Design Architect Reference Manual

Software Version 8.5_1

Mentor Graphics Corporation
8005 S.W. Boeckman Road, Wilsonville, Oregon 97070.

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About This Manual

The Design Architect manuals provide information for electronic design engineers who use the following Mentor Graphics applications:

- The Schematic Editor is used to create and modify schematic diagrams.
- The Symbol Editor lets you create and modify logic symbols representing components used in schematic diagrams.
- The VHDL Editor is used to create and modify VHDL source objects and to compile these models for both simulation and synthesis.

The Design Architect Documentation Set consists of four manuals:

- *Getting Started with Design Architect* is for new users of Design Architect who have some knowledge about schematic drawing and electronic design and are familiar with the UNIX environment. This training workbook provides basic instructions for using Design Architect to create schematics and symbols.
- *Design Architect User's Manual* provides a basic overview of Design Architect, key concepts for using the Schematic Editor, Symbol Editor, and VHDL Editor, and design creation procedures.
- *Design Architect Reference Manual* (this manual) contains information about the functions used to create and modify schematic and cabling designs, logic symbols, and VHDL source files.

If you are unfamiliar with general Mentor Graphics documentation conventions or need to know how to write a command or a function, you should first read *Mentor Graphics Corporation Documentation Conventions*.

Related Publications

- *Design Architect Training Workbook* is for users who have some knowledge about schematic drawing and electronic design and are familiar with the UNIX environment. This training workbook provides concepts and instructions for using Design Architect to create schematics and symbols, using the Design Viewpoint Editor to create design viewpoints.

- *Properties Reference Manual* contains information describing all properties created and/or used by Mentor Graphics applications for associating textual design data with circuit elements.

- *Component Interface Browser User's and Reference Manual* describes the shell-level utility that allows you to view and edit component interfaces.

- *Mentor Graphics Introduction to VHDL* contains introductory conceptual information and basic coding techniques for VHDL.

- *Design Viewpoint Editor User's and Reference Manual* (DVE) contains information about defining and modifying design configuration rules for design viewpoints, along with latching the design. You can also add, modify and manage back annotation data for the design from within DVE.

- *Design Viewing and Analysis Support Manual* (DVAS) contains information about functions and commands for selecting viewing, highlighting, analyzing, reporting, protecting, grouping, syntax checking, naming, and window manipulating capabilities. DVAS functions and commands operate within applications such as QuickSim, QuickPath, AccuSim, QuickGrade and DVE.

The following manuals provide additional useful information:

- *Design Dataport User's and Reference Manual* contains information about Design Dataport (DDP), a procedural interface that can read, write, and modify schematic sheets and symbols.

- *DFI User's and Reference Manual* contains information about the Design File Interface, a procedural interface that allows netlist read, back annotation, and write access to a Mentor Graphics design database.

- *Digital Modeling Guide* contains basic information for designers and modelers using the Mentor Graphics digital analysis environment. This manual can help you make some rudimentary decisions in model or design development.

- *Design Manager User's Manual* provides information about the concepts and use of the Design Manager. This manual contains a basic overview of design management and of the Design Manager, key concepts to help you use the Design Manager, and many design management procedures.

- *Design Manager Reference Manual* describes the AMPLE functions that are available in the Design Manager. This manual also describes the Design Manager shell commands.

- *AMPLE User's Manual* provides overview information, flow-diagram descriptions, explanation of important concepts, and task-oriented procedures for customizing the common user interface and writing AMPLE functions.

- *AMPLE Reference Manual* contains information about AMPLE statements and functions that are common to all applications.

- *Common User Interface Manual* describes the user interface features that are common to all Mentor Graphics products. This manual tells how to manage and use windows, popup command line, function keys, strokes, menus, prompt bars, and dialog boxes.

- *Common User Interface Reference Manual* contains information about all of the Common User Interface functions.

Chapter 1
Reference Tables

This chapter contains reference tables that summarize the functions, internal state functions, and key definitions in Design Architect.

Function Summary

Table 1-1 presents the user functions that are available in Design Architect. If you are viewing this manual online, you can click on a hypertext link in the left column to display the reference page for a specific function.

Some functions listed in the Table 1-1 are provided with a personality module. The names of these functions are followed by an asterisk (*) and are only available if the Component Status Personality Module is loaded. For information on loading personality modules, refer to Appendix A, "Custom Userware". For information on functions/commands in other Design Architect personality modules, refer to the following documents:

AutoLogic BLOCKS Manual
DSP Architect User's and Reference Manual
PCB Products Overview Manual
QuickHDL User's and Reference Manual
VHDLwrite User's and Reference Manual

Table 1-1. Function Summary

Function	Description
$add_ansi_sheet_border()	Creates a border and title block on a schematic sheet.
$$add_arc()	Creates an arc from the three specified coordinate points on the symbol body or as comment graphics on a schematic sheet.
$add_bus()	Creates a bus between the specified locations.
$add_circle()	Creates a circle on a symbol body or comment graphics on a schematic sheet.
$add_dot()	Creates a dot on a symbol, or a comment dot on a schematic sheet.
$add_frame()	Creates and places a frame.
$add_instance()	Creates an instance of a given component symbol at a specified location.
$add_line()	Creates a line segment on a symbol body or comment graphics on a schematic sheet.
$add_net()	Creates net segments between specified points.
$add_panel()	Creates a named panel.
$add_pin()	Adds one or more pins to a symbol, or to schematic sheets.
$add_polygon()	Creates a polygon as part of the symbol body or comment graphics on a schematic sheet.

Table 1-1. Function Summary [continued]

Function	Description
$add_polyline()	Creates a polyline on a symbol body or comment graphics on a schematic sheet.
$add_property()	Adds the specified property with the given value to all selected objects.
$add_property_to_handle()	Adds properties to one or more objects identified by their associated handles, rather than the current selection set.
$add_rectangle()	Creates a rectangle on a symbol body or comment graphics on a schematic sheet based on the coordinates provided.
$add_selected_instance()	Places the most current version of the component symbol for the selected instance on the schematic sheet. Exactly one instance must be selected.
$add_sheet_border()	Creates a border and optional title block for a specified sheet size.
$add_text()	Adds comment text to schematic sheets and symbol text to symbols.
$add_wire()	Creates a net, one pixel wide, between the specified locations.
$align()	Moves the selected objects to align with the most extreme extent (left, right, top, or bottom) of the selected objects.
$allow_resizable_instances()	Sets up the current sheet so that it will allow resizable instances.
$apply_edits()	Applies the edits made to open-edit-in-design-context sheets to the in-memory design without saving the sheets to disk.

Table 1-1. Function Summary [continued]

Function	Description
$auto_sequence_text()	Automatically sequences the values of selected properties from top to bottom and left to right.
$begin_edit_symbol()	Modifies an existing symbol "in place" on a schematic sheet. Only one instance must be selected.
$cancel_compile()	Cancels the VHDL compilation currently in progress.
$change_color()	Changes the color of selected objects.
$change_compiled_pin_name()	Changes the compiled pin name of one or more selected pins on a symbol, or of one or more selected symbol pins in a schematic.
$change_group_visibility()	Toggles the visibility of the specified group of objects.
$change_instance_resize_factor()	Sets the current resize factor for the selected instance(s)
$change_line_style()	Changes the style of selected lines, polylines, or polygons.
$change_line_width()	Changes the width of selected lines, polylines, and polygons.
$change_net_style()	Changes the drawing style of selected net segments for schematic sheets.
$change_net_width()	Changes the width of the selected net segments on a schematic sheet.
$change_polygon_fill()	Changes the fill of selected polygon, rectangle, and circle objects.

Table 1-1. Function Summary [continued]

Function	Description
$change_property_font()	Changes the text font of the property text value associated with a given property on the selected objects.
$change_property_height()	Alters the height of the property text values for the given property name found on selected objects, to the specified number of user units.
$change_property_justification()	Changes the justification on the property text values for the given property name found on selected objects.
$change_property_name()	Changes the names of properties whose owners are selected without changing the property values.
$change_property_offset()	Changes the offset location of property text values for a given property on selected objects.
$change_property_orientation()	Changes the orientation of the property text values for the given property name on selected objects.
$change_property_stability_switch()	For selected symbol items, this function changes the legal operations which can be performed on properties with the given name on an instance of the current symbol in a schematic sheet.
$change_property_type()	Changes the property type of the specified property name on selected objects.

Table 1-1. Function Summary [continued]

Function	Description
$change_property_value()	Sets a new value for all properties with the specified name on all selected objects.
$change_property_visibility()	Hides, displays, or toggles the visibility of the property values for the specified property on selected objects.
$change_property_visibility_switch()	Changes property visibility on an instance of the selected symbol.
$change_text_font()	Changes the font of selected property values and comment text.
$change_text_height()	Alters the height of selected property values or comment text to the specified number of user units.
$change_text_justification()	Changes the justification of selected property text values or comment text.
$change_text_value()	Changes the text value of a selected property or comment.
$$check()	Performs error checking on the current symbol or schematic sheet, or the full schematic.
$clear_unattached_annotations()	Clears all unattached annotations from a back annotation object the next time the sheet is saved.
$close_selection()	Explicitly closes the current selection set.
$close_window()	Closes an active window.
$compile()	Invokes the VHDL compiler using the options specified with the $set_compiler_options() function.

Table 1-1. Function Summary [continued]

Function	Description
$connect()	Forces connections of net segments and pins.
$connect_area()	Forces connections of net segments and pins in the specified rectangular region.
$convert_to_comment()	Converts selected electrical or symbol body objects into non-instantiable comment graphics.
$copy()	Duplicates all selected objects, including both electrical and comment objects.
$copy_multiple()	Creates multiple copies of selected objects and places the copies in a line.
$copy_to_array()	Creates multiple copies of the selected objects.
$create_entity()	Creates a VHDL entity description that matches the symbol in the active window.
$create_pin_list()	Scans the specified schematic for ports and returns a vector of pin information or places the pin information into a pin list file.
$create_sheet()	Creates a schematic sheet of the size and orientation specified.
$create_symbol()	Refer to the description of the $generate_symbol() function.
$cs_end_edit_symbol()*	Terminates the symbol edit-in-place mode, which was invoked with the $begin_edit_symbol() function.

Table 1-1. Function Summary [continued]

Function	Description
$cs_save_sheet()*	Saves the schematic sheet being edited and updates the component status.
$cs_save_sheet_as()*	Saves the sheet being viewed, using the name specified, and updates the component status.
$cs_save_symbol()*	Saves and updates the component status of the symbol being viewed.
$cs_save_symbol_as()*	Saves the symbol being viewed using the name specified, and sets the component status of the symbol.
$delete()	Deletes selected electrical, symbol, comment objects, and property text.
$delete_interfaces()	Deletes empty interfaces from the specified component.
$delete_panel()	Deletes a named panel definition on a schematic or a symbol.
$delete_parameter()	Cancels the effect of a previous $set_parameter() function for the specified parameter names.
$delete_property()	Removes specified property names from selected objects.
$delete_property_owner()	Removes a type of object from the legal owner list of given properties.
$delete_sheet()	Deletes the specified schematic sheet from the workstation disk.
$delete_template_name()	Deletes a template name from the current line using the rules described in the $select_template_name() function.

Table 1-1. Function Summary [continued]

Function	Description
$direct_to_active_window()	Redirects the given AMPLE string to be evaluated in the active window.
$disconnect()	Forces disconnection of net segments and instance pins at selected junctions and intersections.
$disconnect_area()	Forces disconnection of net segments and instance pins at selected junctions and intersections in a specified area.
$does_selection_exist()	Returns whether there are any selected objects.
$end_edit_symbol()	Terminates the symbol edit-in-place mode, which was invoked with the $begin_edit_symbol() function.
$expand_template_name()	Finds a template name on the current line and replaces it with a corresponding VHDL template.
$export_edif_netlist()*	Translates a Mentor Graphics design into an EDIF file describing that design.
$export_miflist()*	Creates a Mentor Intermediate Format (MIF) netlist of a design.
$export_vhdl_netlist()*	Calls $MGC_HOME/bin/vhdlnet to produce a netlist of a VHDL model.
$find_instance()*	Opens a window on the sheet containing an instance specified by the instance handle found in a report produced by $run_erc(), and zooms in on that instance.
$filter_property_check()	Creates a list of properties that are to be excluded from checks.

Table 1-1. Function Summary [continued]

Function	Description
$flip()	Flips selected objects (which can be schematics, symbols, or comments) and the location of any selected text about the current basepoint.
$freeze_window()	Suspends graphic updates to symbol and sheet windows.
$generate_schematic()*	Calls $MGC_HOME/bin/sg to create a schematic from the connectivity model produced by $import_edif_netlist().
$generate_symbol()	Generates a symbol of a specified shape and size using the pin information provided. Optional arguments determine whether or not a window is opened to display the generated symbol.
$get_active_symbol()	Returns a vector containing one or all of the following attributes: the complete pathname, the version number, the component pathname, the component name, and the symbol name of the active symbol.
$get_active_symbol_history()	Returns information related to the active symbol history list.
$get_apply_edits_needed()	Returns @true if there are edits to any edit-in-design-context sheets that have not been applied to the in-memory design through the use of $apply_edits(). Returns @false if no edits have been made that need to be applied.

Table 1-1. Function Summary [continued]

Function	Description
$get_attached_objects()	Returns information about object handles of the specified type which are attached to the given object, if any such objects exists.
$get_attributes()	Returns a vector containing the location of the specified object.
$get_auto_update_inst_handles()$	Returns auto-update information about the sheet in the active window.
$get_basepoint()	Returns a three-element array specifying the location of the basepoint of the current sheet.
$get_bundle_members()	Returns a vector containing an ordered list of the specified bundle's members.
$get_check_status()	Determines if the sheet or symbol was checked and if the sheet or symbol passed or failed the check.
$get_comment_graphics_attributes()	Returns a vector containing the values of attributes of comment graphics specified by the handle argument and the comment_attributes argument.
$get_comment_handles()	Returns a vector whose elements are the handles of comment objects of the specified type(s) in the active window.
$get_comment_text_attributes()	Returns a vector of the requested attributes in the order in which you specified them.
$get_comment_visibility()	Determines the visibility of comment text and graphics.

Table 1-1. Function Summary [continued]

Function	Description
$get_compiled_vhdl_source_name()	Returns a vector containing the complete pathname to the source VHDL design object's file, the pathname to the source VHDL design object, the version number and the type of the source design object used.
$get_default_interface_name()	Returns the name of the default interface for the component that is under edit (or being viewed) in the active window.
$get_diagram_location()	Returns a vector containing the mouse cursor location.
$get_edit_mode()	Returns the value of the edit mode of a schematic or symbol window: @on if editing is enabled in the active window, and @off if editing is disabled.
$get_evaluations()	Returns either @on or @off, which indicates whether viewing of evaluated expressions in the source and/or the back-annotated data aspect of the design viewpoint is enabled or disabled.
$get_frame_attributes()	Returns a vector containing the requested attributes about the specified frame.
$get_frame_handles()	Returns a vector whose elements are the handles of all frames on the active sheet.
$get_grid()	Returns a vector of the requested attributes concerning the current grid settings of the active window.

Table 1-1. Function Summary [continued]

Function	Description
$get_in_design_context()	Returns either @true or @false, indicating whether the current sheet is a design sheet in the context of a design viewpoint.
$get_instance_attributes()	Returns the value of all specified attributes of the instance specified by instance_handle.
$get_instance_handles()	Returns a vector of all instance handles that are attached to the specified net.
$get_instance_models()	Returns detailed information about all models available for the selected instance.
$get_instance_pathname()	Returns a vector containing the component pathname, the component name, the interface name, and the symbol name of the selected instance.
$get_item_type()	Returns one of the following item types specified by the handle: @comment_graphics, @comment_text, @frame, @instance, @net, @pin, @vertex, @symbolpin, @property, or @net_segment.
$get_model_path()	Returns the operating system pathname to the current model corresponding to the specified instance.
$get_net_attributes()	Returns the Net property value assigned to the specified net, and/or the handles of the vertices that define that net.
$get_net_handles()	Returns a vector of the net handles attached to the specified instance or vertex.

Table 1-1. Function Summary [continued]

Function	Description
$get_next_active_symbol()	Returns the name of the next or previous symbol, relative to the specified symbol.
$get_object_property_attributes()	Returns requested information about a specific property for specific objects in the active window.
$get_objects()	Returns the specific information about the specific types of objects on the active sheet or the selected set.
$get_objects_in_area()	Returns a vector of handles for all objects in the specified area.
$get_origin()	Returns the coordinates of the origin of a symbol, which is the reference point on the symbol that is used for placing, copying, and moving instances of that symbol on a schematic sheet.
$get_owned_property_names()	Returns a vector of the names of all the properties, both currently owned by objects of the specified item_type and legal to be added to other objects of the same type.
$get_parameter()	Returns a vector containing the specified parameter name, the associated value and type.
$get_pathname()	Returns the pathname to the component, the schematic, if any, the sheet or symbol name, and the version number of the object displayed in the active window.
$get_pin_attributes()	Returns a vector of specified attributes for a given pin.

Table 1-1. Function Summary [continued]

Function	Description
$get_pin_handles()	Returns a vector of handles of pins attached to the specified object, and/or a matching specified pin name.
$get_pin_names()	Returns a vector of symbol pin names.
$get_property_attributes()	Returns requested information about a specified property or a vector of properties.
$get_property_handles()	Returns a vector of property handles associated with the given object, or of all properties in the active window, if no object handle is specified.
$get_property_names()	Returns the names of all of the properties attached to the object (identified by its handle) in the active window.
$get_property_owners()	Returns information on objects in the active window to which a specified property is attached. Property names are always compared without regard to case.
$get_schematic_sheets()	Returns the names of the sheets in the specified schematic.
$get_search_path()	Returns a vector of strings, one for each pathname in the current search path.
$get_select_count()	Returns an integer designating the number of objects currently selected in the active window.

Table 1-1. Function Summary [continued]

Function	Description
$get_select_count_type()	Returns a vector consisting of the number of selected objects of each specified type, in the order in which the types were specified.
$get_select_extent()	Returns a vector of two locations: the lower-left and the upper-right corners of the area occupied by the currently selected objects.
$get_select_handles()	Returns a vector of handles of all selected objects.
$get_select_handles_type()	Returns a vector of handles of all selected objects of the specified type in the order in which the types are specified.
$get_select_identical()	Determines whether members of a set of selected objects are of the same object type, such as a net, an instance, a string of comment text, or a comment line.
$get_select_text_exists()	Returns @true if the one selected object is a property, and @false otherwise.
$get_select_text_handle()	Returns the handle of the object that owns the selected property text.
$get_select_text_name()	Returns the property name of the selected text.
$get_select_text_origin()	Returns the location of the object that owns the selected property text.
$get_select_text_value()	Returns the property value of the selected property text.

Table 1-1. Function Summary [continued]

Function	Description
$get_sheet_design_pathname()	Returns a string containing the design pathname of the instance that owns the current sheet.
$get_sheet_extent()	Returns two locations: the lower-left and the upper-right corners of a rectangle enclosing the objects on the sheet in the active window.
$get_source_edit_allowed()	Returns either @on or @off, depending on the value of the Source_Edit_Allowed property on the parent instance in the context of a design viewpoint.
$get_symbol_name()	Returns a string defining the symbol name for the current symbol.
$get_text_information()	Returns information such as value, height, and justification about the text at the specified location.
$get_type_present()	Returns whether the specified object exists on the sheet.
$get_vertex_attributes()	Returns a vector of the requested attributes of the vertex specified by the vertex handle.
$get_vertex_handles()	Returns a vector of all vertex handles that are attached to the specified net.
$get_view_area()	Returns a vector containing the locations of the lower left and upper right corners of the current view in the active window.
$get_viewpoint()	Returns a string defining the session viewpoint pathname.

Table 1-1. Function Summary [continued]

Function	Description
$get_window_names()	Returns a vector containing the specified information about all windows in the session.
$group()	Defines or adds to groups of design objects for quicker editing operations on those objects.
$hide_active_symbol_window()	Hides the active symbol window from view.
$hide_annotations()	Turns off the display of back-annotated property values and makes them uneditable in the context of the design viewpoint.
$hide_comment()	Hides comment text and graphics. Hidden comments are not selectable.
$hide_context_window()	Turns off the display of the context window.
$hide_panel_border()	Removes the visible borders of the named panels.
$hide_status_line()	Hides the status line in an editor.
$highlight_by_handle()	Highlights all unselected, unprotected electrical and comment objects having the specified handles.
$highlight_property_owner()	Highlights the owner of a visible property text string, assuming the owner is currently unselected and unprotected.
$import_edif_netlist()*	Invokes $MGC_HOME/bin/enread with the specified EDIF netlist file to produce a connectivity model.

Table 1-1. Function Summary [continued]

Function	Description
$insert_template()	Displays a dialog box containing a scrolling list of available templates.
$is_active_symbol_window_visible()	Returns @true if the active symbol window is visible, and returns @false if it is not visible.
$is_context_window_visible()	Returns @true if the context window is visible, and returns @false if it is not visible.
$is_handle_valid()	Returns @true if the specified handle represents an object on the sheet.
$is_selection_open()	Determines whether the selection set is open or closed.
$is_status_line_visible()	Returns the current state of the status_line_visibility internal variable: either @true or @false.
$make_symbol()	Creates a new symbol and instance from selected comment and pin objects on a schematic sheet.
$mark_property_value()	Marks a property value as modified (or not modified) on this instance.
$measure_distance()	Measures the vector distance and angle between two points and displays the delta-X or delta-Y, and the Cartesian angle, for straight line distances in the message area at the bottom of the Design Architect Session Window.
$merge_annotations()	Merges all annotated property values to the source sheet in the context of a design viewpoint.

Table 1-1. Function Summary [continued]

Function	Description
$modify_frame()	Moves and resizes the selected frame to the rectangular region defined by the coordinates.
$move()	Moves all selected object(s) to a new position that you specify, either by entering coordinates, or by placing the cursor at the desired location.
$move_cursor_incrementally()	Enables moving the mouse cursor incrementally, typically in response to using the keyboard "arrow" keys.
$open_design_sheet()	Invokes the Schematic Editor in the context of a design viewpoint which allows you to create, edit, or view source and back annotation data.
$open_down()	Opens a sheet one hierarchical level down from a selected instance in the context of a design viewpoint.
$open_sheet()	Allows you to edit or view a schematic sheet.
$open_source_code()	Opens a source code editor for the specified language.
$open_symbol()	Allows you edit or view a symbol.
$open_up()	Opens the parent sheet of the currently viewed sheet in the context of a design viewpoint.
$open_vhdl()	Opens a VHDL Editor window on the specified version of the VHDL source design object.

Table 1-1. Function Summary [continued]

Function	Description
$pivot()	Pivots selected electrical, symbol, or comment objects individually about their own origins.
$place_active_symbol()	Places the current active symbol at the specified location.
$print_all_sheets()	Prints all sheets in the specified hierarchy.
$print_design_sheets()	Prints all sheets in a design that display annotations.
$print_schematic_sheets()	Prints all of the sheets in a schematic.
$protect()	Adds all the selected objects to the set of protected items.
$protect_area()	Adds all the objects within the specified rectangular region to the set of protected items.
$recalculate_properties()	Recalculates all property expressions on a design sheet that has been opened in the context of a design viewpoint.
$reconnect_annotations()	Reconnects the back annotations from an object that no longer exists in the design onto an object that does exist in the design.
$redo()	Returns the application to the state existing prior to the previous $undo() function.
$remove_comment_status()	Removes comment status from selected symbol components.

Table 1-1. Function Summary [continued]

Function	Description
$reopen_selection()	Reopens the most recently closed selection set to accept additional selected items.
$replace()	Replaces selected instances in the schematic edit sheet with the most recent version of the specified component.
$replace_with_alternate_symbol()	Replaces the selected instance with the next available symbol from the same component.
$$report_check()	Creates a report containing the check status of the various check categories.
$report_default_property_settings()	Displays the legal owners and types of specified electrical and comment properties.
$report_groups()	Opens a report window in which it lists the user-defined names of groups of design objects.
$report_interfaces()	Reports information contained in the specified interface(s) of the given component.
$report_interfaces_selected()	Reports information about the interface(s) of the selected instance.
$report_object()	Creates a report for requested objects or, if no handles are specified, for selected objects of the types indicated by the arguments.
$report_panels()	Lists the names and locations of all panels in either a popup window, a transcript window, and/or a file.

Table 1-1. Function Summary [continued]

Function	Description
$report_parameter()	Lists the design parameters declared with the $set_parameter() function.
$reselect()	Selects the previously closed selection set (called the reselection set).
$revalidate_models()	Validates all of the models that are registered with the same interface as the specified symbol.
$rotate()	Rotates all selected electrical and comment objects as a unit around the basepoints.
$route()	Replaces segments between selected vertices with an orthogonal net.
$run_erc()*	Opens a viewpoint on the design containing the sheet in the active window, adds the Comp property as a primitive, checks the design using the specified QuickCheck Electrical Rules Check (ERC) file, writes a file to be used by the $find_instance() function, then displays the check report in a notepad window.
$save_sheet()	Writes the schematic data to the disk for the design being viewed in the active window.
$save_sheet_as()	Writes the schematic sheet to the disk, using the name specified by the name arguments for the design being viewed in the active window.
$save_symbol()	Writes the symbol to the disk for the design being viewed in the active window.

Table 1-1. Function Summary [continued]

Function	Description
$save_symbol_as()	Writes the symbol to the disk, using the name specified by the component_name and symbol_name, for the symbol being viewed in the active window.
$scale()	Changes the proportions of selected symbol and comment objects with respect to the basepoint.
$scroll_down_by_unit()	Scrolls the view of the contents in the active window down by one application-defined unit, enabling you to move incrementally from the current cursor position to the bottom of the viewable area.
$scroll_down_by_window()	Scrolls the view into the active window down by one-fourth the height of the window.
$scroll_hz()	Horizontally scrolls by the specified percentage of the active window.
$scroll_left_by_unit()	Scrolls the view of the contents in the active window to the left by one application-defined unit, enabling you to move incrementally from the current window position to the left of the viewable area.
$scroll_left_by_window()	Scrolls the view into the active window to the left, one-fourth the width of the window.

Table 1-1. Function Summary [continued]

Function	Description
$scroll_right_by_unit()	Scrolls the view of the contents in the active window to the right by one application-defined unit, enabling you to move incrementally from the current window position to the right side of the viewable area.
$scroll_right_by_window()	Scrolls to the right, one-fourth the width of the active window.
$scroll_up_by_unit()	Scrolls the view of the contents in the active window up one application-defined unit, enabling you to move incrementally from the current cursor position to the top of the viewable area.
$scroll_up_by_window()	Scrolls the view into the active window up one-fourth the height of the window.
$scroll_vt()	Scrolls the contents of the active window vertically by the specified percentage.
$select_all()	Selects objects in the active window based on the selection switches chosen, or on the values of the select internal state variables.
$select_area()	Selects objects in a given area in the active window based on the selection switches chosen, or on the values of the select internal state variables.
$select_branches()	Selects the entire branch of any net containing selected vertices on a schematic sheet.

Table 1-1. Function Summary [continued]

Function	Description
$select_by_handle()	Selects all unprotected objects (schematics, symbols, and comments) with the specified handles.
$select_by_property()	Selects objects based on the property names, values, and types specified. Multiple property name/value/type sets can be specified with this function.
$select_by_property_type()	Selects objects based on the property type(s) specified.
$select_group()	Selects all objects in the named group.
$select_instances()	Selects all unselected instances that have selected pins.
$select_nets()	Selects all unselected net segments and vertices of nets that have at least one selected net segment or vertex.
$select_pins()	Selects pins of selected instances.
$select_property_owner()	Selects the owner of a visible property text string.
$select_template_name()	Selects the next VHDL template name on the current line by searching for text between the following types of brackets: "<>", "{}", or "[]".
$select_text()	Selects only text objects in the specified area in the active window.
$select_vertices()	Selects either pin or net vertices within a defined area.
$sequence_text()	Allows assignment of sequenced property values.

Table 1-1. Function Summary [continued]

Function	Description
$set_active_symbol()	Specifies a new active symbol to be instantiated whenever the $place_active_symbol() function is issued.
$set_active_symbol_history()	Adds items to the active symbol history list, or replaces the items in the list.
$set_annotation_visibility()	Determines whether annotated values are displayed and editable in the context of a design viewpoint.
$set_auto_update_mode()	Specifies whether an automatic update is performed when a sheet is opened, and specifies how to update instances at that time.
$set_autoripper()	This function is now obsolete. Refer to the $set_ripper_mode() function.
$set_autoroute()	Determines whether nets are automatically orthogonally routed when a net is created or moved.
$set_autoselect()	Specifies whether newly-created objects are selected after being created.
$set_basepoint()	Changes the basepoint of the selected objects to the specified location.
$set_bus_width()	Specifies the width for subsequently created buses.
$set_check_annotations()	Determines whether checks are done for annotations to fixed or protected properties, and whether checks for unattached annotations are done.

Table 1-1. Function Summary [continued]

Function	Description
$set_check_closedots()	Determines whether or not to check for the occurrence of close-dots in the schematic area.
$set_check_dangle()	Specifies whether dangling nets and pins are identified by the $$check() function.
$set_check_expression()	Determines whether or not the $$check() function identifies expressions on the sheet.
$set_check_filemode()	Specifies how information is to be stored in the file defined by the check_filename internal state variable.
$set_check_filename()	Specifies the name of the file in which all messages generated at check time will be stored if the value returned by $get_check_filemode() is @add or @replace.
$set_check_frame()	Determines the type of checking that will be performed during check time on frames. This check is required by Mentor Graphics applications.
$set_check_initprops()	Determines whether mismatched Init property values will be reported at check time. This check is not required by Mentor Graphics applications.
$set_check_instance()	Determines the type of checking that will be performed during check time on instances.

Table 1-1. Function Summary [continued]

Function	Description
$set_check_net()	Determines the type of checking that will be performed during check time on nets. This is required by Mentor Graphics applications.
$set_check_notdots()	Specifies whether the $$check() function reports all not-dot locations on a schematic sheet. This check is not required.
$set_check_overlap()	Specifies whether the $$check() function reports on overlapping instances. This check is not required.
$set_check_owner()	Specifies whether the $$check() function reports any inconsistencies between properties and property owner specifications. This check is not required.
$set_check_parameter()	Specifies whether the $$check() function reports all variables used in expressions on a schematic sheet. This check is not required.
$set_check_pins()	Determines whether or not symbol pins remaining on a sheet are identified by the $$check() function. This check is required.
$set_check_schematicinstance()	Determines whether instance names are checked on all sheets of the schematic, and instances not having unique names are listed. This check is not required.

Table 1-1. Function Summary [continued]

Function	Description
$set_check_schematicinterface()	Determines the type of checking that will be performed during check time on interfaces. This is not required by Mentor Graphics applications.
$set_check_schematicnet()	Determines whether schematic-wide net checks are performed such as checking for on/off-page connectors. This check is not required.
$set_check_schematicspecial()	Specifies whether to check for matching on- and off-page connectors between multiple sheets of a schematic. This check is not required.
$set_check_schematicuserrule()	Specifies whether the $$check() function should perform user-defined checks on a schematic. This check is not required.
$set_check_special()	Specifies whether the $$check() function reports errors and warnings on special instances, such as bus rippers, net connectors, globals, off-page connectors, and ports. This check is required.
$set_check_symbolbody()	Specifies whether the $$check() function reports symbol body errors and warnings. This check is required.
$set_check_symbolinterface()	Determines whether the symbol's registered interface is checked. This check is not required.
$set_check_symbolpin()	Specifies whether the $$check() function reports symbol pin errors and warnings. This check is required.

Table 1-1. Function Summary [continued]

Function	Description
$set_check_symbolspecial()	The value of this function determines if special instances (those with Class property) are checked for proper construction. This check is required.
$set_check_symboluserrule()	Specifies whether the $$check() function should perform user-defined checks on a symbol. This check is not required.
$set_check_transcript()	Controls whether information is displayed in a transcript window at check time.
$set_check_userrule()	Specifies whether user-defined checks are executed on schematic sheets by the $$check() function. This check is not required.
$set_check_window()	Controls whether information is displayed in a window at check time.
$set_close_dot()	Specifies whether closedots are visible or hidden on a schematic sheet.
$set_color()	Resets the color for the selected class(es) of design objects session wide.
$set_color_config()	Changes the background color and resets design object colors to defaults for all design objects and all windows.
$set_compiler_options()	Displays the Compiler Options dialog box for the language being edited (usually VHDL) by calling the language specific function.
$set_default_parts_menu()	Sets the default parts menu to the specified name.

Table 1-1. Function Summary [continued]

Function	Description
$set_dot_size()	Specifies the size of the junction, comment, and instantiated dots on a schematic sheet, and the size of graphic dots in a symbol.
$set_dot_style()	Specifies the style of the junction, comment, and instantiated dots on a schematic sheet, and the style of graphic dots in a symbol.
$set_dynamic_rounding_precision()	Determines the number of significant digits that are displayed for all location coordinates entered with a dynamic.
$set_edit_mode()	Changes the mode of the schematic or symbol window from edit to read-only or from read-only to edit.
$set_environment_dofile_pathname()	Sets the pathname to an AMPLE dofile to be executed each time an object of the specified type is opened.
$set_evaluations()	Toggles viewing of evaluated expressions in the source and/or the back-annotated data aspect of the design viewpoint.
$set_grid()	Configures and displays the grid for the active window.
$set_implicit_ripper()	Determines whether an implicitly ripped net is attached to a bundle at a 45- or 90-degree angle.
$set_line_style()	Specifies the default style for new lines, arcs, circles, rectangles, and polygons in comment graphics for schematic sheets, or graphic objects for symbols.

Table 1-1. Function Summary [continued]

Function	Description
$set_line_width()	Specifies the default width for new lines, arcs, circles, rectangles, and polygons in comment graphics for schematic sheets, or symbol graphics.
$set_net_style()	Specifies the default net style for newly-created nets.
$set_net_width()	Specifies the default width for subsequently-created nets. This function does not affect existing nets.
$set_new_annotation_visibility()	Specifies whether a property of the given name is visible or hidden when it is back-annotated to the design, and does not already exist on the source object in the design.
$set_next_active_symbol()	Activates the next symbol (graphical representation) of the current component.
$set_origin()	Specifies the origin of a symbol.
$set_orthogonal()	Specifies if the object being edited should be restricted to horizontal/vertical movement during edit operations. This setting also affects the placement of some comment objects, including lines, polylines, and polygons.
$set_orthogonal_angle()	Specifies the value that determines the maximum angle at which to orthogonally snap nets and certain comment objects, such as lines and polylines, during creation.

Table 1-1. Function Summary [continued]

Function	Description
$set_parameter()	Assigns values to parameters in FOR, IF, and CASE expressions, and in parameterized property value expressions on a schematic sheet.
$set_pin_spacing()	Specifies pin spacing in user units. To find the current pin spacing, execute $get_pin_spacing().
$set_polygon_fill()	Specifies whether new polygons and circles will be clear, solid, or stippled for comment graphics in schematic sheets and symbol graphics.
$set_previous_active_symbol()	For components having multiple symbols, this function activates the previous symbol in the list of symbols for the current component (not necessarily the previous active symbol).
$set_property_font()	Specifies the name of a registered font family in which the font is defined for newly-created property text.
$set_property_height()	Specifies the default height for newly-created property text.
$set_property_hjustification()	Specifies the default horizontal justification for newly-created property text.
$set_property_orientation()	Specifies the default text orientation for newly-created property text.
$set_property_owner()	Defines the types of objects that may own particular properties.

Table 1-1. Function Summary [continued]

Function	Description
$set_property_stability_switch()	Specifies the symbol default setting for how newly-created symbol properties can be modified on an instance.
$set_property_transparency()	Specifies whether objects beneath newly-created property text are transparent.
$set_property_type()	Sets the default type for the values of given property names, when assigned to objects in the active window.
$set_property_visibility()	Specifies whether newly-created instance-specific properties are visible.
$set_property_visibility_switch()	Specifies whether newly-created properties on an instance of a symbol are visible.
$set_property_vjustification()	Specifies the default vertical text justification for newly-created property text.
$set_report_filemode()	Specifies how information is to be stored in the file defined by the report_filename internal state variable.
$set_report_filename()	Specifies the name of the file in which reports generated from the $$report_check(), $report_default_property_settings(), $report_interfaces(), $report_object(), $report_panels(), and $report_parameter() functions are stored, if the value of the report_filemode internal state function is either @add or @replace.

Table 1-1. Function Summary [continued]

Function	Description
$set_report_transcript()	Controls whether information is displayed in a transcript window when a $report_* function is executed.
$set_report_window()	Controls whether information is displayed in a window during a $report_* function.
$set_ripper_dot()	Specifies whether junction dots appear where bus rippers join bus lines on a schematic sheet.
$set_ripper_mode()	Determines whether the session uses implicit rippers, automatic ripper insertion, or neither, when wires are connected to buses and bundles.
$set_ripper_query()	Determines whether you are asked to supply a net name or bit number when using the $add_wire() function to route a single-bit net to a bundle or bus.
$set_ripper_symbol_pathname()	Specifies the default single bit bus ripper to automatically insert in newly created nets.
$set_schem_check_mode()	Specifies whether a schematic check should save sheets that previously did not pass check, but now check successfully.
$set_schematicuserrules_file()	Specifies the pathname to a file containing user-defined checks for a schematic design.
$set_search_path()	Specifies directory names in which to search for components for instantiation.

Table 1-1. Function Summary [continued]

Function	Description
$set_select_aperture()	Sets the pick aperture within which Design Architect will determine the closest object for single point selection.
$set_select_comment()	Specifies whether comment graphics will be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_exterior()	Specifies whether objects outside a specified area will be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_frame()	Specifies whether frames can be selected when the $select_all() or $select area() function is executed without arguments.
$set_select_instance()	Specifies whether instances can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_net()	Specifies whether nets can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_pin()	Specifies whether instance or symbol pins on a schematic sheet or symbol pins on a symbol can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_property()	Specifies whether property text can be selected when the $select_all() or $select_area() function is executed without arguments.

Table 1-1. Function Summary [continued]

Function	Description
$set_select_segment()	Specifies whether net segments on a schematic sheet can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_symbolbody()	Specifies whether symbol body graphics and symbol text can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_symbolpin()	Specifies whether or not symbol pins on a schematic sheet can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_text()	Specifies whether comment text inside the selection area can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_select_vertex()	Specifies whether net vertices can be selected when the $select_all() or $select_area() function is executed without arguments.
$set_selection_model()	Specifies whether object selection is individual or additive.
$set_snap()	Specifies whether object placement is snapped to the snap grid points in the current window.
$set_symboluserrules_file()	Specifies the pathname to a file containing user-defined checks for symbols.

Table 1-1. Function Summary [continued]

Function	Description
$set_template_directory()	Sets the directory that contains the VHDL templates used when the $expand_template_name() and $insert_template() functions are invoked.
$set_text_font()	Specifies a filename containing the font definitions for comment text on a schematic sheet and symbol text on a symbol.
$set_text_height()	Specifies the default height for newly-created comment text on a schematic sheet, and symbol text on a symbol.
$set_text_hjustification()	Specifies the default horizontal justification for newly-created comment text on a schematic sheet and symbol text on a symbol.
$set_text_orientation()	Specifies the default text orientation for newly-created comment text on a schematic sheet and symbol text on a symbol.
$set_text_transparency()	Specifies whether objects beneath newly-created comment text on schematic sheets or symbol text on a symbol are visible.
$set_text_vjustification()	Specifies the default vertical justification of newly-created comment text on a schematic sheet and symbol text on a symbol.
$set_undo_level()	Specifies the number of undo levels supported.

Table 1-1. Function Summary [continued]

Function	Description
$set_unselect_comment()	Specifies whether comment graphics objects will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_exterior()	Specifies whether objects outside a specified area can be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_frame()	Specifies whether frames will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_instance()	Specifies whether instances on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_net()	Specifies whether nets on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Table 1-1. Function Summary [continued]

Function	Description
$set_unselect_pin()	Specifies whether instance or symbol pins on a schematic sheet or symbol pin on a symbol will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_property()	Specifies whether property text will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_segment()	Specifies whether net segments will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_symbolbody()	Specifies whether symbol body graphics and text will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_symbolpin()	Specifies whether or not a symbol pin on a sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Table 1-1. Function Summary [continued]

Function	Description
$set_unselect_text()	Specifies whether comment text on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_unselect_vertex()	Specifies whether net vertices on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.
$set_user_units()	Defines the coordinate system for symbol and schematic sheets.
$set_userrule_error()	Reports the check userrule errors from within a userrule macro file during userrule checks.
$set_userrules_file()	Specifies the pathname to a file containing user-defined checks for individual schematic sheets.
$set_userrule_warning()	Reports check userrule warnings from within a userrule macro file during the userrule checks.
$set_vhdl_compiler_options()	Sets the compiler options for the next VHDL compile in the session.
$set_viewpoint()	Sets the viewpoint of the session.
$setup_annotated_property_text()	Sets up the annotated property text attributes used when you are adding annotated property text.

Table 1-1. Function Summary [continued]

Function	Description
$setup_check_schematic()	Sets the values of a specified set of internal state variables to determine what schematic checks are performed at check time.
$$setup_check_sheet()	Sets the values of a specified set of internal state variables to determine what sheet checks are performed at check time.
$setup_check_symbol()	Sets the values of a specified set of internal state variables to determine what symbol checks are performed at check time.
$setup_color()	Sets the default colors for all design objects of a given type.
$setup_comment()	Sets up the comment graphic and comment text attributes that are used when creating schematic comments.
$setup_default_viewpoint()	Tells DA that this user wants to edit in design context and also sets the defaults for the name of viewpoints that will be edited, and their type in case one needs to be created.
$setup_net()	Sets up attributes that are used when creating nets.
$setup_page()	Specifies the pin spacing for a symbol or schematic sheet.
$setup_property_text()	Sets up the property text attributes used when adding property text.

Table 1-1. Function Summary [continued]

Function	Description
$setup_report()	Specifies whether reports are displayed in a popup window, a transcript window, and/or stored in a file.
$setup_ripper()	Specifies various settings associated with implicit ripping and automatic ripper insertion.
$setup_select_filter()	Sets up what type of objects are currently selectable.
$setup_symbol_body()	Sets up the graphic attributes used when creating symbol graphics and symbol text.
$setup_unselect_filter()	Sets up what type of objects are currently unselectable.
$show_active_symbol_window()	Displays the graphics and default body properties for the active symbol.
$show_annotations()	Makes back-annotated properties visible and editable.
$show_comment()	Displays comment text and graphics on a schematic sheet.
$show_context_window()	Turns on the display of the context window in the session.
$show_panel_border()	Displays borders of the named panels.
$show_registration()	Displays the name of the component interface with which the symbol is currently registered.
$show_status_line()	Displays the status line in an editor.
$slice()	Slices the selected object.

Table 1-1. Function Summary [continued]

Function	Description
$snap_to_grid()	Snaps comment objects and properties to the nearest "snap" grid coordinates.
$sort_handles()	Returns an array whose elements are the same elements as the input array, but sorted as specified by the method, block_size, and block_offset arguments.
$sort_handles_by_property()	Removes all non-property handles and sorts the remaining list of property text handles according to the property names associated with them, then returns a vector of vectors.
$stretch()	Stretches the selected object.
$string_to_literal()	Returns either the given argument or the literal value, if the argument was a string.
$undo()	Reverses the action of the previous undoable function called in any open window (active, or not).
$unfreeze_window()	Resumes graphic updates to symbol and schematic windows.
$ungroup()	Removes the grouping of all objects in a specified group.
$unhighlight_by_handle()	Unhighlights the objects, including property text, whose handles are specified.
$unhighlight_property_owner()	Unhighlights the owner of a visible property string.
$unprotect()	Removes objects from select protection and adds the objects to the selection list.

Table 1-1. Function Summary [continued]

Function	Description
$unprotect_area()	Removes objects from select protection and then adds the objects to the selection list.
$unselect_all()	Unselects objects in the active window based on the specified unselection switches.
$unselect_area()	Removes objects from the current selection set based on specified unselection switches.
$unselect_by_handle()	Unselects the object(s) whose handles are specified.
$unselect_by_property()	Unselects all electrical or comment objects having the specified property_name and, if specified, having the corresponding property_value or property_type.
$unselect_by_property_type()	Unselects objects based on the property type(s) specified.
$unselect_property_owner()	Unselects the owner of a visible property text string.
$unselect_vertices()	Unselects either pin or net vertices within a defined rectangular area on a schematic sheet.
$update()	Updates selected instances on the schematic edit sheet with the current version of the same symbol.
$update_all()	Synchronizes all sheets and symbols open in a Design Architect session.

Table 1-1. Function Summary [continued]

Function	Description
$update_all_sheets()	Opens all sheets in the specified hierarchy one at a time with the switch specified in the update_type argument.
$update_from_interface()	Updates the specified symbol's pin and property values from the interface.
$update_title_block()	Causes the title block on a sheet to show the name of the user editing the sheet, along with the date and time of the update.
$view_all()	Shrinks or enlarges the image in the current window so the entire design is visible in the window.
$view_area()	Displays the specified rectangle in the current window.
$view_centered()	Centers the view on the point specified without changing the magnification of the view.
$view_panel()	Centers the named panel, changing the magnification as needed to display the entire panel.
$view_selected()	Centers the view on selected items.
$was_saved()	Determines if unsaved edits exist in the active sheet.
$zoom_in()	Expands the image size in the active window to show more detail in that window.
$zoom_out()	Zooms out from the center of the active window by the factor specified.

Commands to Functions

Table 1-2 provides a summary of DA commands that are mapped to functions. Uppercase letters in the command name indicate minimum typing. Command names followed with an asterisk are only available when the Component Status Personality Module is loaded.

If you are viewing this manual online, you can click on a hypertext link in the left column to display the reference page for a specific command.

Table 1-2. Commands to Functions

Command	Function
ADD ARc	$$add_arc()
ADD BUs	$add_bus()
ADD CIrcle	$add_circle()
ADD DOt	$add_dot()
ADD FRame	$add_frame()
ADD INstance	$add_instance()
ADD LIne	$add_line()
ADD PANel	$add_panel()
ADD PIn	$add_pin()
ADD POLYGon	$add_polygon()
ADD POLYLine	$add_polyline()
ADD PRoperty	$add_property()
ADD RECtangle	$add_rectangle()
ADD SElected Instance	$add_selected_instance()
ADD SHeet Border	$add_sheet_border()
ADD TExt	$add_text()

Table 1-2. Commands to Functions [continued]

Command	Function
ADD WIre	$add_wire()
ALIgn	$align()
AUTo SEquence Text	$auto_sequence_text()
BEGin EDit Symbol	$begin_edit_symbol()
CANcel COmpile	$cancel_compile()
CHAnge COlor	$change_color()
CHAnge COmpiled Pin Name	$change_compiled_pin_name()
CHange GRoup Visibility	$change_group_visibility()
CHAnge LIne Style	$change_line_style()
CHAnge LIne Width	$change_line_width()
CHAnge NEt Style	$change_net_style()
CHAnge NEt Width	$change_net_width()
CHAnge POlygon Fill	$change_polygon_fill()
CHAnge PRoperty Font	$change_property_font()
CHAnge PRoperty Height	$change_property_height()
CHAnge PRoperty Justification	$change_property_justification()
CHAnge PRoperty Name	$change_property_name()
CHAnge PRoperty OFfset	$change_property_offset()
CHAnge PRoperty ORientation	$change_property_orientation()
CHAnge PRoperty Stability Switch	$change_property_stability_switch()
CHAnge PRoperty Type	$change_property_type()
CHAnge PRoperty VAlue	$change_property_value()
CHAnge PRoperty VIsibility	$change_property_visibility()

Table 1-2. Commands to Functions [continued]

Command	Function
CHAnge PRoperty Visibility Switch	$change_property_visibility_switch()
CHAnge TExt Font	$change_text_font()
CHAnge TExt Height	$change_text_height()
CHAnge TExt Justification	$change_text_justification()
CHAnge TExt Value	$change_text_value()
CHEck	$$check()
CLOse SELection	$close_selection()
CLOse WIndow	$close_window()
COMpile	$compile()
CONnect	$connect()
CONnect AReа	$connect_area()
CONvert TO Comment	$convert_to_comment()
COPy	$copy()
COPy MUltiple	$copy_multiple()
COPy TO Array	$copy_to_array()
CREate ENtity	$create_entity()
CREate SHeet	$create_sheet()
END EDit Symbol*	$cs_end_edit_symbol()
SAVe SHeet*	$cs_save_sheet()
SAVe SHeet As*	$cs_save_sheet_as()
SAVe SYmbol*	$cs_save_symbol()
SAVe SYmbol As*	$cs_save_symbol_as()
DELete	$delete()

Table 1-2. Commands to Functions [continued]

Command	Function
DELete INterfaces	$delete_interfaces()
DELete PANel	$delete_panel()
DELete PARameter	$delete_parameter()
DELete PRoperty	$delete_property()
DELete PRoperty Owner	$delete_property_owner()
DELete SHeet	$delete_sheet()
DELete TEmplate Name	$delete_template_name()
DISconnect	$disconnect()
DISconnect AReа	$disconnect_area()
END EDit Symbol	$end_edit_symbol()
EXPand TEmplate Name	$expand_template_name()
EXPort EDif Netlist*	$export_edif_netlist()
EXPort MIflist*	$export_miflist()
EXPort VHdl Netlist*	$export_vhdl_netlist()
FINd INstance*	$find_instance()
FILter PRoperty Check	$filter_property_check()
FLIp	$flip()
FREeze WIndow	$freeze_window()
GENerate SChematic*	$generate_schematic()
GROup	$group()
HIDe ACtive Symbol Window	$hide_active_symbol_window()
HIDe ANnotations	$hide_annotations()
HIDe COmment	$hide_comment()

Table 1-2. Commands to Functions [continued]

Command	Function
HIDe COntext Window	$hide_context_window()
HIDe PAnel Border	$hide_panel_border()
HIDe STatus Line	$hide_status_line()
HIGhlight BY Handle	$highlight_by_handle()
HIGhlight PRoperty Owner	$highlight_property_owner()
IMPort EDif Netlist*	$import_edif_netlist()
INSert TEmplate	$insert_template()
MAKe SYmbol	$make_symbol()
MARk PRoperty Value	$mark_property_value()
MEAsure DIstance	$measure_distance()
MERge ANnotations	$merge_annotations()
MODify FRame	$modify_frame()
MOVe	$move()
OPEn DEsign Sheet	$open_design_sheet()
OPEn DOWn	$open_down()
OPEn SHeet	$open_sheet()
OPEn SOurce Code	$open_source_code()
OPEn SYmbol	$open_symbol()
OPEn UP	$open_up()
OPEn VHdl	$open_vhdl()
PIVot	$pivot()
PLAce ACtive Symbol	$place_active_symbol()
PRInt ALl Sheets	$print_all_sheets()

Table 1-2. Commands to Functions [continued]

Command	Function
PRInt DEsign Sheets	$print_design_sheets()
PRInt SChematic Sheets	$print_schematic_sheets()
PROtect	$protect()
PROtect AREa	$protect_area()
RECalculate PRoperties	$recalculate_properties()
REDO	$redo()
REMOVe COmment Status	$remove_comment_status()
REOPEn SElection	$reopen_selection()
REPlace	$replace()
REPlace WIth Alternate Symbol	$replace_with_alternate_symbol()
REPort CHeck	$$report_check()
REPort DEfault Property Settings	$report_default_property_settings()
REPort GRoups	$report_groups()
REPort INterface	$report_interfaces()
REPort OBject	$report_object()
REPort PANels	$report_panels()
REPort PARameter	$report_parameter()
RESELect	$reselect()
ROTate	$rotate()
ROUte	$route()
RUN ERc*	$run_erc()
SAVe SHeet	$save_sheet()
SAVe SHeet As	$save_sheet_as()

Table 1-2. Commands to Functions [continued]

Command	Function
SAVe SYmbol	$save_symbol()
SAVe SYmbol As	$save_symbol_as()
SCAle	$scale()
SCRoll HZ	$scroll_hz()
SCRoll VT	$scroll_vt()
SELect ALl	$select_all()
SELect AReа	$select_area()
SELect BRanches	$select_branches()
SELect BY Handle	$select_by_handle()
SELect BY Property	$select_by_property()
SELect BY Property Type	$select_by_property_type()
SELect GRoup	$select_group()
SELect INSTances	$select_instances()
SELect NEts	$select_nets()
SELect PIns	$select_pins()
SELect PRoperty Owner	$select_property_owner()
SELect TEmplate Name	$select_template_name()
SELect TExt	$select_text()
SELect VErtices	$select_vertices()
SEQuence TExt	$sequence_text()
SET BAsepoint	$set_basepoint()
SET COlor	$set_color()
SET COlor Config	$set_color_config()

Table 1-2. Commands to Functions [continued]

Command	Function
SET COmpiler Options	$set_compiler_options()
SET EDit Mode	$set_edit_mode()
SET EValuations	$set_evaluations()
SET GRid	$set_grid()
SET NExt Active Symbol	$set_next_active_symbol()
SET ORigin	$set_origin()
SET PARameter	$set_parameter()
SET PRevious Active Symbol	$set_previous_active_symbol()
SET PRoperty Owner	$set_property_owner()
SET PRoperty Type	$set_property_type()
SET SEarch Path	$set_search_path()
SET TEmplate Directory	$set_template_directory()
SET VIewpoint	$set_viewpoint()
SETUp CHeck SChematic	$setup_check_schematic()
SETUp CHeck SHeet	$$setup_check_sheet()
SETUp CHeck SYmbol	$setup_check_symbol()
SETUp COlor	$setup_color()
SETUp COMment	$setup_comment()
SETUp NEt	$setup_net()
SETUp PAge	$setup_page()
SETUp PROperty Text	$setup_property_text()
SETUp REport	$setup_report()
SETUp SElect Filter	$setup_select_filter()

Table 1-2. Commands to Functions [continued]

Command	Function
SETUp SYmbol Body	$setup_symbol_body()
SHOw ACtive Symbol Window	$show_active_symbol_window()
SHOw ANnotations	$show_annotations()
SHOw COmment	$show_comment()
SHOw COntext Window	$show_context_window()
SHOw PAnel Border	$show_panel_border()
SHOw REgistration	$show_registration()
SHOw STatus Line	$show_status_line()
SNAp TO Grid	$snap_to_grid()
UNDO	$undo()
UNFREeze WIndow	$unfreeze_window()
UNGROup	$ungroup()
UNHIGhlight BY Handle	$unhighlight_by_handle()
UNHIGhlight PRoperty Owner	$unhighlight_property_owner()
UNPROtect	$unprotect()
UNPROtect ARea	$unprotect_area()
UNSELect ALl	$unselect_all()
UNSELect ARea	$unselect_area()
UNSELect BY Handle	$unselect_by_handle()
UNSELect BY Property	$unselect_by_property()
UNSELect BY Property Type	$unselect_by_property_type()
UNSELect PRoperty Owner	$unselect_property_owner()
UNSELect VErtices	$unselect_vertices()

Table 1-2. Commands to Functions [continued]

Command	Function
UPDate	$update()
UPDate ALl	$update_all()
UPDate ALl Sheets	$update_all_sheets()
UPDate FRom Interface	$update_from_interface()
UPDate TItle Block	$update_title_block()
VIEw ALl	$view_all()
VIEw ARea	$view_area()
VIEw CEntered	$view_centered()
VIEw PAnel	$view_panel()
VIEw SElected	$view_selected()
ZOOm IN	$zoom_in()
ZOOm OUt	$zoom_out()

Key Definitions

The following text summarizes the predefined keys in Design Architect. Function keys are described first, followed by keys on the numeric keypad, then other modified keys.

Predefined Function Keys

The following tables list predefined function keys, with their key names and a description of the action they perform. If a stroke is defined to perform the same action, that is noted in the tables. To see diagrams of predefined stroke definitions, choose the **Help > On Strokes** pulldown menu item; if a symbol or schematic window is active, you can print the displayed message box by clicking the Select mouse button on the Print button at the bottom of the message box.

All function keys can interact with the Shift key, the Control key, and the Alt key. Function keys not listed in the tables are not defined by the application.

Keyboards for HP/Apollo workstations have no function key labeled "F10", "F11", or "F12". For information how these keys are mapped on an HP/Apollo keyboard, refer to the *Common User Interface Manual*.

Table 1-3. Session, IDW Component and IDW Hierarchy Window Function Keys

Key Name	Soft Key Label	Description
F1	Open Sheet	Lets you create, modify, or view the specified schematic sheet.
F3	Open Design Sheet	Lets you create, edit, or view source and back annotation data for the specified sheet in the context of a design viewpoint.
F4	Popup Menu	Displays popup menu for active window. To use popup menus without using the mouse, press this key and enter the underlined letter in menu item desired.

Table 1-3. Session, IDW Component and IDW Hierarchy Window Function Keys [continued]

Key Name	Soft Key Label	Description
F5	Open Symbol	Lets you create, modify, or view the specified symbol.
F6	Open VHDL	Opens the VHDL Editor for the specified model.
F7	Find Component	Opens the Dialog Navigator to find a component.
F8	Toggle Transcript	Opens or closes the transcript window.
F9	Setup Session	Opens the Setup Session dialog box, so you can modify the input device, window layout, and visible areas within the Session window.
F10	Pulldown Menu	Activates the first item on the menu bar. To select menu items without using the mouse, press this key and enter the underlined letter in the desired menu name.
F11	Read File	Opens a file for read-only in a Notepad text editor window. The function that defines this key is $key_read().
F11s (Shift-F11)	Edit File	Opens a file for edit in a Notepad text editor window. The function that defines this key is $key_edit().
F12	Pop Window	Pops the active window. The function that defines this key is $key_pop().
F12s (Shift-F12)	Close Window	Closes the active window. The function that defines this key is $key_close().

Table 1-4. Schematic Editor Window Function Keys

Key Name	Soft Key Label	Description
F1	Select Area	Selects all objects in a given area, regardless of the selection filter. Move cursor to one corner of the area, press and hold the function key, move the cursor to the diagonally opposite corner, then release the function key.
F1s (Shift-F1)	Select Vertex	Selects pin or net vertices in the area defined by the dynamic rectangle.
F1c (Ctrl-F1)	Reopen Select	Reopens the most recently closed selection set to accept additional selected items.
F2	Unselect All	Unselects all selected objects regardless of selection filter. Stroke available.
F2s (Shift-F2)	Unselect Area	Unselects the objects within a given area, regardless of the selection filter.
F2c (Ctrl-F2)	Move	Moves selected electrical or comment objects to the cursor location. Stroke available.
F3	Add Wire	Creates single bit net segments between points. Click mouse button at initial and intermediate points. Double-click to end net. Stroke available.
F3s (Shift-F3)	Add Bus	Creates multi-bit net segments between points. Click mouse button at initial and intermediate points. Double-click to end net. Stroke available.
F3c (Ctrl-F3)	Copy	Copies selected electrical or comment objects to the cursor location. Stroke available.

Table 1-4. Schematic Editor Window Function Keys [continued]

Key Name	Soft Key Label	Description
F4	Popup Menu	Displays popup menu for active window. To use popup menus without using the mouse, press this key and enter the underlined letter in menu item desired.
F4c (Ctrl-F4)	Reselect	Reselects the previous selection set.
F5	Open Symbol	Lets you create, modify, or view the specified symbol.
F5s (Shift-F5)	Add Property	Adds the given property name/value pair to selected electrical, symbol, and comment objects. Fill in prompt bar, click mouse button at property text location. Stroke available.
F5c (Ctrl-F5)	Check Sheet	Performs error checking on the sheet.
F6	Set Grid Snap	Toggles grid snap mode.
F6s (Shift-F6)	Connect All	Connects net segments and pins. Stroke available.
F7	Select Txt & Move	Selects and moves the text under the cursor. Position cursor over text, press the Select (left) mouse button, drag text to desired location, then release.
F7s (Shift-F7)	Chg Text Value	Changes the text value of a property or comment under the cursor location. Enter a new value in the prompt bar.
F7c (Ctrl-F7)	Open up	Opens the sheet(s) hierarchically above the instance under the cursor.
F8	View Area	Scales window to rectangle defined during down/up stroke. Stroke available.

Table 1-4. Schematic Editor Window Function Keys [continued]

Key Name	Soft Key Label	Description
F8s (Shift-F8)	View All	Scales window at pointer location to display all information. Stroke available.
F8c (Ctrl-F8)	Open Down	Opens a sheet(s) hierarchically below the instance beneath the cursor.
F9	Setup Session	Opens the Setup Session dialog box, so you can modify the input device, window layout, and visible areas within the Session window.
F10	Pulldown Menu	Activates the first item on the menu bar. To select menu items without using the mouse, press this key and enter the underlined letter in the desired menu name.
F11	Read File	Opens a file for read-only in a Notepad text editor window. The function that defines this key is $key_read().
F11s (Shift-F11)	Edit File	Opens a file for edit in a Notepad text editor window. The function that defines this key is $key_edit().
F12	Pop Window	Pops the active window. The function that defines this key is $key_pop().
F12s (Shift-F12)	Close Window	Closes the active window. The function that defines this key is $key_close().

Table 1-5. Symbol Editor Window Function Keys

Key Name	Soft Key Label	Description
F1	Select Area	Selects all objects in a given area, regardless of the selection filter. Move cursor to one corner of the area, press and hold the function key, move the cursor to the diagonally opposite corner, then release the function key.
F1s (Shift-F1)	Select Pin	Selects pin vertices in the area defined by the dynamic rectangle.
F1c (Ctrl-F1)	Reopen Select	Reopens the most recently closed selection set to accept additional selected items.
F2	Unselect All	Unselects all selected objects regardless of selection filter. Stroke available.
F2s (Shift-F2)	Unselect Area	Unselects the objects within a given area, regardless of the selection filter.
F2c (Ctrl-F2)	Move	Moves selected electrical or comment objects to the cursor location. Stroke available.
F3	Add Polyline	Creates a polyline on a symbol body or comment graphics. Click mouse button at initial and intermediate points. Double-click to end. Stroke available.
F3s (Shift-F3)	Add Bus	Creates multi-bit net segments between points. Click mouse button at initial and intermediate points. Double-click to end net. Stroke available.
F3c (Ctrl-F3)	Copy	Copies selected electrical or comment objects to the cursor location. Stroke available.

Table 1-5. Symbol Editor Window Function Keys [continued]

Key Name	Soft Key Label	Description
F4	Popup Menu	Displays popup menu for active window. To use popup menus without using the mouse, press this key and enter the underlined letter in menu item desired.
F4s (Shift-F4)	Add Pin	Adds a pin to a sheet or symbol. Fill in dialog box, prompt bar. Click mouse button at desired pin location, then click at text location. Stroke available.
F4c (Ctrl-F4)	Reselect	Reselects the previous selection set.
F5	Add Arc	Creates an arc on a symbol body or comment graphics. Click the mouse at each end point, then at the arc point. Stroke available.
F5s (Shift-F5)	Add Property	Adds the given property name/value pair to selected electrical, symbol, and comment objects. Fill in prompt bar, click mouse button at property text location. Stroke available.
F5c (Ctrl-F5)	Check Symbol	Performs error checking on the symbol.
F6	Set Grid Snap	Toggles grid snap mode.
F7	Select Txt & Move	Selects and moves the text under the cursor. Position cursor over text, press the Select (left) mouse button, drag text to desired location, then release.
F7s (Shift-F7)	Chg Text Value	Changes the text value of a property or comment under the cursor location. Enter a new value in the prompt bar.

Table 1-5. Symbol Editor Window Function Keys [continued]

Key Name	Soft Key Label	Description
F8	View Area	Scales window to rectangle defined during down/up stroke. Stroke available.
F8s (Shift-F8)	View All	Scales window at pointer location to display all information. Stroke available.
F9	Setup Session	Opens the Setup Session dialog box, so you can modify the input device, window layout, and visible areas within the Session window.
F10	Pulldown Menu	Activates the first item on the menu bar. To select menu items without using the mouse, press this key and enter the underlined letter in the desired menu name.
F11	Read File	Opens a file for read-only in a Notepad text editor window. The function that defines this key is $key_read().
F11s (Shift-F11)	Edit File	Opens a file for edit in a Notepad text editor window. The function that defines this key is $key_edit().
F12	Pop Window	Pops the active window. The function that defines this key is $key_pop().
F12s (Shift-F12)	Close Window	Closes the active window. The function that defines this key is $key_close().

Table 1-6. VHDL Editor Window Function Keys

Key Name	Soft Key Label	Description
F1	Toggle Select	Allows selection of text without the mouse. To select a block of text, press the F1 key, move the cursor with one of the cursor movement keys, and then press the F1 key again.
F2	Unselect	Unselects the selected text.
F4	Popup Menu	Displays popup menu for active window. To use popup menus without using the mouse, press this key and enter the underlined letter in menu item desired.
F6	Next Template	Searches for the next template beginning on the current line and selects it.
F7	Expand Template	Expands the currently selected template. If a template is not selected or currently expanded, search for the next template, then select and expand it.
F8	Delete Template	Deletes the template under the cursor, find the next one and select it.
F9	Setup Session	Opens the Setup Session dialog box, so you can modify the input device, window layout, and visible areas within the Session window.
F10	Pulldown Menu	Activates the first item on the menu bar. To select menu items without using the mouse, press this key and enter the underlined letter in the desired menu name.
F11	Read File	Opens a file for read-only in a Notepad text editor window. The function that defines this key is $key_read().

Table 1-6. VHDL Editor Window Function Keys

Key Name	Soft Key Label	Description
F11s (Shift-F11)	Edit File	Opens a file for edit in a Notepad text editor window. The function that defines this key is $key_edit().
F12	Pop Window	Pops the active window. The function that defines this key is $key_pop().
F12s (Shift-F12)	Close Window	Closes the active window. The function that defines this key is $key_close().

Numeric Keypad Definitions

The numeric keypad is defined to manipulate the cursor and the view of the windows. Table 1-7 shows definitions common to all keyboard types, while Table 1-8 shows the four actions whose key definition or location change.

Table 1-7. Numeric Keypad

7 Home	**8 Arrow Up**	**9 Scroll Up**
4 Arrow Left	**5 Next Window**	**6 Arrow Right**
1 End	**2 Arrow Down**	**3 Scroll Down**

Table 1-8. Numeric Keypad Actions

Key Action	Numeric Keypad Key
Zoom In	Use '+' key.
Zoom Out	Use '-' key.
Scroll Left	Use '0' or '/' key depending upon numeric keypad design.**
Scroll Right	Use '.' or '*' key depending upon numeric keypad design.**
**In most cases, if the numeric keypad shows the words 'Ins' and 'Del' on the '0' and '.' keys, the scrolling actions are available on the '/' and '*' keys.	

Other Modified Keys

Design Architect also defines some modified alphabetic keys and mouse buttons to make tasks easier. Modifiers are generally the Ctrl, Shift, and Alt keys. The following tables list these key descriptions for each type of window in Design Architect. To use them, press the modifying key and the alphabetic key simutaneously.

Table 1-9. Session, IDW Component and IDW Hierarchy Window Control Keys

Keys	Description
Ctrl-? or Ctrl-Shift-?	Provides possible commands that match the text string specified on the command line. Exact keys used for this operation are dependant on platform. Try each combination to see which is correct for your platform.
Ctrl-A	Activates the next symbol in the current component. If no symbol is active, the Set Active Symbol dialog box is displayed.
Ctrl-C	Stops execution of an AMPLE script.

Table 1-9. Session, IDW Component and IDW Hierarchy Window Control Keys [continued]

Keys	Description
Ctrl-D	Quits or kills a process.
Ctrl-H	1. Displays the Active Symbol History dialog box. Select from the history list to reactivate a symbol. 2. In the popup command line, displays a history window o the commands that have been executed.
Ctrl-N	In a popup command line, move down in the list of comands that have been executed.
Ctrl-P	In a popup command line, move up in the list of comands that have been executed.
Ctrl-Q	Resumes an AMPLE script after a pause.
Ctrl-S	Suspends an AMPLE script.
MMB	Execute a stroke.
RMB	Displays the apprpriate popup menu at the cursor location. If in the menu bar, displays the pulldown menu beneath the cursor.
Shift-RMB	Display previous menu.
Ctrl-RMB	Repeat previous menu item selection.

Table 1-10. Schematic Editor Window Control Keys

Keys	Description
Ctrl-? or Ctrl-Shift-?	Provides possible commands that match the text string specified on the command line. Exact keys used for this operation are dependant on platform. Try each combination to see which is correct for your platform.
Ctrl-A	Activates the next symbol in the current component. If no symbol is active, the Set Active Symbol dialog box is displayed.
Ctrl-B	Moves the basepoint to the cursor location.
Ctrl-C	Stops execution of an AMPLE script.
Ctrl-D	Quits or kills a process.
Ctrl-F	Displays the Setup Select Filter dialog box.
Ctrl-H	1. Displays the Active Symbol History dialog box. Select from the history list to reactivate a symbol. 2. In the popup command line, displays a history window of the commands that have been executed.
Ctrl-N	In a popup command line, move down in the list of comands that have been executed.
Ctrl-P	In a popup command line, move up in the list of comands that have been executed.
Ctrl-Q	Resumes an AMPLE script after a pause.
Ctrl-S	Suspends an AMPLE script.
LMB	1. Selects objects in dynamic rectangle, based on selection filter. 2. Places active symbol: click in Active Symbol window, then click at desired symbol instance location.

Table 1-10. Schematic Editor Window Control Keys [continued]

Keys	Description
Double-click LMB	Opens down on the instance beneath the cursor.
Shift-LMB or Ctrl-Shift-LMB	Reopens selection set and adds objects within the dynamic rectangle to the selection set.
Ctrl-LMB	Reopens selection set and adds objects within dynamic rectangle to selection set.
MMB	Execute stroke.
Ctrl-MMB	Copies selected objects.
Alt-MMB	Moves selected objects.
RMB	Displays the appropriate popup menu at the cursor location. If in the menu bar, displays the pulldown menu beneath the cursor.
Shift-RMB	Display previous menu.
Ctrl-RMB	Repeat previous menu item selection.

Table 1-11. Symbol Editor Window Control Keys

Keys	Description
Ctrl-? or Ctrl-Shift-?	Provides possible commands that match the text string specified on the command line. Exact keys used for this operation are dependant on platform. Try each combination to see which is correct for your platform.
Ctrl-A	Activates the next symbol in the current component. If no symbol is active, the Set Active Symbol dialog box is displayed.
Ctrl-C	Stops execution of an AMPLE script.
Ctrl-D	Quits or kills a process.

Table 1-11. Symbol Editor Window Control Keys [continued]

Keys	Description
Ctrl-F	Displays the Setup Select Filter dialog box.
Ctrl-H	1. Displays the Active Symbol History dialog box. Select from the history list to reactivate a symbol. 2. In the popup command line, displays a history window of the commands that have been executed.
Ctrl-N	In a popup command line, move down in the list of comands that have been executed.
Ctrl-P	In a popup command line, move up in the list of comands that have been executed.
Ctrl-Q	Resumes an AMPLE script after a pause.
Ctrl-S	Suspends an AMPLE script.
LMB	1. Selects objects in dynamic rectangle, based on selection filter. 2. Places active symbol: click in Active Symbol window, then click at desired symbol instance location.
Shift-LMB	Selects property text within dynamic rectangle.
Ctrl-LMB	Reopens selection set and adds objects within dynamic rectangle to selection set.
MMB	Execute stroke.
Double-click-MMB	Center the view about the cursor location.
Ctrl-MMB	Copies selected objects.
Alt-MMB	Moves selected objects.
RMB	Displays the appropriate popup menu at the cursor location. If in the menu bar, displays the pulldown menu beneath the cursor.

Table 1-11. Symbol Editor Window Control Keys [continued]

Keys	Description
Shift-RMB	Display previous menu.
Ctrl-RMB	Repeat previous menu item selection.

Table 1-12. VHDL Editor Window Control Keys

Keys	Description
Ctrl-? or Ctrl-Shift-?	Provides possible commands that match the text string specified on the command line. Exact keys used for this operation are dependant on platform. Try each combination to see which is correct for your platform.
Ctrl-A	Activates the next symbol in the current component. If no symbol is active, the Set Active Symbol dialog box is displayed.
Ctrl-B	Moves the cursor t the bottom of the file.
Ctrl-C	Stops execution of an AMPLE script.
Ctrl-D	Quits or kills a process.
Ctrl-F	Displays the Setup Select Filter dialog box.
Ctrl-G	Displays the Goto Line dialog box.
Ctrl-H	1. Displays the Active Symbol History dialog box. Select from the history list to reactivate a symbol. 2. In the popup command line, displays a history window of the commands that have been executed.
Ctrl-N	In a popup command line, move down in the list of comands that have been executed.
Ctrl-P	In a popup command line, move up in the list of comands that have been executed.

Table 1-12. VHDL Editor Window Control Keys [continued]

Keys	Description
Ctrl-Q	Resumes an AMPLE script after a pause.
Ctrl-R	Displays the current line number and character number in the message area.
Ctrl-S	Suspends an AMPLE script.
Ctrl-T	Moves the cursor to the top of the file.
Ctrl-U	Undo.
LMB	Selects text.
Double-click LMB	Selects the word under the cursor.
Shift-LMB	Selects text between the mark and the cursor.
MMB	Execute stroke.
RMB	Displays the appropriate popup menu at the cursor location. If in the menu bar, displays the pulldown menu beneath the cursor.
Shift-RMB	Display previous menu.
Ctrl-RMB	Repeat previous menu item selection.

Chapter 2
Function Dictionary

This chapter documents user functions that are not defined as internal state functions. An internal state function is a system-defined and maintained function that manipulates information relating to the current editor. Those functions which set and retrieve information directly relating to the editor are found in Chapter 3, "Internal State Function Dictionary".

Note

When referencing a design object, if you provide a relative pathname that does not begin with the dollar sign ($) character, that relative pathname will be converted to an absolute pathname, based on the value of the environment variable MGC_WD. You must ensure that the value of MGC_WD is set to the correct value for your current working directory. If it is not set properly, an incorrect pathname for the reference may be stored.

Available Functions

While using Design Architect, you have access to user interface, printer, and AMPLE functions and commands. These additional functions let you modify the user interface to meet your needs. You can use them to create and manipulate windows, set up a default printing environment, automate functionality, or change colors and fonts. For complete descriptions of user interface, printer, and AMPLE functions, refer to the following related manuals:

- *Common User Interface Reference Manual.* This manual describes the functions that let you modify the user interface and create interface components such as dialog boxes, prompt bars, and menus.

- *Common User Interface Manual.*. This manual shows you how to operate the user interface that delivers consistent behavior and appearance across all Mentor Graphics applications.

- *Printer Interface Reference Manual.*. This manual describes the printer and plotter user interface and functions, such as selecting a priority level, scaling or magnifying a design, or specifying a page layout.

- *AMPLE Reference Manual.*. This manual provides a complete description of each AMPLE function.

- *AMPLE User's Manual.*. This programming manual provides information, examples, and procedures for writing AMPLE scripts. Topics include function declaration, data types, scope, input and output, flow of control, transcripts, and startup files.

$add_ansi_sheet_border()

Scope: schematic
Window: Schematic Editor

Usage

$add_ansi_sheet_border(size, as_cover_sheet)

Edit > Add Sheet Border > ANSI STD

Description

Creates a border and title block on a schematic sheet.

The title block on a standard sheet includes information such as the design number, name of the designer, and schematic page number. The cover sheet has an enhanced title block which includes a title area, revision status, manufacturing data, and areas for approval signatures, in addition to the standard title block items.

Sheet borders and title blocks are created as a series of comment lines and text. Properties are attached to comment lines in the title block to specify design information. When a border and title block are created, a dialog box is displayed for you to provide title block information. You can change existing title block information using the Change Text Value (Shift-F7) function key or the **[Text] Change Value** palette icon.

You can automatically display FSCM numbers and company information on ANSI cover sheets by changing four external variable values. When the variables are defined in either a site or user-level startup file, those values are displayed when sheet borders are created. The four variables are: schematic@@$fscm, schematic@@$company_line1, schematic@@$company_line2, and schematic@@$company_line3.

ANSI sheet borders are not currently supported in the Open Sheet Options dialog box. To create a border on a new sheet, choose **No Border** in the dialog box, then choose the **Edit > Add Sheet Border > ANSI STD** pulldown menu item.

Arguments

- **size (Size)**

  This argument specifies the size of the sheet border. The following choices are available:

  - **@AHorz** (-AHoriz): 11 by 8.5 inches
  - **@AVert** (-AVert): 8.5 by 11 inches
  - **@B** (-B): 17 by 11 inches
  - **@C** (-C): 22 by 17 inches
  - **@D** (-D): 34 by 22 inches
  - **@E** (-E): 40 by 28 inches
  - **@F** (-F): 44 by 34 inches

- **as_cover_sheet (Cover Sheet)**

  This switch specifies whether to create a standard title block or a cover sheet title block. Choose either **@cover** (-Cover) or ⇒ **@nocover** (-NOCover).

Example(s)

The following example creates a 17 by 11 inch border with an enhanced title block on the sheet in the active window.

```
$add_ansi_sheet_border("b", @cover)
```

When you create ANSI sheet borders, the transcript is similar to the following:

```
$create_ansi_b_sheet_border(@cover);
$generate_ansi_cover_title_info("12345", "engr1");
```

Related Functions

$add_sheet_border()

$update_title_block()

$$add_arc()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$$add_arc([[start], [end], [middle]])

ADD ARc [[start] [end] [middle]]

(Schematic) Add > Draw > Arc

(Schematic) Draw > Add > Arc
(Symbol) Add > Arc
(Symbol) Symbol Body & Pins > Draw > Arc

Description

Creates an arc from the three specified coordinate points on the symbol body or as comment graphics on a schematic sheet.

When called from a menu or palette, a prompt bar is displayed requesting the three location points. Click the Select mouse button at the initial point, the end point, and the arc point in the edit window. The arc dynamic follows the cursor so you can see the arc as you specify the three locations.

If the value of the autoselect internal state variable is set to @on, the arc is selected upon completion of this function. An arc on a symbol and a comment graphics arc on a schematic sheet can be removed by selecting the object and executing the $delete() function.

For backward compatibility, the $add_arc() function found in pre-V8.2 releases remains unchanged, and is still available from the command line or a macro file. The syntax for the pre-V8.2 version does not have brackets surrounding the three location points: $add_arc([start], [end], [middle]).

Arguments

- **start (Initial Point)**

  Identifies the initial point of the arc; specified in user units.

- **end (End Point)**

  Identifies the end point of the arc; specified in user units.

- **middle (Arc Point)**

  Identifies the coordinates of an intermediate point of the arc; specified in user units.

Example(s)

The following $$add_arc() function example shows the values of the arguments when adding an arc in the currently active window.

```
$$add_arc([[-2.5, 0], [2.5, 0], [1, -1]])
```

The next example shows the command syntax of the previous example.

```
add ar  [[-2.5, 0]  [2.5, 0]  [1, -1]]
```

Related Functions

$add_circle()
$add_dot()
$add_line()
$add_polygon()
$add_polyline()
$add_rectangle()
$delete()
$setup_comment()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()

$add_bus()

Scope: schematic
Window: Schematic Editor

Usage

$add_bus([points])

ADD BUs [points]

(Schematic) Add > Bus
(Schematic) Net > Add Bus

Description

Creates a bus between the specified locations.

You can specify the default bus width through the Setup Net dialog box or by executing the $set_bus_width() internal state function. To specify the points using the mouse, click the Select mouse button at each vertex location; double-click at the last location.

The $add_bus() function does not appear in the transcript. It first resets the default net width, if it is not the same as the current default bus width, then calls the $add_net() function.

Arguments

- **points (Locations)**

  These arguments define the coordinates of the starting point and subsequent points for bus segments, specified in user units. The function requires a minimum of two points.

Example(s)

$add_bus([[1.65, -1.25], [1.65, 4.35]])

Related Functions

$add_net()
$add_wire()
$set_bus_width()
$set_net_width()
$setup_net()

$add_circle()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_circle([center], [circle_point])

ADD CIrcle [center] [circle_point]

(Symbol) Add > Circle
Symbol Body & Pins > Draw > Circle
(Schematic) Add > Draw > Circle
(Schematic) Draw > Add > Circle
(Schematic) Edit > Edit Commands > Add Comment > Circle

Description

Creates a circle on a symbol body or comment graphics on a schematic sheet.

On symbols, this function adds a circle to the symbol body. On schematic sheets, this function adds a circle as comment graphics. When the prompt bar appears, press the Select mouse button at the center location for the circle, drag the mouse to the desired circumference location (you will see a ghost image of the circle), and release the Select mouse button.

A circle on a symbol and a comment graphics circle on a schematic sheet can be removed by selecting the object and executing the $delete() function. If the value of the autoselect internal state variable is @on, the circle is selected on completion of this function.

The line width, line style, and polygon fill of the circle are determined by the values of the line_style, line_width, or polygon_fill internal state variables.

Arguments

- **center (Center)**

  This argument describes the coordinates that identify the center of the circle specified in user units.

- **circle_point (Circle Point)**

  This argument describes the coordinates that identify a point on the circumference of the circle specified in user units.

Example(s)

The following example shows the function syntax when adding a circle on a symbol or a comment graphic circle on a schematic sheet.

```
$add_circle([0, -2.5], [2.5, 0])
```

The next example displays the command syntax for adding a comment circle to the active schematic sheet.

```
add ci  [1.5, 0]  [2, 0]
```

Related Functions

$$add_arc()
$add_dot()
$add_line()
$add_polygon()
$add_polyline()
$add_rectangle()
$delete()
$setup_comment()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()
$set_polygon_fill()

$add_dot()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$add_dot([location])

ADD DOt [location]

(Symbol) Add > Dot
(Symbol) Symbol Body & Pins > Draw > Dot
(Schematic) Draw > Add > Dot
(Schematic) Add > Draw > Dot
(Schematic) Edit > Edit Commands > Add Comment > Dot

Description

Creates a dot on a symbol, or a comment dot on a schematic sheet.

When called from a palette or menu, click the Select mouse button at the desired location in the edit window. Dots can be selected, moved and copied. Dots cannot be scaled, rotated, or pivoted.

Symbol dots have no electrical meaning. However, when a symbol containing symbol dots is instantiated upon a schematic sheet, the values of the dot_size and dot_style internal state variables control the appearance of the symbol dots, just as they control the junction dots on that sheet.

Dots on schematic sheets are comments and also have no meaning. However, dots on schematic sheets can be made part of a symbol definition through the $make_symbol() function. The $$check() function does not issue errors if dots are left on a schematic sheet.

A dot can be removed by selecting the object and executing the $delete() function.

If the value of the autoselect internal state variable is @on, the dot is selected on completion of this function. The dot size and dot style are determined by the values of the dot_size and dot_style internal state variables.

Arguments

- **location (At Location)**

  Specifies the coordinates that identify dot placement, specified in user units.

Example(s)

The following example shows the function syntax when adding a dot to the currently-active symbol.

```
$add_dot([2, 3])
```

Related Functions

$$add_arc()
$add_circle()
$add_polygon()
$add_polyline()
$add_rectangle()
$setup_net()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_dot_size()
$set_dot_style()

$add_frame()

Scope: schematic
Window: Schematic Editor

Usage

$add_frame("frame_expression", [frame_rectangle])

ADD FRame "frame_expression" [frame_rectangle]

(Schematic) Add > Frame
(Schematic) Edit > Edit Commands > Add Electrical > Frame

Description

Creates and places a frame.

Frames are composed of two parts: a graphical border and a frame expression. The $add_frame() function creates the graphical border and adds the frame expression property with the specified value. Frames can be nested inside one another. You can create IF, FOR, and CASE frames.

To define the frame area using the mouse, press the Select mouse button at one edge of the rectangular area, drag the mouse to the diagonally opposite corne (you will see a ghost image of the frame rectangle), and release the mouse button.

Arguments

- **frame_expression (Frame Expression)**

  Specifies the value of the Frexp property for the given IF, FOR, or CASE expression (for example, "for i := 1 to 10", or "case CLK == POS"). Frame expression syntax is described in "Frexp Property" in the *Design Architect User's Manual*.

- **frame_rectangle (Frame Area)**

  Specifies the coordinates in user units identifying the rectangular region of the frame.

Example(s)

The following $add_frame() function example shows the values of the arguments when a FOR frame is added to the currently active schematic window.

```
$add_frame("for i := -10 to 10", [[-15, 7.5], [15, -7.5]])
```

The next command example shows the values of the arguments when an IF frame is added to the currently-active schematic window.

```
add fr  "if i == -11"  [[-10.75, 6.75], [2.5, 3.75]]
```

Related Functions

$modify_frame() $setup_page()

$add_instance()

Scope: schematic
Window: Schematic Editor

Usage

$add_instance("component_name", "*symbol_name*", [location], *merge_type*, *@selected*, [name_value_pairs])

ADD INstance "component_name" "*symbol_name*" [location] -*merge_type* -*SElected* [name_value_pairs]

(Schematic) Add > Instance >
(Active Symbol) Add Active Symbol

Description

Creates an instance of a given component symbol at a specified location.

When you click the **[Add_Route] Choose Symbol** icon, or select the **Add > Instance > Choose Symbol** menu item, or use the command line with no arguments, the Choose Symbol dialog box containing the Dialog Navigator is displayed for you to select a component symbol from the components displayed in the navigator window. After selecting the component symbol, you can fill in the other information, such as property name/value pairs.

If you select the **Add > Instance > Symbol by Path** menu item, the Add Instance dialog box is displayed. You can either type in the pathname to the component or click the Navigator button to bring up the Dialog Navigator.

If you want to change the symbol name or add property name/value pairs, click the **Yes** Options button. The information in the Component Name and Symbol Name entry boxes takes precedence over a selected design object in the Dialog Navigator.

After you click **OK** in either dialog box, a prompt bar is displayed with the location cursor on the "Location" entry box. As you move the mouse, a ghost image of the symbol appears. Drag the image to the desired location and click the Select mouse button.

If one or more properties on the component symbol are set to @protected, @variable, or @nonremovable mode, you can override the associated values using the repeating name/value argument pair to assign new values.

If you change a property value when you instantiate the component symbol, the property is flagged as Value_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For more information, refer to the $open_sheet(), $open_design_sheet(), $update(), and $replace() function descriptions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value_Modified property is also Attribute_Modified. You can unmark selected property values marked Value_Modified by choosing the **Miscellaneous > Mark Property Value** menu item. Click the prompt bar stepper button to change the entry to notmodified, and click the **OK** button.

You can add editable Inst property values of the form I$nnn to an instance or as part of the symbol itself. The $check() function validates that Inst property values of the form I$nnn or i$nnn are consistent with their respective handles. Design Architect automatically updates the Inst property value with the current instance handle when the symbol is instantiated, copied, or checked. For example, if an instance has an Inst property value of I$123 and the current handle of the same instance is I$234, the value of the Inst property is updated to I$234.

Properties on pins propagate to the net vertices under the pins when an instance having the Class property is placed on a sheet or updated if those properties may be owned by nets and do not already exist. If you wish to propagate properties in this manner, you must explicitly declare "net" as a legal owner of the desired properties using the $set_property_owner() function in the Symbol Editor.

When an instance with a Class property attached is placed on a sheet, making a connection to an existing net, the Init and Net properties which may have been placed on the pin of the symbol are propagated to the net vertex under the instance pin, assuming the net vertex does not already have an Init or Net property. If an Init property already exists on the net vertex, it is replaced by the instance pin's Init property only if the new instance is a global instance (Class property value = G). If a Net property already exists anywhere on the set of connected net segments, the value of that Net property remains; an existing Net property value is never replaced by the incoming value on the instance pin.

If an instance is placed so that it overlaps another instance, no error message is issued. Instance overlap can be checked by setting the overlap argument in the $check() function to @all or @errorsonly.

If the value of the autoselect internal state variable is @on, the instance is selected on completion of this function.

If you open a transcript window on the Design Architect session, you will notice that the function $$add_instance() is displayed in the transcript, rather than $add_instance(). The function, $$add_instance() is a function that $add_instance() calls. If you replay the transcript, the $$add_instance() function will exhibit the same behavior as the $add_instance() function. However, you must specify $$add_instance(), rather than $add_instance(), in a macro file. Specifying $add_instance() in a macro file causes a popup window to appear and pauses the replay until you respond.

Arguments

- **component_name (Component Name)**

  Specifies the pathname to the component.

- ***symbol_name (Symbol Name)***

  Defines which symbol to use. If the symbol is not registered with an interface, the symbol cannot be instantiated. If no symbol name is specified, the default symbol of the interface is used.

- **location (At Location)**

  Specifies the coordinates that identify the origin of the instance, specified in user units.

- ***merge_type***

  This argument is obsolete. Providing a value has no effect. You may enter a value or simply leave the argument location blank.

- ***selected (Selected)***

  If this switch is set, the most current version of the symbol of the currently selected instance is instantiated. If more than one instance is selected, or no instances are selected, an error message is issued. If component_name is also specified, this switch is ignored.

- ***name_value_pairs (Property Name, Value)***

  This vector of text strings specifies one or more property names and associated values of symbol body properties. Name specifies a property whose value is to be modified on the instance. Value specifies an instance-specific value for the property. The repeating name/value argument pair supports the enumeration of instance-specific values for symbol properties. Both function and command modes require the names and values to be quoted, and brackets around the argument: ["name1", "value1", ..., "*nameN*", "*valueN*"].

  Name_value_pairs are for symbol body properties only. If you specify a pin property name that is on the symbol, you will not modify that pin property value. Instead, a symbol body property with that property name and value is added to the instance.

  An error message is issued if an attempt is made to change the value of a property that is set to @fixed mode on the symbol. If the property does not exist on the symbol, it is added to the instance with the specified value, and the property type defaults to the type declared for that property.

Example(s)

The following $add_instance() function example shows the values of the arguments when adding an instance of the component, *$MGC_GENLIB/and2*, to the currently active schematic window.

```
$add_instance("$MGC_GENLIB/and2", "and2", [-5, 5])
```

The following example displays the command syntax for adding the *$MGC_GENLIB/rip* component to the currently active schematic window. There are several symbol representations of the rip component. In this case, the 8-bit bus ripper is chosen.

```
add in "$MGC_GENLIB/rip"  "8X1"  [0.25, 0.75]
```

Related Functions

$change_property_stability_switch()
$change_property_visibility_switch()
$get_auto_update_inst_handles()
$mark_property_value()
$open_sheet()
$replace()
$setup_page()
$update()

Related Internal State Functions

$set_auto_update_mode()
$set_autoselect()
$set_check_overlap()
$set_property_stability_switch()
$set_property_visibility_switch()

$add_line()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_line([poly_points])

ADD LIne [poly_points]

(Symbol) Add > Two Point Line
(Symbol) Symbol Body & Pins > Draw > Two Point Line
(Schematic) Draw > Add > Two Point Line
(Schematic) Add > Draw > Two Point Line

Description

Creates a line segment on a symbol body or comment graphics on a schematic sheet.

To define endpoints using the mouse, press the Select mouse button at the initial point, drag the mouse to the terminal point, and release the mouse button. For symbols, lines are added to the symbol body. For schematic sheets, lines are added as comment graphics.

To create the line off the grid, you must set the snap argument to @off in the $set_grid() function. To create a diagonal line, you must set the orthogonal argument to @off in the $setup_net() function or the $set_orthogonal() internal state function.

To delete a line on a symbol or comment graphics line from a schematic sheet, select the object and invoke the $delete() function.

Using the command line syntax, if more than two locations are specified, the additional locations are ignored.

If the value of the autoselect internal state variable is @on, the line is selected on completion of this function.

The line width and line style of the line are determined by the values of the line_style or line_width internal state variables.

Arguments

- **poly_points (End Points)**

  Specifies, in user units, the coordinates of the start and endpoints of the line.

Example(s)

The following example shows the function syntax when adding a line to a symbol or a comment graphic line to a schematic sheet.

```
$add_line([[-2.5, 0], [0, 0]])
```

The next example displays the command syntax for adding a comment line to the active schematic sheet.

```
add li  [[-2.5, -4], [3, -4]]
```

Related Functions

$$add_arc()
$add_circle()
$add_polygon()
$add_polyline()
$add_rectangle()
$delete()
$set_grid()
$setup_comment()
$setup_net()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()
$set_orthogonal()

$add_net()

Scope: schematic
Window: Schematic Editor
Prerequisite: A default single bit bus ripper must be set if you want automatic instantiation of single bit bus rippers during net creation.

Usage

$add_net([points])

Description

Creates net segments between specified points.

In V8.2 and later releases, $add_net() is directly accessible only by typing the function in the popup command line. The net width is determined by the last call to $add_wire() or $add_bus(), both of which call $add_net(). Mentor Graphics recommends that you use these new functions, rather than $add_net().

$add_wire() sets the net width to one pixel, then creates a net between the specified locations. $add_bus() sets the net width to 3, 5, or 7 pixels, which you can set through the $setup_net() function, then creates a net between the specified points. You can access these functions through the **[Add_Route]** palette, the **Add** and **Net** popup menus, and the F3 (Add Wire) and Shift-F3 (Add Bus) function keys.

For information about $add_bus(), refer to page 2-7; for information about $add_wire(), refer to page 2-57.

Arguments

- **points (Locations)**

  These arguments describe the coordinates of the starting point, the second point, and any subsequent points for net segments, specified in user units. The function requires a minimum of two points for a net segment.

Example(s)

The following example shows the function syntax to add a net to a sheet.

```
$add_net([[1.65, -1.25], [1.65, 4.35]])
```

Related Functions

$add_bus() $add_wire() $setup_net()

$add_panel()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_panel("panel_name", [*rectangle*], *replace_mode*)

ADD PANel "panel_name" [*rectangle*] *replace_mode*

View > Panel > Add Panel:

Description

Creates a named panel.

You can define the panel area by specifying diagonally opposite corners of the rectangle. Or, you can define the panel to be the visible displayed area of the currently active window by typing the function or command, then entering the panel name in the prompt bar and pressing the Return key.

You define panels so you can plot particular areas of symbol or schematic windows. Panels can be large or small, and they may overlap.

Arguments

- **panel_name (Panel Name)**

  Specifies the name of the panel to be created.

- ***rectangle (Panel Area)***

  Specifies, in user units, the coordinates of diagonally opposite corners of the panel. If this argument is omitted, the boundary rectangle of the currently active window defines the panel area.

- ***replace_mode (Replace)***

  A switch name that specifies the replacement status from among the following:

  @replace (-Replace): If panel_name already exists, the new panel replaces the old panel.

  ⇒ **@noreplace** (-NOReplace): The new panel does not replace the old panel, if panel_name already exists. If panel_name exists, and this value is not specified, an error message is issued.

Example(s)

The following example displays the function syntax for creating a new panel named "symbol_panel" in a currently-active symbol window.

```
$add_panel("symbol_panel", [[-2.4, 2.3], [0.8, 0.1]])
$show_panel_border()
```

The next example shows the command syntax for the same example. However, this time the panel already exists, and the new location replaces the previous location.

```
add pan  "symbol_name"  [[2.4, 2.9], [1.8, 1.1]]  -r
```

The next example shows the function syntax for defining a panel named "all" to be the entire displayed area in the active window.

```
$add panel("all")
```

The next example shows the command syntax for the same example.

```
add pan  "all"
```

Related Functions

$delete_panel()
$hide_panel_border()
$report_panels()
$setup_page()
$show_panel_border()
$view_panel()

$add_pin()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_pin("pin_name", [pin_location], [text_location])

ADD PIn "pin_name" [pin_location] [text_location]

(Symbol) Add > Pin(s)
(Symbol) Symbol Body & Pins > Draw > Pin(s)
(Symbol) Edit > Add Pin(s)
(Schematic) Add > Draw > Pin(s)
(Schematic) Draw > Add > Pin(s)
(Schematic) Edit > Edit Commands > Add Electrical > Pin(s)

Description

Adds one or more pins to a symbol, or to schematic sheets.

When you add a pin on a schematic sheet, you create a symbol pin which can be made part of a symbol definition through the use of the $make_symbol() function. The $$check() function issues errors if the symbol pins are left on the schematic sheet (that is, not made part of a symbol definition) if the value of the check_symbolpin internal state variable is @all or @errorsonly.

When a pin is added to a symbol, the name given as the Pin property value becomes the default compiled pin name. The compiled pin name is used as a non-volatile pin name on library symbols against which timefiles, HML (Hardware Modeling Language) files, and BLMs (Behavioral Language Models) can be compiled.

Subsequent changes to the Pin property value through the $change_property_value() function will cause the compiled pin name to track the Pin property value, until a $change_compiled_pin_name() function is issued. Thereafter, changes to the Pin property will not affect the compiled pin name. To cause the compiled pin name to track the Pin property value again, choose the **Miscellaneous > Change Compiled Pin Name** menu item. When the prompt bar appears, do not enter a new pin name; just click the **OK** button or press the Return key.

The compiled pin name is not a property and cannot be viewed on the sheet. Its value can be inspected through the $report_object() function with the @pin switch set. Symbol compiled pin names are not used for connectivity of an instance on a schematic sheet.

Properties on pins propagate to the net vertices under the pins when an instance having the Class property is placed on a sheet or updated if those properties may be owned by nets and do not already exist. If you wish to propagate properties in this manner, you must explicitly declare "net" as a legal owner of the desired properties using the $set_property_owner() function in the Symbol Editor.

When an instance with a Class property attached is placed on a sheet, making a connection to an existing net, the Init and Net properties which may have been placed on the pin of the symbol are propagated to the net vertex under the instance pin, assuming the net vertex does not already have an Init or Net property.

If an Init property already exists on the net vertex, it is replaced by the instance pin's Init property only if the new instance is a global instance (Class property value = G). If a Net property already exists anywhere on the set of connected net segments, the value of that Net property remains; an existing Net property value is never replaced by the incoming value on the instance pin.

Pins are added with the property stability switch value set to @fixed, and the property visibility switch set to @visible.

When you invoke this function through the palette or menus, or on the command line with no arguments, the Add Pin(s) dialog box is displayed for you to define one or more pins of the same type. The first entry in the dialog box sets the height of the pin name. You can either specify 50% or 75% of the pin spacing, or you can enter a real number.

Name placement can be either manual (you are prompted for both pin and text location), or automatic (you are only prompted for pin location). When you choose automatic pin name placement, you are also choosing whether the pin will have whiskers.

You can automatically add the Pintype property by clicking on the appropriate pin type button: "IN", "OUT", "IXO". If you click on the "omit" button, no Pintype property is added. The pin type you choose applies to all the pin names you type in the entry boxes on the dialog box. Pin placement specifies on which edge of the symbol body to place the pins; click on the button indicating the desired edge. Type the pin names in the text entry boxes. To move to the next text entry box,

press the Tab key. After you have finished adding pin names, click on the OK button on the dialog box.

A prompt bar is displayed with the "PIN Property Value" entry box filled with the first pin name you specified in the dialog box. The location cursor is positioned on the "Pin Location" entry box. Define the pin location (and text location, if you chose "Manual") by clicking the Select mouse button at the desired location in the edit window. Another prompt bar appears with the "PIN Property Value" entry box filled in with the next pin name that you specified in the dialog box. This process continues until you have defined locations for all the pin names.

If the value of the autoselect internal state variable is @on, the pin is selected on completion of this function.

When you execute this function from the popup command line, the font, height, and justification of the property text are set to the values of the corresponding internal state variables, and can be changed through the $change_property and $change_text functions. If you use the Add Pin(s) dialog box, the justification is determined by your placement choice, and the height is chosen with the "Name Height" buttons.

Arguments

- **pin_name (PIN Property Value)**

  This text string names the pin, and is the value assigned to the Pin property. The Pin property type is "string". The compiled pin name for the pin defaults to the pin's Pin property value.

- **pin_location (Pin Location)**

  This argument describes the coordinates that identify the location of pin placement, specified in user units.

- **text_location (Text Location)**

  This argument describes the coordinates of the location of the pin text value, specified in user units.

  Press the Select mouse button at the desired pin location, drag the mouse to the desired text location, and release the Select mouse button.

Example(s)

The following $add_pin() function example shows the values of the arguments when adding a pin to a symbol.

```
$add_pin("In1", [-10, 3], [-10.5, 3.5])
```

The next example displays the command syntax for adding a bus pin.

```
add pi  "Out1(0:4)"  [9, 3]  [9.5, 2.5]
```

Related Functions

$add_property()
$change_compiled_pin_name()
$change_property_font()
$change_property_height()
$change_property_justification()
$change_property_orientation()
$change_property_stability_switch()
$change_property_value()
$change_property_visibility_switch()
$change_text_font()
$change_text_height()
$change_text_justification()
$$check()
$make_symbol()
$report_object()
$setup_page()
$setup_property_text()

Related Internal State Functions

$set_property_hjustification()
$set_property_stability_switch()
$set_property_visibility_switch()
$set_property_vjustification()
$set_autoselect()
$set_property_font()
$set_property_height()

$add_polygon()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_polygon([poly_points])

ADD POLYGon [poly_points]

(Symbol) Add > Polygon
(Symbol) Symbol Body & Pins > Draw > Polygon
(Schematic) Add > Draw > Polygon
(Schematic) Draw > Add > Polygon
(Schematic) Edit > Edit Commands > Add Comment > Polygon

Description

Creates a polygon as part of the symbol body or comment graphics on a schematic sheet.

The polygon is always a closed figure. This function creates a polygon from the specified points by drawing line segments from each point to the next in the sequence given. The sequence of locations is completed by double clicking the Select mouse button or clicking the **OK** button when you are entering coordinates from the prompt bar. Self-intersecting polygons are allowed.

To create the polygon points off the grid, you must set the snap argument to @off in the $set_grid() function. To create a diagonal line, you must set the ortho argument to @off in the $setup_net() function. If the value of the autoselect internal state variable is @on, the polygon is selected on completion of this function. The line width, line style, and polygon fill of the circle are determined by the values of the line_style, line_width, and polygon_fill internal state variables.

To delete a polygon on a symbol or a comment graphics polygon from a schematic sheet, select the object and invoke the $delete() function.

Arguments

- **poly_points (Points)**

  These arguments describe the coordinates that identify the points of the polygon, specified in user units. Click the Select mouse button at each vertex; double click the Select button at the last vertex. The minimum number of required coordinates is three.

Example(s)

The following example shows the function syntax for creating a polygon on a symbol or a comment graphic polygon on a schematic sheet. This example shows the syntax for a polygon with three vertices.

```
$add_polygon([[5, -1], [5, 3], [8, 0]])
```

The next example displays the command syntax for adding a comment polygon with five vertices on the active schematic sheet.

```
add polyg  [[-1.75, 1], [-1.25, 1.5], [-1.25, 1.25], [-0.75, 1.25],  [-0.75, 0.75]]
```

Related Functions

$$add_arc()
$add_circle()
$add_dot()
$add_line()
$add_polyline()
$set_grid()
$setup_comment()
$setup_net()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()
$set_polygon_fill()

$add_polyline()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_polyline([poly_points])

ADD POLYLine [poly_points]

(Symbol) Add > Polyline
(Symbol) Symbol Body & Pins > Draw > Polyline
(Schematic) Add > Draw > Polyline
(Schematic) Draw > Add > Polyline

Description

Creates a polyline on a symbol body or comment graphics on a schematic sheet.

The polyline is completed by double-clicking the Select mouse button. On a symbol, this function creates a multi-segmented line, called a polyline, as part of the symbol body. On a schematic sheet, this function creates a comment graphics polyline.

To create the polyline points off the grid, you must set the snap argument to @off in the $set_grid() function. To create a diagonal line, you must set the ortho argument to @off in the $setup_net() function.

To delete a polyline on a symbol or a comment graphics polyline from a schematic sheet, select the object and invoke the $delete() function.

If the value of the autoselect internal state variable is @on, the line will be selected on the completion of this function. The line width, line style, and polygon fill of the circle are determined by the values of the line_style, line_width, and polygon_fill internal state variables.

Arguments

- **poly_points (Points)**

  These arguments describe the coordinates identifying the points of the polyline specified in user units. Click the Select mouse button at each vertex; double-click the Select mouse button at the last vertex or click the OK button. The minimum number of required coordinates is two. The maximum number allowed is ten.

Example(s)

The following example shows the function syntax for adding a multi-vertex line to a symbol or a comment graphic multi-vertex line to a schematic sheet. This polyline has four vertices.

```
$add_polyline([[4, -7], [5, -4], [8, -6], [7, -7]])
```

The next example displays the command syntax for adding a comment polygon with five vertices on the active schematic sheet.

```
add polyl  [[-1.75, 1], [-1.25, 1.5], [-1.25, 1.25], [-0.75, 1.25],  [-0.75, 0.75]]
```

Related Functions

$$add_arc()
$add_circle()
$add_dot()
$add_line()
$add_polygon()
$add_polyline()
$add_rectangle()
$delete()
$set_grid()
$setup_comment()
$setup_net()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()

$add_property()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: In the Schematic Editor, at least one electrical, symbol, or comment graphics object must be selected.

Symbol Editor Usage

$add_property("property_name", "property_value", [point], *property_type, symbol_visibility_switch, symbol_update_switch, symbol_stability_switch, graphic_mode*)

ADD PRoperty "property_name" "property_value" [point] *-Type property_type -Visibility symbol_visibility_switch -Update symbol_update_switch -Stability symbol_stability_switch graphic_mode*

Add > Properties (Logical) >
Symbol Body & Pins > Properties > Add >

Schematic Editor Usage

$add_property("property_name", "property_value", [point], *property_type, visibility_type, pin_mode*)

ADD PRoperty "property_name" "property_value" [point] *-Type property_type -Visibility visibility_type pin_mode*

(Schematic) Draw > Properties > Add >
(Schematic) Instance > Properties > Add >
(Schematic) Net > Properties > Add >

Description

Adds the specified property with the given value to all selected objects.

Properties cannot be added to comment text, symbol text, or other properties. A property consists of three pieces of information: a name, a value, and a type. The name is a label for data conveyed by that property. A property text value is the data associated with the property. The property type indicates what type of values are legal for that property.

If the property_name has legal owners, as declared through the $set_property_owner() function, it can only be added to selected objects of those types.

To determine the validity of property_value, the $add_property() function first checks the specified value against the type indicated by the property_type value. If property_type is not specified, checks are made against the type declared for property_name on this sheet through the $set_property_type() function. If no type has been defined for property_name, its type defaults to @string.

An error is issued if the property value is not of the correct type, as defined for property_name by the $set_property_type() function, or through the property_type value.

Properties on pins propagate to the net vertices under the pins when an instance (having the Class property) is placed on a sheet or updated, if those properties may be owned by nets and do not already exist. If you wish to propagate properties in this manner, you must explicitly declare "net" as a legal owner of the desired properties using the $set_property_owner() function in the Symbol Editor.

When an instance with a Class property attached is placed on a sheet, making a connection to an existing net, the Init and Net properties which may have been placed on the pin of the symbol are propagated to the net vertex under the instance pin, assuming the net vertex does not already have an Init or Net property.

If an Init property already exists on the net vertex, it is replaced by the instance pin's Init property only if the new instance is a global instance (Class property value = G).

If a Net property already exists anywhere on the set of connected net segments, the value of that Net property remains; an existing Net property value is never replaced by the incoming value on the instance pin.

If the property is created on a symbol, its behavior upon symbol instantiation is determined by the values specified for the symbol_visibility_switch and symbol_stability_switch arguments in the $add_property() function. If these switches are not specified, the values of the property_visibility_switch and property_stability_switch internal state variables are used.

In the Symbol Editor, if a body, pin, or comment object is selected, the property is added to that object and moves with it. The body property is also known to the logical symbol. A check error will be reported if a given property is owned by

more than one symbol body component. If the owning body object is deleted, the property becomes a logical symbol property at its previous location.

In the Symbol Editor, it is possible to add properties which have no graphic owner, but are owned by the logical symbol. If no object is selected when the $add_property() function is invoked, the property is added to the logical symbol. If graphic_mode is set to @graphic, the property has a location and is displayed on the symbol. It can be selected and manipulated.

If graphic_mode is @nongraphic, the property will not be displayed, but will have a name, value, and property switch settings. These property attributes can be changed through the $change_property functions, and the property value can be viewed through the $report_object() function with the @logicalsymbol switch set. The location of these properties is absolute, and does not move as the origin of the symbol body graphics are moved.

Properties added (by the technology compiler, for example) to the interface with which the symbol is registered will be placed on the symbol as non-graphic properties. An instance of the symbol inherits the logical symbol graphic and non-graphic properties.

If a symbol body property is added which matches an existing property name, the graphical state of the existing property is altered, if necessary, to match the graphical state of the "new" property, and assumes the new property value. If the graphical state of the original property is altered, then whichever of the following warnings is appropriate will appear:

"Changing the value of existing nongraphical property, and making it graphical."

"Changing the value of existing graphical property, and making it nongraphical."

When this function is entered from the palette or from a popup or pulldown menu, the Add Property dialog box is displayed in the active window, requesting the property name, type, value, and whether or not the value will be visible on the sheet.

You must specify a property name and a property value. The dialog box displays the default settings for other attributes, which you can change, if you wish. After you press the **OK** button on the dialog box, a prompt bar appears with the location cursor positioned at the "At Location" entry box asking for the location in which the property value is to be placed. Position the moving pointer at the desired location and click the Select mouse button.

If you chose one of the **Symbol Body & Pins > Properties > Add > Repeat Adding Single Properties >** menu items, the Add Property dialog box is displayed again for you to specify the next property name/value pair. This continues until you click the Cancel button on the prompt bar, or press the Escape key on your keyboard.

The **Use Current Selection** menu item lets you add multiple properties to the objects in the current selection set. The **Use Changing Selection** menu item prompts you to select different objects to which to add properties between property additions.

The **Symbol Body & Pins > Properties > Add > Add Multiple Properties** menu item displays a dialog box in which you enter multiple property name/value pairs. Click the OK button to dismiss the dialog box. Each property that you specified is added to the current selection set using the attributes set in the dialog box. You are prompted for the property text location for each property.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can add properties not only to the back-annotation object, but also to the source. Both annotated values and source values are at the same location and have the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in a distinctive color. Source property values are displayed with the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property values are added to the back-annotation object and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in both the source and the back-annotation object, both the source and annotated property values are moved to the new location. The source property value is unchanged, while the back-annotation property value is changed to the specified value.

  If the specified property does not exist in the source, but does exist in the back-annotation object, the old, back-annotated property is replaced with the new property value, and a NULL property is created in the source that

contains only location information for the next time the back-annotated property is displayed.

If the specified property does exist in the source, but does not exist in the back-annotation object, the property is added to the back-annotation object.

If the property does not exist in either the source or the back-annotation object, then the back-annotation property is created, and a NULL property is created in the source that contains only location information.

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() returns @off):

  If the specified property already exists in the source or back-annotation object, the source value is set to the specified value and both the source and the back-annotation values are placed at the specified location. If the specified property does not yet exist, a new property is created in the source with the specified value and attributes. The property is not stored in the back-annotation object.

- If source properties are viewable, but not editable (the return value of $get_source_edit_allowed() is @off), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the property exists in both the source and the back-annotation object, the property value is overwritten in the back-annotation object. The location information is ignored and the back-annotation property value is positioned at the same location as the source property value location.

  If the property exists in the source, but not the back-annotation object, the property is added to the back-annotation object at the same location as the source property. The location information is ignored and the back-annotation property has the same attributes as the source property.

  If the property exists in the back-annotation object, but not in the source, the property is overwritten in the back-annotation object. Location and attribute information used for displaying are not saved beyond the session.

If the property does not exist in either the source or back-annotation object, the property is added to the back-annotation object but not to the source. The property attributes are determined by the current values of the text-related internal state variables. Location and attribute information are not saved beyond the session.

- If source properties are viewable only ($get_source_edit_allowed() and $get_annotation_visibility() both return @off):

  Properties cannot be added to either the source or the back-annotation object.

If you are editing in the context of a design viewpoint, this function will not allow you to add a Structured Logic Design (SLD) property; if you try to add one, you will get the message "Cannot back-annotate SLD properties." The following are SLD properties:

Class	Inst	Pin
Frexp	Net	Rule
Global		

Note

Property values take on the color of their owners. For example, nets are displayed in a "goldenrod" color by default. Therefore, net property values are displayed in goldenrod. To change the color of the property, you must change the color of the owning object. See $set_color(), starting on page 2-522, for information about changing the color of symbol and schematic objects.

Arguments

- **property_name (Property Name)**

  A text string that specifies the name of the property.

- **property_value (Property Value)**

  A text string that specifies the value of property_name.

- **point (At Location)**

  Describes the coordinates indicating the property text location of the selected object. If multiple objects are selected, the distance between the property text location and the basepoint of the closest selected object is determined. This distance is used as the offset for the placement of the property text for all the selected objects. These coordinates are specified in user units. If you are adding a non-graphic logical symbol property in the Symbol Editor (no selected objects and the graphic mode is nongraphic), location is ignored.

- ***property_type (Property Type)***

  Specifies the value of the property type. If specified, this overrides any value set with the $set_property_type() function. If this argument is not specified, and no value was set by the $set_property_type() function, the type is set to @string. If specified, property_type must be one of the following values:

  ⇒ **@string**: The value of property_name must be a string. If property_type is not specified, and if the type for property_type has not been declared for this sheet with the $set_property_type() function, the property_type is set to @string.

  @number: The value of property_name must be a real number or integer.

  @expression: The value of the property must be an expression (in quotes).

  @triplet: The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties. Each of the three values may be a number, an expression, or a string, which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

  If only one value is specified, it is used for the best-case, typical, and worst-case values. If two values are specified, the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics tools that recognize triplets are analysis tools (for example, QuickSim II), and timing calculation tools.

- ***visibility_type (Visibility)***

  Specifies the value of the visibility type. This argument is valid in the Schematic Editor. The value can be either **@on** or **@off**.

  The value of this argument overrides the value of the property_visibility internal state variable for this property only. If this argument is not specified, the value of the property_visibility internal state variable is used.

- ***pin_mode (Add property to)***

  This argument is valid in the Schematic Editor and can have one of two values:

  @pin (-Pin): The property is added to the pin of selected vertices, but not to the vertices themselves.

  ⇒ **@nopin** (-NOPin): The property is added to selected vertices, but not to their pins.

- ***symbol_visibility_switch (Visibility Switch)***

  This argument is valid in the Symbol Editor. It determines the visibility of property text on an instance of the symbol. It can have one of two values:

  @hidden: Property text becomes invisible on the instance. Once a property has been set to hidden, it can only be selected by its handle.

  @visible: Property text is visible on the instance.

  This argument overrides the value of the property_visibility_switch internal state variable for this property only. If this argument is not specified, the value of the property_visibility_switch internal state variable is used.

  Property attributes listed in report windows may include "-Not Visible" and "-Hidden". If both of these are listed, the property was hidden when added, and the property visibility has not been changed. If "-Hidden" is listed without "-Not Visible", the property visibility was changed to visible on the sheet.

- ***symbol_update_switch***

  This argument is obsolete for V8.1 and later releases. To prevent "breaking" transcripts, the switch has been disabled, but still appears in the prompt bar and in the transcript with a value of @instance or @symbol. Refer to the $update() and $replace() function descriptions for the replacement functionality.

- ***symbol_stability_switch (Stability Switch)***

  Determines the type of operations that can be performed on the specified property name on an instance of the symbol. This argument is valid in the Symbol Editor. It can have one of the four following values:

  @fixed: Property values cannot be altered or deleted on any instance on a schematic sheet. Property graphic attributes can be modified through the $change_property functions.

  @protected: Property values can be altered on an instance at instantiation time on a schematic sheet. However, once instantiated, the instance-specific property value cannot be changed. Property graphic attributes can be modified through the $change_property functions.

  @variable: Property values can be altered on an instance at instantiation time. Property values and property graphic attributes can be modified through the $change_property and $change_text functions.

  @nonremovable: Property values can be altered on an instance at instantiation time. Property values and property graphic attributes can be changed through the $change_property and $change_text functions, but the property cannot be deleted from the instance.

  This argument overrides the value of the property_stability_switch internal state variable for this property only. If this argument is not specified, the value of the property_stability_switch internal state variable is used.

- ***graphic_mode (Graphic)***

  This argument is valid in the Symbol Editor when no objects are selected. It can be one of two values:

  ⇒ **@graphic** (-Graphic): The property is rendered as a graphic property at the specified location. Logical symbol properties are displayed in gold to distinguish them from properties owned by symbol body objects.

  @nongraphic (-NONGraphic): The property is attached to the logical symbol, but is not rendered. This is a state intended for program-generated properties that do not need to be displayed or changed.

Example(s)

The following example displays the function syntax for adding a property to the symbol pin with pin name "a". The property name is "RISE", its value is "0 5 0", the property value type is a @triplet, and the property value is visible. Assume that symbol visibility, symbol update, and symbol stability use the values specified in the $setup_property_text() function or the corresponding internal state functions.

```
$add_pin("a", [-2, -5], [-2.5, .5])
$add_property("RISE", "0 5 0", [-2.5, 0.5], @triplet)
```

The next example shows the command syntax for adding a property on a schematic sheet. The property name is "COMP", the property value is "latch_4", the property value type is a string, and is visible.

```
add pr  "COMP"  "latch_4"  [-10, 2]  -t string  -v  on
```

Related Functions

$change_property_font()
$change_property_height()
$change_property_justification()
$change_property_orientation()
$change_property_stability_switch()
$change_property_visibility_switch()
$get_auto_update_inst_handles()
$change_property_name()
$change_property_type()
$change_property_value()
$change_property_visibility()
$mark_property_value()
$set_property_owner()
$set_property_type()
$setup_page()

Related Internal State Functions

$set_property_stability_switch()
$set_property_visibility_switch()
$set_property_vjustification()
$set_annotation_visibility()
$set_auto_update_mode()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_visibility()

$add_property_to_handle()

Scope: schematic

Usage

$add_property_to_handle(handles, prop_name, prop_value, loc, type, *font, height, hjustification, vjustification, orientation, transparency, visibility*);

ADD PRoperty To Handle [handles] "prop_name" "prop_value" [loc] type *"font" height hjustification vjustification orientation transparency visibility*

Description

This function adds properties to one or more objects identified by their associated handles, rather than the current selection set. This function is similar to the $add_property() function, with the added ability to control the text attributes of the property.

Arguments

- **handles**

  A vector of one or more handles to which you want to add a property. Properties can be added only to instances, vertexes, pins, comment graphics, and frames. Handles to other object types are ignored.

- **prop_name**

  Name of the property you want to add.

- **prop_value**

  Value of the property. The value is stored as a string, but is later converted to the data type specified in the *type* argument.

- **loc**

  Diagram location of the property. The coordinate identifies a location relative to the basepoint of the first object in the handles vector. The locations of the properties on the remaining objects are the same distance from the individual basepoints.

- **type**

  Data type for the property value. Valid values include: **@string**, **@number**, **@expression**, and **@triplet**. The function automatically converts the string in the *prop_value* argument to this specified data type. An error occurs if the converstion cannot be made.

- ***font***

  Name of the font for the property text.

- ***height***

  Real number representing the height of the property text.

- ***hjustification***

  Horizontal justification for the property value. Valid values include: ⇒ **@left**, **@center**, and **@right**.

- ***vjustification***

  Vertical justification for the property value. Valid values include: **@top**, **@center**, and ⇒ **@bottom**.

- ***orientation***

  Orientation of the property value. Valid values include: ⇒ **@zero**, and **@ninety**.

- ***transparency***

  Whether the property is transparent. Valid values include: ⇒ **@on**, and **@off**.

- ***visibility***

  Specifies the value of the visibility type. Valid values include ⇒ **@on** or **@off**.

  The value of this argument overrides the value of the property_visibility internal state variable for this property only. If this argument is not specified, the value of the property_visibility internal state variable is used.

Example

The following example adds a string-value property named "NET" with a value of "BUNDLE{x,y.z}" to the vertex "V$20". The property is placed at an offset of [1.25, 1.25] and uses the default text attributes.

```
$add_property_to_handle(["V$20"], "NET", "BUNDLE{x,y,z}", [1.25,1.25],
@string);
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_justification()
$change_property_orientation()
$change_property_visibility_switch()
$change_property_name()
$change_property_type()
$change_property_value()
$change_property_visibility()
$mark_property_value()
$set_property_owner()
$set_property_type()

Related Internal State Functions

$set_property_vjustification()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_visibility()

$add_rectangle()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_rectangle([corners])

ADD RECtangle [corners]

(Symbol) Add > Rectangle
(Symbol) Symbol Body & Pins > Draw > Rectangle
(Symbol) Edit > Add Graphics > Rectangle
(Schematic) Add > Draw > Rectangle
(Schematic) Draw > Add > Rectangle
(Schematic) Edit > Edit Commands > Add Comment > Rectangle

Description

Creates a rectangle on a symbol body or comment graphics on a schematic sheet based on the coordinates provided.

When the prompt bar appears, press and hold the Select mouse button at one corner of the desired location. Hold the mouse button as you move the cursor to the diagonally opposite corner, then release the mouse button. On symbols, this function adds a rectangle to the symbol body. On schematic sheets, this function adds a rectangle as comment graphics.

A rectangle on a symbol and a comment graphics rectangle on a schematic sheet can be removed by selecting the object and executing the $delete() function.

If the value of the autoselect internal state variable is @on, the rectangle is selected on completion of this function. The line width, line style, and polygon fill of the circle are determined by the values of the line_style, line_width, and polygon_fill internal state variables.

Arguments

- **corners (Rectangle)**

  This argument describes the coordinates indicating diagonally-opposite corners of the rectangle, specified in user units.

Example(s)

The following example shows the function syntax for creating a rectangle on a symbol, or a comment graphics rectangle on a schematic sheet.

```
$add_rectangle([[-1.25, -3.75], [1, -6.25]])
```

The next example shows the command syntax for adding a comment rectangle to the active schematic sheet.

```
add rec  [[-2.25, 1.75], [3.75, -1.75]]
```

Related Functions

$$add_arc()
$add_circle()
$add_dot()
$add_line()
$add_polygon()
$add_polyline()
$delete()
$setup_comment()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_line_style()
$set_line_width()
$set_polygon_fill()

$add_selected_instance()

Scope: schematic
Window: Schematic Editor
Prerequisite: One, and only one, instance must be selected.

Usage

$add_selected_instance("*component_name*", "*symbol_name*", [location], *name_value_pairs*)

ADD SElected Instance "*component_name*" "*symbol_name*" [location] *name_value_pairs*

(Active Symbol) Activate Selected
(Schematic) Edit > Edit Commands > Add Electrical > Instance > Selected

Description

Places the most current version of the component symbol for the selected instance on the schematic sheet. Only one instance must be selected.

A prompt bar is displayed with the names of the component and symbol of the selected instance in the entry boxes, and the location cursor on the "Location" entry box, requesting the coordinates for the symbol instance. The property name/value pairs and the property update value with which the selected instance was instantiated are not set for this function.

If one or more properties on the component symbol are set to @protected, @variable, or @nonremovable mode, you can override the associated property values, using the repeating name/value argument pair to reassign new values. If you change a property value when you instantiate the component symbol, the property is flagged as Value_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For more information, refer to the $open_sheet(), $update(), and $replace() function descriptions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value_Modified property is also Attribute_Modified. Property values that are marked can be unmarked using the **Miscellaneous > Mark Property Value** menu item. When the prompt bar is

displayed, click the stepper button to choose "notmodified" and click on the **OK** button.

You can add editable Inst property values of the form I$nnn to an instance or as part of the symbol itself. The $$check() function validates that Inst property values of the form I$nnn or i$nnn are consistent with their respective handles. Design Architect automatically updates the Inst property value to the current instance handle when the symbol is instantiated, copied, or checked. For example, if an instance has an Inst property value of I$123 and the handle of the same instance is I$234, the value of the Inst property is updated to I$234.

If an instance is placed so that it overlaps another instance, no error message is issued. Instance overlap can be checked by setting the overlap argument in the $check() function to @all or @errorsonly.

If the value of the autoselect internal state variable is @on, the instance is selected on completion of this function.

Arguments

- **location (At Location)**

  This argument describes the coordinates that identify the origin of the instance, specified in user units.

- ***component_name (Component Name)***

  This argument is a text string that specifies the pathname to the component. The text entry box in the prompt bar already contains the pathname to the selected component, although you can change it if you decide to use a different component.

- ***symbol_name (Symbol Name)***

  This argument is a text string that defines which symbol to use. This entry in the prompt bar already contains the name of the symbol. If you want a different symbol, enter that symbol name.

- ***replace_mode (Property Update)***

  This argument is obsolete in V8.1 and later releases. Replacement functionality is discussed in the $open_sheet() and $update() function descriptions.

- ***name_value_pairs (Property Name, Value)***

  This vector contains a repeating name/value pair. Name is a text string specifying a symbol body property name whose values are to be modified on the instance. Value is a text string specifying an instance-specific value for the property value. The repeating name/value argument pair supports the enumeration of instance-specific values for symbol properties. An error message is issued if an attempt is made to change the value of a property set to @fixed mode on the symbol.

  If the property does not exist on the symbol, the property is added to the instance with the specified value, and the property type defaults to the type declared for that property.

  Name_value_pairs are for symbol body properties only. If you specify a pin property name that is on the symbol, you will not modify that pin property value. Instead, a symbol body property with that pin property name and value is added to the instance.

Example(s)

The following example displays the function syntax for adding the currently selected instance at location [1.25, 3.75].

```
$add_selected_instance([1.25, 3.75])
```

The next example displays the command syntax for adding the selected instance at location [1.5, -3.75].

```
add se i [1.5, -3.75]
```

Related Functions

$add_instance()
$get_auto_update_inst_handles()
$mark_property_value()
$open_sheet()
$replace()
$update()

Related Internal State Functions

$set_auto_update_mode()
$set_autoselect()
$set_check_overlap()
$set_property_stability_switch()
$set_property_visibility_switch()

$add_sheet_border()

Scope: schematic
Window: Schematic Editor

Usage

$add_sheet_border(sheet_size, logic_symbols, *title_block*)

ADD SHeet Border sheet_size logic_symbols *title_block*

Edit > Add Sheet Border

Description

Creates a border and optional title block for a specified sheet size.

All sheet borders are created as a series of comment lines and text which are defined as a group named "sheet_border". This lets you select the entire sheet border and treat it as a single object. A panel named "border_panel" is also defined so you can view the extents of the border by executing the $view_panel() function. The border is a graphical guide only. No checking is done to ensure that all objects are inside the sheet border.

Title blocks are also created as a series of comment lines and text. Properties are attached to the comment lines to specify information such as the name of the design engineer, the last person to change the design, and the date and time changed. The title block also includes the company name and address, which you can customize for your site. A dialog box is displayed for you to enter the title block information. You can use the Change Text Value function key or the Change Value icon in the Text palette to change text in the title block.

When you open a new sheet, you have the option to create a border. Click the **Options** button on the Open Sheet dialog box, then click **New Sheet** on the Open Sheet Options dialog box, and choose the sheet size. If you do not want a title block, or you want fullsize symbols, click the **Set** button to display those options.

For information about customizing a title block or changing the format of the border, see Custom Userware on page A-1 in this manual.

Arguments

- **sheet_size**

  This argument defines the size of the schematic sheet. Choose one of the following sizes:

@A (-A): 11 by 8.5 inches	**@A4** (-A4): 297 by 210 millimeters
@B (-B): 17 by 11 inches	**@A3** (-A3): 420 by 297 millimeters
@C (-C): 22 by 17 inches	**@A2** (-A2): 594 by 420 millimeters
@D (-D): 34 by 22 inches	**@A1** (-A1): 841 by 594 millimeters
@E (-E): 44 by 34 inches	**@A0** (-A0): 1189 by 841 millimeters

  The default is the previously specified value or, if none was previously specified, D size (34 by 22 inches) is used.

- **logic_symbols**

  This argument specifies whether to use full or half size logic symbols. Possible values are **@full_size** (-Full_size) and **@half_size** (-Half_size). If you specify @full_size, the pin spacing on English sheets is set to .25 inches, and 2.5 millimeters on metric sheets. If you specify @half_size, the pin spacing on English sheets is set to .125 inches, and 1.25 millimeters on metric sheets. The default is the last value specified, or @half_size, if not previously specified.

- **title_block**

  This argument specifies whether to create a title block within the sheet border. The possible values are **@yes** (-Yes) and **@no** (-No). If not specified, the default is the previously specified value, or @yes, if not previously specified.

Example(s)

The following example displays the function syntax to create and then view a 17 by 11 inch border with a title block on the schematic sheet in the active window. Logic symbols are full size.

```
$add_sheet_border(@B, @full_size, @yes)
$view_panel("border_panel")
```

The next example shows the command syntax to create a border that is 34 by 22 inches without a title block, then selects the border.

```
add sh b  -d  -no sel gr "sheet_border"
```

This example creates a border and title block on a sheet using .125 inch pin spacing.

```
$add_sheet_border(@B, @half_size, @yes)
```

Related Functions

$add_ansi_sheet_border()

$update_title_block()

$add_text()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$add_text("text_value", [location])

ADD TExt "text_value" [location]

(Symbol) Add > Text
(Schematic) Draw > Add > Text
(Schematic) Edit > Edit Commands > Add Comment > Text

Description

Adds comment text to schematic sheets and symbol text to symbols.

Font, justification, height, and orientation are taken from the current values of the text-related internal state variables. Click the Select mouse button at the desired text location. If the value of the autoselect internal state variable is @on, the text is selected on completion of this function. Text on a symbol and comment text on a schematic sheet can be removed by selecting the object and executing the $delete() function.

Arguments

- **text_value (Text)**

  A text string that contains the text to be added.

- **location (At Location)**

  Describes the coordinates for the text location, specified in user units.

Example(s)

The following example displays the function syntax for adding symbol text on a symbol or adding comment text on a schematic sheet.

```
$add_text("function(x) = y", [2.25, 0.5])
```

The next example displays the command syntax for adding symbol text or comment text.

```
add te   "Annotate this figure"  [2.4, 0.5]
```

Related Functions

$$add_arc()
$add_circle()
$add_dot()
$add_line()
$add_polygon()
$add_polyline()
$add_rectangle()
$setup_comment()
$setup_page()
$setup_symbol_body()

Related Internal State Functions

$set_autoselect()
$set_text_font()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_vjustification()

$add_wire()

Scope: schematic
Window: Schematic Editor

Usage

$add_wire([points])

ADD WIre [points]

(Schematic) Add > Wire
(Schematic) Net > Add Wire
(Schematic) Edit > Edit Commands > Add Electrical > Wire

Description

Creates a net, one pixel wide, between the specified locations.

To specify the points using the mouse, click the Select mouse button at each vertex location; double-click at the last location.

The $add_wire() function does not appear in the transcript. It first resets the default net width to one pixel, if the default width is any other value, then calls the $add_net() function.

Arguments

- **points (Locations)**

  These arguments define the coordinates of the starting point and subsequent points for net segments, specified in user units. The function requires a minimum of two points.

Example(s)

The following example shows the function syntax to add a wire to a sheet.

```
$add_wire([[1.65, -1.25], [1.65, 4.35]])
```

Assuming the default net width was not one pixel, the transcript would be similar to the following.

```
$set_net_width(@p1)
$add_net([[1.65, -1.25, "Schematic#1.0"], [1.65, 4.35, "Schematic#1.0"]])
```

Related Functions

$add_bus()
$add_net()
$set_net_width()
$setup_net()

$align()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$align(direction)

ALIgn direction

(Symbol) Symbol body & Pins > Align > Left | Right | Top | Bottom
(Schematic) Instance > Align > Left | Right | Top | Bottom
(Symbol, Schematic) Property/Text > Align > Left | Right | Top | Bottom

Description

Moves the selected objects to align with the most extreme extent (left, right, top, or bottom) of the selected objects.

Net vertices and segments are not affected by this function. The objects remain selected after they are aligned. This is a single undoable function.

The window is frozen while the objects are being aligned. If the selection includes objects which must be snapped to the grid and the object that defines the extremity need not be snapped to the grid, the relative positions of the selected objects may be distorted by the alignment.

Arguments

- ***direction***

  Specifies in which direction the selected objects should be aligned. The four possible values are: **@left**, **@right**, **@top**, and **@bottom**.

Example(s)

The following example shows the function syntax to align the top edgesof the selected objects with the upper edge of the topmost selected object.

```
$align (@top)
```

$allow_resizable_instances()

Scope: schematic
Window: Schematic Editor

Usage

$allow_resizable_instances()

ALLow REsizable Instances

Description

The $allow_resizable_instances() function sets up the current sheet so that it will allow resizable instances. This is done by decreasing the current pin spacing by a factor of four, then scaling every instance placed by a factor of four. Any existing comments are also scaled up by a factor of four.

Arguments

None.

Example(s)

The following command sets the schematic Editor to allow resizable instances:

```
ALL RE I
```

Related Functions

$change_instance_resize_factor()

Note

One instance resizing has beed allowed on a given sheet, it cannot later be disallowed.

$apply_edits()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$apply_edits(if_window_closes)

APPly EDits

File > Apply Edits

Description

The $apply_edits() function applies the edits made to open edit-in-design-context sheets to the in-memory design without saving the sheets to disk. This allows you to see the effects of the changes being made without saving the sheets to disk.

Arguments

- **if_window_closes**

  This switch determines what DA does if a sheet is closed because the sheet is no longer part of the design. Possible values are:
  @save - Save the edits without asking.
  @discard - Discard the edits and do not save the file.
  @ask - Pop up a dialog box and ask the user if the edits should be saved.

Example(s)

The following function applies the edits made to the in-memory design, and discards the edits on any sheets that may be closed because of design changes:

```
$apply_edits(@discard)
```

Related Functions

$get_apply_edits_needed()

$auto_sequence_text()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$auto_sequence_text("*prefix*", first_index, "*suffix*", *step*)

AUTo SEquence Text "*prefix*" first_index "*suffix*" *step*

(Symbol) Symbol Body & Pins > Properties > Sequence
(Symbol, Schematic) Property/Text > Sequence Text
(Symbol) Edit > Properties > Sequence Text
(Schematic) Draw > Properties > Sequence Text
(Schematic) Instance > Properties > Sequence Text
(Schematic) Net > Properties > Sequence Text
(Schematic) Edit > Edit Commands > Properties > Sequence Text

Description

Automatically sequences the values of selected properties from top to bottom and left to right.

Text sequencing operates on a single property name, which is determined by the top-most, left-most selected property. Selected properties of different names are ignored.

This is a single undoable function. The edit window is frozen while the property values are being sequenced.

Arguments

- **first_index (Beginning Index Number)**

  Specifies the value to assign to the first selected property. If not specified, the value used in the last call to this function during the current editing session is used. If not specified, and this is the first call to this function, "1" is used.

- ***prefix (New Prefix)***

  Specifies the prefix for the sequenced property values. If not specified, the value last specified during this session is used.

- ***suffix (New Suffix)***

  Specifies the suffix for the sequenced property values. If not specified, the value last specified during this session is used.

- ***step (Step By)***

  Specifies the difference between sequenced property values. If not specified, either the last value specified or "1" is used.

Example(s)

The following example shows the function syntax to automatically assign the values "a_2", "a_4", "a_6", ... to the selected properties.

```
$auto_sequence_text("a_", 2, "", 2)
```

Related Functions

$sequence_text()

$begin_edit_symbol()

Scope: schematic
Window: Schematic Editor
Prerequisite: Only one instance must be selected.

Usage

$begin_edit_symbol()

BEGin EDit Symbol

Edit > Begin Edit Symbol

Description

Modifies an existing symbol "in place" on a schematic sheet. Only one instance must be selected.

After the $begin_edit_symbol() function is invoked, all (and only) symbol editing functions are available. All functions specific to schematic sheets (such as the $add_net() and $add_instance() functions) are inaccessible. The contents of the menu bar change appropriately to display symbol menus. The schematic objects are still visible, but they cannot be selected.

The symbol definition coordinate system inherits that of the schematic sheet. The symbol origin is marked on the sheet. Subsequent edits create or modify objects in the symbol definition. On a color node, the inaccessible schematic objects are displayed in a protected color to distinguish them from the editable symbol components. On a monochrome node, all schematic objects are drawn with a dotted line style.

The $end_edit_symbol() function is used to complete symbol-in-place editing and return to the editor that originally invoked the Symbol Editor.

Example(s)

The following example displays the function syntax when you are modifying a selected symbol on a schematic sheet.

```
$begin_edit_symbol()
```

Related Functions

$convert_to_comment()
$end_edit_symbol()
$make_symbol()
$open_symbol()

$cancel_compile()

Scope: hdtxt_area
Window: VHDL Editor

Usage

$cancel_compile()

CANcel COmpile

Compile > Cancel Compile

Description

Cancels the VHDL compilation currently in progress.

All error messages already displayed in the compile status area remain available. If this function is invoked when the compiler is not executing, a warning is displayed.

Example(s)

The following example shows the function syntax to cancel the compilation of a VHDL source file.

```
$compile()
$cancel_compile()
```

Related Functions

$compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$change_color()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_color(color)

CHAnge COlor color

(Symbol) Edit > Change Attributes > Color
(Schematic) Edit > Edit Commands > Change Attributes > Color

Description

Changes the color of selected objects.

This function lets you change the color of selected comment text and graphics, frames, pins, nets, and symbol bodies. The objects are displayed in their new color after they are unselected.

You cannot use this function to change the color of instances. If an instance and a net are selected, $change_color() changes the color of only the net. If only an instance is selected, $change_color() does nothing. If you want to change the default color for all instances, use the $set_color() function.

If the $set_color_config() function is executed to change the background color, all objects whose color was changed using the $change_color() function revert to their default colors.

Arguments

- **color**

  This quoted text string specifies a new color for the selected objects. Choose one color from the following list:

aquamarine	irismistm	odysseybluem
black	irismistvd	odysseybluevd
blue	khaki	orange
blueviolet	lightblue	orangered
brown	lightgold	orchid
cadetblue	lightgray	palegreen
coral	lightgrey	pink
cornflowerblue	lightsteelblue	plum
cyan	limegreen	red
darkblue	magenta	salmon
darkgreen	maroon	sandybrown
darkolivegreen	mediumaquarmarine	seagreen
darkorchid	mediumblue	sienna
darkslateblue	mediumforestgreen	skyblue
darkslategray	mediumgoldenrod	slateblue
darkslategrey	mediumorchid	springgreen
darkturquoise	mediumseagreen	ssspressod
dimgray	mediumslateblue	ssspressol
dimgrey	mediumspringgreen	ssspressom
firebrick	mediumturquoise	ssspressovd
forestgreen	mediumvioletred	steelblue
gold	midnightblue	tan
goldenrod	midorilimed	thistle
gray	midorilimel	turquoise
green	midorilimem	violet
greenyellow	midorilimevd	violetred
grey	navy	wheat
indianred	navyblue	white
irismistd	odysseyblued	yellow
irismistl	odysseybluel	yellowgreen

Example(s)

The following example assumes there are selected wires, and changes their color to coral. The change is not seen until they are unselected.

```
$change_color("coral")
```

The next example adds a wire, then changes its color to OrangeRed (auto_select is @on). The change is seen when the wire is unselected.

```
$add_wire([[-6.25, 4.5, "Schematic#1.0"], [-5.25, 4.5, "Schematic#1.0"]])
$change_color("OrangeRed")
```

Related Functions

$set_color() $set_color_config() $setup_color()

$change_compiled_pin_name()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$change_compiled_pin_name("new_name")

CHAnge COmpiled Pin Name "new_name"

Miscellaneous > Change Compiled Pin Name

Description

Changes the compiled pin name of one or more selected pins on a symbol, or of one or more selected symbol pins in a schematic.

The compiled pin name is used on library symbols against which timefiles, HML (Hardware Modeling Language) files, and BLMs (Behavioral Language Models) can be compiled.

When you create a pin, the Pin property value that you specify becomes the compiled pin name. Changes to the Pin property value through the $change_property_value() function cause the compiled pin name to track the Pin property value, until a $change_compiled_pin_name() function is issued. Thereafter, changes to the Pin property will not affect the compiled pin name.

To cause the compiled pin name to track the Pin property value again, invoke $change_compiled_pin_name() and set the name to "" (null string). When you type this function, the quotes are necessary. When you choose the **Miscellaneous > Change Compiled Pin Name** menu item, do not enter quotes in the prompt bar that appears; just click the **OK** button or press the Return key.

If you create a pin, change its compiled pin name, then copy the pin, the changed compiled pin name is also copied to the new pin. The $copy() function preserves the source (derived or fixed) for the compiled pin name.

The compiled pin name is not a property and cannot be viewed on the symbol. Its value can be inspected through the $report_object() function with the @pin switch set. Symbol compiled pin names are not used for connectivity of an instance on a schematic sheet.

When issued in the schematic scope, this function only operates on pins added with the $add_pin() function, not on pins of an instance.

If any objects other than pins are selected, an error message is issued.

Arguments

- **new_name (New Name)**

  This argument is a text string that specifies a new compiled pin name.

Example(s)

The following example shows the function syntax when a pin, "IN0", is added to the active symbol. The Pin property and the compiled pin name both have the value "IN0". The compiled pin name is then changed to "IX0".

```
$add_pin("IN0", [1.2, 4.5], [1.75, 4.5])
...
$select_area([[0.25, 5.6], [2.5, 4.6]], , , @pin)
$change_compiled_pin_name("IX0")
```

Related Functions

$add_pin() $report_object() $select_area()
$get_pin_attributes()

$change_group_visibility()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_group_visibility("name", *visibility*)

CHange GRoup Visibility "name" *visibility*

Miscellaneous > Change Group Visibility

Description

Toggles the visibility of the specified group of objects.

The group must have been created with the $group() function.

Arguments

- **name (Group Name)**

  This text string identifies the group of objects you want to see or hide.

- ***visibility (Visibility)***

  This switch toggles the visibility of the objects in the specified group. It can have either of these values: **@hidden** (-Hidden) or **@visible** (-Visible). The default is @visible.

Example(s)

The following example hides objects in the group named "foo".

```
$change_group_visibility("foo", @hidden)
```

Related Functions

$group() $select_group() $ungroup()

$change_instance_resize_factor()

Scope: schematic
Window: Schematic Editor

Usage

$change_instance_resize_factor(resize_factor)

CHAnge INstance Resize Factor

Description

The $change_instance_resize_factor() function sets the current resize factor for the selected instance(s). You must execute the $allow_resizable_instances() function once per sheet before using this function.

Arguments

- **resize_factor (Resize Factor)**

  This argument can be set to one of of the following: **@half, @quarter,** ⇒ **@normal, @two_x,** or **@four_x.** The default is **@normal**.

Example(s)

The following function sets the instance resize factor to one half:

```
$change_instance_resize_factor(@half);
```

Related Functions

$allow_resizable_instances()

$change_line_style()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one line or polygon on a symbol, or comment graphics on a schematic sheet must be selected in the active window.

Usage

$change_line_style(line_style)

CHAnge LIne Style line_style

(Schematic) Draw > Change > Line Style >
(Schematic) Edit > Edit Commands > Change Attributes > Line > Style >
(Symbol) Edit > Change Attributes > Line > Style >

Description

Changes the style of selected lines, polylines, or polygons.

For symbols, this function works on selected lines or polygons of the symbol body. For schematic sheets, this function works on selected comment graphic lines.

The result of the changed line style is not displayed until the selected line(s) are unselected.

Arguments

- **line_style (Style)**

  Choose one of the following values for the new style of selected objects: **@solid** (-SOlid), **@dot** (-Dot), **@longdash** (-Longdash), or **@shortdash** (-SHortdash).

Example(s)

The following example displays the function syntax when changing the line style of selected graphic objects on a symbol or selected comment graphic objects on a schematic sheet to long dashed.

```
$change_line_style(@longdash)
```

The next example displays the command syntax for changing the line style of selected objects to dotted.

```
cha li s dot
```

Related Functions

$change_line_width()
$select_area()
$setup_symbol_body()
$select_all()
$setup_comment()

Related Internal State Functions

$set_line_style()
$set_line_width()

$change_line_width()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one line or polygon on a symbol body or comment graphics on a schematic sheet must be selected in the active window.

Usage

$change_line_width(line_width)

CHAnge LIne Width line_width

(Schematic) Draw > Change > Line Width >
(Schematic) Edit > Edit Commands > Change Attributes > Line > Width >
(Symbol) Edit > Change Attributes > Line > Width >

Description

Changes the width of selected lines, polylines, and polygons.

On symbols, this function changes the line width of selected lines that are a part of the symbol body. On schematic sheets, this function changes the line width of selected comment graphic lines and polygons. The result of the changed line width is not displayed until the selected line(s) are unselected.

Arguments

- **line_width (Width)**

  This argument specifies the width of the line in pixels. The line_width must have one of the following values: **@p1**, **@p3**, **@p5**, or **@p7**.

Example(s)

The following example displays the function syntax when changing the line width of a selected symbol graphic (on symbols), or comment graphic (on schematic sheets) to @p3.

```
$change_line_width(@p3)
```

The next example displays the command syntax used to change the line style of selected objects to p5.

```
cha li w p5
```

Related Functions

$change_line_style()
$select_all()
$select_area()
$setup_comment()
$setup_symbol_body()

Related Internal State Functions

$set_line_style()
$set_line_width()

$change_net_style()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one net on a schematic sheet must be selected in the active window.

Usage

$change_net_style(line_style)

CHAnge NEt Style line_style

(Schematic) Net > Change Net > Style >
(Schematic) Edit > Edit Commands > Change Attributes > Net > Style >

Description

Changes the drawing style of selected net segments for schematic sheets.

The result of the changed net style is not displayed until the selected net(s) are unselected.

Arguments

- **line_style (Style)**

  The style of the net must be one of the following values: **@solid** (-SOlid), **@dot** (-Dot), **@longdash** (-Longdash), or **@shortdash** (-SHortdash).

Example(s)

The following example displays the function syntax for changing the net style of selected nets on the active schematic window to short dashes.

```
$change_net_style(@shortdash)
```

The next example displays the command syntax for changing the net style of selected nets to solid lines.

```
cha ne s  solid
```

Related Functions

$add_net()
$change_net_width()
$select_all()
$select_area()
$setup_net()

Related Internal State Functions

$set_net_style()
$set_net_width()

$change_net_width()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one net on a schematic sheet must be selected in the active window.

Usage

$change_net_width(line_width)

CHAnge NEt Width line_width

(Schematic) Net > Change Net > Width >
(Schematic) Edit > Edit Commands > Change Attributes > Net > Width >

Description

Changes the width of the selected net segments on a schematic sheet.

By convention, buses are wider than single signal nets. The result of the changed net width is not displayed until the selected nets(s) are unselected.

Arguments

- **line_width (Width)**

  This argument specifies the width of the net in pixels. It must have one of the following values: **@p1**, **@p3**, **@p5**, or **@p7**.

Example(s)

The following example displays the function syntax for changing the width of selected nets in the active schematic window to @p5.

```
$change_net_width(@p5)
```

The next example shows the command syntax for changing the width of the selected nets to p1.

```
cha ne w  p1
```

Related Functions

$add_net()
$change_net_style()
$select_all()
$select_area()
$setup_net()

Related Internal State Functions

$set_net_style()
$set_net_width()

$change_polygon_fill()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: There must be at least one polygon object in the Symbol Editor, or comment graphic in the Schematic Editor that has been selected in the active window.

Usage

$change_polygon_fill(fill_type)

CHAnge POlygon Fill fill_type

(Symbol) Edit > Change Attributes > Polygon Fill >
(Schematic) Draw > Change > Polygon Fill
(Schematic) Edit > Edit Commands > Change Attributes > Polygon Fill >

Description

Changes the fill of selected polygon, rectangle, and circle objects.

On symbols, this function changes selected polygons, rectangles, and circles which are a part of the symbol body. On schematic sheets, this function changes selected comment graphics polygons.

Arguments

- **fill_type (Fill Type)**

  Specifies the type of fill within the perimeter of the polygon. This argument must have one of three values: **@clear** (-Clear), **@solid** (-SOlid), or **@stipple** (-STipple).

Example(s)

The following example displays the function syntax for changing the polygon fill of the selected object or group of objects (symbol graphics on a symbol, comment graphics on a schematic sheet) to @solid.

```
$change_polygon_fill(@solid)
```

The next example shows the command syntax for changing the polygon fill of selected objects to clear.

```
cha po f  clear
```

Related Functions

$add_polygon() $select_area() $setup_comment()
$select_all()

Related Internal State Functions

$set_polygon_fill()

$change_property_font()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_font("*property_name*", "font_name")

CHAnge PRoperty Font "*property_name*" "font_name"

(Symbol) Symbol Body & Pins > Properties > Change > Text Font
(Symbol, Schematic) Properties/Text > Change Attributes > Text Font
(Schematic) Draw > Properties > Change > Text Font
(Schematic) Instance > Properties > Change > Text Font
(Schematic) Net > Properties > Change > Text Font
(Schematic) Edit > Edit Commands > Properties > Change > Text Font
(Symbol) Edit > Properties > Change > Text Font

Description

Changes the text font of the property text value associated with a given property on the selected objects.

If font_name is a font definition that has not been registered properly, an error message is issued.

If property_name is not specified, this function acts on all selected properties. If property_name is specified, the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

When you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() function descriptions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in a distinctive color. Source property values are displayed with the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are visible and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in the back-annotation object and the source, the font specified in the font_name changes the fonts in the source and in the back-annotation object.

  If the specified property exists in the back-annotation object, but not in the source, the font specified in the font_name changes the font of the back-annotation value and determines the font that will be used for the source value if one is later added.

  If the specified property exists in the source, but not in the back-annotation object, the font specified in the font_name changes the font of the specified property only in the source.

  If the specified property does not exist in the source and the back-annotation object, there is no change in the fonts.

- If source properties are viewable and editable ($get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() is @off):

  The specified property must exist in the source. The specified font_name is the new font for the source property and the back-annotation object.

- If source properties are viewable only ($get_source_edit_allowed() is @off), regardless of whether back-annotation properties may be viewable and editable, the font is not changed on the specified property. A warning message is issued if back-annotation properties are viewable and editable.

Arguments

- **font_name (Font)**

  Specifies the registered font family in which the font is defined. Fonts and font registry files are located in *$MGC_HOME/pkgs/base/fonts*.

- ***property_name (Property Name)***

  Specifies the name of the property in which the font of its text value is to be modified.

Example(s)

The following example displays the function syntax for changing the font of the "RISE" property value on all selected objects to the font family "helvetica".

```
$change_property_font("RISE", "helvetica")
```

The next example displays the command syntax for changing the font to "stroke" of the "CLASS" property value on all selected objects.

```
cha pr f  "CLASS"  "stroke"
```

Related Functions

$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_value()
$change_property_visibility()
$change_property_orientation()
$change_property_justification()
$change_property_stability_switch()
$change_property_visibility_switch()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_auto_update_mode()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_height()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_height("*property_name*", height)

CHAnge PRoperty Height "*property_name*" height

(Symbol) Symbol Body & Pins > Properties > Change Text Height
(Symbol, Schematic) Properties/Text > Change Text Height
(Schematic) Draw > Properties > Change Height
(Schematic) Instance > Properties > Change Height
(Schematic) Net > Properties > Change Height
(Schematic) Edit > Edit Commands > Properties > Change Height
(Symbol) Edit > Properties > Change Text Height

Description

Alters the height of the property text values for the given property name found on selected objects, to the specified number of user units.

If property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

If the **... > Properties > Modify** menu item is invoked, and the property's owner is selected, a Modify Properties dialog box dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (that are associated with the selected objects) that you want to modify. To choose more than one property, press the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property

height, you can change the value, orientation, vertical and horizontal justification, and visibility (for schematic sheets) or the switches (for symbols) for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

When you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() function descriptions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes in the back-annotation object and in the source. Both annotated and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in a distinctive color. Source property values are displayed in the color of the owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation object and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are also (the return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the height is changed in the source and in the back-annotation object.

  If specified property exists in the back-annotation object, but not in the source, the height of the back-annotation value is changed and the height of the source value is determined if it is later added.

If the specified property exists in the source, but not in the back-annotation object, the height is changed only in the source.

If the specified property does not exist in the source and the back-annotation object, there is no change in the height of the property value.

- If source properties are viewable and editable (return value of $get_source_edit_allowed() is @on), but back-annotation properties are not (return value of $get_annotation_visibility() is @off):

  The specified property must exist in the source. The specified height is the new height of the property value in the source and the height of the property value in the back-annotation object.

- If source properties are viewable only ($get_source_edit_allowed() is @off): The height of the property value is unchanged on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

Arguments

- **height (Height)**

  A real number in user units specifying the height of a character. The width is proportional to the height.

- ***property_name (Property Name)***

  A text string that specifies the name of the property in which the height of its text value is to be modified.

Example(s)

The following example shows the function syntax for changing the property height to .275 inches of the "COMP" property value on all selected objects.

```
$change_property_height("COMP", .275)
```

The next example shows the command syntax for the previous example.

```
cha pr h "COMP"  .275
```

Related Functions

$change_property_font()
$change_property_name()
$change_property_offset()
$change_property_value()
$change_property_visibility()
$change_property_orientation()
$change_property_justification()
$change_property_stability_switch()
$change_property_visibility_switch()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_auto_update_mode()
$set_property_font()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_justification()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_justification("*property_name*", vertical_justify, horizontal_justify)

CHAnge PRoperty Justification "*property_name*" vertical_justify horizontal_justify

(Symbol) Symbol Body & Pins > Properties > Change > Text Justification
(Symbol, Schematic) Property/Text > Change Attributes > Text Justification
(Schematic) Draw > Properties > Change > Text Justification
(Schematic) Instance > Properties > Change > Text Justification
(Schematic) Net > Properties > Change > Text Justification
(Schematic) Edit > Edit Commands > Properties > Change > Text Justification
(Symbol) Edit > Properties > Change > Text Justification

Description

Changes the justification on the property text values for the given property name found on selected objects.

The property text values are justified in relation to their current location points on the sheet.

If property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly.

The justification points remain stationary within the bounding box. If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (associated with the selected objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property justification, you can change the value, orientation, height, and visibility (for schematic sheets), or switches (for symbols) for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property that was specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **... Properties > Change > Text Justification** menu item or type the command or function without the arguments on the command line, a prompt bar is displayed providing you with entry boxes for the property name and the new horizontal and vertical justification.

When you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() function descriptions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-

annotated property values are displayed in red, by default. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable (the return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the specified justification changes the justification of the property value in the source and in the back-annotation object.

  If the specified property exists in the back-annotation object, but not in the source, the justification is changed for the back-annotation value. The justification is used for the source value if one is later added.

  If the specified property exists in the source, but not in the back-annotation object, the specified horizontal and vertical justification changes the justification of the specified property only in the source.

  If the specified property does not exist in the source and the back-annotation object, there is no change in the horizontal and vertical justification.

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable (the return value of $get_annotation_visibility() is @off):

  The specified property must exist in the source. The specified justification changes the justification of the property value in the source and in the back-annotation object.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off), regardless of whether back-annotation properties may be viewable and editable or not.

  The justification of the property value is not changed on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

Arguments

- **vertical_justify (Vertical)**

  Specifies the vertical justification relative to the text location point. It must have one of the following values:

  @top (-Top): The vertical justification is at the top.

  @center (-Center): The vertical justification is in the center.

  @bottom (-Bottom): The vertical justification is at the bottom.

- **horizontal_justify (Horizontal)**

  Specifies the horizontal justification relative to the text location point. It must have one of the following values:

  @left (-Left): The horizontal justification is on the left.

  @center (-Center): The horizontal justification is in the center.

  @right (-Right): The horizontal justification is on the right.

- ***property_name (Property Name)***

  A text string that specifies the name of the property whose text value is to be justified.

Example(s)

The example that follows displays the function syntax for changing the property text justification of all occurrences of the "Ref" property found on the selected objects to top (vertical) and left (horizontal).

```
$change_property_justification("Ref", @top, @left)
```

The next example shows the command syntax to change the property text justification of the "MODEL" property found on all selected objects to bottom and left.

```
cha pr j  "MODEL"  bottom  left
```

Related Functions

$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_value()
$change_property_orientation()
$change_property_stability_switch()
$change_property_visibility()
$change_property_visibility_switch()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_auto_update_mode()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_name()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_name("*old_name*", "new_name")

CHAnge PRoperty Name "*old_name*" "new_name"

(Symbol) Symbol Body & Pins > Properties > Change > Name
(Symbol, Schematic) Property/Text > Change Attributes > Name
(Schematic) Draw > Properties > Change > Name
(Schematic) Instance > Properties > Change > Name
(Schematic) Net > Properties > Change > Name
(Schematic) Edit > Edit Commands > Properties > Change > Name
(Symbol) Edit > Properties > Change > Name

Description

Changes the names of properties whose owners are selected without changing the property values.

The specified new_name cannot duplicate any existing property on any of the selected items.

Note

It is not possible to change the name of a property on an instance or instance pin if the property came from the symbol.

If old_name is not specified, then this function acts on all selected properties. If old_name is specified, then the function acts on all selected properties with that name and all properties with the name attached to the selected objects. The new_name property inherits the value, type, and switches of the old_name property.

If an owner or type has been declared for new_name through the $set_property_owner() or $set_property_type() functions, all selected items must be legal owners for the new_name property.

When in the Schematic Editor, this function cannot be used on symbol properties whose property stability switch has been set to @fixed or @protected. In the Symbol Editor, if no objects are selected, change operations are performed on the named property of the non-graphic logical symbol.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation object and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable (return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the old_name is changed to the new_name in both the back-annotation object and the source.

  If specified property exists in the back-annotation object, but not in the source, the old_name is changed to the new_name only in the back-annotation object. If the specified property exists in the source, but not in the back-annotation object, the old_name is changed to the new_name only in the source. If the specified property does not exist in either the source or in the back-annotation object, the property name does not change.

- If source properties are viewable and editable (return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable (return value of $get_annotation_visibility() is @off):

  If the specified property exists in the source, the old_name is replaced with the new_name in the source. The property name is not changed in the back-annotation object.

- If source properties are viewable, but not editable (return value of $get_source_edit_allowed() is @off), and back-annotation properties are viewable and editable (return value of $get_annotation_visibility() is @on):

The property name is not changed in either the source or the back-annotation object.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off and the return value of $get_annotation_visibility() is @off), the name is not changed in the source or the back-annotation object.

Arguments

- **new_name (New Name)**

  This argument is a text string specifying the new name of a property.

- ***old_name (Old Name)***

  This argument is a string specifying the property name you wish to change.

Example(s)

The following example shows the function syntax when changing the property name from "prop_a" to "prop_d" on selected objects.

```
$change_property_name("prop_a", "prop_d")
```

The next example shows the command syntax when changing the property name from "prop_x" to "prop_a" on selected objects.

```
cha pr n "prop_x"  "prop_a"
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_offset()
$change_property_type()
$change_property_value()
$change_property_justification()
$change_property_orientation()
$change_property_stability_switch()
$change_property_visibility()
$change_property_visibility_switch()

Related Internal State Functions

$set_annotation_visibility()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_offset()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_offset("*property_name*", [point])

CHAnge PRoperty OFfset "*property_name*" [point]

Description

Changes the offset location of property text values for a given property on selected objects.

This function moves the text value of the specified property name that is owned by selected objects. Property text can also be selected and moved using the $select_area() function with the @property switch set, then the $move() function.

If property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

Arguments

- **point (Offset Change)**

  This argument defines location coordinates where the specified property text value is placed (defined in user units), relative to its current position.

- ***property_name (Property Name)***

  This argument is a text string that specifies the name of the property whose text value is to be moved.

Example(s)

The following example displays the function syntax for changing the property offset of the property "Inst_name" for all the selected objects by 2.5 user units in the x direction and -3.0 user units in the y direction.

```
$change_property_offset("Inst_name", [2.5, -3.0])
```

The next example shows the command syntax for the previous example.

```
cha pr of  "Inst_name"  [2.5, -3.0]
```

Related Functions

$setup_page()
$add_property()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_type()
$change_property_value()
$change_property_justification()
$change_property_orientation()
$change_property_stability_switch()
$change_property_visibility()
$change_property_visibility_switch()

$change_property_orientation()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_orientation("*property_name*", orientation)

CHAnge PRoperty ORientation "*property_name*" orientation

(Symbol) Symbol Body & Pins > Properties > Change > Text Orientation
(Symbol, Schematic) Property/Text > Change Attributes > Text Orientation
(Schematic) Draw > Properties > Change > Text Orientation
(Schematic) Instance > Properties > Change > Text Orientation
(Schematic) Net > Properties > Change > Text Orientation
(Schematic) Edit > Edit Commands > Properties > Change > Text Orientation
(Symbol) Edit > Properties > Change > Text Orientation

Description

Changes the orientation of the property text values for the given property name on selected objects.

If property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (associated with the specified objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property orientation, you can change the value, height, vertical and horizontal justification,

and visibility (for schematic sheets), or switches (for symbols) for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **... Change > Text Orientation** menu item or type the command or function without the arguments on the command line, a prompt bar is displayed providing you with entry boxes for the property name and the new orientation.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, orientation, justification, and height). Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable (the return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the specified orientation changes the orientation of the property value in the source and in the back-annotation object.

If specified property exists in the back-annotation object, but not in the source, the orientation of the back-annotation value is changed. The orientation will be used for the source value if one is later added.

If the specified property exists in the source, but not in the back-annotation object, the orientation is changed for the specified property only in the source.

If the specified property does not exist in the source and the back-annotation object, there is no change in the orientation.

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable (the return value of $get_annotation_visibility() is @off):

  The specified property must exist in the source. The specified orientation changes the orientation of the property value in the source and in the back-annotation object.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off), regardless of whether back-annotation properties may be viewable and editable or not:

  The orientation of the property value is not changed on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

Arguments

- **orientation (Degrees)**

  Specifies the orientation of the property text value. It can be one of two values: 0 or 90. If property text is currently read horizontally (from left to right), it is considered to be at orientation 0. If property text is currently read vertically (from bottom to top), it is considered to be at orientation 90.

- ***property_name (Property Name)***

  A text string specifying the name of the property for which the orientation of this text value is to be modified.

Example(s)

The following example shows the function syntax for changing the orientation of all occurrences of the property "PART_NO" on the selected objects to 90 degrees.

```
$change_property_orientation("PART_NO", 90)
```

The next example displays the command syntax for changing the orientation of all occurrences of the property "REF" on the selected objects to 0 degrees.

```
cha pr or  "REF"  0
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_value()
$change_property_visibility()
$change_property_justification()
$change_property_stability_switch()
$change_property_visibility_switch()
$setup_property_text()

Related Internal State Functions

$set_auto_update_mode()
$set_annotation_visibility()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_stability_switch()
$set_property_vjustification()

$change_property_stability_switch()

Scope: symbol
Window: Symbol Editor

Usage

$change_property_stability_switch("*property_name*", stability)

CHAnge PRoperty Stability Switch "*property_name*" stability

(Symbol) Property/Text > Change Attributes > Stability Switch
(Symbol) Symbol Body & Pins > Properties > Change > Stability Switch
(Symbol) Edit > Properties > Change > Stability Switch

Description

For selected symbol items, this function changes the legal operations which can be performed on properties with the given name on an instance of the current symbol in a schematic sheet.

If property_name is not specified, this function acts on all selected properties. If property_name is specified, the function acts on all selected properties with that name and all properties with that name attached to the selected objects. If no objects are selected, the non-graphic logical symbol property of the specified property name is operated on.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (that are associated with the selected objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property stability switch, you can change the value, height, vertical and horizontal justification, orientation, and other switches for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the

Modify Properties dialog box. This process is repeated for each property specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **... Change > Stability Switch** menu item or type the command or function without arguments on the command line, a prompt bar appears asking for a value for the stability switch.

If no objects are selected, change operations are performed on the named property on the logical symbol.

Arguments

- **stability (Stability Switch)**

  Determines the type of operations that can be performed on the specified property name on an instance of the symbol. It must have one of the following values:

  @fixed: Property values cannot be altered or deleted on any instance on a schematic sheet. Property graphic attributes can be modified through the $change_property functions.

  @protected: Property values can be altered on an instance at instantiation time on a schematic sheet. However, once instantiated, the instance-specific property value cannot be changed. Property graphic attributes can be modified through the $change_property functions.

  @variable: Property values can be altered on an instance at instantiation time. Property values and property graphic attributes can be modified through the $change_property or $change_text functions.

  @nonremovable: Property values can be altered on an instance at instantiation time. Property values and property graphic attributes can be changed through the $change_property and $change_text functions, but the property cannot be deleted from the instance.

- ***property_name (Property Name)***

  A text string specifying the name of the property.

Example(s)

The following example shows the function syntax for changing the stability switch to "fixed" for the property "COMP" that occurs on all selected objects.

```
$change_property_stability_switch("COMP", @fixed)
```

The next example displays the command syntax for changing the stability switch on the property "REF" to "protected".

```
cha pr s s  "REF"  protected
```

Related Functions

$add_property()
$setup_property_text()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_orientation()
$change_property_justification()
$change_property_type()
$change_property_value()
$change_property_visibility()
$change_property_visibility_switch()

Related Internal State Functions

$set_auto_update_mode()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_vjustification()
$set_property_visibility_switch()

$change_property_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_type("*property_name*", property_type, "*new_value*")

CHAnge PRoperty Type "*property_name*" property_type -*Value* "*new_value*"

(Symbol) Symbol Body & Pins > Properties > Change > Type
(Symbol, Schematic) Property/Text > Change Attributes > Type
(Schematic) Draw > Properties > Change > Type
(Schematic) Instance > Properties > Change > Type
(Schematic) Net > Properties > Change > Type
(Schematic) Edit > Edit Commands > Properties > Change > Type
(Symbol) Edit > Properties > Change > Type

Description

Changes the property type of the specified property name on selected objects.

If the @value switch is not specified and the current value for property_name on that object is not valid for the new type, an error message is issued.

In the Schematic Editor, if property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

In the Symbol Editor, if no objects are selected, change operations are performed on the named property on the non-graphic logical symbol.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (associated with the selected

objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property type, you can change the value, height, vertical and horizontal justification, orientation, and other switches for one of the specified properties from the Modify Property dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **... Change > Type** menu item or type the command or function without argument on the command line, a prompt bar is displayed requesting a value for the property type.

This function cannot be used on symbol properties whose property stability switch has been set to @fixed or @protected when in the Schematic Editor.

Arguments

- **property_type (Type)**

  Specifies the type of property, which must be one of the following:

  @string (String): The value of property_name must be a string.

  @number (Number): The value of property_name must be a real number or integer.

  @expression (Expression): The value of the property must be an expression (in quotes).

  @triplet (Triplet): The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties. Each of the three values may be a number, an expression, or a string, which will evaluate to a number. These values must be separated by spaces or

commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

If only one value is specified, then it is used for the best-case, typical, and worst-case values. If two values are specified, then the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics tools that recognize triplets are analysis tools (for example, QuickSim II), and timing calculation tools.

- ***property_name (Property Name)***

  A text string specifying the name of the property. If property_name is not specified, then this function acts on all selected properties.

- ***new_value (Value)***

  A text string that is used to change the property value. An error message is issued if the new value does not match the new property type.

Example(s)

The following example shows the function syntax for changing the "RISE" property to a triplet property type. It also attaches a new value to the "RISE" property.

```
$change_property_type("RISE", @triplet, "0 5 10")
```

The next example displays the command syntax for changing the "new_comp" property to an expression property type. It also attaches a new value to the "new_comp" property.

```
cha pr t "new_comp"  expression  -value  "(x * y)"
```

Related Functions

$add_property()
$set_property_type()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_justification()
$change_property_orientation()
$change_property_stability_switch()
$change_property_value()
$change_property_visibility()

Related Internal State Functions

$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_vjustification()
$set_property_visibility_switch()

$change_property_value()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$change_property_value("*property_name*", "property_value", *property_type*)

CHAnge PRoperty VAlue "*property_name*" "property_value" *property_type*

(Symbol) Symbol Body & Pins > Properties > Change Text Values
(Symbol) Symbol Body & Pins > Properties > Change > Value
(Symbol, Schematic) Property/Text > Change Value
(Symbol, Schematic) Property/Text > Change Attributes >Value
(Schematic) Draw > Properties > Properties > (also in Instance, Net menus)
(Symbol) Edit > Properties > Change Text Values
(Schematic) Edit > Edit Commands > Properties > Change Text Values

Description

Sets a new value for all properties with the specified name on all selected objects.

All associated property values are changed to property_value without changing the attributes of the text (such as text height and orientation).

In the Schematic Editor, if property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

In the Symbol Editor, if no objects are selected, change operations are performed on the named property on the non-graphic logical symbol.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (that are associated with the selected objects) that you want to modify. To choose more than one property,

press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on the Modify Properties dialog box, the Modify Properties<property_name> dialog box is displayed. In addition to changing the property value, you can change the height, orientation, vertical and horizontal justification, and visibility (for schematic sheets), or switches (for symbols) for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property <property_name> dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property that was specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **... Change > Value** menu item or type the command or function without arguments on the command line, a prompt bar is displayed providing you with entry boxes for the property name and the new value.

This function cannot be used on symbol properties whose property stability switch has been set to @fixed or @protected when in the Schematic Editor.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $open_design_sheet(), $update(), and $replace() functions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value Modified property is also Attribute_Modified. Property values that are marked Value_Modified can be unmarked using the $mark_property_value(@notmodified) function.

When editing in the context of a design viewpoint, you can change the property value not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location. Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable (the return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the specified orientation changes the property value in the back-annotation object, but not in the source.

  If specified property exists in the back-annotation object, but not in the source, the back-annotation property value changes only.

  If the specified property exists in the source, but not in the back-annotation object, the back-annotation property value is added, but the source property value does not change.

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable (the return value of $get_annotation_visibility() is @off):

  If the specified property exists in the source, the property value in the source is changed, but not in the back-annotation object. If the specified property does not exist in the source, no changes occur.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off), and back-annotation properties are viewable and editable (the return value of $get_annotation_visibility() is @on):

  If the back-annotation property exists, it is changed to the specified value. If the back-annotation property does not exist, but the source property value does, the back-annotation property value is added.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off and the return value of $get_annotation_visibility() is @off), property values are not changed in the source and the back-annotation object.

If you are editing in the context of a design viewpoint, this function will not allow you to change the value of a Structured Logic Design (SLD) property; if you try to do so, you will get the message "Cannot back-annotate SLD properties." The following are SLD properties:

Class	Inst	Pin
Frexp	Net	Rule
Global		

For more information about SLD properties, refer to "Structured Logic Design Properties" in the *Design Architect User's Manual*.

Arguments

- **property_value (New Value)**

  Specifies the new value of property_name. This value must be legal for the specified type.

- ***property_name (Property Name)***

  A text string specifying the name of the property.

- ***property_type (Type)***

  If this argument is not specified, the new property value must match the current property type associated with the property_name. If this argument is specified, the type of legal property values for property_name must be one of the following values:

  @string (-String): The value of property_name must be a string. If property_type is not specified, and if the type for property_name has not been declared for this sheet with the $set_property_type() function, the property_type is set to @string.

  @number (-Number): The value of property_name must be a real number or integer.

@expression (-Expression): The value of the property must be an expression (in quotes).

@triplet (-Triplet): The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties. Each of the three values may be a number, an expression, or a string, which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

If only one value is specified, it is used for the best-case, typical, and worst-case values. If two values are specified, the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics tools that recognize triplets are analysis tools (for example, QuickSim II), and timing calculation tools.

Example(s)

The following example displays the function syntax when you are changing the property value to "In1" of the specified Pin property on the selected object.

```
$change_property_value("pin", "In1", @string)
```

The next example shows the command syntax when changing the property value of the property "comp" to "U12" on the selected object. Assume that "comp" property type has already been set to string.

```
cha pr va "comp" "U12"
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_orientation()
$change_property_type()
$change_property_visibility()
$change_property_justification()
$change_property_stability_switch()
$change_property_visibility_switch()
$get_auto_update_inst_handles()
$mark_property_value()

Related Internal State Functions

$set_annotation_visibility()
$set_auto_update_mode()
$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_visibility()

Scope: schematic
Window: Schematic Editor

Usage

$change_property_visibility("*property_name*", *visibility*)

CHAnge PRoperty VIsibility "*property_name*" *visibility*

(Schematic) Property/Text > Change Attributes > Visibility
(Schematic) Draw > Properties > Change Visibility
(Schematic) Instance > Properties > Change Visibility
(Schematic) Net > Properties > Change Visibility
(Schematic) Edit > Edit Commands > Properties > Change > Visibility

Description

Hides, displays, or toggles the visibility of the property values for the specified property on selected objects.

If property_name is not specified, then this function acts on all selected properties. If property_name is specified, then the function acts on all selected properties with that name and all properties with that name attached to the selected objects.


Note

You must specify the property name argument (even if properties are selected) when using the command or expert syntax for this function.

If the **... > Properties > Modify** menu item is invoked, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (associated with the selected objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the "Modify Property <property_name>" dialog box is displayed. In addition to changing the property visibility, you can modify the value, the text orientation, horizontal and vertical justification, and height for one of the specified properties from the Modify Properties dialog box. When you are finished, click the **OK** button. This dialog

box is displayed for every property that you selected in the Modify Properties dialog box.

If you choose the **Properties > Modify** menu on a single selected property text, the "Modify Property<property_name>" dialog box is displayed with the owner of the property text displayed as the <property_name>. This is the same dialog box discussed in the previous paragraph, which lets you modify the property text attributes. When you are finished, click the OK button.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

Arguments

- ***property_name (Property Name)***

  A text string specifying the name of the property.

- ***visibility (Visibility)***

  Determines the visibility of property text of selected objects. It can have one of the following values:

  @hidden (-Hidden): Property text is invisible. Once a property has been set to hidden, it can only be selected by its handle.

  @visible (-Visible): Property text is visible.

  ⇒ **@toggle** (-Toggle): Property text visibility toggles to the opposite state.

Example(s)

The following example displays the function syntax for changing the property value visibility of the Ref property on selected objects to hidden.

```
$change_property_visibility("Ref", @hidden)
```

The next example displays the command syntax for changing the property value visibility of the Comp property on selected objects to the opposite state.

```
cha pr vi  "Comp"  -toggle
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_orientation()
$change_property_justification()
$change_property_stability_switch()
$change_property_type()
$change_property_value()
$change_property_visibility_switch()
$setup_property_text()

Related Internal State Functions

$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_property_visibility_switch()

Scope: symbol
Window: Symbol Editor

Usage

$change_property_visibility_switch("*property_name*", visibility)

CHAnge PRoperty Visibility Switch "*property_name*" visibility

(Symbol) Property/Text > Change Attributes > Visibility Switch
(Symbol) Symbol Body & Pins > Properties > Change > Visibility Switch
(Symbol) Edit > Properties > Change > Visibility Switch

Description

Changes property visibility on an instance of the selected symbol.

If the **... > Properties > Modify** menu item is invoked and the property's owner is selected, a Modify Properties dialog box is displayed. The Modify Properties dialog box allows you to choose the properties (that are associated with the selected objects) that you want to modify. To choose more than one property, press down the Ctrl key before clicking the Select mouse button on each specified property.

After you click the **OK** button on this dialog box, the Modify Property <property_name> dialog box is displayed. In addition to changing the property visibility switch, you can change the value, orientation, vertical and horizontal justification, and other switches for one of the specified properties from the Modify Properties dialog box.

After you click the **OK** button on the Modify Property dialog box, another Modify Property dialog box is displayed for the next property that you specified in the Modify Properties dialog box. This process is repeated for each property that was specified in the Modify Properties dialog box.

If you select a single property text, the Modify Property <property_name> dialog box is displayed with the same information as if you selected the property owner of that text.

If you select the **...Change > Visibility Switch** menu item or type the command or function with no arguments on the command line, a prompt bar is displayed requesting a value for the visibility switch.

Arguments

- **visibility (Visibility Switch)**

  Determines the visibility of property text on the instance of the selected symbol. It must have one of the following values:

  @hidden (-Hidden): Property text is invisible on the instance. Once a property has been set to hidden, it can only be selected by its handle.

  @visible (-Visible): Property text is visible on the instance.

- ***property_name (Property Name)***

  A text string specifying the name of the property. If property_name is not specified, this function acts on all selected properties.

  If property_name is specified, the function acts on all selected properties with that name and all properties with that name attached to the selected objects. If no objects are selected, the function acts on the non-graphic logical symbol property of the specified property name.

Example(s)

The following example displays the function syntax for changing the visibility of the "ref" property to hidden.

```
$change_property_visibility_switch("ref", @hidden)
```

The next example shows the command syntax for changing the visibility of the "rise" property to visibility.

```
cha pr v s "rise"  visible
```

Related Functions

$add_property()
$change_property_font()
$change_property_height()
$change_property_name()
$change_property_offset()
$change_property_orientation()
$change_property_justification()
$change_property_stability_switch()
$change_property_type()
$change_property_value()
$change_property_visibility()
$setup_property_text()

Related Internal State Functions

$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_stability_switch()
$set_property_visibility()
$set_property_visibility_switch()
$set_property_vjustification()

$change_text_font()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: There must be at least one selected property text or comment text in the active window.

Usage

$change_text_font("font_name")

CHAnge TExt Font "font_name"

(Symbol, Schematic) Property/Text > Change Attributes > Text Font
(Symbol) Edit > Properties > Change > Text Font
(Schematic) Edit > Edit Commands > Properties > Change > Text Font

Description

Changes the font of selected property values and comment text.

If font_name is a font definition that has not been registered properly, an error message is issued.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in the back-annotation object and the source, the font specified in the font_name changes the fonts in the source and in the back-annotation object.

  If the specified property exists in the back-annotation object, but not in the source, the font specified in the font_name changes the font of the back-annotation value and determines the font which will be used for the source value if one is later added.

  If the specified property exists in the source, but not in the back-annotation object, the font specified in the font_name changes the font of the specified property only in the source.

  If the specified property does not exist in the source and the back-annotation object, there is no change in the fonts.

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() returns @off):

  The specified property must exist in the source. The font specified in the font_name changes the font in the source property and in the back-annotation object.

- If source properties are viewable only ($get_source_edit_allowed() returns @on), regardless of whether back-annotation properties may be viewable and editable or not:

  The font is not changed on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

Arguments

- **font_name (Font File)**

  This string specifies the registered font family in which the font is defined. Fonts and font registry files are located in *$MGC_HOME/pkgs/base/fonts*.

Example(s)

The following example displays the function syntax for changing the font style of the selected property text and comment objects in the active window to the "helvetica" font family.

```
$change_text_font("helvetica")
```

The next example shows the command syntax for the previous example.

```
cha te f  "helvetica"
```

Related Functions

$change_property_stability_switch()
$change_text_height()
$change_text_justification()
$change_text_value()
$setup_comment()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_vjustification()

$change_text_height()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: Property text values or comment text must be selected in the active window.

Usage

$change_text_height(height)

CHAnge TExt Height height

(Symbol, Schematic) Property/Text > Change Attributes > Text Height
(Symbol) Edit > Properties > Change > Text Height
(Schematic) Edit > Edit Commands > Properties > Change > Text Height

Description

Alters the height of selected property values or comment text to the specified number of user units.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), and back-annotation properties are viewable and editable (the return value of $get_annotation_visibility() is @on):

  If the specified property exists in the back-annotation object and the source, the specified height changes the height of the property value in the source and in the back-annotation object.

  If the specified property exists in the back-annotation object, but not in the source, the height of the back-annotation value is changed. The height will be used for the source value, if one is later added.

  If the specified property exists in the source, but not in the back-annotation object, the specified height changes the height of the specified property value, only in the source.

  If the specified property does not exist in the source and the back-annotation object, there is no change in the height of the property value.

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() returns @off):

  The specified property must exist in the source. The specified height changes the height of the property value in the source and of the property value in the back-annotation object.

- If source properties are viewable only ($get_source_edit_allowed() returns @off), regardless of whether back-annotation properties may be viewable and editable or not:

  The property value height is not changed on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

The height is measured in the units defined by the value of the user_units internal state variable.

Arguments

- **height (Height)**

  A real number specifying the height of a character. The width is proportional to the height.

Example(s)

The following example displays the function syntax for changing the text height of selected property text or comment text to .125 user units.

```
$change_text_height(.125)
```

The next example shows the command syntax for changing the text height of selected property text or comment text to .25 user units.

```
cha te h .25
```

Related Functions

$change_text_font()
$change_text_justification()
$change_text_value()
$setup_comment()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_vjustification()
$set_user_units()

$change_text_justification()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one property text value or comment text object must be selected in the active window.

Usage

$change_text_justification(vertical, horizontal)

CHAnge TExt Justification vertical horizontal

(Symbol, Schematic) Property/Text > Change Attributes > Text Justification
(Symbol) Symbol Body & Pins > Properties > Change > Text Justification
(Schematic) Draw > Properties > Change > Text Justification
(Schematic) Instance > Properties > Change > Text Justification
(Schematic) Net > Properties > Change > Text Justification
(Schematic) Edit > Edit Commands > Properties > Change > Text Justification
(Symbol) Edit > Properties > Change > Text Justification

Description

Changes the justification of selected property text values or comment text.

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box. If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change property attributes not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and

use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in the back-annotation object and the source, the specified justification changes the justification of the property value in the source and in the back-annotation object.

  If specified property exists in the back-annotation object, but not in the source, the specified justification changes the justification of the back-annotation value and determines the justification which will be used for the source value, if one is later added.

  If the specified property exists in the source, but not in the back-annotation object, the specified horizontal and vertical justification changes the justification of the specified property only in the source.

  If the specified property does not exist in the source and the back-annotation object, there is no change in the horizontal and vertical justification.

- If source properties are viewable and editable (the return value of $get_source_edit_allowed() is @on), but back-annotation properties are not viewable and editable (the return value of $get_annotation_visibility() is @off):

  The specified property must exist in the source. The specified justification changes the justification of the property value in the source and in the back-annotation object.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off), regardless of whether back-annotation properties may be viewable and editable or not:

  The justification of the property value is not changed on the specified property. If back-annotation properties are viewable and editable, a warning message is issued.

Arguments

- **vertical (Vertical)**

  This argument specifies the vertical justification relative to the text location point. It must have one of the following values: **@top** (-Top), **@center** (-Center), or **@bottom** (-Bottom).

- **horizontal (Horizontal)**

  This argument specifies the horizontal justification relative to the text location point. It must have one of the following values: **@left** (-Left), **@center** (-Center), or **@right** (-Right).

Example(s)

The following example displays the function syntax to change the vertical and horizontal justification of selected property text or comment text. The vertical justification is set to @center and the horizontal justification is set to @right.

```
$change_text_justification(@center, @right)
```

The next example displays the command syntax for changing the vertical to bottom and horizontal justification to right of the selected property text and comment text.

```
cha te j bottom left
```

Related Functions

$change_text_font()
$change_text_height()
$change_text_value()
$setup_comment()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_vjustification()

$change_text_value()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: There must be only one property text or comment text selected in the active window.

Usage

$change_text_value("new_text")

CHAnge TExt Value "new_text"

(Symbol) Symbol Body & Pins > Properties > Change Text Values
(Symbol) Symbol Body & Pins > Properties > Change > Value
(Symbol, Schematic) Property/Text > Change Value
(Symbol, Schematic) Property/Text > Change Attributes >Value
(Schematic) Draw > Properties > Properties > (also in Instance, Net menus)
(Symbol) Edit > Properties > Change Text Values
(Schematic) Edit > Edit Commands > Properties > Change Text Values

Description

Changes the text value of a selected property or comment.

This function operates on one, and only one, selected text object. If the text is property text, the new value must be of the correct type for the property, as set by the $add_property() or $set_property_type() function.

This function cannot be used on symbol properties whose property stability switch has been set to @fixed or @protected when in the Schematic Editor.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value Modified property is also Attribute_Modified. Property values that are marked Value_Modified can be unmarked using the $mark_property_value(@notmodified) function.

When you choose the **... > Change Text Values** menu item, you can change multiple property text values. A Change Text Values dialog box is displayed in the active window allowing you to enter a number of property text values. After the dialog box has been **OK**ed, for each text value that you entered, you must select the area (the prompt bar associated with the $select_area() function is displayed in the active window) in which the property to be changed resides.

To change the Rule property values of bus ripper pins, choose the **... > Sequence Text** menu item. The Sequence Text dialog box is displayed for you to enter a number, generally 0, in the Beginning Index Number text entry box. When you click the **OK** button, the Select Area prompt bar is displayed, prompting you to select the specified property text. You can click the Select mouse button to explicitly select the "R" property value. After it has been selected, the number appears. Continue changing the remaining R values in this manner. To exit this mode, click the **Cancel** button on the still-displayed Select Area prompt bar.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can change the property value not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location. Back-annotated property values are displayed in red. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation objects and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in the back-annotation object and the source, the property value is changed in the back-annotation object, but not in the source.

  If the specified property exists in the back annotation object, but not in the source, the back-annotation property value changes only.

If the specified property exists in the source, but not in the back-annotation object, the back-annotation property value is added, but the source property value does not change.

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() returns @off):

  If the specified property exists in the source, the property value in the source is changed, but not in the back-annotation object. If the specified property does not exist in the source, no changes occur.

- If source properties are viewable only ($get_source_edit_allowed() returns @off), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the back-annotation property exists, it is changed to the specified value. If the back-annotation property does not exist, but the source property does, the back-annotation property value is added.

- If source properties are viewable only (the return value of $get_source_edit_allowed() is @off and the return value of $get_annotation_visibility() is @off):

  Property values are not changed in the source or the back-annotation object.

An error message is issued if more than one object is selected, or if the object selected is neither a property value or comment text.

Arguments

- **new_text (New Text)**

  This argument is a text string specifying replacement text.

Example(s)

The following example displays the function syntax for changing the Rise selected property text.

```
$change_text_value("0 5 10")
```

The next example displays the command syntax for changing comment text.

```
cha te v "September 22, 1991"
```

Related Functions

$add_property()
$change_text_font()
$change_text_height()
$change_text_justification()
$get_auto_update_inst_handles()
$mark_property_value()
$set_property_type()
$setup_comment()
$setup_property_text()

Related Internal State Functions

$set_annotation_visibility()
$set_auto_update_mode()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_vjustification()

$$check()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$$check(*overall_check_setting, keepswitch, window, transcript, check_filemode, check_filename, special, pins, symbolbody, interface, userrule, userrulefile*)

CHEck *overall_check_setting keepswitch window transcript check_filemode check_filename -SPecial special -PIns pins -SYMBolbody symbolbody -INTerface interface -Userrule userrule -UserruleFile userrulefile*

Check > With Defaults
Check > As Specified > No Change | Using Current Settings... | Using Default Settings...

Schematic Editor Usage

$$check*(schematic, overall_check_setting, keepswitch, window, transcript, check_filemode, check_filename, instance, special, net, frame, parameter, expression, pins, owner, overlap, notdots, closedots, dangle, initprops, userrule, schematicinterface, schematicspecial, schematicinstance, schematicnet, schematicuserrule, userrulefile, schematicuserrulefile, annotations*)

CHEck *schematic overall_check_setting keepswitch window transcript check_filemode check_filename -Instance instance -SPecial special -Net net -FRame frame -PArameter parameter -EXpression expression -PIns pins -OWner owner -OVerlap overlap -NOTDots notdots -Closedots closedots -Dangle dangle -INItprops initprops -Userrule userrule -SChematicINTerface schematicinterface -SChematicSpecial schematicspecial -SChematicINStance schematicinstance -SChematicNet schematicnet -SChematicUserrule schematicuserrule -UserruleFile userrulefile -SChematicuserruleFile schematicuserrulefile annotations*

Check > Sheet > With Defaults
Check > Sheet > As Specified > No Change | Using Current Settings... | Using Default Settings...
Check > Schematic > With Defaults

Check > Schematic > As Specified > No Change | Using Current Settings... | Using Default Settings.. .

Description

Performs error checking on the current symbol or schematic sheet, or the full schematic.

In the Symbol Editor, $$check() verifies that property values have valid syntax and that special symbols (those containing Class properties such as port connectors, off page connectors, net connectors, and bus rippers) are properly constructed, plus checks configured through the $setup_check_symbol() function or by the check options and user-defined design rule checks. A symbol must pass all required symbol checks with no errors before it can be instantiated on a sheet.

In the Schematic Editor, $$check() examines the sheet for valid frame construction, meaningful property attachment and values, and net connectivity, plus checks configured through the $$setup_check_sheet() and $setup_check_schematic() functions, or by check options and user-defined design rule checks.

During sheet checks, any parameter values defined with the $set_parameter() function are used as evaluation parameters for that sheet during check. A sheet must pass all required and specified sheet checks with no error messages, or a warning will be issued by any downstream tool that uses it.

If the @schematic switch is specified, all the sheets of the schematic are first checked as individual sheets. Then all sheets making up the schematic are checked and a variety of multi-sheet checks are performed. Additional checks may be requested through the $setup_check_schematic() function or the check options. If duplicate handles are found on any sheets in the schematic, you must perform the following steps:

1. Close/Save all windows that are not sheets of this schematic.

2. Close unedited sheets.

   **The following step may cause DA to crash. **
   If so, proceed with step 5.

3. Close/Save edited sheets.

4. Exit DA.

5. Make sure no one else is editing the schematic and none of the sheets have ".lck" files.

6. Execute the following command:

```
$  $MGC_HOME/bin/da -fix_ids '<schematic>'
```

The duplicate handles are now fixed. Refer to the transcript from "da -fix_ids" for detailed information on changes made to eliminate duplicate handles.

It is not required to check a schematic before using it in analysis tools. However, a warning will be issued by any downstream tool that uses it if no check has been performed on the individual sheets comprising the schematic.

If you specify @autoschemsave, all sheets of the schematic are checked. If any sheets previously did not pass check, but now check successfully, they are automatically saved. They do not need to be individually opened and saved.

The values of the check internal state variables are not modified by the values set by the arguments in the $$check() function unless the keep option is specified. The values of these arguments override the check status only for this check.

When **... With Defaults** is selected, the check is invoked using the values of the check internal state variables. When **... As Specified > No Change** is specified, check uses the values that were set by the last As Specified dialog box. If **... As Specified > Using Current Settings** is selected, a dialog box is displayed with the settings specified from the previous check. If you choose **... As Specified > Using Default Settings**, the dialog box is displayed with the settings as specified by the check internal state variables. You can modify the check settings and click the **OK** button on the dialog box. Check is invoked using the settings you specified in the dialog box.

You can replace the values of the check internal state variables with the values you specified in the **... As Specified > Using Current Settings** and **... As Specified > Using Default Settings** dialog boxes by clicking the Update Default Settings button in the dialog boxes.

The output can be simultaneously directed to a file, a popup window, and/or the transcript window. This control is established either through the $$check()

function arguments, or by values of the window, transcript, check_filemode, or check_filename internal state variables.


Note

The schematicuserrule and schematicuserrulefile options have been disabled for the V8.x release.

Arguments

The values of the internal state variables associated with checking may be overridden by specifying values for appropriate check-setting options with the $$check() function. The check-setting options described here override the values only for this check. The values of the internal state variables are not modified unless the keepswitch option is specified.

Each $$check() function check-setting option represents a category of checks. Most of them can have one of the following three values:

@all (-Option All): Both errors and warnings are reported.

@errorsonly (-Option Errorsonly): Only errors are reported.

@nocheck (-Option NOCheck): The category of checks is not performed.

These check-setting options are position-dependent for functions, and are specified by the option value (the @ character is required), with the exception of the schematic, overall check setting, keep switch, check report options, and userrule files. The following example displays the syntax when you are setting all the check settings to @all, with the exception of the instance check setting option, which is set to @errorsonly (assuming schematic scope):

```
$$check(, @all, , , , , , @errorsonly)
```

When entered as a command, the check-setting options are position-independent, and are specified as a switch/value pair, with the exception of the schematic, overall check setting, keepswitch, and check report options.

The next example displays the command syntax for the previous example (assuming schematic scope):

```
CHEck  -ALl  -INStance errorsonly
```

Table 2-1 lists the $$check() function options that are available in all scopes (Symbol and Schematic Editors). Options available only in the Symbol Editor

are listed in Table 2-2. Options available in the Schematic Editor are listed in Table 2-3.

In each table, the left column shows the argument name (check category) and the possible values when entered as a function. The check categories shown in bold font indicate required checks. The center column shows the command syntax for each argument. The last column provides a brief description of the argument and the name of the $get_ internal state function whose value is the default.

Note

If you are reading this online, the first column in each table contains hyperlinks to the related *$set_* internal state function descriptions. The internal state function descriptions include more information about conditions that cause errors and warnings in each check category.

Table 2-1 lists the $$check() options which are common to all scopes.

Table 2-1. Check Options Available in All Scopes

Category Function Syntax	Command Syntax	Description
overall_check_setting @all @errorsonly @nocheck	-ALl -ERrorsonly -NOCheck	Overrides (for this check only) the default values of the check internal state functions for all categories not specified in this invocation of $$check().
keepswitch @keep @nokeep	-Keep -NOKeep	Determines if current settings replace the values of the check internal state functions. The default is @nokeep, meaning settings apply only to this invocation of $$check().
@window @nowindow	-Window -NOWindow	Controls whether check results are displayed in a popup window. The default is the value of $get_report_window().
transcript @transcript @notranscript	-TRanscript -NOTranscript	Determines if check results are displayed in a transcript window. The default is the value of $get_report_transcript().
check_filemode @add @replace @nofile	-ADd -Replace -NOFile	Indicates how contents of the check report are placed in the file specified by the check_filename argument. If @add or @replace is specified and the file does not exist, it is created. If you specify @nofile, the check report is not saved. The value of $get_check_filemode() is the default.

Table 2-1. Check Options Available in All Scopes [continued]

Category Function Syntax	Command Syntax	Description
check_filename "filename"	"filename"	Specifies the name of the output file in which to place error messages generated by the $$check() function. This is used only if check_filemode is @add or @replace. If not specified, the value of $get_check_filename() is used.

Table 2-2 lists the check options available in the Symbol Editor, in addition to the options listed in Table 2-1. The names of required check categories are shown in bold font.

Table 2-2. Check Options in Symbol Editor

Category Function Values	Command Syntax	Description
special @all @errorsonly @nocheck	-SPecial all -SPecial errorsonly -SPecial nocheck	Determines if special symbols such as net connectors, bus rippers, on/off-page connectors, and ports, are checked for proper construction. The default is the value of $get_check_symbolspecial().
pins @all @errorsonly @nocheck	-PIns all -PIns errorsonly -PIns nocheck	Indicates whether symbol pin name and property errors and warnings are reported. The value of $get_check_symbolpin() is the default.

Table 2-2. Check Options in Symbol Editor [continued]

Category Function Values	Command Syntax	Description
symbolbody @all @errorsonly @nocheck	-SYMBolbody all -SYMBolbody errorsonly -SYMBolbody nocheck	Specifies whether errors and warnings about symbol body properties and graphics are reported. The default is the value of $get_check_symbolbody().
interface @all @errorsonly @nocheck	-INTerface all -INTerface errorsonly -INTerface nocheck	Specifies whether errors and warnings about the symbol's registered component interface are reported. The default is the value of $get_check_symbolinterface().
userrule @all @nocheck	-Userrule all -Userrule nocheck	Specifies whether the $$check() function performs user-defined checks on a symbol. The value of $get_check_symboluserrule() is the default.
userrulefile "filename"	-UserruleFile "filename"	Specifies the pathname to a file containing user-defined checks for individual internal state variables when the userrule argument is @all. The default pathname is specified by $get_symboluserrules_file().

Table 2-3 lists the $$check() options available in the Schematic Editor. These options are in addition to those listed in Table 2-1, on page 2-145. Required check category names are shown in bold font.

Table 2-3. Check Options in Schematic Editor

Category **Function Syntax**	**Command Syntax**	**Description**
schematic @schematic @noschematic @autoschemsave	-SChematic -NOSchematic -Autoschemsave	If you request any schematic options, you must specify @schematic. @schematic indicates that all sheets of a schematic are checked. @autoschemsave causes sheets which had not passed check previously but now are successfully checked to be saved. @noschematic (the default) means only the current sheet is checked.
instance @all @errorsonly @nocheck	-Instance all -Instance errorsonly -Instance nocheck	Specifies whether the $$check() function reports errors and warnings about instance properties and the symbol referenced by the instance. The default is the value of $get_check_instance().

Table 2-3. Check Options in Schematic Editor [continued]

Category Function Syntax	Command Syntax	Description
special @all @errorsonly @nocheck	-SPecial all -SPecial errorsonly -SPecial nocheck	Determines if errors and warnings about improper usage of special symbols, such as net connectors, bus rippers, on/off-page connectors, and ports are reported. The value of $get_check_special() is the default.
net @all @errorsonly @nocheck	-Net all -Net errorsonly -Net nocheck	Indicates whether the $$check() function reports errors and warnings about net names, properties, and usage. The default is the value of $get_check_net().
frame @all @errorsonly @nocheck	-FRame all -FRame errorsonly -FRame nocheck	Determines if errors and warnings about frame construction, properties, and usage are reported. The default is the value of $get_check_frame().
parameter @all @errorsonly @nocheck	-PArameter all -PArameter errorsonly -PArameter nocheck	Determines if all variables required to evaluate property values on a sheet are reported at check time. The value of $get_check_parameter() is the default.

Table 2-3. Check Options in Schematic Editor [continued]

Category **Function Syntax**	**Command Syntax**	**Description**
expression @all @errorsonly @nocheck	-EXpression all -EXpression errorsonly -EXpression nocheck	Specifies whether expression analysis is performed on a sheet. The default is the value of $get_check_expression().
pins @all @errorsonly @nocheck	-PIns all -PIns errorsonly -PIns nocheck	Indicates whether the $$check() function identifies symbol pins left on a sheet. The default is the value of $get_check_pins().
owner @all @errorsonly @nocheck	-OWner all -OWner errorsonly -OWner nocheck	Determines if the $$check() function reports inconsistencies between properties and property owners. The value of $get_check_owner() is the default.
overlap @all @errorsonly @nocheck	-OVerlap all -OVerlap errorsonly -OVerlap nocheck	Indicates whether overlapping instances are reported by the $$check() function. The value of $get_check_overlap() is the default.
notdots @all @errorsonly @nocheck	-NOTDots all -NOTDots errorsonly -NOTDots nocheck	Specifies whether the $$check() function reports not-dot locations. The value of $get_check_notdots() is the default.

Table 2-3. Check Options in Schematic Editor [continued]

Category Function Syntax	Command Syntax	Description
closedots @all @errorsonly @nocheck	-Closedots all -Closedots errorsonly -Closedots nocheck	Specifies whether the $$check() function reports the locations of closedots. The value of $get_check_closedots() is the default.
dangle @all @errorsonly @nocheck	-Dangle all -Dangle errorsonly -Dangle nocheck	Indicates if the $$check() function reports the locations of dangling nets and pins. The value of $get_check_dangle() is the default.
initprops @all @errorsonly @nocheck	-INItprops all -INItprops errorsonly -INItprops nocheck	Determines if the $$check() function reports nets having two different globals attached, mismatched Init property values, or a forcing Init property, but no global. The value of $get_check_initprops() is the default.
userrule @all @nocheck	-Userrule all -Userrule nocheck	Specifies whether user-defined checks are executed. If set to @all, the file used is specified by the userrulefile argument. If userrule is not specified, the default is the value of $get_check_userrule.

Table 2-3. Check Options in Schematic Editor [continued]

Category **Function Syntax**	**Command Syntax**	**Description**
schematicinterface @all @errorsonly @nocheck	-SChematicINTerface all -SChematicINTerface errorsonly -SChematicINTerface nocheck	Specifies whether errors and warnings are reported for interfaces for all sheets of the schematic. @schematic must be specified. The default is the value of $get_check_schematicinterface().
schematicspecial @all @errorsonly @nocheck	-SChematicSpecial all -SChematicSpecial errorsonly -SChematicSpecial nocheck	Determines if errors and warnings about improper usage of special symbols that connect multiple sheets in the schematic are reported. @schematic option must be set. The default is the value of $get_check_schematicspec ial().
schematicinstance @all @errorsonly @nocheck	-SChematicInstance all -SChematicInstance errorsonly -SChematicInstance nocheck	Determines if instances on all sheets of the schematic are checked for unique names. This is valid only if @schematic is specified. The default is the value of $get_check_schematicinstance().

Table 2-3. Check Options in Schematic Editor [continued]

Category **Function Syntax**	**Command Syntax**	**Description**
schematicnet @all @errorsonly @nocheck	-SChematicNet all -SChematicNet errorsonly -SChematicNet nocheck	Specifies whether nets on all sheets of the schematic are checked for unique names and for shorted nets. This is only valid if @schematic option is set. The value of $get_check_schematicnet() is the default.
schematicuserrule @all @nocheck	-SChematicUserrule all -SChematicUserrule nocheck	Specifies whether user-defined checks are performed on multi-sheet schematics. This is valid only if @schematic is set. The file containing the checks is specified by the schematicuserrulefile option or the value of $get_check_schematicuserrule().
userrulefile "filename"	-UserruleFile "filename"	Specifies the pathname to a file that contains user-defined checks for individual internal state variables when the userrule argument is @all. The default pathname is specified by $get_userrules_file().

Table 2-3. Check Options in Schematic Editor [continued]

Category Function Syntax	Command Syntax	Description
schematicuserrulefile "filename"	-SChematicuserruleFile "filename"	Specifies the pathname to a file that contains user-defined checks for all sheets of the schematic. This is valid only if @schematic is specified and the schematicuserrule option is set to @all. The default is the value of $get_schematicuserrules_file().
annotations ⇒ @all @errorsonly @nocheck	-Annotations all -Annotations errorsonly -Annotations nocheck	Specifies whether $$check() reports warnings for annotations to fixed or protected properties and whether $$check() warns about unattached annotations. The value of $get_check_annotations is the default.

Example(s)

In the following example, symbol checking is set to errors only. The results are displayed in a popup window, but are not saved to a file.

```
$$check( , , @window , , @nofile, @errorsonly, @errorsonly, @errorsonly)
```

In the next example, the schematicuserrule check is set to @all, and schematic checking will be performed on all sheets associated with the schematic.

```
che -schematic -schematicuserrule all
```

Related Functions

$$report_check()
$$setup_check_sheet()
$setup_check_schematic()
$setup_check_symbol()

Related Internal State Functions$set_check_annotations()

$set_check_filemode()
$set_check_filename()
$set_check_transcript()
$set_check_window()
$set_check_userrule()
$set_userrules_file()
$set_check_closedots()
$set_check_dangle()
$set_check_expression()
$set_check_pins()
$set_check_frame()
$set_check_initprops()
$set_check_instance()
$set_check_net()
$set_check_notdots()
$set_check_overlap()
$set_check_owner()
$set_check_parameter()
$set_check_schematicinterface())
$set_check_schematicinstance()
$set_check_schematicnet()
$set_check_schematicspecial()
$set_check_schematicuserrule()
$set_check_special()
$set_check_symbolbody()
$set_check_symbolpin()
$set_check_symbolspecial()
$set_check_symboluserrule()
$set_schem_check_mode()
$set_schematicuserrules_file()
$set_symboluserrules_file()
$set_check_annotations()

$clear_unattached_annotations()

Scope: schematic
Window: Schematic Editor

Usage

$clear_unattached_annotations()

CLEar UNattached Annotations

Miscellaneous > Clear Unattached Annotations:

Description

The $clear_unattached_annotations() function clears all unattached annotations associated with this schematic the next time the sheet is saved. This function is only available when editing in the context of a Design Viewpoint.

Example(s)

$clear_unattached_annotations()

Related Functions

None.

$close_selection()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$close_selection()

CLOse SELection

Description

Explicitly closes the current selection set.

Example(s)

In the following example, the current selection set is closed after several selections have been made in the active window.

```
$select_area([[2.1, -0.3], [3.8, 5.3]], , , ,  @instance)
$select_vertices(@nets, [[0.8, 0.2], [4.5, 6.8]])
$close_selection()
```

Related Functions

$reopen_selection()

$reselect()

$close_window()

Scope: bed_window, da_report, da_window, hdtxt_area, hdtxt_compile_area, schematic, and symbol
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$close_window(save_action)

CLOse WIndow save_action

(Window) Close

Description

Closes an active window.

If the window is the last view on a design, you are prompted to save the edits made since the last save operation, unless the @discard switch is specified.

If you have opened a transcript window on the Design Architect session, you will notice that the function $$close_window() is displayed in the transcript rather than $close_window(). The function, $$close_window() is a function that $close_window() calls. If you replay the transcript, the $$close_window() function will exhibit the same behavior as the $close_window() function.

Arguments

- ***save_action (Action for Unsaved Edits)***

  This argument determines whether any edits on the diagram are saved before closing the window. It must have one of two options:

  @save (-Save): The edits on the sheet are saved.

  ⇒ **@discard** (-Discard): The edits on the sheet are not saved.

Example(s)

The following example displays the function syntax for closing the active window, and saving the contents of the window.

```
$close_window(@save)
```

The next example shows the command syntax for forcing a window to close without saving any changes since the last save.

```
clo wi  -d
```

Related Functions

$save_sheet()
$save_sheet_as()
$save_symbol()
$save_symbol_as()

$compile()

Scope: hdtxt_area and hdtxt_compile_area
Window: VHDL Editor

Usage

$compile(*wait_mode*)

COMpile *wait_mode*

Compile > Compile

Description

Invokes the VHDL compiler using the options specified with the $set_compiler_options() function.

When this function is invoked, a compiler status window is displayed which contains a list of any error messages generated by the compiler. If the status window from a previous compilation is still open, a new compiler status window is not created.

While the compiler is executing, the editor remains responsive to user interaction. As error messages are received by the editor, they are added to a scrolling list in the compiler status window. Error messages can be selected one at a time.

The compiler status window includes a button named "Highlight" which, when pressed, scrolls the edit window appropriately and highlights the range of source text indicated by the compiler as responsible for the error. If you double-click on the error message, the responsible text is highlighted.

Once an error message is received by the editor and appears in the compiler status window, subsequent editing does not affect the ability of the editor to highlight the corresponding source text, unless the region to be highlighted is deleted or moved to another location. When it is necessary to highlight text that has been deleted or moved, a new window is created which displays the version of the source originally sent to the compiler. The text responsible for the error message is highlighted in the new window.

For information about other VHDL Editor functions that are described outside this manual, refer to the *Notepad User's and Reference Manual*.

Arguments

- ***wait_mode***

  This argument is used in conjunction with transcripting to product replayable transcripts and can have one of two values:

  @wait (-Wait): Control does not return until the compilation has completed. The compiler status window is updated periodically so that progress can be viewed.

  ⇒ **@nowait** (-NOWait): Control returns immediately. The compiler status window is updated synchronously with compiler progress.

Example(s)

The following example compiles the VHDL source object in the active VHDL window.

```
$compile()
```

Related Functions

$cancel_compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$connect()

Scope: schematic
Window: Schematic Editor
Prerequisite: If the connection_type is set to @selected, at least one net vertex or instance must be selected.

Usage

$connect(connection_type)

CONnect connection_type

(Schematic) Add > Connections > Connect All
(Schematic) Mixed Selection > Connections > Connect Selected | Connect All
(Schematic) Net > Connections > Connect Selected | Connect All
(Schematic) Edit > Edit Commands > Connections >

Description

Forces connections of net segments and pins.

After connection, a junction dot is displayed in place of the not-dot only if a three-way or more connection occurs. A not-dot on a vertex indicates that not all segments passing through that vertex are connected. The not-dot is only for informational purposes; it is not considered to be an electrical object on the sheet.

If @select is assigned to connection_type, selected vertices and selected instance pins are connected (not-dots disappear). If @all is assigned, all unconnected junctions are connected.

Arguments

- **connection_type (Type)**

  This argument specifies the type of connections. Connection_type must have one of the following values:

  @selected (Selected): Connect all selected instance pins and vertices.

  @all (All): Connect all unconnected junctions on the sheet.

Example(s)

The following $connect() function example shows the values of the arguments when connecting all disconnected junctions on the currently active schematic sheet.

```
$connect(@all)
```

The next example displays the command syntax for connecting all selected disconnected junctions on the currently active sheet.

```
con selected
```

Related Functions

$connect_area()
$disconnect()
$disconnect_area()
$add_bus()
$add_wire()

$connect_area()

Scope: schematic
Window: Schematic Editor

Usage

$connect_area([connect_area])

CONnect ARea [connect_area]

(Schematic) Add > Connections > Connect Area
(Schematic) Mixed Selection > Connections > Connect Area
(Schematic) Net > Connections > Connect Area
(Schematic) Edit > Edit Commands > Connections > Connect Area

Description

Forces connections of net segments and pins in the specified rectangular region.

After connection, a junction dot is displayed in place of the not-dot only if a three-way or more connection occurs.

If the area is just a single location, the closest unconnected object is connected. This allows point connect of close-dots. A diagonal segment close-dot may connect to the closest vertex object within snapping distance.

A not-dot on a vertex indicates that not all segments passing through that vertex are connected. The not-dot is only for informational purposes; it is not considered to be an electrical object on the sheet.

Arguments

- **connect_area (Area)**

  This argument defines an area indicating the selection rectangle specified in user units.

Example(s)

The following is an example of the $connect_area() function when connecting all disconnected junctions in a specified area on the currently active schematic or sheet.

```
$connect_area([[-1.25, -.75], [-0.75, -1.25]])
```

Related Functions

$add_bus()
$add_wire()
$connect()
$disconnect()
$disconnect_area()
$setup_page()

$convert_to_comment()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical object or symbol body object must be selected.

Usage

$convert_to_comment()

CONvert TO Comment

Edit > Convert to Comment

Description

Converts selected electrical or symbol body objects into non-instantiable comment graphics.

On a schematic sheet, this function changes selected electrical objects into comment text and graphics. For example, nets become lines, instances lose electrical connotation, and they become simply the displayed graphics of boxes and lines. Visible property values become comment text at their current location. All other property information is deleted. Vertices are not converted. Attached pins are duplicated as comment text and the original property is retained.

On a symbol, this function changes selected symbol text and graphics into symbol comments "internal" to the definition and non-instantiable. The comment can be made instantiable graphics again through the $remove_comment_status() function. However, the $remove_comment_status() function does not restore any electrical information that was previously on the symbol (for example, pins).

If an object that owned property text (before being converted) is moved, the text no longer moves with that object.

Example(s)

The following example creates symbol text and then converts that symbol text to comment text.

```
$open_symbol("my_home/comp_1", "comp_1")
$add_text("This is comment text.", [7.1, 0.5])
$convert_to_comment()
```

The following example shows the command syntax for converting an instance on the active schematic sheet to a comment.

```
ope sh  "my_home/design_comp"  "schematic"  "sheet1"
add in  "$MGC_GENLIB/nand3"  "nand3"  [0, 0]  -clear
con to co
```

Related Functions

$remove_comment_status()

$show_comment()

$hide_comment()

$copy()

Scope: da_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor
Prerequisite: At least one electrical object or comment object must be selected in the active window.

Usage

$copy([location], *flip_type, pivot_increment, rotate_increment selection_mode*)

COPy [location] *-Flip flip_type -Pivot pivot_increment -Rotate rotate_increment -Selection selection_mode*

Most popup menus > Copy > Selected
Most popup menus > Copy > Flipped > Horizontal | Vertical
Most popup menus > Copy > Pivoted > -90 | 90 | 180
Most popup menus > Copy > Rotated > -90 | 90 | 180

Description

Duplicates all selected objects, including both electrical and comment objects.

A copied object is positioned such that the object's origin (a reference point usually located at the bottom-left of the object) appears at the specified location. When more than one object is selected, the left-most, lowest origin among the selected objects is placed at the specified location. Left-most takes precedence over lowest.

Objects can be copied from one window to another. Copying schematics into a symbol window automatically creates symbol graphics (a warning is issued). Displayed properties of electrical objects are copied as properties of the new symbol graphics objects. Copying symbol graphics into a schematic window creates comment objects. You can copy an object from a read-only window to an editable window.

When copying from a symbol window to a symbol window, or from a schematic window to a schematic window, invisible properties of any copied electrical objects are copied to the new electrical objects with the visibility switch set to @hidden. When copying from a symbol window to a schematic window, or from a schematic window to a symbol window, invisible properties are not copied.

If only comment text and graphics are selected, the objects may be copied so that the basepoint is placed off the pin-spacing grid. If any electrical objects are selected, the $copy() function will snap the basepoint onto the pin-spacing grid. The basepoint of the drag image is at the cursor location.

The $copy() function preserves the sheet connectivity. If the copy results in copied segments being placed on existing pins or vertices, or in copied pins or vertices falling on existing net segments, not-dots will result at the vertex locations.

In addition to not-dots, which indicate that two or more vertices share the same location but are not connected, Design Architect sometimes displays a close-dot. These close-dots appear where any nets are close to another vertex but do not share the same location. If you zoom in such that you can see that the vertex and the nets are not touching (connected), the close-dot disappears. Close-dots appear only with diagonal segments.

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box.

If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

When you copy objects with properties, the copied property values are flagged as Value_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value Modified property is also Attribute_Modified. Property values that are marked Value_Modified can be unmarked using the $mark_property_value(@notmodified) function. For information about value and attribute modified properties, refer to the $open_sheet(), $update(), and $replace() functions.

If the $copy() function is used interactively, a ghost outline of the selected object(s) appears in the window while the copied objects are in transit, in response to any graphic device movement. The ghost outline appears when you press the

Select mouse button, and the object(s) are copied to the location where the mouse button is released.

When you select the copy icon from the palette menus, you can copy the selected object(s) several times. To exit out of copy mode, press the Cancel button on the still-displayed prompt bar.

If the value of the autoselect internal state variable is @on, or the selection_mode option is @open, the copied objects are selected after this function is completed. Only one of the @flip, @pivot, and @rotate switches can be specified. If more than one is specified, an error is reported.

Arguments

- **location (At Location)**

  Defines the coordinates indicating the location on a sheet where the copy of the selected object is to be placed, specified in user units. Alternatively, you can specify the location by moving the ghost outline of the selected objects and clicking the Select mouse button at the desired location.

- ***flip_type (Flip)***

  Specifies one of the following values to indicate how selected objects are to be inverted:

  ⇒ **@noflip**: Selected object is not inverted.

  @horizontally: Invert left-to-right or right-to-left, depending on the basepoint location.

  @vertically: Invert top-to-bottom or bottom-to-top, depending on the basepoint location.

- ***degree_increment (Pivot)***

  An integer specifying degrees to pivot. This argument pivots each selected object based on its own origin. If text or electrical objects are being rotated, the value must be a multiple of 90. Any value is legal for rotating comment graphics. Positive values pivot items counter-clockwise; negative values pivot items clockwise. The default is 0.

- ***degree_increment (Rotate)***

  An integer specifying degrees. This argument rotates selected objects or text around the basepoint of the group of selected objects. If text or electrical objects are being rotated, the value must be a multiple of 90. Any value is legal for rotating comment graphics. Positive values rotate items counter-clockwise; negative values rotate items clockwise. The default is 0.

- ***selection_mode (Selection Mode)***

  Controls the state of the selection set after objects are copied. The value can be either: ⇒ **@open** or **@close**. Most userware paths such as menu items and function key definitions call $copy() with @close.

Example(s)

The following $copy() function example shows the values of the arguments when copying and flipping an object or a group of objects from one location in the currently active window to another location in the same window.

```
$copy([-2.5, 0.75], @vertically)
```

The next example shows the command syntax for copying and rotating an object or group of objects from one location to another in the same window.

```
cop  [1.5, 3.5]  -rotate 90
```

Related Functions

$close_selection()
$delete()
$flip()
$is_selection_open()
$mark_property_value()
$move()
$pivot()
$redo()
$flip()
$undo()

$copy_multiple()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$copy_multiple(count, placement)

COPy MUltiple

Most popups > Copy > Copy Multiple

(Schematic) Edit > Edit Commands > Edit Operations > Copy > Copy Multiple
(Symbol) Edit > Edit Operations > Copy > Copy Multiple

Description

Creates multiple copies of selected objects and places the copies in a line.

You specify the location of the first copy; the offset between the basepoints of the original object(s) and the first copy determines the placement of the remaining copies.

If the selected objects include objects which must be snapped to the grid, but the offsets do not result in a pin-gridded location, the copied objects will snap to the nearest pin grid. If the selected objects also include objects which need not be pin-gridded, the relative positions of the copied objects will be distorted.

This is a single undoable function. The edit window is frozen while the selected objects are being copied. The last copy remains selected after the copy operation.

Arguments

- **count (Count)**

  An integer specifying how many copies to make of the selected objects.

- **placement (Placement)**

  Specifies the location of the first copy.

Example(s)

The following example shows the function syntax to create three copies in a line beneath the original selected object.

```
$copy_multiple(3, [11.25, -50.9375, "Schematic#1.0"]);
```

Related Functions

$copy() $copy_to_array() $set_grid()

$copy_to_array()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$copy_to_array(xcount, ycount, xoffset, yoffset)

COPy TO Array

Most popups > Copy > To Array

(Schematic) Edit > Edit Commands > Edit Operations > Copy > To Array
(Symbol) Edit > Edit Operations > Copy > To Array

Description

Creates multiple copies of the selected objects.

The array contains the number of columns specified by xcount, and the number of rows specified by ycount. The distance between columns is specified by xoffset, and the distance between rows is specified by yoffset. Distances are measured in user units.

If the selected objects include objects which must be snapped to the grid, but the offsets do not result in a pin-gridded location, the copied objects will snap to the nearest pin grid. If the selected objects also include objects which need not be pin-gridded, the relative positions of the copied objects will be distorted.

This is a single undoable function. The edit window is frozen while the selected objects are being copied. The last copy remains selected after the copy operation.

Arguments

- **xcount (X Count)**

  Specifies the number of columns in which to copy the selected objects.

- **ycount (Y Count)**

  Specifies the number of rows in which to copy the selected objects.

- **xoffset (X Offset)**

  A real number specifying the distance in user units between the columns of copied objects.

- **yoffset (Y Offset)**

  A real number specifying the distance in user units between the rows of copied objects.

Example(s)

The following example shows the function syntax to create three rows of two columns of the selected objects. The rows are 2 user units apart, and the columns are 1 user unit apart.

```
$copy_to_array(2, 3, 1.0, 2.0)
```

Related Functions

$copy() $copy_multiple() $set_grid()

$create_entity()

Scope: symbol
Window: Symbol Editor

Usage

$create_entity("*source_path*", *package_type*)

CREate ENtity *source_path package_type*

(Symbol) Miscellaneous > Create VHDL Entity

Description

Creates a VHDL entity description that matches the symbol in the active window.

This entity description is displayed in a new VHDL Editor window, and is given the symbol name with the extension "_entity". All ports are designated as type qsim_state.

After you have created a symbol body, added pins, and added the Pintype properties on each pin, choose the **Miscellaneous > Create VHDL Entity** menu item. The resulting source code is displayed in a VHDL Editor window for you to edit or compile. For more information refer to "Create Entity Declaration From Symbol" in the *System-1076 Design and Model Development Manual*.

Arguments

- ***source_path***

  An optional string that specifies the path to the VHDL file created. The default is the pathname to the active symbol, with the suffix "_entity" appended.

- ***package_type***

  An optional name that specifies the type of VHDL package to use. Possible values:

  ⇒ **@ieee** (-Ieee): Use the IEEE 1164 package.

  @mgc (-Mgc): Use the System 1076 package.

Example(s)

The following transcript creates a symbol named "my_model" and then creates a VHDL entity named "my_model_entity" from the symbol.

```
// ope sy $DESIGNS/my_model
        $$open_symbol("$DESIGNS/my_model", "", @editable, "");
// 9: Version 1 of component "$DESIGNS/my_model" has been written
                                                (from: Capture/gdc_do_mgr/note 81)
$set_active_window("Symbol#1");
        $add_rectangle([[-1, 1, "Symbol#1.0"], [1, -1, "Symbol#1.0"]]);
        $add_pin("W", [2, 0, "Symbol#1.0"], [0.5, 0, "Symbol#1.0"]);
        $add_line([[1, 0, "Symbol#1.0"], [2, 0, "Symbol#1.0"]]);
        $add_property("PINTYPE", "IXO", [1.5, -1.5, "Symbol#1.0"], void,
                                        @hidden, @instance, @variable, @graphic);
  $create_entity();
```

Related Functions

$create_sheet()
$get_pathname()
$get_pin_handles()
$get_property_names()
$open_vhdl()

$create_pin_list()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$create_pin_list(view_name, *outputpinlist*, *replace*, *sort*, *edit*)

Description

Scans the specified schematic for ports and returns a vector of pin information or places the pin information into a pin list file.

This pin information is used to generate a symbol with the $generate_symbol() function. For detailed information on the pin list file format, refer to the "Pin List File Format" appendix in this manual.

Arguments

- **view_name (Schematic Path)**

  A string data type that specifies the pathname of a schematic to scan for ports.

- ***outputpinlist* (Pin List File)**

  An optional string data type that specifies the pathname to an output pin list file. If this string is not specified, the function returns a vector.

- ***replace* (Replace existing pin list file)**

  An optional name data type that specifies whether or not to replace an existing pin list file with the same name: **@replace** or ⇒ **@noreplace**.

- ***sort* (Sort Pins)**

  An optional name data type that specifies whether or not to sort the pin names alphabetically: **@sort** or ⇒ **@nosort**.

- ***edit* (Edit Pin List)**

  An optional name data type that specifies whether or not to open the pin list file for edit: **@edit** or ⇒ **@noedit**.

Returned Value

One of two possible values:

VOID The pin list was written to a file or the specified schematic is not valid.

vector A two-dimensional vector. The first element in the vector is a vector containing one element for each pin. The format of this vector is:

["pinname", label, "porttype", width, side, position_on_side, "bubble", "edge_sense"]

The second element in the vector is a vector containing schematic view information. The format of this vector is:

["view_name", "view_type", view_version]

A sample returned vector is as follows:

```
[[["Q0", void, "output", 0, 1, -1, "no_bubble", "no_edgesense"],
  ["P0", void, "input", 0, 3, -1, "no_bubble", "no_edgesense"],
  ["MR", void, "input", 0, 3, -1, "no_bubble", "no_edgesense"],
  ["CLK", void, "input", 0, 3, -1, "no_bubble", "no_edgesense"],
  ["DS", void, "input", 0, 3, -1, "no_bubble", "no_edgesense"],
  ["PL", void, "input", 0, 3, -1, "no_bubble", "no_edgesense"]],
  ["$VENDOR2/designs/small/schematic", "mgc_schematic", 4]]
```

Example(s)

The following example scans the schematic */usr/designs/asic/decode/schematic* for ports and places the sorted list into the file */usr/designs/asic/decode_pins*:

```
$create_pin_list("$DESIGNS/asic/decode/schematic",
                 "$DESIGNS/asic/decode_pins", @replace, @sort)
```

Related Functions

$generate_symbol()

$create_sheet()

Scope: symbol
Window: Symbol Editor

Usage

$create_sheet("*schematic*", "*sheet_name*", replace, height, width, user_units, orientation, make_border)

CREate SHeet "*schematic*" "*sheet_name*" replace height width user_units orientation make_border

(Symbol) Miscellaneous > Create Sheet

Description

Creates a schematic sheet of the size and orientation specified.

It uses the pins of the symbol under edit as the specification of the location and name of the port instances on the created sheet. The relative position of the pins on the symbol is used to position the ports on the sheet by scaling the symbol to fit the sheet size and orientation specified. The schematic sheet is created in the same component that contains the symbol. Setting make_border to @border also creates a comment rectangle border using the height, width, and units specified. Specifying @replace will cause an existing schematic sheet with the same name to be deleted and replaced by the newly created sheet.

When you choose the **Miscellaneous > Create Sheet** menu item, a dialog box is displayed. You can specify sheet height and width and units by selecting one of the standard sheet sizes (A, B, C, D, E, F, A0, A1, A2, A3, A4), or by filling in actual values for height, width and units.

If you have a transcript window open on the session, notice that $$create_sheet() is displayed in the transcript. $create_sheet() calls the function $$create_sheet(). If you replay the transcript, $$create_sheet() will exhibit the same behavior as the $create_sheet() function.

Arguments

- **replace**

  Specifies whether an existing schematic sheet having the same schematic name and sheet name will be replaced by the new sheet. The two possible values are **@replace** and ⇒ **@noreplace**.

- **height**

  A real number specifying the height of the sheet in user units. The default sheet height is 11.0 inches.

- **width**

  A real number specifying the width of the sheet in user units. The default sheet width is 8.5 inches.

- **user_units**

  Specifies units of measurement for the sheet. The possible values are ⇒ **@inch**, **@cm**, **@mm**, and **@pin**.

- **orientation**

  Defines the sheet orientation. The value can be **@portrait** or ⇒ **@landscape**.

- **make_border**

  Specifies whether to create a comment border around the sheet using the size and orientation specified. The value can be **@border** or ⇒ **@noborder**.

- ***schematic***

  Specifies the name of the schematic to be created in the component container. The default is "schematic".

- ***sheet_name***

  Specifies the name of the sheet to be created. The default is "sheet1".

Example(s)

The following example creates a new schematic sheet for the symbol in the active window. The sheet is 8.5 by 11 inches with no border, and it replaces the existing sheet.

```
$create_sheet(,, @replace, 11.0, 8.5, @inch, @portrait, @noborder)
```

Related Functions

$create_entity()

$generate_symbol()

$create_symbol()

Scope: schematic
Window: Schematic Editor

Usage

See $generate_symbol().

Description

Refer to the description of the $generate_symbol() function.

Beginning with the V8.4_1 release, $create_symbol() calls the $generate_symbol() function. The $create_symbol() function is provided to allow backward compatibility with userwrare written for previous versions of Mentor Graphics software. All new userware should call the $generate_symbol() function directly.

Related Functions

$open_symbol()
$generate_symbol()
$report_object()
$revalidate_models()

$cs_end_edit_symbol()

Scope: symbol (Component Status Personality Module)
Window: Symbol Editor
Prerequisite: The environment variable $MGC_COMPONENT_STATUS must be defined to show that the Component Status tool is running. If the variable is not defined, a note is transcripted to inform you that the save was done but the component status was not altered.

Usage

$cs_end_edit_symbol(*force*)

END EDit Symbol *force*

(Symbol) Edit > End Edit Symbol

Description

Terminates the symbol edit-in-place mode, which was invoked with the $begin_edit_symbol() function.

If the symbol has not been checked successfully, an error message is issued. If the symbol has been correctly checked, symbol graphics disappear from the schematic, and you return to the original editor that you were in.

If the symbol was opened on a selected instance, all instances of the symbol on the schematic sheet are updated (using the -auto switch) to reflect any changes.

If the symbol was not changed, $end_edit_symbol() appears in the transcript. If the symbol was changed and requires a save, the transcript will show either $set_component_status() or $update_component_status() which are Component Status functions.

Arguments

- **end_action (Force)**

  This switch can have one of the following two values:

  @force (-Force): Indicates that any unsaved changes should be discarded and the edit-in-place session terminated without confirmation.

  ⇒ **@noforce** (-NOForce): Indicates that if edits have been made but not saved, you are prompted with a "Save changes?" dialog box. Answering "yes" writes edits to disk before closing the symbol. If you answer "no", the changes are discarded before closing the symbol.

Example(s)

The following example displays the function syntax for ending the symbol edit-in-place mode, not saving any changes since the last save.

```
$cs_end_edit_symbol(@force)
```

Related Functions

$cs_save_symbol() $cs_save_symbol_as()

$cs_save_sheet()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: The environment variable MGC_COMPONENT_STATUS must be defined to show that the Component Status tool is running. If the variable is not defined, a note is transcripted to inform you that the save was done but the component status was not altered.

Usage

$dha_save_sheet([*register_interfaces*], [*unregister_interfaces*], [*add_labels*], [*remove_labels*])

SAVe SHeet *-Register* [*register_interfaces*] *-UNRegister* [*unregister_interfaces*] *-Label* [*add_labels*] *-UNLabel* [*remove_labels*]

(Schematic) File > Save Sheet > Default Registration | Change Registration/Label

Description

Saves the schematic sheet being edited and updates the component status.

This function is an enhanced version of $save_sheet(). When the data is written, this function calls the iDM function $$get_object_property_value() to check the status of the $component_type property. Based on that value, it calls either $set_component_status() or $update_component_status(), which are Component Status functions.

This function does not transcript its own name. It will first transcript a call to $save_sheet(), then either $set_component_status() or $update_component_status() which are Component Status functions.

Arguments

- ***register_interfaces (Add Registration to Interfaces)***

  This vector of text strings identifies interface names. Schematic sheets can be registered with multiple interfaces.

- ***unregister_interfaces (Delete Registration From Interfaces)***

  These text strings specify interface names from which to delete the registration of the active sheet before registration with new interfaces.

- ***add_labels (Add Labels)***

  These text strings identify labels to add to the sheet model when it is registered with the interfaces specified in the register_interfaces argument.

- ***remove_labels (Remove Labels)***

  These text strings identify registration labels to remove from the sheet model. The deletion of labels takes place before the addition of new labels.

Example(s)

The following example is displayed in function syntax. This example saves the schematic, *your_home/da/my_lib/add_det*, registers it with the "add_det" interface, and adds another label, "schematic_new" to the list of labels.

```
$open_sheet("your_home/da/my_lib/add_det", "schematic_new", "sheet1")
$cs_save_sheet( ["add_det"], , ["schematic_new"])
```

In the next example, the $cs_save_sheet() function is displayed in command syntax. (The proper function is called because the Component Status tool is running.) This example saves the schematic, *your_home/da/my_lib/design_1*, and registers it with the "design_mgc" interface. No others labels, besides the default labels, are added.

```
ope sh  "your_home/da/my_lib/design_1"   "schematic"   "sheet1" sav sh  -r
["design_mgc"]
```

Related Functions

$cs_save_sheet_as()
$cs_save_symbol()
$cs_save_symbol_as()
$save_sheet()

$cs_save_sheet_as()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: The environment variable MGC_COMPONENT_STATUS must be defined to show that the Component Status tool is running. If the variable is not defined, a note is transcripted to inform you that the save was done but the component status was not altered.

Usage

$cs_save_sheet_as("component_name", "*schematic_name*", "*sheet_name*", [*register_interfaces*], [*unregister_interfaces*], [*add_labels*], [*remove_labels*], *replace_mode*)

SAVe SHeet As "component_name" "*schematic_name*" "*sheet_name*" *-REGister* [*register_interfaces*] *-UNRegister* [*unregister_interfaces*] *-Addlabels* [*add_labels*] *-REMovelabels* [*remove_labels*] *replace_mode*

(Schematic) File > Save Sheet As

Description

Saves the sheet being viewed, using the name specified, and updates the component status.

This function first calls $save_sheet_as() to write the schematic sheet to the disk, using the specified name arguments. It then calls the iDM function $$get_object_property_value() to check the status of the component so it can make the correct call to either $set_component_status() or $update_component_status() which are Component Status functions.

When you choose the **File > Save Sheet As** menu item, a dialog box is displayed for you to enter a component name and registration information. An error message is issued if a sheet with the same name already exists and the @replace switch was not specified.

This function does not transcript its own name. The transcript will first show $save_sheet_as(), and will then show either $set_component_status() or $update_component_status() which are Component Status functions.

Arguments

- **component_name (Component)**

  This text string specifies the pathname of the component being saved.

- ***schematic_name (Schematic Name)***

  This text string specifies the name of a schematic representation of the component. If schematic_name is not specified, it defaults to "schematic".

- ***sheet_name (Sheet Name)***

  This text string specifies the name of the sheet to be saved. If not specified, the name defaults to "sheet1".

- ***register_interfaces (Add Registration to Interfaces)***

  These text strings identify interface names. Schematic sheets can be registered with multiple interfaces.

- ***unregister_interfaces (Delete Registration from Interfaces)***

  This is a vector of text strings that identify interface names from which to delete the registration of the active schematic sheet. Unregistration occurs before the registration with new interfaces.

- ***add_labels (Add Labels)***

  This argument is a vector of text strings that identify labels to add to the sheet model when registered with the specified interfaces.

- ***remove_labels (Remove Labels)***

  This is a vector of text strings that identify labels to be removed from the active sheet model. The labels are deleted before new labels are added.

- ***replace_mode (Replace Existing Sheet)***

  This argument controls whether an existing sheet of the same name is replaced by the new sheet. The argument can have one of two values: **@replace** (-REPlace) or ⇒ **@noreplace** (-NOREPlace).

Example(s)

In the following example, a new sheet is created and the component status is set.

```
$cs_save_sheet_as("your_home/da/my_lib/nand", "alt_schem", "sheet2")
```

Related Functions

$cs_save_sheet()

$save_sheet_as()

$cs_save_symbol()

Scope: symbol (Component Status Personality Module)
Window: Symbol Editor
Prerequisite: The environment variable MGC_COMPONENT_STATUS must be defined to show that the Component Status tool is running. If the variable is not defined, a note is transcripted informing you that the symbol was saved but the component status was not altered.

Usage

$cs_save_symbol(*update_switch, force_switch, @defaultsym, @defaultifc,* "*interface*", *@unregister*)

SAVe SYmbol *update_switch force_switch -DefaultSym -DefaultIfc -Register* "*interface*" *-UNRegister*

(Symbol) File > Save Symbol > Default Registration | Change Registration | Delete Registration

Description

Saves and updates the component status of the symbol being viewed.

The $cs_save_symbol() function first calls $save_symbol() to write the symbol to the disk. When the data is written, it checks the value of the $component_type property by calling the iDM function $$get_object_property_value(). Based on that value, $cs_save_symbol() then calls either $set_component_status() or $update_component_status() which are Component Status functions.

This function does not transcript its own name. The transcript will show a call to $save_symbol(), then either of the Component Status functions, $set_component_status() or $update_component_status().

Arguments

- ***update_switch (Overwrite Interface?)***

  This switch only has meaning when a successfully checked symbol does not match the interface with which it is registered. It can have one of two values:

  @update (-UPdate): If the symbol contents do not match the currently registered interface, the symbol is saved and the interface is updated to match the symbol. Any other symbol models currently registered with the interface are marked invalid.

  ⇒ **@noupdate** (-NOUPdate): If the symbol contents do not match the interface with which the symbol is registered, that interface is not updated; only the symbol is saved.

- ***force_switch (Force Save If Unchecked?)***

  This switch only has meaning for an unchecked symbol or a symbol that fails check. This argument can have one of two values:

  @force (-Force): If the symbol is unchecked or fails check, the symbol is saved, but the interface is not updated.

  ⇒ **@noforce** (-NOForce): If the symbol is unchecked or fails check, the symbol is not saved.

- ***@defaultsym (Mark Symbol As Default for Interface?)***

  This switch specifies that this symbol is the default symbol for the interface with which it is registered. If the interface already has a default symbol, the symbol being saved becomes the default. If the symbol is not registered andf no interface is specified, the symbol is registered as the default symbol with an interface of the same name as the component leaf name. There can only be one default symbol per interface. The symbol is labeled "default_sym", which will be visible if you execute the $report_interfaces() function.

- ***@defaultifc (Mark This Interface As Default?)***

  This switch specifies that the interface being registered should be marked as the default interface for this component. There can be only one default interface per component.

- ***interface (Register With Interface)***

  This text string is the name of the interface with which to register the symbol. A symbol can be registered with only one interface. If the symbol is currently registered with an interface, its registration changes. If no interface is specified and the symbol is already registered with an interface, the registration does not change.

- ***@unregister (Delete Registration?)***

  This switch removes the symbol registration with an interface.

Example(s)

The following example displays the function syntax for saving the "nand3" symbol in the component *your_home/da/my_lib/nand*. The symbol is registered with the default interface "nand3" (the interface name derived from the symbol name), and marked as the default symbol.

```
$open_symbol("your_home/da/my_lib/nand", "nand3")
$cs_save_symbol( , , @defaultsym , @defaultifc)
```

The next example displays the command syntax. Another symbol is created for the same component as specified in the previous example. This symbol is not the default symbol, but is registered with the default interface for component "nand", which is "nand3". If the Component Status tool is running, the Save Symbol command calls the $cs_save_symbol() function which will call the appropriate functions to set or update the component status.

```
ope sy  "your_home/da/my_lib/nand" "nand2"
sav sy
```

Related Functions

$cs_save_sheet()
$cs_save_sheet_as()
$cs_save_symbol_as()
$save_symbol()

$cs_save_symbol_as()

Scope: symbol (Component Status Personality Module)
Window: Symbol Editor
Prerequisite: The environment variable MGC_COMPONENT_STATUS must be defined to show that the Component Status tool is running. If the variable is not defined, a note is transcripted to inform you that the symbol was saved but the component status was not altered.

Usage

$cs_save_symbol_as("component_name", "*symbol_name*", "*interface*", *@defaultsym*, *@defaultifc*, *replace_mode*)

SAVe SYmbol As "component_name" "*symbol_name*" "*interface*" *-DefaultSym -DefaultIfc replace_mode*

(Symbol) File > Save Symbol As

Description

Saves the symbol being viewed using the name specified, and sets the component status of the symbol.

This function calls $save_symbol_as() to write the symbol to the disk, using the name specified by the component_name and symbol_name. Then it calls the iDM function $$get_object_property_value() to find the value of the $component_type property. Based on that value, the appropriate function is called to either set or update the component status. An error message is issued if symbol_name already exists and the @replace switch was not set.

This function does not transcript its own name. The transcript will first show $save_symbol_as(), and then either $set_component_status() or $update_component_status() which are Component Status functions.

Arguments

- **component_name (Component Name)**

  This text string is the component pathname in which to save the symbol.

- ***symbol_name (Symbol Name)***

  This text string is the name of the symbol. The default is the leaf name of the component.

- ***interface (Interface Name)***

  This is text string is the name of the interface with which to register the symbol. A symbol can be registered with only one interface.

- ***@defaultsym (Mark as the Default Symbol?)***

  This switch designates the symbol as the default symbol model for the interface with which it is registered. If the interface already has a default symbol, this symbol becomes the default. If no interface is specified, the symbol is registered with an interface of the same name as the component leaf name and is designated as the default for that interface. There can only be one default symbol per interface. The label "default_sym" is attached to the symbol, and is visible if you execute the $report_interfaces() function.

- ***@defaultifc (Mark as the Default Interface?)***

  This switch marks the interface with which the symbol is being registered as the default interface for this component. There can be only one default interface per component.

- ***replace_mode (Replace Existing Symbol)***

  This argument controls whether the new symbol replaces an existing symbol of the same name. Choose one of two values: **@replace** (-Replace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

The following function example opens a symbol "nand2" from the component, *your_home/da/my_lib/nand_gates*. The symbol is modified and saved as "nand3", and is registered as the default symbol model for the interface called "nand3". The original nand2 symbol remains unmodified.

```
$open_symbol("your_home/da/my_lib/nand_gates", "nand2")
$cs_save_symbol_as("your_home/da/my_lib/nand_gates", "nand3",
                                                "nand3", @defaultsym)
```

Related Functions

$cs_save_sheet()
$cs_save_sheet_as()
$cs_save_symbol()
$save_symbol_as()

$delete()

Scope:	da_window and hdtxt_area
Window:	Schematic Editor, Symbol Editor, and VHDL Editor
Prerequisite:	At least one electrical, symbol, comment object, or property text must be selected in the active window.

Usage

$delete()

DELete

Most popup menus > Delete

Description

Deletes selected electrical, symbol, comment objects, and property text.

The objects are removed from the design, making them unavailable to the user. These objects can be retrieved through the $undo() function.

For selected objects on a schematic sheet, the $delete() function removes instances, frames, pin vertices, nets, comments, and property text. For selected objects on a symbol, the $delete() function removes graphic primitives, pins, comments, and property text.

If the object being deleted is instantiable graphics on a symbol, all the properties owned by the symbol graphics are converted to graphical logical symbol properties. Thus, these properties will change color to indicate they do not belong to any particular graphic. Therefore, they remain in place and will instantiate in exactly the same way.

When a property is affected by deletion, the property value is flagged as Value_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value Modified property is also Attribute_Modified. Property values that are marked Value_Modified can be unmarked using the **Miscellaneous > Mark Property Value** menu item.

Example(s)

The following example selects all comments on a schematic sheet and then deletes them.

```
$select_area([[-12.3, -10.2], [12.3, 10.2]], @comment)
$delete()
```

Related Functions

$delete_property()
$copy()
$mark_property_value()
$move()
$redo()
$undo()

$delete_interfaces()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$delete_interfaces("component_path", "*interface_names*")

DELete INterfaces "component_path" "*interface_names*"

(Session) File > Delete Interfaces

Description

Deletes empty interfaces from the specified component.

An empty interface is one that has no models registered with it. If no interface names are specified, then all empty interfaces are deleted. If one or more interface names are specified, then each one is deleted if it is empty.

If you try to delete an interface that contains a registered model, you will receive an error message stating that the interface still has registered models, and nothing will be deleted.

Arguments

- **component_path**

  Specifies the pathname to the component that contains empty interfaces to delete.

- ***interface_names***

  Specifies the names of one or more interfaces to delete if they are empty.

Example(s)

The following example shows the transcript from reporting and deleting a specified interface, then reporting again to show the results.

```
$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                    "da_report_file");
//  Reporting: Interfaces
//
//  Interface    ifc1
//    Pin Count 3
//    Registered Models
//      Type          Path
//  Default Interface   ifc2
//    Pin Count 3
//    Registered Models
//      Type          Path
//      mgc_symbol      /pad/test/comp/comp
//                  Labels [ default_sym ]
//
$delete_interfaces("$DESIGNS/test/comp", ["ifc1"]);
//  Note: Version 7 of part $DESIGNS/test/comp/part has been written
                                                (from: Capture/gdc/note 81)
$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                    "da_report_file");
//  Reporting: Interfaces
//
//  Default Interface   ifc2
//    Pin Count 3
//    Registered Models
//      Type          Path
//      mgc_symbol      $DESIGNS/test/comp/comp
//                  Labels [ default_sym ]
//
```

The next example shows the transcript from deleting any empty interfaces from the specified component.

```
$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                    "da_report_file");
//  Reporting: Interfaces
//
//  Interface    ifc1
//    Pin Count 3
//    Registered Models
//      Type          Path
//  Interface    ifc2
//    Pin Count 3
//    Registered Models
//      Type          Path
//      mgc_symbol      $DESIGNS/test/comp/comp
//                  Labels [ default_sym ]
//
$delete_interfaces("$DESIGNS/test/comp", void);
$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                    "da_report_file");
//  Reporting: Interfaces
//
//  Default Interface   ifc2
//    Pin Count 3
//    Registered Models
//      Type          Path
//      mgc_symbol      $DESIGNS/test/comp/comp
//                  Labels [ default_sym ]
```

Related Functions

$report_interfaces()

$save_symbol()

$delete_panel()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$delete_panel("panel_name")

DELete PANel "panel_name"

View > Panel > Delete Panel

Description

Deletes a named panel definition on a schematic or a symbol.

This function only deletes the definition of a panel, not any object(s) within that panel.

Arguments

- **panel_name (Panel Name)**

  The name of the panel to be deleted.

Example(s)

The following example displays the function syntax for deleting the panel "panel1".

```
$delete_panel("panel1")
```

The next example displays the command syntax for deleting the panel "mux_cpu".

```
del pan "mux_cpu"
```

Related Functions

$add_panel()
$hide_panel_border()
$report_panels()
$show_panel_border()
$view_panel()

$delete_parameter()

Scope: schematic
Window: Schematic Editor

Usage

$delete_parameter(parameter_names)

DELete PARameter parameter_names

Check > Parameters > Delete

Description

Cancels the effect of a previous $set_parameter() function for the specified parameter names.

The $$check() function will no longer use the specified parameter names as it attempts to evaluate expressions.

When the menu item is invoked, or the command or function is typed with no arguments from the command line, a dialog box is displayed in the active window.

Arguments

- **parameter_names (Parameter Name)**

  This argument defines a repeating text string specifying the name of the design parameter to delete.

Example(s)

The following example displays the function syntax for deleting the parameter, "my_parm", from the currently active schematic window.

```
$set_parameter("my_parm", "25", "number")
$delete_parameter("my_parm")
```

The next example shows the command syntax for the previous example.

```
set par  "my_parm"  "25"  "number"
del par  "my_parm"
```

Related Functions

$report_parameter()

$set_parameter()

$delete_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$delete_property(property_names)

DELete PRoperty property_names

(Symbol, Schematic) Most popup menus > Delete > Property
(Symbol) Edit > Edit Operations > Delete > Property
(Schematic) Edit > Edit Commands > Edit Operations > Delete > Property

Description

Removes specified property names from selected objects.

On a symbol, if no objects are selected, the specified property is deleted from the logical symbol.

When in the Schematic Editor, this function cannot be used to delete properties on an instance if those properties had their property stability switch set to @nonremovable or @protected.

When the menu item is invoked or the command or function is typed with no arguments on the command line, a dialog box is displayed in the active window.

If the Schematic Editor has been invoked in the context of a design viewpoint, you can delete properties not only in the back-annotation object, but also in the source. Both annotated values and source values are at the same location and use the same attributes (font, height, orientation, and justification). Back-annotated property values are displayed in a distinctive color. Source property values are displayed in the color of their owning object.

The edit mode of the source sheet and the value of the annotation_visibility internal state variable determine how property attributes are affected by the back-annotation object and the source. The following list describes the conditions for which the given rules apply:

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), and back-annotation properties are viewable and editable ($get_annotation_visibility() returns @on):

  If the specified property exists in the back-annotation object and the source, the property is deleted from the back-annotation object.

  If the specified property exists in the back-annotation object but not in the source, the property is deleted from the back-annotation object.

  If the specified property exists in the source only, the property is deleted from the source.

  If the specified property does not exist in the source and back-annotation object, no action occurs.

- If source properties are viewable and editable ($get_source_edit_allowed() returns @on), but back-annotation properties are not viewable and editable ($get_annotation_visibility() returns @off):

  If specified property exists in the source, but may or may not exist in the back-annotation object, the property is deleted in the source.

- If source properties are viewable only ($get_source_edit_allowed() returns @off): If specified property exists in the back-annotation object, but may or may not exist in the source, the property is deleted in the back-annotation object, but not in the source.

- If source properties are viewable only ($get_source_edit_allowed() returns @off and $get_annotation_visibility() returns @off):

  The specified property is not deleted in either the source or the back-annotation object.

Arguments

- **property_names (Property Name)**

  Defines a repeating text string specifying the names of properties to delete from the selected object.

Example(s)

The following example displays the function syntax when deleting the Drive property on the selected objects.

```
$delete_property("drive")
```

The next example shows the command syntax for deleting the "ref" property from selected objects.

```
del pr "ref"
```

Related Functions

$add_property() $delete() $delete_property_owner()

Related Internal State Functions

$set_annotation_visibility()

$delete_property_owner()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$delete_property_owner(*comment, pin, symbolbody, net*, property_names)

DELete PRoperty Owner *comment pin symbolbody net* property_names

Most popup menus > Delete > Property Owner
Edit > Edit Operations > Delete > Property Owner

Schematic Editor Usage

$delete_property_owner(*comment, frame, instance, net, pin,* property_names)

DELete PRoperty Owner *comment frame instance net pin* property_names

Most popup menus > Delete > Property Owner
Edit > Edit Commands > Edit Operations > Delete > Property Owner

Description

Removes a type of object from the legal owner list of given properties.

This function removes a type of object from the legal owner list of given properties specified by a previous $set_property_owner() function. This function does not affect properties already assigned to objects.

If you invoke this function through the menu path or type the command or function with no arguments on the command line, a dialog box appears in the active window.

Arguments

- **property_names (Property Name)**

  Indicates names of properties for which to remove objects from the list of legal property owners.

  All of the following options explicitly remove, or do not remove, an object from the list of legal owners of the named properties. For example, @comment removes comment objects from the list of legal owners of one or

more specified properties; @nocomment specifies that comment objects remain on the list of legal owners for the named properties. The default action is the previous setting during the current editing session or, if this function has not been executed in the current editing session, objects are not removed from the list of legal owners.

- ***comment (Comments)***

  Value may be **@comment** (-Comment) or ⇒ **@nocomment** (-NOComment).

- ***frame (Frames)***

  This argument is valid in the Schematic Editor. Value may be **@frame** (-Frame) or ⇒ **@noframe** (-NOFrame).

- ***instance (Instances)***

  This switch is valid in the Schematic Editor. Value may be **@instance** (-Instance) or **@noinstance** (-NOInstance).

- ***net (Nets)***

  Value may be **@net** (-Net) or ⇒ **@nonet** (-NONet). You can use @net in the Symbol Editor to prevent propagation of properties from a symbol pin to a net vertex.

- ***pin (Pins)***

  Value may be **@pin** (-Pin) or ⇒ **@nopin** (-NOPin).

- ***symbolbody (Symbol Bodies)***

  Valid in the Symbol Editor. Value may be **@symbolbody** (-Symbolbody) or ⇒ **@nosymbolbody** (-NOSymbolbody).

Example(s)

The following example shows the function syntax in the Symbol Editor for deleting the comment property owner from the "mycomp" property after it was previously set in the $set_property_owner() function.

```
$set_property_owner(@comment, @pin, @symbolbody, "mycomp")
...
$delete_property_owner(@comment, , ,  "mycomp")
```

The next example shows the command syntax in the Schematic Editor for deleting net and frame property owners from the following properties: "comp_1", "comp_2", and "comp_3".

```
del pr o -net  -frame  "comp_1"  "comp_2"  "comp_3"
```

Related Functions

$delete_property()
$highlight_property_owner()
$report_default_property_settings()
$set_property_owner()
$unhighlight_property_owner()

$delete_sheet()

Scope:	da_session
Window:	IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite:	There must be no window opened on this sheet in this session. The sheet must not be locked for edit by any other session.

Usage

$delete_sheet("component_name", "schematic_name", "sheet_name", *sheet_type*)

DELete SHeet "component_name" "schematic_name" "sheet_name" *sheet_type*

(Session) File > Delete Sheet

Description

Deletes the specified schematic sheet from the workstation disk.

When the command or function is typed with no arguments from the command line, a prompt bar is displayed in the active window for you to enter the information about the sheet to delete.

Arguments

- **component_name (Component)**

  Specifies the pathname of the component that contains the schematic sheet to delete.

- **schematic_name (Schematic)**

  Specifies the name of the schematic containing the sheet to delete.

- **sheet_name (Sheet)**

  Specifies the name of the sheet to delete.

- **sheet_type (Sheet Type)**

  Specifies whether the sheet is a schematic sheet. The value may be ⇒ **@sheet** (-Sheet) or **@cablesheet** (-Cablesheet).

Example(s)

The following example displays the function syntax for deleting sheet2 of the schematic named "schematic" from the component, "my_design".

```
$delete_sheet("my_design", "schematic", "sheet2")
```

The next example shows the command syntax for the previous example.

```
del sh  "my_design", "schematic", "sheet2"
```

Related Functions

$open_sheet()

$delete_template_name()

Scope: hdtxt_area
Window: VHDL Editor
Prerequisite: The insertion cursor must be placed within the bounding template brackets.

Usage

$delete_template_name()

DELete TEmplate Name

Templates > Delete Name
VHDL Popup Menu > Templates > Delete Name

Description

Deletes a template name from the current line using the rules described in the $select_template_name() function.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Example(s)

In the following example, the template name on the current line is deleted.

```
$delete_template_name()
```

Related Functions

$cancel_compile()
$compile()
$expand_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$direct_to_active_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$direct_to_active_window("ample_string")

Description

Redirects the given AMPLE string to be evaluated in the active window.

This function is helpful when writing your own userware. It provides a method to execute a function in the active window from another scope.

Arguments

- **ample_string**

  This string is evaluated as an AMPLE function in the active window.

Example(s)

Placing this function in the da_context_window scope defines the left mouse button to do a view all in the active window when double clicked.

```
function $key_lmb2(), INDIRECT { $direct_to_active_window("$view_all()"); }
```

Related Information

"Scoping" in the *AMPLE User's Manual*.

$disconnect()

Scope: schematic
Window: Schematic Editor
Prerequisite: If the connection_type is set to @selected, there must be at least one vertex or instance pin selected on the sheet.

Usage

$disconnect(connection_type)

DISconnect connection_type

(Schematic) Add > Connections > Disconnect All
(Schematic) Mixed Selection > Connections > Disconnect Selected | Disconnect All
(Schematic) Net > Connections > Disconnect Selected | Disconnect All
(Schematic) Edit > Edit Commands > Connections >

Description

Forces disconnection of net segments and instance pins at selected junctions and intersections.

When invoked, it disconnects the specified junctions and marks each location with a not-dot. Four-way junctions are not marked with not-dots after disconnection if they are orthogonal (a four-way diagonal has a junction dot).

A not-dot on a vertex indicates that not all segments passing through that vertex are connected. The not-dot is only for informational purposes; it is not considered to be an electrical object on the sheet.

If @selected is assigned to connection_type, selected vertices and instances are disconnected. If @all is assigned, all junctions are disconnected. Not-dots appear at all previously-connected junctions.

Arguments

- **connection_type (Type)**

  Specifies one of the following type:

  @selected (Selected): Disconnect all selected net junctions and instances with vertex junctions.

  ⇒ **@all** (All): Disconnect all net junctions and instances with vertex junctions on the sheet.

Example(s)

The following $disconnect() function example shows the values of the arguments when disconnecting all connected junctions on the currently-active schematic sheet that have been selected.

```
$disconnect(@selected)
```

The next example shows the command syntax for disconnecting all connected junctions.

```
dis all
```

Related Functions

$connect()
$connect_area()
$disconnect_area()
$add_net()

$disconnect_area()

Scope: schematic
Window: Schematic Editor

Usage

$disconnect_area([connection_area])

DISconnect ARea [connection_area]

(Schematic) Add > Connections > Disconnect Area
(Schematic) Mixed Selection > Connections > Disconnect Area
(Schematic) Net > Connections > Disconnect Area
(Schematic) Edit > Edit Commands > Connections > Disconnect Area

Description

Forces disconnection of net segments and instance pins at selected junctions and intersections in a specified area.

When invoked, it disconnects the junctions within the specified rectangular region and marks each location with a not-dot. If the area is just a single location, the closest connected junction is disconnected.

Four-way junctions are not marked with not-dots upon disconnection if they are orthogonal (a four-way diagonal has a junction dot).

A not-dot on a vertex indicates that not all segments passing through that vertex are connected. The not-dot is only for informational purposes; it is not considered to be an electrical object on the sheet. Not-dots appear at all previously-connected junctions.

Arguments

- **connection_area (Area)**

  Defines an area indicating the selection rectangle, specified in user units.

Example(s)

The following example displays the $disconnect_area() function when disconnecting all connected junctions within a specified rectangular region.

```
$disconnect_area([[0.75, 0.25], [1.26, -0.25]])
```

The next example displays the command syntax of the previous example.

```
dis ar  [[0.75, 0.25], [1.26, -0.25]]
```

Related Functions

$connect()
$connect_area()
$disconnect()
$add_net()

$does_selection_exist()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$does_selection_exist()

Description

Returns whether there are any selected objects.

This function returns @true if any objects are selected, and returns @false if no objects are selected.

Example(s)

In the following example, comment objects are selected on the sheet before $does_selection_exist() is invoked.

```
$select_all(@comment)
$writeln($does_selection_exist())
```

In the transcript window, you will see:

```
$select_all(@comment)
$writeln(@true) //  @true
```

Related Functions

$is_selection_open()

$get_select_count()

$end_edit_symbol()

Scope: symbol
Window: Symbol Editor

Usage

$end_edit_symbol(*end_action*)

END EDit Symbol *end_action*

(Symbol) Edit > End Edit Symbol

Description

Terminates the symbol edit-in-place mode, which was invoked with the $begin_edit_symbol() function.

If the symbol has not been checked successfully, an error message is issued. If the symbol has been correctly checked, symbol graphics disappear from the schematic window, and you return to the original editor that you were in. If the symbol was opened on a selected instance, all instances of the symbol on the schematic sheet are updated (using the -auto switch) to reflect any changes.

Arguments

- ***end_action (Force)***

  This argument can have one of two values:

  @force (-Force): Indicates that symbol should be saved before it is closed, regardless of whether or not changes have been made to the symbol.

  ⇒ **@noforce** (-NOForce): Indicates that if edits have been made but not saved, you are prompted with a "Save changes?" dialog box. Answering with a "yes" response writes edits to disk before closing the symbol. This is the default. If you answer "no", no changes are saved before closing the symbol.

Example(s)

The following example displays the function syntax for ending the symbol edit-in-place mode, not saving any changes since the last save.

```
$end_edit_symbol(@force)
```

Related Functions

$begin_edit_symbol()
$$check()
$make_symbol()
$open_symbol()

$expand_template_name()

Scope: hdtxt_area
Window: VHDL Editor
Prerequisite: The insertion cursor must be placed on the line that contains the template to be expanded. The cursor must be positioned either before the template or within the closing brackets.

Usage

$expand_template_name(*"template_name"*)

EXPand TEmplate Name *"template_name"*

Templates > Expand Name
VHDL > Templates > Expand Name

Description

Finds a template name on the current line and replaces it with a corresponding VHDL template.

The algorithm used to determine the template is described on page 2-510. The corresponding template is inserted from the directory specified through the $set_template_directory() function.

If the template name is a subdirectory under the directory specified by the $set_template_directory() function, a dialog box is displayed, containing a scrolling list of all templates in the subdirectory. When you click on a template in the scrolling list and select the OK button on the dialog box, the new template appears in place of the original VHDL template name.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Arguments

- ***template_name***

  Specifies the name of the template to expand. If this argument is not specified, the first template found on the current line is expanded.

Example(s)

In the following example, the cursor is positioned at the beginning of the following VHDL source line.

<wait_statement>

The <wait_statement> VHDL template is expanded after the $expand_template_name() function is invoked.

$expand_template_name()

It expands to:

WAIT [.sensitivity_clause] [.condition_clause] [.timeout_clause] ;

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$export_edif_netlist()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: $MGC_HOME/bin/enwrite must be available. If command files are used, they should be provided by the site EDIF specialist.

Usage

$export_edif_netlist(mg_name, *output_file*, *command_file*, *netlist_type*, *replace_mode*)

EXPort EDif Netlist mg_name *output_file command_file netlist_type replace_mode*

File > Export > Edif Netlist

Description

Translates a Mentor Graphics design into an EDIF file describing that design.

This function invokes *$MGC_HOME/bin/enwrite* using the specified function arguments as input values. When this function is called from a menu, a dialog box is displayed for you to enter the desired arguments.

Arguments

- **mg_name (Input Pathname)**

  This is the pathname to a Mentor Graphics component, schematic model, or design viewpoint. If an existing design viewpoint is specified, that viewpoint is used to create the netlist. If a component or schematic model is specified, the design viewpoint named "default" within the component is used. If a default viewpoint is not found, but a component interface exists, a temporary default design viewpoint is created and used.

- **output_file (Output Netlist File)**

  This is the pathname for the EDIF output file. If no pathname is specified, the netlist is written to the transcript.

- ***command_file (Command File)***

  This is the pathname to a file containing ENWrite commands.

- ***netlist_type (Netlist Type)***

  This switch specifies which type of netlist to create. It can have one of the following values:

  ⇒ **@hierarchical** (-Hierarchical): The design is read and the netlist is written in hierarchical mode.

  @flat (-Flat): The design is read and the netlist is written in flat mode.

- ***replace_mode (Replace)***

  This switch specifies whether to replace an existing EDIF output file. It can have one of the following values: **@replace** (-Replace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

The following example reads the design at *your_home/designs/designA* and creates a hierarchical EDIF netlist using the ENWrite commands in *your_home/designs/designA.config1*. The resulting netlist file is placed in *your_home/designs/designA.edif*, and replaces any existing file of the same name.

```
$export_edif_netlist("your_home/designs/designA",
        "your_home/designs/designA.edif",
            "your_home/designs/designA.config1",  @hierarchical, @replace)
```

The next example shows the command syntax for creating a flat EDIF netlist for the design *your_home/designs/designA* using the ENWrite commands in *your_home/designs/designA.config2*. The resulting file is placed in *your_home/designs/designA.edif.flat*. If a file by that name already exists, the process stops and an error message is displayed.

```
exp ed n "your_home/designs/designA"
        "your_home/designs/designA.edif.flat"
                                    "your_home/designs/designA.config2" -f
```

Related Functions

$export_miflist()
$export_vhdl_netlist()
$import_edif_netlist()

$export_miflist()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: $MGC_HOME/bin/miflist must be available.

Usage

$export_miflist("design_pathname", "output_file", *replace_mode*)

EXPort MIflist "design_pathname" "output_file*"* *replace_mode*

File > Export > Miflist

Description

Creates a Mentor Intermediate Format (MIF) netlist of a design.

This function calls *$MGC_HOME/bin/miflist* to produce a netlist to interface to non-Mentor Graphics applications. MIFlist creates a description of a design which includes properties, instances, and connectivity information.

When you invoke this function from the menu, a dialog box is displayed for you to enter the required pathnames and choose whether to replace an existing output file. If the named output file already exists and you did not specify @replace, the operation stops and an error message is displayed.

Arguments

- **design_pathname (Design Pathname)**

  A string specifying the pathname to the design you want to netlist.

- **output_file (Output File Pathname)**

  A string specifying a file pathname in which to place the output.

- ***replace_mode (Replace)***

  A switch specifying whether to replace an existing MIFlist output file of the same name. Choose either **@replace** (-Replace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

The following example invokes MIFlist to replace an existing netlist using the design *$HOME/my_design*.

```
$export_miflist("$HOME/my_design", "$HOME/my_design/miflist",
                                                    @replace)
```

Related Functions

$export_edif_netlist() $export_vhdl_netlist() $import_edif_netlist()

$export_vhdl_netlist()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: $MGC_HOME/bin/vhdlnet must be available.

Usage

$export_vhdl_netlist("component_path", "output_path", "archive_dir", "control_file", *replace_mode*)

EXPort VHdl Netlist "component_path" "output_path" "archive_dir" "control_file" *replace_mode*

File > Export > VHDL Netlist

Description

Calls $MGC_HOME/bin/vhdlnet to produce a netlist of a VHDL model.

When invoked without arguments or from the menu, a dialog box is displayed for you to enter the required pathnames and choose whether to replace an existing output file having the same name. If the named output file already exists and you did not specify @replace, the operation stops and an error message is displayed.

A temporary file, *danet.tmp_dir*, is created in the current working directory when this netlister is invoked. If the netlist fails, you need to look at this file to find why it failed, then correct the problem, delete the *danet.tmp_dir* file, and reinvoke. If *danet.tmp_dir* exists when you invoke $export_vhdl_netlist(), operation stops and a message is displayed telling you to delete that file.

Arguments

- **component_path**

  Specifies the pathname to the component you want to netlist.

- **output_netlist**

  Specifies the pathname of a file in which to place the output.

- **archive_dir**

  Specifies the pathname of a directory that can be used for writing intermediate data during the netlist process.

- **control_file**

  Specifies the pathname to a file containing information for the netlist process.

- ***replace_mode (Replace)***

  A switch specifying whether to replace an existing file having the specified name: **@replace** (-Replace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

The following example creates a netlist for the currently active VHDL model. If the named output file already exists and you do not specify @replace, the operation stops and an error message is displayed.

```
$export_vhdl_netlist("$DESIGNS/my_design",
        "$DESIGNS/my_design.vhdl_nl",
                                "/tmp", "$DESIGNS/netlist/vhdl.ctl", @replace)
```

Related Functions

$export_edif_netlist() $export_miflist() $import_edif_netlist()

$find_instance()

Scope: schematic (Component Status Personality Module)
Window: Schematic Editor
Prerequisite: A report generated by the $run_erc() function must exist.

Usage

$find_instance(instance_number, design_pathname)

FINd INstance instance_number design_pathname

Analysis > Find Instance

Description

Opens a window on the sheet containing an instance specified by the instance handle found in a report produced by $run_erc(), and zooms in on that instance.

If you choose the **Analysis > Find Instance** menu item, a prompt bar is displayed for you to enter the desired instance handle.

The report produced by the $run_erc() function is stored with the design that was active when the function was called. $find_instance() uses the specified design pathname to locate the correct report file to search for the instance handle.

If $run_erc() has been called during the current session, design_pathname defaults to the design that was active when the function was called. If $run_erc() has not been called during the current session, $find_instance() will look for a report file in the area of the currently active sheet.

Arguments

- **instance_number**

  This string is either the full instance handle ("Ixxx/Ixx"), or a combination of instance handles and Inst properties for the desired instance as displayed in the *erc.report* file. If you assign an Inst property to an instance at any level, that Inst property value is used in the pathname instead of the handle. The instance_number must match the pathname shown in the *erc.report* file.

- ***design_pathname (Design Pathname)***

  This is the pathname of the design used for the call to $run_erc().

Example(s)

The following example opens a window on the sheet containing an instance with the handle I$2312, and zooms in on that instance.

```
$find_instance("/I$2312", "$HOME/my_designs/this_design")
```

Related Functions

$run_erc()

$filter_property_check()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$filter_property_check("*propertyN*")

FILter PRoperty Check "*propertyN*"

Description

Creates a list of properties that are to be excluded from checks.

Excluding properties from checks is especially useful when you have technology files or symbols that contain complex expressions that you do not want to check. Removing these types of properties from the check improves the performance of checking and can eliminate many unwanted warning and error messages. This command is only valid for the current session.

To clear the list of excluded properties, execute this function with no arguments. Each call to this function completely resets the list of excluded properties. There is no way to add or remove properties from the existing list.

Arguments

- ***propertyN (Property)***

  One or more strings that specify the names of properties to omit from the check. Default if omitted: check all properties.

Examples

To exclude the __qp_prim and cap_drive properties from the next check, enter the command:

```
FILter PRoperty Check  "__qp_prim" "cap_drive"
```

Related Functions

$$check()
$$setup_check_sheet()
$setup_check_schematic()
$setup_check_symbol()

$flip()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical, symbol, or comment object must be selected.

Usage

$flip(invert_type)

FLIp invert_type

(Symbol) Symbol Body & Pins > Rotate/Flip > Flip > Horizontal | Vertical
(Symbol, Schematic) Mixed Selection > Rotate/Flip > Flip > Horizontal | Vertical
(Schematic) Instance > Rotate/Flip > Flip > Horizontal | Vertical
(Schematic) Edit > Edit Commands > Edit Operations > Flip > Horizontal | Vertical
(Symbol) Edit > Edit Operations > Flip > Horizontal | Vertical

Description

Flips selected objects (which can be schematics, symbols, or comments) and the location of any selected text about the current basepoint.

Net segments attached to pins on the selected instances "stretch" to the new location. The flip operation preserves the connectivity of the flipped objects. Automatic connections are not made (not-dots may result). Text can be flipped.

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box.

If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

When a property is affected by flipping objects, the property value is flagged as Value_Modified. This flag can affect if and how a property is updated when a

sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $update(), and $replace() functions.

Arguments

- **invert_type (Direction)**

  This argument is a flip indicator that must have one of two values:

  ⇒ **@horizontally** (-Horizontally): Flip left-to-right or right-to-left, depending on the basepoint location.

  @vertically (-Vertically): Flip top-to-bottom or bottom-to-top, depending on the basepoint location.

Example(s)

The following example displays the function syntax for flipping a selected object and inverting it horizontally.

```
$flip(@horizontally)
```

The next example displays the command syntax for flipping a selected object and inverting it vertically.

```
fli  vertically
```

Related Functions

$copy()
$move()
$pivot()
$rotate()

$freeze_window()

Scope: bed_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$freeze_window()

FREeze WIndow

Description

Suspends graphic updates to symbol and sheet windows.

Each time the $freeze_window() function is called a counter is incremented. This counter is decremented with a call to the $unfreeze_window() function. Graphic updates are suspended if the counter is non-zero.

Example(s)

The following example suspends graphic updates to all symbol and sheet windows.

```
$freeze_window()
```

Related Functions

$unfreeze_window()

$generate_schematic()

Scope:	da_session (Component Status Personality Module)
Window:	IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite:	$MGC_HOME/bin/sg and $MGC_HOME/bin/enread must be available.

Usage

$generate_schematic("component_pathname")

GENerate SChematic "component_pathname"

File > Generate Schematic
Session > Generate Schematic

Description

Calls $MGC_HOME/bin/sg to create a schematic from the connectivity model produced by $import_edif_netlist().

The newly created schematic sheet is opened for edit.

Arguments

- **component_pathname**

  Specifies the location of a design connectivity model produced by a call to $import_edif_netlist().

Example(s)

The following example creates a schematic from the connectivity model in *$HOME/my_designs/edif_4*.

```
$generate_schematic("$HOME/my_designs/edif_4")
```

Related Functions

$export_edif_netlist()
$export_miflist()
$export_vhdl_netlist()
$import_edif_netlist()

$generate_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$generate_symbol("component_path", "symbol_name", *source_type*, "source_path", "*source_name*", "shape", [shape_args], *replace*, *save_window*, *activate_symbol*, *sort*, [*body_props*], *pin_spacing*)

(Session) File > Generate > Symbol
(Schematic) Miscellaneous > Generate Symbol

Description

Generates a symbol of a specified shape and size using the pin information provided. Optional arguments determine whether or not a window is opened to display the generated symbol.

For detailed information on the format of the pin list, refer to the "Pin List File Format" appendix in this manual.

Arguments

- **component_path (Component Name)**

  A string data type that specifies the pathname of the component in which the generated symbol is placed.

- **symbol_name (Symbol Name)**

  A string data type that specifies the leaf name of the symbol to be generated. The default is the leaf name of the specified component pathname.

- ***source_type*** **(Choose Source)**

  A name data type that specifies the the type of source information to use for symbol generation. Possible choices are:

  ⇒ **@file**: Use a pin list file created with the $create_pin_list() function as input.

  @schematic: Use a schematic for input. If a schematic window is active, @schematic becomes the default.

- **source_path (Component Name | Pinlist File)**

  A string data type that specifies the pathname to the source object, either a pin list file or schematic. The source_type argument specifies the type of source object.

- ***source_name*** **(Schematic Name)**

  An optional string data type that specifies the name of the schematic. This argument is only valid when the source_type argument is set to @schematic. The default value is "schematic".

- **shape (Shape)**

  A string data type that specifies the shape to generate. Possible values are: "**and**", "**or**", "**xor**", ⇒ "**box**", "**buf**", "**andor**", "**orand**", "**adder**", or "**trap**".

- **shape_args**

  A vector data type that specifies the characteristics of the shape. The format of this argument varies based on the type of shape selected. The default is [2,2]. The following list shows the possible formats in relation to each possible shape:

Shape	shape_args Format
and	[max_body_pins]
or	[max_body_pins]
xor	[max_body_pins]
box	[min_width, min_height]
buf	[min_height]
andor	[num_input_gates]
orand	[num_input_gates]
adder	[min_width, min_input_height, min_output_height]
trap	[min_width, min_input_height, min_output_height]

- ***replace*** **(Replace existing)**

  An optional name data type that specifies whether or not to replace an existing symbol with the same name: **@replace** or ⇒ **@noreplace**.

- ***save_window*** **(Once generated)**

  An optional name data type that specifies whether or not the generated symbol is displayed in a window and/or saved. Possible values are:

  @save: The generated symbol is checked and saved; a window is not opened to display the symbol.

  ⇒ **@window**: The generated symbol is opened for edit.

  @save_window: The generated symbol is checked and saved; a window is opened to allow further modification of the symbol.

- ***activate_symbol*** **(Activate symbol)**

  A optional name data type that specifies if the generated symbol becomes the active symbol and is displayed in the active symbol window: **@active** or ⇒ **@noactive**. The value of the save_window argument must be @save or @save_window for the generated symbol to become the active symbol.

- ***sort*** **(Sort Pins)**

  An optional name that determines whether the pins on the symbol are sorted in alphabetical order: **@sort** or ⇒ **@nosort**.

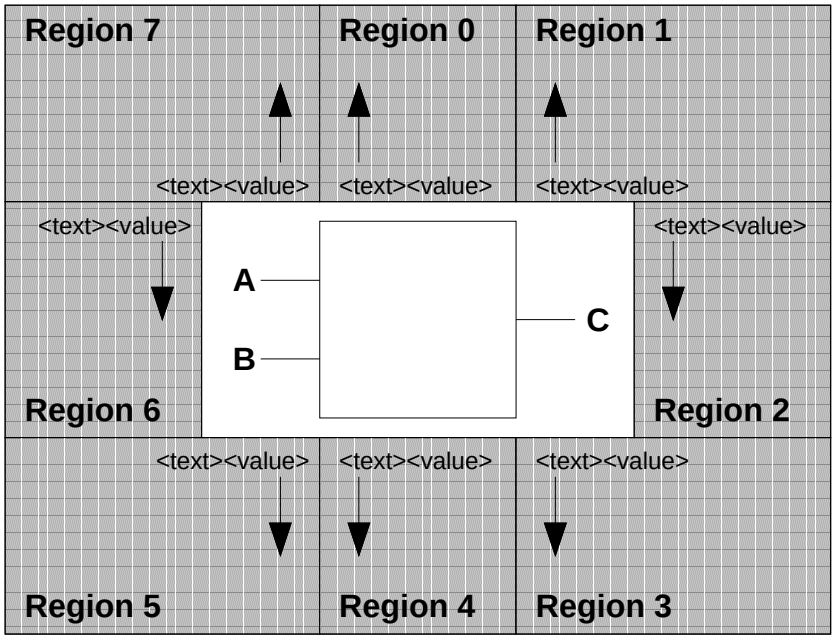
- ***body_props***

  An optional vector of vectors that contains properties to place on the body of the symbol. The format of this argument is:

  [["name", "label", "value", "type", region], [...]]

  The following list defines the fields for each property:

"name"	The property name.
"label"	An optional text label to be inserted as comment graphic text in front of the property value. For example, "<name>=".
"value"	The property value.
"type"	The type of the property value: "string", "number", "expression", "triplet", "tripletcase".
region	An integer (0-7) that indicates the region on the symbol in which to place the property. Region numbering starts a the top-center of the symbol and increases in a clockwise direction.



The default for this argument is an empty vector.

- ***pin_spacing*** **(Pin spacing (in pin grids))**

  An optional integer data type that specifies the number of pin-grid spaces beteween pins. The default is 2.

Returned Value

VOID No component path is specified or an error occurs.

Example(s)

This example generates a symbol from the schematic "/usr2/designs/parts/and/schematic". The symbol is of shape "and" with a maximum of 4 body pins, replaces an existing symbol with the same name, and is not opened for edit.

```
$generate_symbol("/usr2/designs/parts/and", , @schematic,
        "/usr2/designs/parts/and", "schematic", "and", [4], @replace, @save)
```

Related Functions

$create_pin_list()

$get_active_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_active_symbol(*attribute*)

Description

Returns a vector containing one or all of the following attributes: the complete pathname, the version number, the component pathname, the component name, and the symbol name of the active symbol.

If no symbol is active, a message is displayed.

Arguments

- ***attribute***

  Specifies one of the following attributes for which information about the active symbol is desired:

  @alias: Returns an optional user or library specified name that helps the user identify the symbol.

  @component: Returns the pathname to the component.

  @parameters: Returns a vector of property name/value pairs associated with the active symbol.

  ⇒ **@path**: Returns a vector containing the complete pathname, the version number, the component pathname, the component name, and the symbol name of the active symbol.

  @symbol: Returns the name of the symbol within the component.

Example(s)

This example displays the use of the $set/$get_active_symbol() functions. After setting the active symbol with the following function:

```
$set_active_symbol("$PROJ_DA/da/instance", "instance", ["a", "b"],
                                                    "my_new_symbol")
```

Entering the function:

```
$get_active_symbol()
```

or

```
$get_active_symbol(@path)
```

will return something similar to:

```
//  ["$PROJ_DA/da/instance", 15, "$PROJ_DA/da", "instance", "instance"]

$get_active_symbol(@component)
//  "$PROJ_DA/da/instance"

$get_active_symbol(@symbol)
//  "instance"

$get_active_symbol(@alias)
//  "my_new_symbol"

$get_active_symbol(@parameters)
//  ["a", "b"]
```

Related Functions

$add_instance() $replace() $set_active_symbol()

$get_active_symbol_history()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_active_symbol_history(list_info, *num*)

(Active Symbol) Symbol History > List

Description

Returns information related to the active symbol history list.

A history list is a list of previously active symbols. Each item in the list is a vector of the alias, the component pathname, the symbol name, and any instance-specific property name/value pairs.

This function returns a vector of all items in the history list, or a specified item (using @specified with the number of the item), or the number of items in the list, or the item number of the current active symbol. The number of the current active symbol is not necessarily the same as the number of items in the list because you may have reactivated a previous symbol.

Arguments

- **list_info**

  This argument specifies the information to retrieve. It can have one of the following values:

  @all: Returns a vector of all the items in the history list.

  @specified: Returns the item in the history list specified by the optional number argument.

  @count: Returns the number of items in the history list.

  @current_number: Returns the entry number in the history list for the active symbol.

- ***num***

  This argument specifies the number of the item in the history list for which you are requesting information when the list_info argument is @specified.

Example(s)

This example displays the use of the $get_active_symbol_history() function. Executing

```
$get_active_symbol_history(@specified, 1)
```

May return

```
//  ["portin", "$MGC_GENLIB/portin", "portin", [] ]
```

Related Functions

$add_instance()
$set_active_symbol()
$set_active_symbol_history()

$get_apply_edits_needed()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_apply_edits_needed()

Description

Returns @true if there are edits to any edit-in-design-context sheets that have not been applied to the in-memory design through the use of $apply_edits(). Returns @false if no edits have been made that need to be applied.

Arguments

None.

Example(s)

The following line could be used in an AMPLE script:

```
if ($get_apply_edits_needed() == @true)
  $apply_edits();
```

Related Functions

$apply_edits()

$get_attached_objects()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_attached_objects("handle", type, format)

Description

Returns information about object handles of the specified type which are attached to the given object, if any such objects exists.

It returns an empty vector, "[]", if there are no objects of the given type attached to the object.

The following information can be returned depending on the type of handle object specified:

- An instance handle can return information about its nets and pins.
- A net handle can return information about its vertices and pins.
- A pin handle can return information about its vertex and owning instance.
- A vertex handle can return information about its pins and nets.
- A property handle can return information about the object it is attached to.

Arguments

- **handle**

  This argument is a text string defining the handle object.

  type

  This argument specifies one of the following types of objects to return: **@any, @electrical**, **@comment**, **@comment_graphics**, **@comment_text**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@property**, or **@symbolbody**.

- **format**

  The following argument determines the type of information that is returned. It can have one of the following values:

  @presence: Returns @true if any of the specified items are present.

  @count: Returns the count of all the specified items.

  @handles: Returns the handles of all the specified items.

Example(s)

In the following example, the $get_attached_objects() function returns a true or false value depending on whether the instance, I$6, contains pins.

```
$writeln($get_attached_objects("I$6", @pin, @presence))
```

In the transcript you will see:

```
$writeln(@true) //  @true
```

Related Functions

$get_instance_attributes()
$get_instance_handles()
$get_net_handles()
$get_pin_handles()
$get_vertex_handles()

$get_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_attributes("handle", attribute)

Description

Returns a vector containing the location of the specified object.

The location returned is a vector containing the x and y coordinates and the window name.

Arguments

- **handle**

  This argument is a text string specifying a handle, such as I$31 or V$24.

- **attribute**

  This argument can be one of two values:

  @extent: Returns the lower-left and upper-right location of the object.

  @origin: Returns the location of the origin of the object.

Example(s)

In the following example, the $get_attributes() function returns the location of the origin of instance, I$7.

```
$writeln($get_attributes("I$7", @origin))
```

In the transcript you will see:

```
$writeln([2.4, 4.6, "Schematic#2.0"]) //  [2.4, 4.6, "Schematic#2.0"]
```

Related Functions

$get_comment_graphics_attributes()
$get_comment_text_attributes()
$get_instance_attributes()
$get_net_attributes()
$get_pin_attributes()
$get_property_attributes()

$get_auto_update_inst_handles()

Scope: schematic
Window: Schematic Editor

Usage

$get_auto_update_inst_handles()

Description

Returns auto-update information about the sheet in the active window.

The returned vector contains the handles of instances that were either:

- Automatically updated when the sheet was opened using a value other than @noupdate for the auto_update_mode argument, or
- Out-of-date when the sheet was read and need to be updated. The instances were not updated because the value of the auto_update_mode argument to $open_sheet() was @noupdate.

This function only returns valid results immediately after the sheet is opened.

Example(s)

This example displays the use of the $get_auto_update_inst_handles() function:

```
$writeln($get_auto_update_inst_handles())
```

In the transcript you will see:

```
$writeln(["I$12", "I$23", "I$24", "I$25"]) //  ["I$12", "I$23", "I$24", "I$25"]
```

Related Functions

$open_sheet()

$get_basepoint()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_basepoint()

Description

Returns a three-element array specifying the location of the basepoint of the current sheet.

The first element contains the x coordinate of the basepoint. The second element contains the y coordinate of the basepoint. The third element contains the window name.

Example(s)

In the following example, the $get_basepoint() function returns the location of the basepoint of the current sheet.

```
$open_symbol("$MGC_GEN_LIB/design_1", "design_1")
$writeln($get_basepoint())
```

In the transcript you will see:

```
$open_symbol("$MGC_GENLIB/design_1", "design_1", @editable, "")
$writeln([2.4, 4.6, "Symbol#2.0"]) //  [2.4, 4.6, "Symbol#2.0"]
```

Related Functions

$set_basepoint()

$get_bundle_members()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_bundle_members("handle", scan_type, unique)

GET BUndle Members "handle" scan_type unique

Description

Returns a vector containing an ordered list of the specified bundle's members. The function works on both net and pin bundles.

By default, this function returns the set of members currently located in the bundle. Duplicates are not removed, nor are nested bundles scanned. The scan_type and unique arguments can alter this behavior.

Return Value

A vector containing an ordered list of the bundle members.

Arguments

- **handle**

  The handle of the bundle whose members you want to get. For net bundles, the value of this argument must be in the form, "B$xxx", where xxx represents a vaild bundle ID, such as "B$2". For pin bundles, the argument must be in the form , "P$xxx", where xxx represents a vaild pin bundle ID, such as "P$2".

- ***scan_type***

  Type of scan to perform. Valid values include:

  ⇒ **@shallow**: Returns only members located directly in the bundle.

  @deep: Returns all members in the bundle hierarchy that are not bundles themselves.

  @both: Returns all members in the bundle hierarchy.

- ***unique***

  Switch to determine whether to remove duplicate members from the returned vector. Valid values include:

  ⇒ **@notunique**: Returns all members of the bundle

  @unique: Returns only unique members of the bundle.

Example(s)

In the following examples, assume that bundle B$12 is named **A{B{x,y},C{x},z}**. Notice the values returned as different parameters are passed to the function.

```
$get_bundle_members("B$12", @shallow);
// ["B{x,y}", "C{x}, "z"]
$get_bundle_members("B$12", @deep);
// ["x", "y", "x", "z"]
$get_bundle_members("B$12", @both);
// ["B{x,y}", "x", "y", "C{x}, "x", "z"]
$get_bundle_members("B$12", @deep, @unique);
// ["x", "y", "z"]
```

Related Functions

None.

$get_check_status()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_check_status()

Description

Determines if the sheet or symbol was checked and if the sheet or symbol passed or failed the check.

It returns one of three values: @unchecked, @passed, or @failed.

Example(s)

The following example displays the use of the $get_check_status() function. Assume that no errors were found during the last check of a symbol.

```
$check(@all, @nokeep, @window, @notranscript, @nofile)
$writeln($get_check_status())
```

In the transcript, you will see:

```
    $check(@all, @nokeep, @window, @notranscript, @nofile,
                                "da_check_file", void, void, void, void, void, void)
    $writeln(@passed)
//  @passed
```

Related Functions

$$check() $was_saved()

$get_comment_graphics_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_comment_graphics_attributes("handle", comment_attributes)

Description

Returns a vector containing the values of attributes of comment graphics specified by the handle argument and the comment_attributes argument.

The $get_comment_text_attributes() function is provided for comment text. The attribute data is returned in the order they were specified in the attribute list. Each attribute listed has one corresponding return value in the returned vector. Each value may be a vector, such as a location.

The following error is displayed if this function is used incorrectly: "Handle argument is not a comment graphic."

Arguments

- **handle**

  This argument is a text string defining a comment graphic handle, for example, C$142.

- **comment_attributes**

  This is a repeating argument specifying one or more of the following attributes:

  @extent: Returns a two-element vector of the location of the lower-left and upper-right points of the contents of the comment on the sheet. Each location is defined as three values: x and y coordinates, and window name.

  @origin: Returns the coordinates of the origin of the comment graphic.

  @style: Returns the style of lines in the comment graphic. Possible returned values are @solid, @dot, @longdash, and @shortdash.

  @width: Returns the width of the comment graphic lines. Possible returned values are @p1, @p3, @p5, and @p7.

@fill: Returns how the comment is filled, if possible. Possible returned values are @clear, @solid, and @stipple.

@shape: Returns the shape of the comment graphic. The returned value can be @arc, @circle, @dot, @line, @polygon, @polyline, or @rectangle.

@shape_parameters: Returns a vector of the locations of points in the comment graphic object. If the object is a circle, the vector consists of the center location and the length of the radius. If the object is an arc, the vector consists of four vectors (locations of the arc point, end points, and center), and a real number which is the length of the radius.

@line_color: Returns the color of the comment graphic lines.

@fill_color: Returns the background color of the comment graphic.

Example(s)

The following example displays the of $get_comment_graphics_attributes().

```
$writeln($get_comment_graphics_attributes("C$140", @extent, @origin))
```

In the transcript, you will see:

```
$writeln([[[-4, -0.5, "Schematic#1.0"], [-2.75, 0.5, "Schematic#1.0"]],
                                                    [-4, -0.5, "Schematic#1.0"]])
//  [[[-4, -0.5, "Schematic#1.0"], [-2.75, 0.5, "Schematic#1.0"]],
                                                     [-4, -0.5, "Schematic#1.0"]]
```

The next example requests information about an arc.

```
$writeln($get_comment_graphics_attributes("C$10", @shape_parameters,
                                                          @style, @line_color))
```

The transcript will be similar to the following:

```
$writeln([[[[5, 6, "Schematic#1.0"], [3, 4, "Schematic#1.0"],
[7, 4, "Schematic#1.0"], [5, 4, "Schematic#1.0"], 2.0], @shortdash, @cyan]])
//  [[[[5, 6, "Schematic#1.0"], [3, 4, "Schematic#1.0"],
[7, 4, "Schematic#1.0"], [5, 4, "Schematic#1.0"], 2.0], @shortdash, @cyan]]
```

Related Functions

$get_comment_text_attributes()

$get_comment_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_comment_handles(comment_type)

Description

Returns a vector whose elements are the handles of comment objects of the specified type(s) in the active window.

An empty vector, "[]", is returned if the active window does not contain comments of the specified type.

Arguments

- **comment_type**

  This argument specifies the type of comment object for which handles are returned. Select one of the following comment types: **@comment**, **@comment_text**, **@comment_line**, **@comment_graphics**, **@comment_polyline**, **@comment_polygon**.

Example(s)

The following example displays the use of the $get_comment_handles() function.

```
$writeln($get_comment_handles(@comment_graphics))
```

In the transcript, you will see:

```
 $writeln(["C$9", "C$26", "C$27", "C$28"])
//   ["C$9", "C$26", C$27", C$28"]
```

Related Functions

$get_comment_graphics_attributes() $highlight_by_handle()
$get_objects()

$get_comment_text_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_comment_text_attributes("handle", attributes)

Description

Returns a vector of the requested attributes in the order in which you specified them.

Returned coordinate values are real numbers. Each specified attribute's return value takes up one position in the return vector. If the specified handle is not a comment text handle, an error is reported.

Arguments

- **handle**

  This argument is a text string specifying a handle.

- **attributes**

  This argument is a repeating string of values specifying the type of comment text attribute. It can have one or more of the following values:

  @extent: Returns a two-element vector containing the lower-left and upper-right locations of the comment text. Each location is a vector containing three values: the x and y coordinates, and the window name.

  @height: Returns the height of the comment text in user units.

  @justification: Returns the comment text justification with respect to the text origin when placed, copied, or moved on the sheet.

  @origin: Returns the location coordinates of the text.

  @rotation: Returns the degrees the comment text is rotated from standard left-to-right orientation on the sheet.

  @value: Returns the comment text string.

  @flipped: Returns @True if the given comment text is flipped.

Example(s)

In the following example, the $get_comment_text_attributes() function returns the height and justification of the comment text object, C$101.

```
$writeln($get_objects(@selected, @comment_text, @handles))
$writeln($get_comment_text_ attributes("C$101", @height, @justification))
```

The transcript will be similar to the following:

```
$writeln(["C$101"]);
//  ["C$101"]
$writeln([0.1875], [@bottom, @left]]);
//  [0.1875, [@bottom, @left]]
```

The following example retrieves the handle of selected comment text, then uses the $get_comment_text_attributes() function to find the origin and whether the comment text is rotated or flipped.

```
$writeln($get_objects(@selected, @comment_text, @handles))
$writeln($get_comment_text_ attributes("C$15", @origin, @rotation,
                                                          @flipped)
```

The transcript will be similar to the following:

```
$writeln(["C$15"]);
//  ["C$15"]
$writeln([[-1.5, -1, "Schematic#1.0"], 270, @false]);
//  [[-1.5, -1, "Schematic#1.0"], 270, @false] )
```

Related Functions

$get_attributes()
$get_comment_graphics_attributes()
$get_comment_handles()
$get_objects()

$get_comment_visibility()

Scope: schematic
Window: Schematic Editor

Usage

$get_comment_visibility()

Description

Determines the visibility of comment text and graphics.

If @on is returned, comment objects are visible; if @off is returned, comment objects are hidden.

Example(s)

The following example displays the use of the $get_comment_visibility() function.

```
$writeln($get_comment_visibility())
```

In the transcript, you will see:

```
$writeln(@on); // @on
```

Related Functions

$hide_comment()

$show_comment()

$get_compiled_vhdl_source_name()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_compiled_vhdl_source_name("pathname", type)

Description

Returns a vector containing the complete pathname to the source VHDL design object's file, the pathname to the source VHDL design object, the version number and the type of the source design object used.

The first pathname returned is to the actual plain text file which was used by the compiler. The path may point to a specific version within a VHDL source design object, or it may point to a plain text file.

The second pathname returned is the name of the VHDL source design object or plain text file used to create the given VHDL design object. This version of the pathname will lack the characteristic suffix such as *.vhdl* or *.hdl* used on VHDL source design objects. If the compiler was invoked on a plain text file without the *.hdl* suffix, this portion of the returned value will also contain the complete pathname of that file.

The version is an integer specifying the version number of the VHDL source design object which was used to compile the given VHDL design object. If the compiler was invoked on a plain text file instead, the value is "undefined".

The returned type is the source object type of the source code used to compile the specified VHDL object. If the object was compiled from a VHDL design object created in the VHDL Editor, the type will be "vhdl". If the object was compiled from a plain text file with a *.hdl* suffix, the type will be "mgc_hdl_srcfile". If the object was compiled from some other plain text file, the type will be "Mgc_file".

Arguments

- **pathname**

  This argument is a string specifying the pathname to a compiled VHDL design object.

- **type**

  This argument defines the type of hdl design object. It can have one of four values: **@Hdl_arch**, **@Hdl_pkg_hdr**, **@Hdl_entity**, or **@Hdl_pkg_body**.

  For information about hdl design object types, refer to the *System-1076 Design and Model Development Manual*.

Example(s)

These examples show the function syntax followed by the returned values you will see in the transcript. In this example, *my_clock/full* is an hdl architecture:

```
$get_compiled_vhdl_source_name("my_clock/full", @hdl_arch)
//  ["$DESIGNS/da/my_clock/type_clock.vhdl_1",
                                    "$DESIGNS/da/my_clock/type_clock", 1, "vhdl"]
```

In the next example, *my_clock_ascii/full* is an hdl architecture compiled from a *.hdl* file:

```
$get_compiled_vhdl_source_name("my_clock_ascii/full", @hdl_arch)
//  ["$DESIGNS/da/my_clock_ascii/source.hdl",
        "$DESIGNS/da/my_clock_ascii/source", undefined, "mgc_hdl_srcfile"]
```

In this example, *my_clock_ascii/full* is an hdl entity compiled from a plain text file:

```
$get_compiled_vhdl_source_name("my_clock_ascii2/entity", @hdl_entity)
//  ["$DESIGNS/da/my_clock_ascii2/source_ent.boogle",
"$DESIGNS/da/my_clock_ascii2/source_ent.boogle", undefined, "mgc_file"]
```

Related Functions

$open_vhdl()

$get_default_interface_name()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_default_interface_name()

Description

Returns the name of the default interface for the component that is under edit (or being viewed) in the active window.

The active window can be either a symbol window opened on a symbol in the component, or a schematic sheet window opened on a sheet in the component.

If the component currently has no interface marked as the default interface, then this function returns the name that will be used when the default interface is generated (via **File > Save Symbol > Default Registration** if in a symbol window, or **File > Save Sheet > Default Registration** if in a schematic sheet window).

Example(s)

This example opens a new symbol and shows what the name of the default interface will be if this new symbol in this new component is saved with default registration:

```
$$open_symbol("my_design", "", @editable, "");
//  Note: Version 1 of component "$DESIGNS/my_design" has been written
                                        (from: Capture/gdc_do_mgr/note 81)
$set_active_window("Symbol#1");
$writeln($get_default_interface_name());
//  "my_design"
```

This example uses $report_interfaces() to show all of the interfaces for the *$MGC_GENLIB/wor* component, then uses $get_default_interface_name() to show the name of the default interface for *wor*:

```
$$open_symbol("$MGC_GENLIB/wor", "3", @readonly, "");
//  Note: Reading version 1 of symbol $MGC_GENLIB/wor/3
                                                    (from: Capture/gdc/note 82)
$set_active_window("Symbol#2");
$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                              "da_report_file");
//  Reporting: Interfaces
//
//  Interface    4
//    Pin Count 4
//    Registered Models
//      Type          Path
//      mgc_symbol      $MGC_GENLIB/$wor/4
//                  Labels [ TYPE ]
//  Default Interface   2
//    Pin Count 2
//    Registered Models
//      Type          Path
//      mgc_symbol      $MGC_GENLIB/$wor/2
//                  Labels [ TYPE default_sym ]
//  Interface    3
//    Pin Count 3
//    Registered Models
//      Type          Path
//      mgc_symbol      $MGC_GENLIB/$wor/3
//                  Labels [ TYPE ]
//
$writeln($get_default_interface_name())
//  "2"
```

This example shows the default registration of a new schematic sheet in a new component, and the interface information (via notes, $report_interfaces() and $get_default_interface_name()):

```
$$open_sheet("my_comp2", "schematic", "sheet1", @editable,
                                                    void, "", @auto);
$set_active_window("Schematic#1");
$save_sheet(["my_comp2"], [], [], []);

$report_interfaces("", void, @nowindow, @transcript, @nofile,
                                                    "da_report_file");
//  Reporting: Interfaces
//
//  Default Interface   my_comp2
//    Pin Count 0
//    Registered Models
//      Type          Path
//      mgc_schematic    $DESIGNS/my_comp2/schematic
//                    Labels [ $schematic schematic default ]
//
$writeln($get_default_interface_name());
//  "my_comp2"
```

Related Functions

$report_interfaces()
$save_sheet()
$save_symbol()

$get_diagram_location()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$get_diagram_location(*grid_mode*)

Description

Returns a vector containing the mouse cursor location.

The first two elements of the vector are the x and y coordinates, and the third element is the window name.

Arguments

- ***grid_mode***

  This argument specifies whether the mouse cursor is snapped to grid. It can have one of two values: ✓ **@use_grid** or **@ignore_grid**.

Example(s)

The following example displays the function syntax.

```
$writeln($get_diagram_location())
```

In the transcript window, you will see:

```
   $writeln([1.2, 3.5, "Schematic#1.0"])
//  [1.2, 3.5, "Schematic#1.0"]
```

Related Functions

$open_sheet() $open_symbol()

$get_edit_mode()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_edit_mode()

Description

Returns the value of the edit mode of a schematic or symbol window: @on if editing is enabled in the active window, and @off if editing is disabled.

Example(s)

The following example displays the function syntax.

```
$writeln($get_edit_mode())
```

In the transcript window, you will see:

```
   $writeln(@off)
// @off
```

Related Functions

$open_sheet()
$open_symbol()
$set_edit_mode()

$get_evaluations()

Scope: schematic
Window: Schematic Editor

Usage

$get_evaluations()

Description

Returns either @on or @off, which indicates whether viewing of evaluated expressions in the source and/or the back-annotated data aspect of the design viewpoint is enabled or disabled.

The viewing of evaluated expressions is determined by the edit mode of the source sheet and the value of the annotation_visibility internal state variable.

Example(s)

In the following example, the $get_evaluations() function returns an @on value.

```
$writeln($get_evaluations())
```

In the transcript window, you will see:

```
$writeln(@on) //  @on
```

Related Functions

$get_in_design_context()
$hide_annotations()
$merge_annotations()
$open_design_sheet()
$recalculate_properties()
$save_sheet()
$set_evaluations()
$show_annotations()

Related Internal State Functions

$get_source_edit_allowed()
$set_annotation_visibility()

$get_frame_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_frame_attributes("frame_handle", *attributes*)

Description

Returns a vector containing the requested attributes about the specified frame.

If no attributes are specified, this function returns the size of the frame in user units.

Arguments

- **frame_handle**

  This is a text string specifying the handle of a frame.

- ***attributes***

  This is a repeating argument specifying one or more frame attributes. The order in which multiple attributes are given determines the order of the returned array. Choose from the following attributes:

  ⇒ **@extent**: Returns a two-element vector containing the lower-left and upper-right locations of the frame size. Each location is defined as a vector of three values, the x and y coordinates, and the window name.

  @origin: Returns the coordinates of the frame origin.

  @orientation: Returns the orientation of the frame in degrees.

  @expression: Returns the value of the Frexp (frame expression) property.

  @flipped: Returns @true if the frame is flipped, or if not, returns @false.

Example(s)

In the following example, the $get_frame_attributes() function returns the frame origin and the value of the frame expression.

```
$writeln($get_frame_attributes("F$494", @origin, @expression))
```

In the transcript you will see:

```
  $writeln([[-1.4, 4.6, "Schematic#2.0], "for i :=  -10 to 10"])
//  [[-1.4, 4.6, "Schematic#2.0], "for i := -10 to 10"]
```

Related Functions

$get_frame_handles()

$get_objects()

$get_frame_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_frame_handles()

Description

Returns a vector whose elements are the handles of all frames on the active sheet.

Example(s)

The following example displays the use of the $get_frame_handles() function:

```
$writeln($get_frame_handles())
```

In the transcript, you will see:

```
   $writeln(["F$11", "F$13"])
//  ["F$11", "F$13"]
```

Related Functions

$add_frame()
$get_frame_attributes()
$get_objects()
$modify_frame()

$get_grid()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_grid(attributes)

Description

Returns a vector of the requested attributes concerning the current grid settings of the active window.

The values are returned in the same order as specified. If multiple windows are concurrently opened on a sheet/symbol, this function will return values associated with the active window.

Arguments

- **attributes**

  This argument is a repeating string of values. Choose one or more from the following list:

  @grids_per_pin: A real number specifying the number of grid points between each pin space.

  @minor_multiple: An integer specifying the number of grid locations between displayed grid dots.

  @major_multiple: An integer specifying the number of displayable minor location points between each major grid point.

  @show: The current display attribute; returns @show when display is visible, @noshow otherwise.

  @snap: The current snap enable value; returns @snap when enabled, @nosnap otherwise.

Example(s)

In the following example, the $get_grid() function returns the grids_per_pin, minor_multiple, and major_multiple of the active sheet.

```
$writeln($get_grid(@grids_per_pin, @minor_multiple, @major_multiple))
```

In the transcript you will see:

```
  $writeln([4, 1, 4])
//  [4, 1, 4]
```

Related Functions

$set_grid()

$get_in_design_context()

Scope: schematic
Window: Schematic Editor

Usage

$get_in_design_context()

Description

Returns either @true or @false, indicating whether the current sheet is a design sheet in the context of a design viewpoint.

Example(s)

This example displays the use of the $get_in_design_context() function.

```
$open_sheet("$DESIGNS/component", "schematic", "sheet1")
$writeln($get_in_design_context())
```

In the transcript, you will see:

```
$open_sheet("$DESIGNS/component","schematic","sheet1",@editable,
                                                    void, "", @noupdate)
$writeln(@false)
//   @false
```

Related Functions

$get_evaluations()
$hide_annotations()
$merge_annotations()
$show_annotations()

$get_instance_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_instance_attributes("instance_handle", attributes)

Description

Returns the value of all specified attributes of the instance specified by instance_handle.

The attributes are returned in the order requested, with one vector element position per attribute.

Arguments

- **instance_handle**

  This argument is a text string specifying an instance handle (for example, I$34 or I$14**).**

- **attributes**

  This argument can be one or more of the following attribute arguments:

  @extent: Returns a two-element vector containing the lower-left and upper-right locations of the instance. Each location is defined as a vector containing three values, the x and y coordinates, and the window name.

  @origin: Returns the location of the instance origin.

  @orientation: Returns the orientation of the instance in degrees: 0, 90, 180, or 270.

  @flipped: Returns @true if the instance is flipped, @false otherwise.

  @pathname: Returns the pathname of the symbol instance.

  @version: Returns the version of the symbol instance.

  @symbol_name: Returns the name of the symbol instance.

Example(s)

The following example displays the use of the $get_instance_attributes() function.

```
$writeln($get_instance_attributes("I$23", @pathname))
$writeln($get_instance_attribute s("I$23", @symbol_name))
```

In the transcript, you will see:

```
    $writeln(["$MGC_GENLIB/nand3"])
//  ["$MGC_GENLIB/nand3"]
    $writeln(["nand3"])
//  ["nand3"]
```

Related Functions

$set_active_symbol()
$get_attributes()
$get_instance_handles()
$get_instance_models()
$get_instance_pathname()
$get_pathname()

$get_instance_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_instance_handles("*net_handle*")

Description

Returns a vector of all instance handles that are attached to the specified net.

If no argument is specified, the function returns all instance handles in the active window. If there are no instances in the active window, an empty vector, "[]", is returned. The following error is displayed if the specified handle is not a net: "Handle X$<n> is not a net handle."

Arguments

- ***net_handle***

  This argument is a text string specifying a net handle (for example, N$243).

Example(s)

The following example displays the use of the $get_instance_handles() function.

```
$writeln($get_instance_handles("N$72"))
```

In the transcript, you will see:

```
   $writeln(["I$252", "I$154", "I$145"])
//  ["I$252", "I$154", "I$145"]
```

Related Functions

$get_attached_objects()
$get_net_attributes()
$get_objects()
$get_pin_attributes()

$get_instance_models()

Scope: schematic
Window: Schematic Editor
Prerequisite: One instance must be selected.

Usage

$get_instance_models()

Description

Returns detailed information about all models available for the selected instance.

This information includes the type of model, the pathname to the model, and a list of labels on the model.

Example(s)

The following is a transcript from adding an instance, then requesting model information about that instance.

```
$$add_instance("$MGC_GENLIB/dff", "", [13.25, 17.5, "Schematic#1.0"],
                                                    @auto, void, void);
$get_instance_models()
//  [["mgc_symbol", "$MGC_GENLIB/dff/dff", ["default_sym"]],
        ["mgc_schematic", "$MGC_GENLIB/dff/schematic", "$schematic",
                                                              "schematic", "d
    ["Tf_tfile_do", "$MGC_GENLIB/dff/technology ", "def_tech", "$gen_qpt"]],
                    ["Tdm_qpt_do", "$MGC_GENLIB/dff/qpfile", "$gen_qpt"]]]
```

If the selected instance is a VHDL model, the output will be similar to the following:

```
//  [["Hdl_entity_do", "$DESIGNS/da/type_clocks/entity", ["entity"]],
            ["Hdl_arch_do", "my_home/da/type_clocks/full", ["full", "$hdl"]],
 ["mgc_symbol", "$DESIGNS/da/type_clocks/typ e_clocks", ["default_sym"]]]
```

Related Functions

$get_compiled_vhdl_source_name()
$get_instance_attributes()
$get_instance_pathname()
$get_model_path()

$get_instance_pathname()

Scope: schematic
Window: Schematic Editor
Prerequisite: One, and only one, instance must be selected.

Usage

$get_instance_pathname()

Description

Returns a vector containing the component pathname, the component name, the interface name, and the symbol name of the selected instance.

Example(s)

The following example displays the use of the $get_instance_pathname() function. The symbol "dff_1" was saved with the interface name "dff_pi".

```
$open_sheet("$PROJECT_A/component", "schematic", "sheet1")
$$add_instance("$MGC_GENLIB/dff", "dff_1", [0, 0], @clear)
$writeln($get_instance_pathname())
```

In the transcript, you will see:

```
    $open_sheet("$PROJECT_A/component", "schematic", "sheet1",
                                                @editable, void, "", @noupdate)
    $$add_instance("$MGC_GENLIB/dff", "dff_1", [0, 0], @clear, void, "")
    $writeln(["$MGC_GENLIB/", "dff", "dff_pi", "dff_1"])
//  ["$MGC_GENLIB/", "dff", "dff_pi", "dff_1"]
```

Related Functions

$add_instance()
$get_instance_attributes()
$get_instance_handles()
$get_pathname()

$get_item_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_item_type("handle")

Description

Returns one of the following item types specified by the handle: @comment_graphics, @comment_text, @frame, @instance, @net, @pin, @vertex, @symbolpin, @property, or @net_segment.

The error "Invalid handle" is displayed when this function is used incorrectly.

Arguments

- **handle**

  This argument is a text string specifying a handle (for example, I$143).

Example(s)

The first line in this example displays the use of the $get_item_type() function. The next two lines appear in the transcript.

```
$writeln($get_item_type("I$252"))
    $writeln(@instance)
// @instance
```

Related Functions

$get_select_identical()

$get_model_path()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_model_path("instance_path")

Description

Returns the operating system pathname to the current model corresponding to the specified instance.

If the component has a model, a vector containing the following three values is returned:

- The type of model. This is either @schematic or @hdl.
- The operating system pathname to the schematic or VHDL source file that defines the model.
- The sheet name of the schematic model.

If the component has no model registered, the function returns an empty vector, "[]". Outside the context of a design, this function returns an empty vector, "[]", because the model for an instance cannot be determined.

Arguments

- **instance_path**

  This text string specifies the design pathname to a component in the design sheet. An example of a design pathname is "/$I23/$I4/$I16".

Example(s)

The following example returns the model type, pathname, and sheet name of the model for a selected instance on a design sheet.

```
$writeln($get_model_path($get objects(@selected, @instance,
@handles)[0]);
```

If the model is a schematic, the output is similar to the following:

```
//  [@schematic, "$DESIGN/mydff/schematic", "sheet1"]
```

If a VHDL instance is selected, the output is similar to this:

```
//  [@hdl, "$DESIGN/my_clock/clock_source"]
```

Related Functions

$get_instance_models()
$get_instance_attributes()
$get_instance_pathname()
$get_compiled_vhdl_source_name()

$get_net_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_net_attributes("handle", net_attributes)

Description

Returns the Net property value assigned to the specified net, and/or the handles of the vertices that define that net.

These values are returned in the order in which the arguments requesting them are specified.

If the specified net handle is not valued, an error will result.

Arguments

- **handle**

  This argument is a text string specifying a net handle (for example, N$412 or N$2343).

- **net_attribute**

  This is a repeating string of values for valid net attributes. They can be any or all of the following:

  @name: Returns the value of the net property.

  @vertices: Returns the handles of the vertices that define the specified net.

Example(s)

The following example displays the use of the $get_net_attributes() function.

```
$writeln($get_net_attributes("N$23", @name))
```

In the transcript, you will see:

```
    $writeln("Q0")
//  "Q0"
```

Related Functions

$get_attached_objects()

$get_net_handles()

$get_net_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_net_handles("*handle*")

Description

Returns a vector of the net handles attached to the specified instance or vertex.

If no argument value is given for handle, then the function returns all net handles on the sheet. If no nets exist on the sheet, the function returns an empty vector "[]".

This error is displayed when this function is used incorrectly: "Handle argument was not an instance or vertex."

Arguments

- ***handle***

  This argument is a text string specifying an instance or vertex handle (for example, I$3421 or V$143).

Example(s)

The following example displays the use of the $get_net_handles() function.

```
$writeln($get_net_handles("I$32"))
```

In the transcript, you will see:

```
    $writeln(["N$23", "N$24", "N$34", "N$36"])
//  ["N$23", "N$24", "N$34", "N$36"]
```

Related Functions

$get_attached_objects()
$get_instance_handles()
$get_objects()
$get_vertex_attributes()
$get_vertex_handles()

$get_next_active_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_next_active_symbol("component", "lastsymbol", direction)

Description

Returns the name of the next or previous symbol, relative to the specified symbol.

Arguments

- **component**

  A string that specifies the pathname to the component containing the symbol. The default is the pathname to the component that contains the active symbol.

- **lastsymbol**

  A string that indicates the symbol name to use as a reference point. The default is the active symbol.

- **direction**

  A name that specifies whether to retrieve the name of the next symbol or the previous symbol, relative to the specified symbol. The possible values are ⇒ **@forward** (next symbol) and **@backward** (previous symbol.

Example(s)

This example returns "1X3", the symbol prior to the "1X4" symbol in the "$MGC_GENLIB/rip" component.

```
$get_next_active_symbol("$MGC_GENLIB/rip", "1X4", @backward)
```

Related Functions

$add_instance()
$hide_active_symbol_window()
$is_active_symbol_window_visible()
$place_active_symbol()
$set_active_symbol()
$set_next_active_symbol()
$set_previous_active_symbol()
$show_active_symbol_window()

$get_object_property_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_object_property_attributes(object_handle, "property_name", attributes)

Description

Returns requested information about a specific property for specific objects in the active window.

This function accepts either a single handle or a vector of handles. If you specify a single handle, the function returns a vector of the requested attributes in the order in which you specified them. Each specified attribute's return value takes up one position in the return vector.

If you specify a vector of handles, the function returns a vector that contains each given handle, followed by the requested attribute information for the handle. The information returned for each attribute takes up one vector position. That single position value may itself be a vector, for example a location. If the specified property is not attached to any of the objects whose handles you have specified, the function returns the value, "undefined".

Arguments

- **object_handle**

  This argument can be a text string specifying a handle (for example, N$23 or I$42), or a vector whose elements are handles.

- **property_name**

  This text string specifies the name of a property, such as Net, Comp, or Rise, or a user-defined property. Property names are compared without regard to case.

- **attributes**

  This argument is a repeating string specifying the types of attributes. It can have one or more of the following values:

  @attribute_modified: Returns **@modified** if an attribute of the property has been modified, otherwise returns **@notmodified**.

  @fixed: The function returns **@true** if the property is fixed, otherwise the function returns **@false**. (You can also use the @stability_switch option to receive more information about property stability.)

  @graphic: Returns **@true** if the property has graphics, and **@false** otherwise.

  @height: Returns the height of the property text.

  @justification: Returns the property text's justification with respect to its text origin when placed, copied, or moved on the sheet.

  @offset_x: Returns the horizontal distance between the property text and the origin of the object to which it is attached.

  @offset_y: Returns the vertical distance between the property text and the origin of the object to which it is attached.

  @orientation: Returns the rotation of the property text in degrees from standard left-to-right orientation on the sheet.

  @prop_handle: Returns the handle of the property.

  @origin: Returns the location of the property.

  @stability_switch: Indicates which operations you can perform on the specific property. This returns **@nonremovable**, **@fixed**, **@protected**, or **@variable**. This argument is only valid in the Symbol Editor.

  @type: Returns the type of the property: **@string**, **@number**, **@expression**, or **@triplet**.

  @font: Returns the font type of the property text.

  @update_switch: This switch is obsolete in V8.1 and later releases. Information about updating properties may be found in the $open_sheet(), $mark_property_value(), $replace(), and $update() function descriptions.

  @value: Returns the value of the property.

@value_modified: Returns **@modified** if the value of the property has been modified, otherwise returns **@notmodified**.

@visibility: Indicates whether the property text is visible. This returns **@hidden** or **@visible**. This is valid in the Schematic Editor.

@visibility_switch: Indicates whether the property text of a symbol object is visible when an instance of the symbol is placed on a sheet. This returns **@hidden** or **@visible**. This argument is only valid in the Symbol Editor.

Example(s)

The following example displays the use of the $get_object_property_attributes() function.

```
$writeln($get_object_property_attributes("I$155", "MODEL", @value))
```

In the transcript, you will see:

```
    $writeln(["nand2"])
//  ["nand2"]
```

Related Functions

$change_property_stability_switch()
$change_property_visibility_switch()
$change_property_visibility()
$get_property_attributes()

$get_objects()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_objects(domain, item_type, format)

Description

Returns the specific information about the specific types of objects on the active sheet or the selected set.

This function may identify more selected objects than the number returned by the $get_select_count() function, or than appears in the status line. This is because $get_select_count() omits pins and nets, counting only their vertices, while this function identifies either or both.

Arguments

- **domain**

  This argument must have one of the following values:

  @sheet: Returns information about item types on the active sheet.

  @selected: Returns information about item types from the selected set.

- **item_type**

  This argument must be one of the following item types: **@comment**, **@comment_graphics**, **@comment_text**, **@electrical**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@symbolbody**, **@property**, or **@any**.

- **format**

  This argument specifies how the information will be returned. It must have one of the following values:

  @presence: Returns @true if any of the specified items are present, and @false, otherwise.

  @count: Returns the count of all specified items.

  @handles: Returns the handles of all specified items.

Example(s)

The following example displays the use of the $get_objects() function in the active schematic window.

```
$writeln($get_objects(@selected, @instance, @handles))
```

In the transcript, you will see:

```
    $writeln(["I$231", "I$204", "I$134", "I$361"])
//  ["I$231", "I$204", "I$134", "I$361"]
```

Related Functions

$get_comment_handles()
$get_select_count()
$get_select_count_type()
$get_select_handles()
$get_select_handles_type()
$get_select_text_exists()
$get_type_present()

$get_objects_in_area()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_objects_in_area(corners)

Description

Returns a vector of handles for all objects in the specified area.

Arguments

- **corners**

  This argument defines diagonally opposite corners of an area.

Example(s)

The following example displays the use of the $get_objects_in_area() function.

```
$writeln($get_objects_in_area([[-2.33, 1.86, "Symbol#1.0"], [2.77, -2.30,
                                                    "Symbol#1.0"]]));
```

In the transcript, you might see:

```
//   ["C$18", "P$20", "C$13", "T$36"]
```

Related Functions

$get_attached_objects()
$get_objects()
$get_item_type()

$get_origin()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_origin()

Description

Returns the coordinates of the origin of a symbol, which is the reference point on the symbol that is used for placing, copying, and moving instances of that symbol on a schematic sheet.

Example(s)

The following example displays the syntax for retrieving the origin of a symbol.

```
$writeln($get_origin())
```

The transcript shows the origin:

```
// [-1.25, 0.375]
```

Related Functions

$add_instance()
$set_origin()

$get_owned_property_names()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_owned_property_names(item_type, *criterion*)

Description

Returns a vector of the names of all the properties, both currently owned by objects of the specified item_type and legal to be added to other objects of the same type.

This vector may include only those properties actually assigned to objects in the active window, or properties constrained by the $set_property_owner() function to include this item_type, or the combination of these. These two subdivisions are not mutually exclusive; a property may have been constrained using the $set_property_owner() function, and also be attached to an object.

Arguments

- **item_type**

  This argument must be one of the following item types: **@electrical**, **@comment**, **@comment_graphics**, **@comment_text**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@symbolbody**, **@property**, or **@any**.

- ***criterion***

  This argument can have one of the following values:

  @attached: Only returns property names currently attached to objects of the specified item_type if they can be legally added to new objects of this type. These property names may or may not have been constrained using the $set_property_owner() function.

  @set_legal: Only returns property names whose legality has been constrained with the $set_property_owner() function to include the specified item_type. These property names may or may not be currently attached to objects of this type.

⇒ **@all**: Returns all property names that may be attached to objects of the specified item_type. This includes both attached and unattached, constrained and unconstrained property names.

Example(s)

The following examples display the use of the $get_owned_property_names() function. All three examples use the same sheet which has three symbol instances. The first example returns property names that are attached to instances and can be added to new instances:

```
$writeln($get_owned_property_names(@instance, @attached))
```

In the transcript, you will see:

```
   $writeln(["CLASS", "GLOBAL", "MODEL"]);
//  ["CLASS", "GLOBAL", "MODEL"]
```

The next example returns property names that have been constrained to include instances:

```
$writeln($get_owned_property_names(@instance, @set_legal))
```

In the transcript, you will see:

```
   $writeln(["INST", "CLASS", "GLOBAL"]);
//  ["INST", "CLASS", "GLOBAL"]
```

The third example returns all property names that may be added to instances:

```
$writeln($get_owned_property_names(@instance, @all))
```

In the transcript, you will see:

```
   $writeln(["INST", "CLASS", "GLOBAL", "MODEL"]);
//  ["INST", "CLASS", "GLOBAL", "MODEL"]
```

The previous example could also be entered without specifying any criterion:

```
$writeln($get_owned_property_names(@instance))
```

Related Functions

$delete_property_owner()
$get_property_attributes()
$get_property_names()
$get_property_owners()
$set_property_owner()

$get_parameter()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_parameter(parameter_name)

Description

Returns a vector containing the specified parameter name, the associated value and type.

If no parameter name is specified, this function returns the name, value, and type of all parameters.

Arguments

- ***parameter_name***

  This argument is the name of the parameter for which you want the value and type.

Example(s)

The following example displays the function syntax for setting and retrieving parameters.

```
$set_parameter("n", "v", "string");
$set_parameter("n2", "v2", "expression");
$writeln($get_parameter())
//  [["n", "v", "string"], ["n2", "v2", "expression"]]
```

Related Functions

$$check() $set_parameter()

$get_pathname()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_pathname()

Description

Returns the pathname to the component, the schematic, if any, the sheet or symbol name, and the version number of the object displayed in the active window.

If you are editing or viewing a schematic or design sheet, this function returns a vector containing:

- the pathname to the object,
- the schematic name,
- the sheet name, and
- the version number.

In the Symbol Editor, this function returns a vector containing:

- the pathname to the symbol,
- the symbol name, and
- the version number.

Example(s)

The following example displays the use of the $get_pathname() function in an active schematic window.

```
$open_sheet("$PROJECT_C/design", "schematic_2", "sheet2")
$writeln($get_pathname())
```

In the transcript, you will see:

```
    $open_sheet("$PROJECT_C/design", "schematic_2", "sheet2",
                                          @editable, void, "", @noupdate)
    $writeln(["$PROJECT_C/design", "schematic_2", "sheet2", 1])
//  ["$PROJECT_C/design", "schematic_2", "sheet2", 1]
```

The next example displays the use of the $get_pathname() function in an active symbol window.

```
$open_symbol("$PROJECT_C/design", "symbol_1")
$writeln($get_pathname())
```

In the transcript, you will see:

```
    $open_symbol("$PROJECT_C/design", "symbol_1", @editable, "")
    $writeln(["$PROJECT_C/design", "symbol_1", 1])
//  ["$PROJECT_C/design", "symbol_1", 1]
```

Related Functions

$get_instance_pathname() $get_symbol_name()

$get_pin_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_pin_attributes("handle", attributes, "compiled_name")

Description

Returns a vector of specified attributes for a given pin.

The compiled name must either be the name of a symbol pin in the Symbol Editor, or the name of a pin placed on a schematic using the $add_pin() function in the Schematic Editor. The compiled name cannot be the name of a pin on an instance.

Arguments

- **handle**

  This argument is a text string specifying a pin handle (for example, P$42).

- **attributes**

  This argument is a repeating string of values specifying one or more attributes. These attributes must be any of the following:

  @origin: Returns the location of the pin.

  @instance: Returns the instance of the pin (not valid in the Symbol Editor).

  @vertex: Returns the vertex of the pin (not valid in the Symbol Editor).

- **compiled_name**

  When a symbol pin is specified, you can use this option to retrieve the compiled pin name for that pin.

Example(s)

In the following example, the $get_pin_attributes() function returns the pin origin and the instance of the pin, P$417.

```
$writeln($get_pin_attributes("P$417", @origin, @instance))
```

In the transcript you will see:

```
   $writeln([[1.4, 4.6, "Schematic#2.0"], "I$9"])
//  [[1.4, 4.6, "Schematic#2.0"], "I$9"]
```

Related Functions

$change_compiled_pin_name()
$get_attached_objects()
$get_attributes()
$get_objects()
$get_pin_handles()
$get_vertex_attributes()

$get_pin_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_pin_handles("*handle*", *pin_names*)

Description

Returns a vector of handles of pins attached to the specified object, and/or a matching specified pin name.

If no handle argument is specified, the function returns all pin handles in the active window.

If you supply a pin name argument (a Pin property value), the function returns pin handles only for the pin(s) having that name. If no pins are found, the function returns an empty vector, "[]". Pin names are always compared without regard to case.

An error is returned if the handle argument is not an instance, net, or vertex.

When executed in the Symbol Editor with no arguments, handles of all pins are returned, as they are in schematics. In the context of a symbol, instances, nets, and vertices have no meaning, so the first argument is always ignored. If a pin name is specified, the corresponding handle is returned.

Arguments

- ***handle***

  This argument is a string specifying the handle of an instance, net, or vertex (for example, I$342 or N$542 or V$840).

- ***pin_names***

  This is a repeating text string argument specifying one or more pin names. The pin name is a Pin property value(s), such as "I0" or "I1".

Example(s)

The following example displays the use of the $get_pin_handles() function.

```
$writeln($get_pin_handles("I$157"))
```

In the transcript, you will see:

```
    $writeln(["P$159", "P$161", "P$163", "P$165"])
//  ["P$159", "P$161", "P$163", "P$165"]
```

Related Functions

$get_attached_objects()
$get_objects()
$get_pin_attributes()
$get_pin_names()

$get_pin_names()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_pin_names()

Description

Returns a vector of symbol pin names.

If no pins are found, the function returns an empty vector, "[]".

Example(s)

The following example displays the use of the $get_pin_names() function.

```
$writeln($get_pin_names())
```

In the transcript, you will see:

```
    $writeln(["IN1" "IN2", "OUT"])
//  ["IN1", "IN2", "OUT"]
```

Related Functions

$get_attached_objects()
$get_pin_attributes()
$get_pin_handles()
$get_vertex_attributes()
$get_vertex_handles()

$get_property_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_property_attributes(property_handle, attributes)

Description

Returns requested information about a specified property or a vector of properties.

This function accepts either a single handle, or a vector of handles, which identify the properties in question.

If you specify a single handle, the function returns a vector of the requested attributes in the order in which you specified them. If you specify a vector of handles, this function returns a vector containing each given handle, followed by the requested attribute information for the handle. The information returned for each attribute takes up one vector position. That single position value may itself be a vector, for example, a location.

Arguments

- **property_handle**

  This argument can be a text string specifying a single property handle (for example, X$23 or X$42), or a vector whose elements are property handles.

- **attributes**

  This argument is a repeating string specifying the types of attributes. Enter one or more of the following attributes:

  @attribute_modified: Returns @modified if an attribute of the property has been modified, otherwise returns @notmodified.

  @fixed: Indicates fixed properties. The function returns @true if the property is fixed, otherwise the function returns @false.

  @font: Returns the font type of the property text.

  @graphic: Returns @true if the property has graphics, and @false otherwise.

@height: Returns the height of the property text.

@justification: Returns the property text justification with respect to the cursor when placed, copied, or moved on the sheet.

@name: Returns the name of the property.

@offset_x: Returns the horizontal distance between the property text and the origin of the object to which it is attached.

@offset_y: Returns the vertical distance between the property text and the origin of the object to which it is attached.

@orientation: Returns the rotation of the property text in degrees from standard left-to-right orientation on the sheet.

@origin: Returns the location of the property.

@owner_handle: Returns the handle of the properties owner.

@stability_switch: Indicates which operations you can perform on the specified property. This returns @nonremovable, @fixed, @protected, or @variable. This is valid only in the Symbol Editor.

@type: Returns the type of the property: @string, @number, @expression, or @triplet.

@update_switch: This switch is obsolete in V8.1 and later releases. Information about updating properties may be found in the descriptions of the $mark_property_value(), $open_sheet(), $replace(), and $update() functions.

@value: Returns the value of the property.

@value_modified: Returns @modified if the value of the property has been modified, otherwise returns @notmodified.

@visibility: Indicates whether the property text is visible. This returns @hidden or @visible. This is valid in the Schematic Editor.

@visibility_switch: Indicates whether the property text of a symbol object is visible on an instance of this symbol. This returns @hidden or @visible. This is valid only in the Symbol Editor.

Example(s)

The following example displays the use of the $get_object_property_attributes() function.

```
$writeln($get_property_attributes("T$155", @value))
```

In the transcript, you will see:

```
    $writeln(["ENA"])
//  ["ENA"]
```

Related Functions

$change_property_stability_switch()
$change_property_visibility()
$change_property_visibility_switch()
$get_property_owners()
$get_object_property_attributes()
$get_property_handles()

$get_property_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_property_handles("*handle*")

Description

Returns a vector of property handles associated with the given object, or of all properties in the active window, if no object handle is specified.

Arguments

- ***handle***

  This string specifies the handle of some object (for example, I$42, V$67).

Example(s)

In the following example, the $get_property_handles() function returns the property handles of the specified instance, I$23.

```
$writeln($get_property_handles("I$23"))
```

In the transcript you will see:

```
$writeln(["T$234", "T$245", "T$246", "T$243"]) //  ["T$234", "T$245", "T$246",
                                                                    "T$243"]
```

Related Functions

$get_attached_objects()
$get_object_property_attributes()
$get_objects()
$get_property_attributes()

$get_property_names()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_property_names("handle")

Description

Returns the names of all of the properties attached to the object (identified by its handle) in the active window.

If the specified object does not have any properties attached to it, the function returns an empty vector, "[]". An error is displayed if an invalid handle is specified.

Arguments

- **handle**

  This argument is a text string specifying a handle, such as I$31 or V$24.

Example(s)

The following example displays the use of the $get_property_names() function.

```
$writeln($get_property_names("I$155"))
```

In the transcript, you will see:

```
    $writeln(["MODEL"," MODELCODE", "QRISE, "QFALL"])
//  ["MODEL", "MODELCODE", "QRISE, "QFALL"]
```

Related Functions

$get_property_handles()
$get_owned_property_names()
$get_object_property_attributes()
$get_property_owners()

$get_property_owners()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_property_owners("name", *format*)

Description

Returns information on objects in the active window to which a specified property is attached. Property names are always compared without regard to case.

If @type is specified as the format, this function returns a vector containing any or all of the following owners: @frame, @instance, @net, @pin, @vertex, @comment_graphics, and @symbolpin.

If @presence is specified as the format, the value @true is returned if at least one object is attached to the specified property. If @count is specified as the format, an integer is returned defining the number of objects attached to the property.

If @handles is specified as the format, a vector containing a list of object handles is returned. If the property does not have any objects, the function returns an empty vector ,"[]".

The following error is displayed when this function is used incorrectly:
"Undefined property name."

Arguments

- **name**

  This argument is a text string specifying a property name.

- ***format***

  This argument can be one of four values:

  ⇒ **@type**: Returns the type of objects attached to the specified property.

  @presence: Returns @true if at least one object has the specified property.

  @count: Returns the number of objects having the specified property.

  @handles: Returns a vector of handles of the objects that own the specified property.

Example(s)

The following example displays the use of the $get_property_owners() function.

```
$writeln($get_property_owners("MODEL", @type))
```

In the transcript, you will see:

```
      $writeln([@instance, @instance])
//    [@instance, @instance]
```

Related Functions

$get_item_type()
$get_object_property_attributes()
$get_owned_property_names()

$get_schematic_sheets()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_schematic_sheets(component_pathname schematic_name)

Description

The function $get_schematic_sheets() function returns a string vector of the names of the sheets in the specified schematic. The schematic is assumed to be registered to the component interface marked “default”.

Arguments

- **component_pathname**

  The pathname to a valid Mentor Graphics component structure.

- **schematic_name**

  The name (label) of a schematic registered to the default component interface.

Example(s)

The following function returns the names of the sheets in *schematic2* of the component */designs/mux*. The string vector is returned to the Design Architect Message window:

```
$message($get_schematic_sheets(“/designs/mux”,“schematic2”))
```

You may see something like the following string in the Message window:

```
["sheet1", "sheet2", "sheet3"]
```

Related Functions

None.

$get_search_path()

Scope: schematic
Window: Schematic Editor

Usage

$get_search_path()

Description

Returns a vector of strings, one for each pathname in the current search path.

The search path is used by the $add_instance() function. These values can then be used in subsequent $set_search_path() functions.

Example(s)

The following example returns the text string *$PROJECT_C/da/my_lib* as the current search path setting.

```
$writeln($get_search_path())
```

In the transcript window, you will see:

```
   $writeln(["$PROJECT_C/da/my_lib"])
//  ["$PROJECT_C/da/my_lib"]
```

Related Functions

$add_instance()

$set_search_path()

$get_select_count()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$get_select_count()

Description

Returns an integer designating the number of objects currently selected in the active window.

The number of objects includes both electrical and comment objects. However, pins and nets are not included in the count, although their vertices are. This number is always equal to the select count number displayed in the status line.

Example(s)

The following example displays the use of the $get_select_count() function.

```
$writeln($get_select_count())
```

In the transcript, you will see:

```
    $writeln(153)
//  153
```

Related Functions

$does_selection_exist()
$get_objects()
$get_select_count_type()
$is_selection_open()

$get_select_count_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$get_select_count_type(item_types)

Description

Returns a vector consisting of the number of selected objects of each specified type, in the order in which the types were specified.

This function may count more selected objects than the number returned by the $get_select_count() function, or than appears in the status line. This is because $get_select_count() omits pins and nets, counting only their vertices, while this function counts either or both.

Arguments

- **item_types**

  A repeating set of arguments. This argument can be any or all of the following item types: **@comment**, **@comment_graphics**, **@comment_text**, **@electrical**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@symbolbody**, **@property**, or **@any**.

Example(s)

The following example displays the use of the $get_select_count_type() function.

```
$select_all()
$writeln($get_select_count_type(@instance, @property))
```

In the transcript, you will see:

```
   $select_all(void, void, void, void, void, void, void, void)
   $writeln([17, 12])
//  [17, 12]
```

Related Functions

$does_selection_exist()
$get_item_type()
$get_objects()
$get_select_count()

$get_select_extent()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$get_select_extent()

Description

Returns a vector of two locations: the lower-left and the upper-right corners of the area occupied by the currently selected objects.

Each location is a vector of three values: the x and y coordinates, and the window name.

Example(s)

The following example displays the use of the $get_select_extent() function.

```
$select_all()
$writeln($get_select_extent())
```

In the transcript, you will see:

```
$select_all(void, void, void, void, void, void, void, void)
$writeln([[-6.6, -2.8, "Schematic#2.0"], [4.4, 3, "Schematic#2.0"]])
//  [[-6.6, -2.8, "Schematic#2.0"], [4.4, 3, "Schematic#2.0"]]
```

Related Functions

$get_attributes()
$get_sheet_extent()

$get_select_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_select_handles()

Description

Returns a vector of handles of all selected objects.

If no objects are selected, the function returns an empty vector, "[]".

This function may identify more selected objects than the number returned by the $get_select_count() function, or than appears in the status line. This is because $get_select_count() omits pins and nets, counting only their vertices, while this function identifies both.

Example(s)

The following example displays the use of the $get_select_handles() function. Assume that one instance on the active schematic sheet has been selected.

```
$writeln($get_select_handles())
```

In the transcript, you will see:

```
    $writeln(["V$345", "V$360", "I$157"])
//  ["V$345", "V$360", "I$157"]
```

Related Functions

$does_selection_exist()
$get_objects()
$get_select_count()
$get_select_handles_type()

$get_select_handles_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$get_select_handles_type(item_types)

Description

Returns a vector of handles of all selected objects of the specified type in the order in which the types are specified.

If no objects are selected, the function returns an empty vector, "[]".

This function may identify more selected objects than the number returned by the $get_select_count() function, or than appears in the status line. This is because $get_select_count() omits pins and nets, counting only their vertices, while this function identifies either or both.

Arguments

- **item_types**

  This argument is a repeating string of values. This argument can be any or all of the following item types: **@comment**, **@comment_graphics**, **@comment_text**, **@electrical**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@symbolbody**, **@property**, and **@any**.

Example(s)

The following example displays the use of the $get_select_handles_type() function. Assume that at least one instance has been selected.

```
$writeln($get_select_handles_type(@instance))
```

In the transcript, you will see:

```
    $writeln(["I$23", "I$34", "I$56"])
//  ["I$23", "I$34", "I$56"]
```

Related Functions

$get_item_type()
$get_objects()
$get_select_count_type()
$get_select_handles()
$sort_handles()

$get_select_identical()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$get_select_identical()

Description

Determines whether members of a set of selected objects are of the same object type, such as a net, an instance, a string of comment text, or a comment line.

If all the selected items are of the same type, the function returns @true. If the selected items are not of the same type, the function returns @false. If less than two items are selected, the function returns "Undefined". All comments or symbol bodies are considered to be of the same type.

Example(s)

The following example displays the use of the $get_select_identical() function. Assume that object1 and object2 are AMPLE variables containing the handles of the objects that may be of the same type. The last four lines appear in the transcript.

```
$unselect_all()
$select_by_handle( , "object1", "object2")
$writeln($get_select_identical())
$unselect_all(void, void, void, void, void, void, void, void)
$select_by_handle(void, "I$1", "I$2")
$writeln(@true)
// @true
```

Related Functions

$get_item_type()

$get_select_text_exists()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_select_text_exists()

Description

Returns @true if the one selected object is a property, and @false otherwise.

If @true is returned, the other $get_select_text functions can operate on the selected property text.

Example(s)

The following example displays the use of the $get_select_text_exists() function. Assume that one property text on the active schematic sheet has been selected.

```
$writeln($get_select_text_exists())
```

In the transcript, you will see:

```
   $writeln(@true)
//  @true
```

Related Functions

$get_object_property_attributes()
$get_property_attributes()
$get_select_handles()
$get_select_handles_type()

$get_select_text_handle()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_select_text_handle()

Description

Returns the handle of the object that owns the selected property text.

If property text has not been selected, the function returns this error message: "Exactly one text property must be selected".

Example(s)

The following example displays the use of the $get_select_text_handle() function.

```
$unselect_all()
$select_area([[-4.6, 0.05], [-5.2, -0.18]], , , , , , , @property)
$writeln($get_select_text_handle())
```

In the transcript, you will see:

```
   $unselect_all(void, void, void, void, void, void, void, void)
   $select_area([[-4.6, 0.05, "Schematic#1.0"], [-5.2, -0.18, "Schematic#1.0"]],
                @comment, void, @frame, @instance, @net, @pin, @property,
                                                @segment, @symbolpin, @text, @vertex)
   $writeln("I$2");
//  "I$2"
```

Related Functions

$get_attached_objects()
$get_objects()
$get_property_handles()
$get_select_text_exists()
$get_select_text_name()
$get_select_text_origin()
$get_select_text_value()

$get_select_text_name()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: Exactly one piece of property text must be selected.

Usage

$get_select_text_name()

Description

Returns the property name of the selected text.

If no property text is selected, the function returns this error message: "Exactly one text property must be selected".

Example(s)

The following example displays the use of the $get_select_text_name() function.

```
$unselect_all()
$select_by_handle( , $get_objects(@sheet, @property, @handles)[1])
$writeln($get_select_text_name())
```

In the transcript, you will see:

```
    $unselect_all(void, void, void, void, void, void, void, void)
    $select_by_handle(void, "T$13")
    $writeln("QRISE")
//   "QRISE"
```

Related Functions

$get_objects()
$get_object_property_attributes()
$get_property_attributes()
$get_select_text_exists()
$get_select_text_handle()
$get_select_text_origin()
$get_select_text_value()

$get_select_text_origin()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: Exactly one property text must be selected.

Usage

$get_select_text_origin()

Description

Returns the location of the object that owns the selected property text.

The location is defined as a vector containing three values, the x and y coordinates, and window name. If no property_text is selected, the function returns this error message: "Exactly one text property must be selected".

Example(s)

The following example displays the use of the $get_select_text_origin() function.

```
$unselect_all()
$select_by_handle( , $get_objects(@sheet, @property, @handles)[1])
$writeln($get_select_text_origin())
```

The last four lines appear in the transcript:

```
$unselect_all(void, void, void, void, void, void, void, void)
$select_by_handle(void, "T$13")
$writeln([-5.25, 0.75, "Schematic#1.0"])
//  [-5.25, 0.75, "Schematic#1.0"]
```

Related Functions

$get_attached_objects()
$get_attributes()
$get_objects()
$get_select_text_exists()
$get_select_text_name()
$get_select_text_handle()
$get_select_text_value()

$get_select_text_value()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: Exactly one property text must be selected.

Usage

$get_select_text_value()

Description

Returns the property value of the selected property text.

If no property text is selected, the function returns this error message: "Exactly one text property must be selected".

Example(s)

The following example displays the use of the $get_select_text_value() function.

```
$unselect_all()
$select_by_handle( , $get_objects(@sheet, @property, @handles)[1])
$writeln($get_select_text_value())
```

In the transcript, you will see:

```
   $unselect_all(void, void, void, void, void, void, void, void)
   $select_by_handle(void, "T$13")
   $writeln("0");
//  "0"
```

Related Functions

$get_object_property_attributes()
$get_objects()
$get_property_attributes()
$get_select_text_exists()
$get_select_text_name()
$get_select_text_handle()
$get_select_text_origin()

$get_sheet_design_pathname()

Scope: schematic
Window: Schematic Editor

Usage

$get_sheet_design_pathname()

Description

This function is normally executed when you are editing in the context of a design viewpoint. This function returns a string containing the design pathname of the instance that owns the current sheet. When this function is executed while editing a source sheet, an empty string “” is returned.

Example(s)

The following example displays the use of the $get_sheet_design_pathname() function.

```
$message($get_sheet_design_pathname())
```

You may see something like the following string in the Message window:

```
“/I$2/I$5/I$3"
```

Related Functions

None.

$get_sheet_extent()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_sheet_extent()

Description

Returns two locations: the lower-left and the upper-right corners of a rectangle enclosing the objects on the sheet in the active window.

The location is defined as a vector containing three values, the x- and y-coordinates, and the window name.

Example(s)

The following example displays the use of the $get_sheet_extent() function.

```
$writeln($get_sheet_extent())
```

In the transcript, you will see:

```
    $writeln([[-6.64, -2.83, "Symbol#2.0"], [4.46, 3, "Symbol#2.0"]])
//  [[-6.64, -2.83, "Symbol#2.0"], [4.46, 3, "Symbol#2.0"]]
```

Related Functions

$get_source_edit_allowed()

Scope: schematic
Window: Schematic Editor

Usage

$get_source_edit_allowed()

Description

Returns either @on or @off, depending on the value of the Source_Edit_Allowed property on the parent instance in the context of a design viewpoint.

If the Source_Edit_Allowed property is "false" on the parent instance, this function returns @off, and you cannot open the source design sheet for editing. If the Source_Edit_Allowed property is "true", or if it is absent on the parent instance, $get_source_edit_allowed() returns @on, and the edit mode of the source design sheet can be set to either on or off.

Example(s)

The following example displays the use of the $get_source_edit_allowed() function. Assume that the Source_Edit_Allowed property has been attached to the parent instance of the design viewpoint *$PROJ_A/design_1/vpt*. The value of the Source_Edit_Allowed property is "true"; $get_source_edit_allowed() returns @on.

```
$open_design_sheet("$PROJ_A/design_1",
                                    "$PROJ_A/design_1/vpt", "/", "sheet1")
$writeln($get_source_edit_allowed())
```

In the transcript, you will see:

```
    $open_design_sheet("$PROJ_A/design_1", "$PROJ_A/design_1/vpt",
                                    "/", "sheet1", @editable, void, "", @noupdate)
    $writeln(@on)
//  @on
```

Related Functions

$get_evaluations()
$merge_annotations()
$set_evaluations()
$open_design_sheet()

$get_symbol_name()

Scope: symbol
Window: Symbol Editor

Usage

$get_symbol_name()

Description

Returns a string defining the symbol name for the current symbol.

Example(s)

The following example displays the use of the $get_symbol_name() function.

```
$open_symbol("$PROJECT_A/my_lib/nand", "nand3")
$writeln($get_symbol_name())
```

In the transcript, you will see:

```
    $open_symbol("$PROJECT_A/my_lib/nand", "nand3", @editable, "")
    $writeln("nand3")
//  "nand3"
```

Related Functions

$get_pathname()

$get_text_information()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$get_text_information()

Description

Returns information such as value, height, and justification about the text at the specified location.

Click on the "Text Info" icon in the Text palette. A repeating prompt bar will appear. Click the Select mouse button on any text item. The text information is displayed in the message area, and the prompt bar reappears for you to either click on another text item, or cancel.

The following list describes the information returned for each type of text:

- **Property text**: Property name, value, height, justification, visibility (in a symbol window), and type.
- **Comment text**: Comment value, height, and justification.
- **Symbol body text**: Symbol body text value, height, and justification.

Arguments

- **location (Text Location)**

  This argument defines the coordinates of a text item. The item may be property text, comment text, or symbol body text (in a symbol window).

Example(s)

Choose the **[Text] Text Info** icon, then click the Select mouse button on a text item. Following are examples of the information you will see displayed in the message area for the different types of text.

```
Property Name: MODEL  Value: AND  Height: 0.1
                                  Justification: [@center, @left]  Type: @string
Comment Value: my_comment  Height: 0.75  Justification: [@bottom, @left]
Symbolbody Value: sym_text  Height: 0.75  Justification: [@bottom, @left]
Property Name: CLASS  Value: dangle  Height: 0.75
            Justification: [@bottom, @left]  Visibility: @visible  Type: @string
```

Related Functions

$get_property_attributes()

$get_type_present()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_type_present(type)

Description

Returns whether the specified object exists on the sheet.

If any objects of the specified type are present on the current sheet, this function returns **@true**. If no objects of the specified type exist, **@false** is returned.

Arguments

- **type**

  This name specifies one of the following object types: **@comment**, **@comment_graphics**, **@comment_text**, **@electrical**, **@frame**, **@instance**, **@net**, **@pin**, **@vertex**, **@symbolpin**, **@symbolbody**, **@property**, or **@any**.

Example(s)

The first line in this example displays the use of the $get_type_present() function; the last two lines appear in the transcript.

```
$writeln($get_type_present(@comment_graphics))
$writeln(@false)
// @false
```

Related Functions

$get_objects()

$get_vertex_attributes()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_vertex_attributes("vertex_handle", attributes)

Description

Returns a vector of the requested attributes of the vertex specified by the vertex handle.

Arguments

- **vertex_handle**

  This argument is a text string that is a vertex handle (for example, V$412).

- **attributes**

  This argument must be one or more of the following vertex attributes:

  @net: Returns the handle of the net owning the vertex.

  @location: Returns the x and y coordinates of the vertex and the window name.

  @pin_count: Returns the number of pins at the vertex.

  @not_dot: Returns @true if there is a not-dot at the vertex.

  @junction_dot: Returns @true if there is a junction dot at the vertex.

  @close_dot: Returns @true if there is a close-dot at the vertex. Note that the appearance of close-dots depends on how far the image is zoomed in.

Example(s)

The following example places the handle of a selected vertex in an array named "vertex", then uses the $get_vertex_attributes() function to obtain information about the selected vertex.

```
local  vertex = $get_objects(@selected, @vertex, @handles)
$writeln($get_vertex_attrib utes(vertex[0], @net, @location, @pin_count,
                                 @not_dot, @junction_dot, @close_dot)
```

The array returned in the transcript is similar to the following:

```
//   ["$204", [2.75, -3, "Schematic#1.0"], 1 @false, @false, @false]
```

Related Functions

$get_attached_objects()
$get_attributes()
$get_net_attributes()
$get_net_handles()
$get_pin_handles()
$get_vertex_handles()

$get_vertex_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_vertex_handles("*net_handle*")

Description

Returns a vector of all vertex handles that are attached to the specified net.

If no net handle is supplied, all vertex handles on the sheet are returned. If no such vertices exist, the function returns an empty vector, "[]". An error is returned if the handle argument is not a net handle.

Arguments

- ***net_handle***

  This argument is a text string specifying a net handle (for example, N$134).

Example(s)

The following example displays the use of the $get_vertex_handles() function.

```
$writeln($get_vertex_handles("N$72"))
```

In the transcript, you will see:

```
    $writeln(["V$24", "V$25", "V$56", "V$34"])
//  ["V$24", "V$25", "V$56", "V$34"]
```

Related Functions

$get_attached_objects()
$get_instance_handles()
$get_net_attributes()
$get_net_handles()
$get_objects()
$get_vertex_attributes()

$get_view_area()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$get_view_area()

Description

Returns a vector containing the locations of the lower left and upper right corners of the current view in the active window.

Example(s)

The following example reports the locations of the current view in the schematic window:

```
$get_view_area()
// [[-3.1831, -1.507,  "Schematic#1.0"], [3.1831, 1.507,  "Schematic#1.0"]]
```

Related Functions

$view_area()

$get_viewpoint()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_viewpoint()

Description

Returns a string defining the session viewpoint pathname.

The viewpoint pathname was specified by the $set_viewpoint() or $open_design_sheet() function.

Example(s)

The following example displays the use of the $get_viewpoint() function when a design sheet is open in the Session window.

```
$writeln($get_viewpoint())
```

In the transcript, you will see:

```
    $writeln("$DESIGNS/my_lib/dff/vpt")
//  "$DESIGNS/my_lib/dff/vpt"
```

Related Functions

$open_design_sheet() $set_viewpoint()

$get_window_names()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$get_window_names(*info*)

File > Select Window

Description

Returns a vector containing the specified information about all windows in the session.

Note that only one type of information can be retrieved in a single call. To retrieve several types of information, call the function several times with a different argument each time. Information about a particular window will be found in the same position in each returned vector, as long as no functions that affect the positions of windows in the session were called between the calls to $get_window_names().

Arguments

- ***info***

  This argument specifies the type of information to return. It can have one of the following values:

  ⇒ **@name**: Returns the names of all windows in the Session, such as "Schematic#1".

  @scope: Returns the name of the AMPLE scope associated with each window.

  @title: Returns the titles of the windows. This usally contains the name of the design object being viewed in the window.

  @extent: Returns the coordinates of the corners of the window.

  @collapsed: Returns @true if the window is displayed as an icon, and @false otherwise.

Example(s)

The following example uses $get_window_names in a function that lists the names and titles of all the windows in the session.

```
function list_titles()
{
   local names = $get_window_names(@name);
   local titles = $get_window_names(@title);
   local i;
   for (i = 0; i < length(names); i = i + 1)
   {
      $writeln($strcat("Window ", names[i], "is titled  ",
         titles[i], "."));
   }
}
```

When you execute the list_titles() function in the Session window, the transcript will be similar to the following:

```
   list_titles();
// "Window  Schematic#1 is titled Schematic#1 my_dff sheet1."
// "Window  Symbol#1 is titled Symbol#1 my_dff."
// "Window  Check#1 is titled Check#1 my_dff/schematic/sheet1:Sheet."
// "Window  Userware#1" is titled Ample Userware for symbol - (untitled)."
// "Window  Check#3 is titled Check#3 my_dff/my_dff;Symbol."
// "Window  Report#2 is titled Report#2 add_det:Interfaces."
// "Window Notepad#2 is titled Notepad#2 design_notes."
```

$group()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$group(name, *existing*, *duration*)

GROup name *existing duration*

Miscellaneous > Group

Description

Defines or adds to groups of design objects for quicker editing operations on those objects.

The knowledge of a group of objects is saved for use in later editing sessions unless you specify @temporary. Properties cannot be grouped together with this function.

Arguments

- **name (Group Name)**

  This text string specifies a new group name to collectively identify the selected objects, or the name of an existing group to which the selected objects should be added.

- ***existing (Existing)***

  This switch lets you add objects to an existing group or replace a group definition. Choose one of the following values:

  ⇒ **@replace** (-Replace): If a group definition with the specified name already exists, it is replaced by the selected objects.

  @append (-Append): If the group name exists, selected objects are added to that group definition.

  @noreplace (-NOReplace): If the group name already exists, an error message is displayed. The group definition remains the same.

- ***duration (Duration)***

  This switch determines whether the group definition is saved or not. Choose one of these two values:

  ⇒ **@persistent** (-Persistent): The group definition is saved at the end of the editing session.

  @temporary (-Temporary): The group definition is only recognized during the current editing session.

Example(s)

The following example defines "new" as the name of the selected group of objects. The group name will not be saved.

```
$group("new", ,@temporary)
```

Related Functions

$change_group_visibility()
$select_group()
$ungroup()

$hide_active_symbol_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$hide_active_symbol_window()

HIDe ACtive Symbol Window

(Active Symbol) Hide Window

Description

Hides the active symbol window from view.

You can specify the active symbol window visibility in the MGC Setup Session dialog box by choosing **MGC > Setup > Session**. You can also toggle the visibility from the palette popup menu. The active symbol window displays the active symbol with its default properties for the schematic editing session. You can place this symbol on a sheet using the $add_instance() function.

Example(s)

This example displays the syntax to hide the active symbol window.

```
$hide_active_symbol_window()
```

Related Functions

$add_instance()
$get_next_active_symbol()
$is_active_symbol_window_visible()
$place_active_symbol()
$set_next_active_symbol()
$show_active_symbol_window()

Related Internal State Functions

$set_active_symbol()

$hide_annotations()

Scope: schematic
Window: Schematic Editor

Usage

$hide_annotations()

HIDe ANnotations

Setup > Annotations/Evaluations > Toggle Annotations

Description

Turns off the display of back-annotated property values and makes them uneditable in the context of the design viewpoint.

Example(s)

This example displays the relationship between $show_annotations() and $hide_annotations(). Property "a_prop" is added to the viewpoint, *my_lib/dff/vpt*; property "b_prop" is added to the unevaluated source sheet, not the viewpoint.

```
$open_design_sheet("my_lib/dff", "my_lib/dff/vpt", "/", "sheet1")
$show_annotations()
$add_property("a_prop", 2.5, [0.32, -0.68], @number, @on, @nopin)
$hide_annotations()
$add_property("b_prop", 3.7, [0.5, -1.23], @number, @on, @nopin)
```

Related Functions

$show_annotations()

$hide_comment()

Scope: schematic
Window: Schematic Editor

Usage

$hide_comment()

HIDe COmment

Setup > Other Options > Comment Visibility Off

Description

Hides comment text and graphics. Hidden comments are not selectable.

Example(s)

The following example displays the function syntax when hiding comment text and graphics on the active schematic sheet.

```
$hide_comment()
```

Related Functions

$show_comment()

$hide_context_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$hide_context_window()

HIDe COntext Window

(Context) Hide Window

Description

Turns off the display of the context window.

The context window displays the outline of a window to indicate the area of the symbol or sheet that is visible in the edit window.

You can redisplay the context window by choosing the **MGC > Setup > Session** and toggling the window visibility in the Session Setup dialog box.

Example(s)

This example displays the syntax to hide the context window.

```
$hide_context_window()
```

Related Functions

$is_context_window_visible() $show_context_window()

$hide_panel_border()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$hide_panel_border(*panel_names*)

HIDe PAnel Border *panel_names*

View > Panel > Hide Panel Border > All Panels on Sheet | By Panel Name

Description

Removes the visible borders of the named panels.

A dialog box is displayed when the menu item is invoked.

Arguments

- ***panel_names (Panel Name)***

  This argument is a repeating text string specifying the name(s) of the panel(s) whose borders should be hidden. If no panel names are specified, all visible panel borders are removed.

Example(s)

The following example displays the function syntax for removing the visible panel border drawn around the panel "mux_pic" when the $show_panel_border() function was invoked.

```
$hide_panel_border("mux_pic")
```

Related Functions

$add_panel()
$delete_panel()
$report_panels()
$show_panel_border()
$view_panel()

$hide_status_line()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$hide_status_line()

HIDe STatus Line

Description

Hides the status line in an editor.

This function sets the status_line_visibility which determines the default shown in the Setup Session dialog box. To display the status line, choose the **MGC > Setup > Session** menu item and click the appropriate button in the dialog box.

Example(s)

The following example displays the function syntax for hiding the status line.

```
$hide_status_line()
```

Related Functions

$is_status_line_visible()

$show_status_line()

$highlight_by_handle()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$highlight_by_handle(*view_mode*, handles)

HIGhlight BY Handle *view_mode* handles

Miscellaneous > Highlight > By Handle

Description

Highlights all unselected, unprotected electrical and comment objects having the specified handles.

If the menu item is invoked or the command or function is typed with no arguments on the command line, a dialog box is displayed in the active window.

Arguments

- **handles (Handle)**

  This argument is a repeating text string specifying unique object handles.

- ***view_mode (Center View?)***

  This argument specifies whether the highlighted objects should be centered in the current view, and zoomed in or out so that the view is defined by the extent of the highlighted objects. It can have one of the following values: **@view** (-View) or ⇒ **@noview** (-NOView).

Example(s)

The following example displays the function syntax when highlighting two nets by their handles, N$15 and N$54, from the active schematic sheet.

```
$highlight_by_handle( , "N$14", "N$54")
```

The next example displays the command syntax for the previous example.

```
hig by h  "N$14"  "N$54"
```

Related Functions

$highlight_property_owner()
$select_by_handle()
$unhighlight_by_handle()
$unhighlight_property_owner()
$unselect_by_handle()

$highlight_property_owner()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$highlight_property_owner([location])

HIGhlight PRoperty Owner [location]

Miscellaneous > Highlight > Property Owner

Description

Highlights the owner of a visible property text string, assuming the owner is currently unselected and unprotected.

An owner is the object to which property value text is assigned with the $add_property() function.

The cursor need not be placed directly on the text. The function highlights the owner of the text closest to the specified location, if that text is a displayed property value. If the text is comment text, an error is issued. The property text owner is highlighted only if it is unselected and unprotected at the time this function is called.

The object remains highlighted until it is explicitly unhighlighted with the $unhighlight_property_owner() function, or until it is selected. Unselection does not restore the object to its highlighted state.

Arguments

- **location (At Location)**

  This argument is a location specifying the coordinates, in user units, of a portion of property text whose owner is to be highlighted.

Example(s)

The following example highlights the owner of a visible property text string that is closest to the location [1.2, 4.2].

```
$highlight_property_owner([1.2, 4.2])
```

Related Functions

$highlight_by_handle()
$unhighlight_by_handle()
$unhighlight_property_owner()

Related Internal State Functions

$set_select_aperture()

$import_edif_netlist()

Scope:	da_session (Component Status Personality Module)
Window:	IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite:	Either $MGC_HOME/bin/enread or $MGC_HOME/pkgs/esi_da, or both, must be available. If command files are used, they should be provided by the site EDIF specialist.

Usage

$import_edif_netlist(edif_file, *command_file*, *replace_mode*)

IMPort EDif Netlist edif_file *command_file replace_mode*

Session > Import > Edif Netlist
File > Import > Edif Netlist

Description

Invokes $MGC_HOME/bin/enread with the specified EDIF netlist file to produce a connectivity model.

When you invoke this function from the palette or from a menu, a dialog box is displayed for you to enter the EDIF file pathname, a command file pathname if desired, and the replacement mode.

Arguments

- **edif_file (EDIF file pathname)**

  This string specifies the pathname to an EDIF netlist file.

- ***command_file (Command file pathname)***

  This is the pathname to a file containing EDIF commands.

- ***replace_mode (Replace mode)***

  This switch specifies whether to replace an existing file having the specified name. It can have one of the following three values:

  @replace (-Replace): Specifies that components written from the EDIF file should replace existing Mentor Graphics components.

  @add_model (-Add_model): Specifies that ENRead is allowed to add a new model to an existing component, but is not allowed to edit any other existing components.

  ⇒ **@noreplace** (-NOReplace): Specifies that if an existing Mentor Graphics component is found, ENRead should issue an error message and not attempt to continue.

Example(s)

The following example creates a connectivity model from the EDIF netlist at $HOME/designs/new_design.edif_nl. Existing components are replaced by components written from the EDIF file.

```
$import_edif_netlist("$HOME/designs/new_design.edif_nl", , @replace)
```

The next example shows the command syntax for the previous example.

```
imp ed n  $HOME/designs/new_design.edif_nl  -Replace
```

Related Functions

$export_edif_netlist()
$export_miflist()
$export_vhdl_netlist()
$generate_schematic()

$insert_template()

Scope: hdtxt_area
Window: VHDL Editor

Usage

$insert_template("template_name")

INSert TEmplate "template_name"

Templates > Insert
VHDL Popup Menu > Templates > Insert

Description

Displays a dialog box containing a scrolling list of available templates.

When the selection has been confirmed, the contents of the template are inserted at the current cursor location. For more information about the contents of the scrolling list of available default System-1076 templates, refer to Appendix C, "VHDL Editor Templates."

If the template name points to a subdirectory, another scrolling list is displayed with the list of available templates.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Arguments

- **template_name**

  This argument is a template name that specifies what template is to be inserted. If this argument is not specified, a dialog box is displayed. Choose the template you want from the scrolling list of templates in the dialog box.

Example(s)

In the following example, when the $insert_template() function is invoked, a dialog box is displayed with the list of available templates.

```
$insert_template()
```

If the template "attribute specification" is chosen from the scrolling list, the following template appears at the current cursor position:

```
ATTRIBUTE <%attribute_designator%> OF ...
```

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$expand_template_name()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$is_active_symbol_window_visible()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$is_active_symbol_window_visible()

Description

Returns @true if the active symbol window is visible, and returns @false if it is not visible.

You can set the window visibility in the Setup Session dialog box by choosing **MGC > Setup > Session**. You can also toggle the window visibility through the Palette popup menu.

Example(s)

The following example displays use of the $is_active_symbol_window_visible() function.

```
$writeln($is_active_symbol_window_visible())
```

In the transcript, you will see:

```
    $writeln(@true)
//  @true
```

Related Functions

$get_next_active_symbol()
$hide_active_symbol_window()
$place_active_symbol()
$set_next_active_symbol()
$show_active_symbol_window()

Related Internal State Functions

$set_active_symbol()

$is_context_window_visible()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$is_context_window_visible()

Description

Returns @true if the context window is visible, and returns @false if it is not visible.

The context window highlights the area of a sheet that is currently displayed in the edit window. You can set the context window visibility by choosing **MGC > Setup > Session** and clicking the appropriate button in the dialog box. You can also toggle the visibility through the palette popup menu.

Example(s)

The following example displays use of the $is_context_window_visible() function.

```
$writeln($is_context_window_visible())
```

In the transcript, you will see:

```
    $writeln(@true)
//  @true
```

Related Functions

$hide_context_window()

$show_context_window()

Related Internal State Functions

$set_active_symbol()

$is_handle_valid()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$is_handle_valid()

Description

Returns @true if the specified handle represents an object on the sheet.

If no object with the specified handle exists on the sheet, the function returns @false.

Example(s)

The following example displays use of the $is_handle_valid() function.

```
$writeln($is_handle_valid())
```

In the transcript, you will see:

```
    $writeln(@true)
// @true
```

Related Functions

$get_attributes()
$get_comment_graphics_attributes()
$get_comment_text_attributes()
$get_frame_attributes()
$get_instance_attributes()
$get_net_attributes()
$get_object_property_attributes()
$get_objects()
$get_pin_attributes()
$get_property_attributes()
$get_vertex_attributes()

$is_selection_open()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$is_selection_open()

Description

Determines whether the selection set is open or closed.

A @true value is returned if the selection set is open; @false is returned if the selection set is closed. When the selection set is open, new selections are added to the selection set. When the selection set is closed, new selections replace the current selection set.

Example(s)

The following example displays the use of the $is_selection_open() function.

```
$writeln($is_selection_open())
```

In the transcript, you will see:

```
    $writeln(@true)
//  @true
```

Related Functions

$does_selection_exist()
$close_selection()
$reopen_selection()
$reselect()

$is_status_line_visible()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$is_status_line_visible()

Description

Returns the current state of the status_line_visibility internal variable: either @true or @false.

You set the status_line_visibility variable through the Setup Session dialog box which is displayed after choosing the **MGC > Setup > Session** menu item, or by executing the $hide_status_line() and $show_status_line() functions. The value returned by $is_status_line_visible() determines the default value displayed in the Setup Session dialog box.

Example(s)

The following example displays the function syntax for displaying the status line.

```
$show_status_line() $writeln($is_status_line_visible())
```

In the transcript you will see:

```
// @true
```

Related Functions

$hide_status_line()

$show_status_line()

$make_symbol()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one comment and pin object must be selected, because a symbol must have both graphic and pin information.

Usage

$make_symbol("component_name", "*symbol_name*", "*interface_name*", *symbol_label*, *create_mode*)

MAKe SYmbol "component_name" "*symbol_name*" "*interface_name*" *symbol_label create_mode*

(Schematic) Edit > Make Symbol

Description

Creates a new symbol and instance from selected comment and pin objects on a schematic sheet.

This function provides a method to create a symbol for immediate placement in the context of a schematic sheet. You can use $make_symbol() to create functional blocks to represent high-level functionality when creating top-down designs. On invocation of the $make_symbol() function, selected comment objects and symbol pins become part of the symbol definition. The selected objects are placed in the center of a newly-created symbol, and the symbol origin is set to the left-most, lowest pin. The current page setup, grid, and default attributes are copied to the new symbol.

An error message is issued if nothing is selected or if any electrical objects, such as nets or instances, are selected. You must perform an explicit $convert_to_comment() function on selected electrical objects in order to include them in the symbol contents.

An automatic symbol check is performed on the symbol contents. If errors in any required checks are found, the function is not executed, and the objects remain selected on the schematic sheet.

If no errors are found, the selected comment objects and symbol pins are deleted from the schematic sheet. The resultant symbol is placed in the same location as

the original comment objects and symbol pins on the schematic sheet. The origin of the symbol is located on the left-most, lowest pin.

Table 2-4 summarizes the behavior of the options. When the menu item is executed or the command or function is typed with no arguments on the command line, a dialog box is displayed in the active window.

Table 2-4. $make_symbol() Option Behavior

Create Mode	Symbol Label	Action
new	nochange	New symbol is created and registered with *interface_name*.
new	default	New symbol is created and registered with *interface_name*. The symbol is labeled as the default symbol model for this interface.
replace	nochange	Existing symbol is replaced by the new symbol, which is registered with *interface_name*. If the existing symbol was labeled as the default, the new symbol is labeled as the default symbol model for the interface.
replace	default	Existing symbol is replaced by the new symbol, which is registered with *interface_name*. The new symbol is labeled as the default symbol model for the interface.

Arguments

- **component_name (Component Name)**

  A text string specifying the pathname of the component being created.

- ***symbol_name (Symbol Name)***

  A text string specifying the name of the newly-created symbol. If not specified, the symbol name becomes the leaf name of the specified component.

- ***interface_name (Interface Name)***

  A text string specifying the name of the interface with which to register the newly-created symbol. The default is the leaf name of the specified component.

- ***symbol_label (Symbol Label)***

  This argument specifies whether or not the new symbol should be labeled as the default symbol model for the interface with which the symbol is registered. Choose one of the following:

  ⇒ **@default** (-Default): This symbol is the default model for the interface with which the symbol is registered. If another symbol is currently labeled as the default for the interface and "@replace" is the value of create mode, then this newly created symbol becomes the default.

  @nochange (-NOChange): If this symbol is new (create mode value is "@new"), the symbol is not registered as the default symbol model for the interface. If this symbol is replacing an existing symbol (create mode value is "@replace"), the new symbol retains the current registration of the symbol it is replacing.

- ***create_mode (Create Mode)***

  This argument specifies if this symbol is new or replacing an existing symbol. Choose one of the following:

  ⇒ **@new** (-New): Create a new symbol and register it with the interface. If a symbol with the same name already exists, an error is reported.

  @replace (-Replace): Overwrite an existing symbol, and retain the registration of the replaced symbol. If the symbol being replaced was registered as the default symbol, the new symbol is registered with the interface as the default symbol model.

Example(s)

The following example shows the function syntax for converting comment graphics on a schematic sheet into a new symbol called "my_symbol".

```
$open_sheet("$PROJECT_A/circuit_1", "schematic", "sheet1")
$add_rectangle([[1.2, 4.3] , [3.4, 5.6]])
$add_line([[1.5, 2.3], [2.5, 5.4]])
$add_pin("p1", [2.5, 5.4], [2.2, 5.0])
...
$make_symbol("$PROJECT_A/my_symbol", "my_symbol")
```

Related Functions

$begin_edit_symbol()
$$check()
$convert_to_comment()
$end_edit_symbol()
$open_symbol()
$save_symbol()

$mark_property_value()

Scope: schematic
Window: Schematic Editor

Usage

$mark_property_value("*property_name*", modified_switch)

MARk PRoperty Value "*property_name*" modified_switch

Miscellaneous > Mark Property Value

Description

Marks a property value as modified (or not modified) on this instance.

Property values have a Value_Modified flag and an Attribute_Modified flag which help determine how properties are updated. A property value on an instance becomes Value_Modified when you change the value on the instance via options to functions, such as $add_instance(), $add_property(), and $change_property_value(), or when you explicitly set the Value_Modified flag using the $mark_property_value() function.

The $mark_property_value() function operates on selected property values, or on the specified property name. A Value_Modified property, by definition, is also Attribute_Modified. You can mark a property value as either @modified or @notmodified, depending on how you want properties updated.

The Value_Modified and Attribute_Modified flags have no meaning in the Symbol Editor

Properties that are on the symbol and the instance and are Value_Modified appear in report windows as "Value Modified". Property values that are marked Value_Modified can be unmarked by choosing Miscellaneous > Mark Property Value and clicking the stepper button on the prompt bar to display "notmodified" in the Modified? field.

Caution

If the property value was modified via $change_property_value() or $change_text_value(), then executing *$mark_property_value(@notmodified)* on that property will clear the Value_Modified flag and cause the value to revert back to the original value on the symbol immediately.

Arguments

- **modified (Modified?)**

  This switch indicates how a property value is to be marked. The switch value can be either ⇒ **@modified** (-Modified) or **@notmodified** (-Notmodified).

- ***property_name (Property Name)***

  This argument specifies the name of the property whose value is to be marked. If not specified, the values of selected properties are marked.

Example(s)

The following example unmarks the selected property value:

```
$mark_property_value(@notmodified)
```

Related Functions

$open_design_sheet() $replace() $update()
$open_sheet()

$measure_distance()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$measure_distance ([from/to_area])

MEAsure DIstance [from/to_area]

Miscellaneous > Measure Distance

Description

Measures the vector distance and angle between two points and displays the delta-X or delta-Y, and the Cartesian angle, for straight line distances in the message area at the bottom of the Design Architect Session Window.

For angular distances, the delta-X, delta-Y, Manhattan and Euclidean distances, and the Cartesian angle, between the two points are displayed in the message area.

Manhattan distance is the sum of delta-X and delta-Y. It is the distance traveled along a rectilinear path between two points.

The delta-X, delta-Y, and Manhattan coordinates are displayed in user units.

Arguments

- **from/to_area (From/To)**

  This argument defines the coordinates indicating the starting point and ending point of the distance to measure specified in user units.

  Press the Select mouse button at the specified location, drag the mouse to the desired ending point, and release the Select mouse button.

Example(s)

The following example displays the function syntax for measuring distance between two points on an active schematic window.

```
$measure_distance([[0.25, 5.0], [0.5, 2.75]])
```

The message area displays the following information (note that the user units are in inches):

```
X=.25  Y=-2.25  Euclidean=2.26  Manhattan= 2.5 inch  Angle=-83.66 degrees
```

The next example displays the command syntax for measuring distance between two points on an active symbol window.

```
mea di  [[0.5, 2.5], [5.3, 0.2]]
```

The message area displays the following information (note that the user units are in pins):

```
X=4.8  Y=-2.3  Euclidean=5.32  Manhattan= 7.1 pin  Angle=-25.60 degrees
```

Related Functions

$setup_page()

$merge_annotations()

Scope: schematic
Window: Schematic Editor

Usage

$merge_annotations(*merge_type*)

MERge ANnotations *merge_type*

Miscellaneous > Merge Annotations > All | Selected

Description

Merges all annotated property values to the source sheet in the context of a design viewpoint.

This function is meaningful only when either the Schematic Editor has been invoked in the context of a design viewpoint, using the $open_design_sheet() function. Design viewpoints and back-annotation files can be created within the Design Viewpoint Editor (DVE), or a down-stream application (such as QuickSim II). Within DVE, you can connect back-annotation objects to a particular design viewpoint. When you return to Design Architect to evaluate a particular design viewpoint, you invoke the $open_design_sheet() function on an instance of the design. Design Architect can view and edit property values annotated from a specified set of back-annotated data (only when annotations are visible).

This function merges either all or selected annotated values to the source (unevaluated) sheet. It replaces source property values with the back-annotated property values from the back-annotation object that were successful. After this function has been executed, if you decide to save the sheet, the back-annotation object will no longer contain the property values which were successfully merged. If you do not save the sheet, the back-annotation property values will not be merged to the sheet on disk. Merges may be unsuccessful if, for example, the property's stability switch is set to @fixed, preventing its value from changing.

This function will not merge annotations to a symbol with fixed properties. The back-annotations for a symbol's fixed properties are stored in the viewpoint.

Caution

Do not merge annotations if the sheet is "reusable"; that is, the sheet is used in several areas of the complete design.

Arguments

- ***merge_type (Merge Type)***

  This argument lets you restrict which back annotation properties are merged into the source sheet. It can have one of the two following values:

  @all (-All): All back annotations, visible or not, are merged into the source. This is the default.

  @selected (-Selected): Only selected, visible back annotations are merged into the source. For this switch value, back annotations must be visible, otherwise a warning message is displayed, and no merge occurs.

Example(s)

This example displays the function syntax for merging the back-annotation property, "a_prop", that was added to *my_lib/dff/vpt*, to the source sheet.

```
$open_design_sheet("my_lib/dff", "my_lib/dff/vpt", "/", "sheet1")
$show_annotations()
$add_property("a_prop", 2.5, [0.32, -0.68], @number, @on, @nopin)
$merge_annotations()
```

Related Functions

$hide_annotations() $save_sheet() $show_annotations()

Related Internal State Functions

$set_annotation_visibility()

$modify_frame()

Scope: schematic
Window: Schematic Editor
Prerequisite: Only one frame must be selected on the sheet in the active window.

Usage

$modify_frame([frame_area])

MODify FRame [frame_area]

(Schematic) Add > Frame

Description

Moves and resizes the selected frame to the rectangular region defined by the coordinates.

Only one frame can be selected for modification.

Arguments

- **frame_area (Frame Area)**

  This argument indicates the coordinates of the frame's new size and position, specified in user units.

Example(s)

The following example displays the function syntax for modifying the dimensions of a selected frame in an active schematic window.

```
$modify_frame([[2, 0.5], [3.2, 2.5]])
```

Related Functions

$add_frame()

$setup_page()

$move()

Scope: da_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$move([location], *flip_type, pivot_increment, rotate_increment*)

MOVe [location] *-Flip flip_type -Pivot pivot_increment -Rotate rotate_increment*

Most popup menus > Move > Selected
Most popup menus > Move > Flipped > Horizontal | Vertical
Most popup menus > Move > Pivoted > -90: | -90: | 180
Most popup menus > Move > Rotated > -90: | -90: | 180

Description

Moves all selected object(s) to a new position that you specify, either by entering coordinates, or by placing the cursor at the desired location.

Only one of the @flip, @pivot, and @rotate switches can be specified at one time. If more than one switch is specified, an error is reported.

In placing the selected objects, two factors are used: (1) The origin(s) of the selected object(s), and (2) the offset of the origin(s) of each selected object from the current basepoint on the editing sheet. A moved object is positioned such that the offset of the object's origin from the new location is the same as the offset of the original location of the object's origin from the basepoint.

If vertices at both ends of a net segment are selected, the $move() function moves the entire segment. If the vertex at only one end of a net segment is selected, the segment stretches from the non-selected vertex to the new location of the selected vertex. If the automatic routing is set to @on, the router is called upon completion of the $move() function to orthogonally route the moved net between its initial and terminal vertices.

If only comment text and graphics are selected, the objects can be moved so that the basepoint is placed off the pin-spacing grid. If any electrical objects are selected, the $move() function will snap the basepoint onto the pin-spacing grid.

Objects can be moved from one window to another. Moving schematics to a symbol window creates symbol graphics (a warning is issued). Displayed

properties of electrical objects are created in the symbol as symbol text. Invisible properties of any moved electrical objects are not found on the newly-created symbol graphics. Moving symbol graphics to a schematic window creates comment objects. You can only move an object to an editable window.

When moving electrical objects from a symbol window to a symbol window, or from a schematic window to a schematic window, invisible properties are moved with their owners, with the visibility switch set to @hidden. Invisible properties do not move with their owners from a symbol window to a schematic window, or from a schematic window to a symbol window.

The move operation preserves the connectivity of the moved objects; automatic connections are not made. If the move results in moved segments being placed on existing pins or vertices, or in moved pins or vertices falling on existing net segments, a not-dot results at the vertex locations.

In addition to not-dots, which indicate that two or more vertices share the same location but are not connected, Design Architect sometimes displays a close-dot. These close-dots appear where any nets are close to another vertex but do not share the same location. If you zoom in such that you can see that the vertex and the net are not touching/connected, the close-dot disappears. Close-dots appear only with diagonal segments.

Property text justification is the location of the fixed justification point relative to the text, as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box. If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

If the $move() function affects property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For more information, refer to the $open_sheet(), $update(), and $replace() function descriptions.

If the $move() function is invoked interactively, a ghost outline appears while the objects are in transit, and the ghost outline moves in response to movement of the graphic input device. The ghost outline appears when you depress the select

mouse button and the object(s) are moved to the location where the mouse button is released.

If the $move() function is invoked through the palette menus, you can move the selected object(s) several times. To exit out of move, press the Cancel button on the still-displayed prompt bar.

Arguments

- **location (To Location)**

  Selected object(s) are moved to a location derived from the coordinates specified, plus the offset of the selected items from the current basepoint of the editing sheet. This coordinate is specified in user units.

  When the prompt bar appears, press the Select mouse button, drag the mouse to the desired location (the ghost outline of the selected objects will move with the movement of the mouse), and release the Select mouse button.

- ***flip_type (Flip)***

  This argument specifies how selected objects are to be inverted. It must have one of the following values:

  ⇒ **@noflip**: The object is not inverted.

  @horizontally: Invert left-to-right or right-to-left, depending on the basepoint location.

  @vertically: Invert top-to-bottom or bottom-to-top, depending on the basepoint location.

- ***degree_increment (Pivot)***

  This argument is an integer specifying degrees to pivot. This argument rotates each selected object based on its own origin. If text or electrical objects are being rotated, the value must be a multiple of 90. Any value is legal for rotating comment graphics. Positive values pivot items counter-clockwise; negative values pivot items clockwise. The default is 0.

- ***degree_increment (Rotate)***

  This argument is an integer specifying degrees. This argument rotates select objects around the basepoint of the group of selected objects. If text or electrical objects are being rotated, the value must be a multiple of 90. Any value is legal for rotating comment graphics. Positive values rotate items counter-clockwise; negative values rotate items clockwise. The default is 0.

Example(s)

The following example shows the function syntax for moving and rotating a selected object or a selected group of objects from one location on the currently active window to another location on the same sheet.

```
$move([-10, 3.25], , 0, 90)
```

The next example shows the command syntax for moving and flipping a selected object or group of objects.

```
mov  [-2.5, -0.5]  -flip horizontally
```

Related Functions

$copy()
$delete()
$flip()
$pivot()
$redo()
$rotate()
$undo()

$move_cursor_incrementally()

Scope: bed_window
Window: Schematic Editor and Symbol Editor
Prerequisite: In order for the key definitions generated from invocations of this function to perform as specified, the active window must be either a symbol window or a schematic window.

Usage

$move_cursor_incrementally(direction, *fine_resolution*, *auto_scroll*)

Description

Enables moving the mouse cursor incrementally, typically in response to using the keyboard "arrow" keys.

The most obvious use of this function is in the body of a key-defining function (see the Examples at the end of this description).

The default key binding is:

- Unmodified arrow keys move by either grid intervals (if the grid is enabled) or by 10% of the window width or height (if the grid is disabled) and auto-scroll if the cursor would move outside the window.
- Shift-arrow keys move by one pixel and auto-scroll if the cursor would move outside the window.
- Control-arrow keys move by grid intervals (if the grid is enabled) or by 10% of the window width or height (if the grid is disabled) and auto-scroll is disabled (@false value).
- Shift-control-arrow keys move by one pixel and auto-scroll is disabled.

The default key binding is disabled whenever the cursor is within a prompt bar or outside the Design Architect Session window, or the active window is not a symbol or a schematic window.

Arguments

- **direction**

  This argument determines cursor movement direction and can have one of eight values: **@up**, **@down**, **@left**, **@right**, **@to_top**, **@to_bottom, @to_left**, and **@to_right**. The last four values indicate movement to the corresponding edge of the area containing the cursor.

- ***fine_resolution***

  This argument determines the granularity of cursor movement and can have one of two values:

  ⇒ **@false**: If the window containing the cursor has a grid, the cursor is moved to the next visible grid point in the specified direction. If the window containing the cursor does not have a grid and the cursor motion is horizontal, the cursor is moved by 10% of the window width; otherwise, the cursor motion is moved by 10% of the window height.

  @true: The cursor is moved by one pixel.

- ***auto_scroll***

  This argument determines cursor action if the cursor would move outside the window. It can have one of the two following values:

  ⇒ **@true**: The window is scrolled to keep the cursor inside the window.

  @false: The cursor may move outside the window.

Example(s)

The following example shows the use of the $move_cursor_incrementally() function within a userware file.

```
function $key_arrow_up(), invisible  {$move_cursor_incrementally(@up);}
function $key_arrow_down(), invisible
                                        {$move_cursor_incrementally(@down);}
```

$open_design_sheet()


Note

If you wish to see the sheet through a viewpoint, apply back-annotations, see existing back-annotations on the sheet, or traverse the design hierarchy from the sheet, then you must use $open_design_sheet(). If you want to create a new sheet, you must use $open_sheet().

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$open_design_sheet("component", "design_viewpoint", "*instance_name*", "*sheet_name*", *edit_mode*, *version*, "*environment_file*", *auto_update_mode*)

OPEn DEsign Sheet "component" "design_viewpoint" "instance_name" "sheet_name" *edit_mode version -ENvironment* "*environment_file*" *auto_update_mode*

File > Open > Design Sheet
Session > Open Design Sheet

Description

Invokes the Schematic Editor in the context of a design viewpoint which allows you to create, edit, or view source and back annotation data.

The "D" displayed in the second field of the status line indicates that you are viewing or editing in the context of a design viewpoint. You can invoke the Schematic Editor either in edit mode (the default), or in read-only mode using the @readonly switch. If you are in edit mode, you can edit back-annotated property values and source property values. You can also merge the back-annotated values to the source sheet.

If you specify a pathname for design_viewpoint, and it exists, the Schematic Editor is invoked on that specific design viewpoint. If the viewpoint does not exist, a default viewpoint is created with a primitive property of "comp" and PCB-specific visible properties. The root of the viewpoint is the default interface, if one exists, or a schematic model with the name "schematic" if the schematic

model exists. If the design_viewpoint does not have an associated back-annotation object, a back-annotation object is attached to the viewpoint with the same name as the viewpoint name.

If the parent instance has the Source_Edit_Allowed property value of "false", the source design sheet cannot be opened for editing. If Source_Edit_Allowed is absent on the parent instance, or if it has the value of "true", the edit mode of the source design sheet can be set to either on or off. If the design sheet is opened for read-only, annotations on the source sheet are not permitted.

When this function is executed from the menu or the command or the function is typed without arguments on the command line, the Open Design Sheet dialog box appears on the screen. You can fill in the name of the component, or you can click on the navigator button, which allows you to use the Dialog Navigator.

From the Dialog Navigator, you may select a Design Architect component design object from a list of files and design objects by clicking on the component name. Or, you can select the viewpoint name by progressing one hierarchical level down from the component level. Click on the desired viewpoint name from the list of available viewpoints for the selected component. When you **OK** the Dialog Navigator, it disappears.

The name of the selected component is placed in the Component Name text entry field or the name of the selected viewpoint is placed in the Viewpoint Name text entry field of the Open Design Sheet dialog box. These fields can be modified as desired even after it has been filled in by selection through the navigator.

If the values for the instance_name, sheet_name, edit_mode, environment_file, and auto_update_mode should be other than the defaults, click on the **Yes** button next to the Options? field. The "long form" of the Open Design Sheet dialog box is displayed for you to change the values for any arguments.

You can also open a design viewpoint from the Design Manager. When you click on a design viewpoint icon, you can choose to open either the Design Viewpoint Editor (DVE) or Design Architect. If you choose Design Architect, the specified object is opened in the context of a design viewpoint.

If you have a transcript window open, notice that $$open_design_sheet() is displayed, rather than $open_design_sheet(). $$open_design_sheet() is a function that $open_design_sheet() calls. $$open_design_sheet() will exhibit the same behavior as the $open_design_sheet() function if you replay the transcript.

Arguments

- **component (Component Name)**

  This argument is a text string specifying the pathname of the component to be edited.

- **design_viewpoint (Viewpoint Name)**

  This text string specifies the viewpoint pathname. If the viewpoint name contains no "/", the viewpoint pathname is assumed to be relative to the component name. If the viewpoint exists, the Schematic Editor is invoked on that specific design viewpoint.

  If the viewpoint does not exist, a default viewpoint is created with the primitive property of "comp" and PCB-specific visible properties. The root of the viewpoint is either the default interface, if it exists, or a schematic model with the name "schematic" if the schematic model exists. If a viewpoint name is not specified, it is assumed to be "pcb_design_vpt" in the component directory.

  If the design_viewpoint does not have an associated back-annotation object, a back-annotation object is attached to the viewpoint with the same name as the viewpoint name.

- ***instance_name (Instance Name)***

  This text string specifies the hierarchical instance pathname of a symbol existing on a sheet of a design viewpoint. If this is omitted, the string "/" is used, indicating the root symbol of the design viewpoint.

- ***sheet_name (Sheet Name)***

  This text string specifies the name of a sheet within the specified component. If this is omitted, the string "sheet1" is used.

- ***edit_mode (Open as:)***

  This argument can have one of the following values:

  ⇒ **@editable** (-EDitable): Indicates that the design sheet can be edited.

  @readonly (-Readonly): Indicates that the design sheet is to be opened in read-only mode. If there is already a window open to edit the requested sheet, an error message is issued and no window is opened.

- ***version (Version)***

  This integer specifies the version number of the sheet to open for viewing. When you specify a version number, you cannot edit that sheet, nor can you invoke the $update() or $replace functions on that sheet. If the specified version of the sheet does not exist, an error messsage is displayed. The default is the most current version of the sheet.

- ***environment_file (Environment)***

  This argument is the pathname to an ASCII file containing functions to execute after the window is opened. Functions in this file may affect the environment of other windows of the same type.

- ***auto_update_mode (Auto Update Mode:)***

  This switch specifies which type of automatic instance update is performed when the sheet is opened. If not specified, the default is the value of the $get_auto_update_mode() function.

  Choose one of the five following options:

  @noupdate (-Noupdate): Instances are not automatically updated when the sheet is opened.

  @clear (-Clear): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values. Any new properties on the current symbol are added to the instance.

  @symbol (-Symbol): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol values. If a property value is updated and the Attribute_Modified flag is

not set, the attributes are also updated. Any new properties on the current symbol are added to the instance.

@instance (-Instance): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance.

@auto (-Auto): Symbol body graphics are updated. All instance-only and Value_Modified properties remain unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated.

Example(s)

The following example displays the function syntax for opening a design sheet, in viewpoint *$DESIGNS/my_lib/dff/pcb_design_vpt*. The root instance of the design viewpoint is used as the instance pathname.

```
$open_design_sheet("$DESIGNS/my_lib/dff",
                   "$DESIGNS/my_lib/dff/pcb_design_vpt", "/", "sheet1")
```

The next example shows the command syntax for opening a design sheet, *$DESIGNS/mux_dir/cpu/pcb_design_vpt*. The instance pathname is */MUX1*.

```
ope de s  "$DESIGNS/mux_dir/cpu"
          "$DESIGNS/mux_dir/cpu/pcb_design_vpt" "/MUX1"  "sheet1"
```

In the next example, no viewpoint name is specified. In this case, a viewpoint with the pathname *$DESIGNS/mux_dir/cpu/pcb_default*_vpt is opened if it exists. If it does not exist, it is created like a default PCB viewpoint.

```
ope de s  "$DESIGNS/mux_dir/cpu"  "" "/MUX1"  "sheet1"
```

Related Functions

$get_auto_update_inst_handles()
$get_in_design_context()
$get_source_edit_allowed()
$hide_annotations()
$mark_property_value()
$merge_annotations()
$open_down()
$open_sheet()
$open_symbol()
$open_up()
$open_vhdl()
$recalculate_properties()
$set_evaluations()
$show_annotations()
$update_all()
$set_viewpoint()

Related Internal State Functions

$set_auto_update_mode()
$set_annotation_visibility()

$open_down()

Scope: schematic
Window: Schematic Editor
Prerequisite: Only one instance can be selected.

Usage

$open_down("sheet_name", *edit_mode*)

OPEn DOWn "sheet_name" *edit_mode*

(Schematic) File > Open Down > Sheet1 | Other

Description

Opens a sheet one hierarchical level down from a selected instance in the context of a design viewpoint.

Only one instance can be selected. If more than one instance is selected, a warning is issued.

If the specified sheet does not exist, it is created. If the selected instance did not exist in the design context when the sheet was originally opened, a $save_sheet() function is executed. The specified sheet is opened only if a successful $save_sheet() function is performed, and the viewpoint can successfully descend through the selected instance.

When you choose this function from a menu or palette, the Open Down dialog box displays a list of the objects you can open.

Arguments

- **sheet_name (Sheet Name)**

  This text string specifies the sheet_name of the sheet to be opened for the selected instance.

- ***edit_mode (Readonly)***

  This argument can have one of the following values:

  ⇒ **@editable** (-Editable): Indicates that the sheet can be edited.

  @readonly (-Readonly): Indicates that the sheet is to be opened in read-only mode within the session. If there is already a window open to edit the requested sheet, an error message is issued and no window is opened.

Example(s)

The following example displays the function syntax for opening the sheet below the design sheet, on the viewpoint *$DESIGNS/da/my_lib/dff/vpt*.

```
$open_design_sheet("$DESIGNS/my_lib/dff", "$DESIGNS/my_lib/dff/vpt",
                                                        "/", "sheet1")
$$add_instance("$MGC_GENLIB/portin", "portin", [1.2, 3.4])
$open_down("sheet1")
```

Related Functions

$open_up()

$save_sheet()

$open_sheet()


Note

If you wish to see the sheet through a viewpoint, apply back-annotations, see existing back-annotations on the sheet, or traverse the design hierarchy from the sheet, then you must use $open_design_sheet(). If you want to create a new sheet, you must use $open_sheet().

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$open_sheet ("component_name", "*schematic_name*", "*sheet_name*", *edit_mode*, *version*, "*environment_file*", *auto_update_mode*)

OPEn SHeet "component_name" "*schematic_name*" "*sheet_name*" *edit_mode version -ENvironment* "*environment_file*" *auto_update_mode*

File > Open > Sheet
Session > Open Sheet
(Schematic) File > Open Down > Choose Model
(Schematic) Instance > Open Down

Description

Allows you to edit or view a schematic sheet.

If the specified sheet does not exist, it is created (unless the @readonly switch was specified). If the sheet is already being edited in a window, this function opens another window onto the sheet.

Multiple windows are allowed to be open on the same sheet; however, those windows must all be in the same edit mode. It is possible to open a schematic in a view-only window, and then use the $set_edit_mode() function to make editing possible on the schematic in that window.

When this function is executed from the menu or the command or function is typed with no arguments on the command line, the Open Sheet dialog box appears on the screen. You can fill in the name of the component, or you can click on the navigator button, which allows you to use the Dialog Navigator.

If you select the navigator button, the Dialog Navigator appears on the screen. From the Dialog Navigator, you may select a Design Architect component design object from a list of files and design objects by clicking on the component name.

You can also select the schematic name by progressing one hierarchical level down from the component level. Click on the schematic name you want to select from the list of available schematics for the selected component.

If you also want to select the sheet name, progress another level down from the schematic level. Click on the sheet name you want to select from the list of available sheets for the selected schematic.

When you OK the Dialog Navigator, it disappears. The name of the selected design object is placed in the Component Name text entry field of the Open Sheet dialog box. This field can be modified as desired even after it has been filled in by the selection of the component through the navigator.

If the values for the schematic_name, sheet_name, edit_mode, environment_file, and auto_update_mode should be other than what you specified through the Dialog Navigator or the defaults, click on the "Yes" button next to the Options? field. This action displays the "long form" of the Open Sheet dialog box, and lets you change the values for any and all optional arguments.

If you have opened a transcript window on the Design Architect session, you will notice that the function $$open_sheet() is displayed in the transcript rather than $open_sheet(). The function, $$open_sheet() is a function that $open_sheet() calls. If you replay the transcript, the $$open_sheet() function will exhibit the same behavior as the $open_sheet() function.

If you get an error message similar to the following:

```
// Error: $$open_sheet returned error status at line ...
// Error: Sheet "sheet1" references its schematic as <pathname><UID>
//        instead of <pathname> <UID>
//        Please correct the reference and try again.
```

you have a corrupt reference file, probably caused by using operating system commands instead of the Design Manager to move or copy part or all of the design. To fix this problem, open the Design Manager and navigate to the schematic (not the sheet), then choose the **Edit > Check Refs** menu item.

Arguments

- **component_name (Component Name)**

  This text string specifies the pathname of the component to be edited.

- ***schematic_name (Schematic Name)***

  This text string specifies the name of a schematic representation of the component. If schematic_name is not specified, it defaults to "schematic".

- ***sheet_name (Sheet Name)***

  This text string specifies the name of the sheet to be edited. If a sheet name is not specified, it defaults to "sheet1".

- ***edit_mode (Open as:)***

  This argument can have one of the following values:

  ⇒ **@editable** (-EDitable): The schematic can be edited.

  @readonly (-Readonly): Indicates that the schematic is to be opened in read-only mode. If there is already a window open to edit the requested sheet, an error message is issued and no window is opened.

- ***version***

  This integer specifies the version number of the sheet to open for viewing. When you specify a version number, you cannot edit that sheet, nor can you invoke the $update() or $replace() functions on that sheet. If the specified version of the sheet does not exist, an error message is displayed. The default is the most current version of the sheet.

- ***environment_file (Pathname for environment script)***

  This argument is the pathname to an ASCII file containing functions to execute after the window is opened. Functions in this file may affect the environment of other windows of the same type.

- ***auto_update_mode (Auto Update Mode:)***

  Specifies which type of update will be performed when the sheet is opened. If not specified, the value of the $get_auto_update_mode() function is used. Choose one of the five following options:

  @noupdate (-Noupdate): Instances are not automatically updated when the sheet is opened.

  @clear (-Clear): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values. Any new properties on the current symbol are added to the instance.

  @symbol (-Symbol): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol values. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated. Any new properties on the current symbol are added to the instance.

  @instance (-Instance): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance.

  @auto (-Auto): Symbol body graphics are updated. All instance-only and Value_Modified properties remain unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated.

Example(s)

The following example shows the values of the arguments when opening an existing schematic sheet, *$DESIGNS/design_1*. The sheet was created using the default values for the arguments schematic_name and sheet_name. The sheet is opened for edits and no environment file is specified. Instances are updated when the sheet is opened; Value_Modified and instance-only properties remain unchanged, other properties are reset to current symbol values, and any new properties on current symbols are added to the instances.

```
$open_sheet("$DESIGNS/design_1", "schematic", "sheet1", , , , @auto)
```

In the transcript you will see:

```
$$open_sheet("$DESIGNS/da/design_1", "schematic", "sheet1", @editable,
                                                        void, "", @auto)
```

The next example shows the command syntax for the previous example.

```
ope sh  "$DESIGNS/design_1"  "schematic"  "sheet1"  -a
```

Related Functions

$get_auto_update_inst_handles()
$mark_property_value()
$open_design_sheet()
$open_symbol()
$open_vhdl()
$set_edit_mode()

Related Internal State Functions

$set_auto_update_mode()

$open_source_code()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$open_source_code("language", "source_objectname", "*component_name*", *edit_mode*, *version*, "*initial_contents*", "*environment_file*", *filetype*)

OPEn SOurce Code "language" "source_objectname" "*component_name*" *edit_mode version -INitial_contents* "*initial_contents*" *-ENvironment* "*environment_file*" *filetype*

File > Open > Source Code
Session > Open Source Code

Description

Opens a source code editor for the specified language.

This function creates a new window containing a text editor which is specialized for editing and processing the specified type of source code. Each specialized editor has a dialog box in which you can set compiler options. The $compile() function in each editor starts the relevant compiler on the source code. Each editor may also have templates to aid in the construction of source code in that language.

For information about VHDL models, refer to the *Mentor Graphics Introduction to VHDL*. For information about synthesis, refer to the *AutoLogic Library Development Manual*.

Arguments

- **language (Language)**

  This text string specifies the language of the source code editor desired. Possible values are: "**VHDL**", "**PLA**", "**M**", "**KISS**", "**EQU**". The list of choices may be extended by other optional or user-defined packages.

- **source_objectname**

  This argument is a text string defining the pathname of the source object. If the design object does not exist, Design Architect creates it.

- ***component_name***

  This text string specifies the component object that the source object is in (if it exists). If the specified component does not exist, it is created.

- ***edit_mode***

  This argument indicates whether the source object is to be opened in read-only or edit mode. It can have one of the following values: **@readonly** (-Readonly) or ⇒ **@editable** (-EDitable).

- ***version***

  This integer specifies the version number of the source object to open for viewing. When you specify a version number, you cannot edit that source object. If the specified version of the sheet does not exist, an error message is displayed. If this argument is not specified, the newest version is assumed, which is indicated by the number 0.

- ***initial_contents***

  This argument is a text string specifying the pathname to the text file to import to the editor. This is the most convenient method to convert plain text files to versioned source design objects.

- ***environment_file***

  This argument is the pathname to an ASCII file containing functions to execute after the window is opened. Functions in this file may affect the environment of other windows of the same type.

- ***filetype***

  This argument specifies the type of file to open Choose one of the following:

  ⇒ **@existing** (-existing): Indicates that the source may be either a plain text file or a versioned fileset. If the source file specified does not exist, a plain text file is created with the specified pathname.

  @fileset (-fileset): Indicates that the source specified is a versioned fileset.

  @plain_text (-plaintext): Indicates that the source specified is a plain text file.

Example(s)

The following example shows the function syntax for opening a PLA editing window on the design object, *pla_model*, which is in the component named *test_model*. It is assumed that the PLA synthesis options are installed.

```
$open_source_code("PLA", "pla_model", "test_model ", @editable)
```

You will see the following lines in the transcript window:

```
$$open_source_code("PLA", "pla_model", "test_model ", @editable,
                                                    0, " ", " ", @plain_text);
//  Note:  Version 1 of component "$PROJECT_X/test_model" has been
                                        written  (from:  Capture/gdc_do_mgr_note 81)
$set_active_window("PLA Editor");
```

The next example displays the command syntax for the previous example.

```
open source code  "PLA"  "pla_model"  "test_model"  -editable
```

Related Functions

$open_vhdl()

$open_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$open_symbol("component_name", "*symbol_name*", *edit_mode*, "*environment_file*")

OPEn SYmbol "component_name" "*symbol_name*" *edit_mode* -*ENvironment* "*environment_file*"

File > Open > Symbol
Session > Open Symbol

Description

Allows you edit or view a symbol.

If the specified symbol does not exist, it is created, unless the @readonly switch is specified. An automatic $update_from_interface() function is executed any time an existing symbol is edited in order to bring it up-to-date with respect to its registered interface.

If this is a new symbol and there exists an interface in this component that has been marked as the default interface, then the new symbol automatically incorporates the interface information (which includes pins and properties). The default interface may be created by the HDL compiler or by Design Architect. For more information about this function, refer to page 2-664.

If the symbol exists, has been registered with an interface, and is invalid with the current version of that interface (for example, pin mismatch), Design Architect issues a warning message.

Although multiple windows are allowed to be open on the same symbol, those windows must all be in the same edit mode (edit or view-only). It is possible to open a symbol in a read-only window, and then use the $set_edit_mode() function to make editing possible on the symbol in that window.

When this function is executed from the menu or the command or function is typed without arguments on the command line, the Open Symbol dialog box

appears on the screen. You can fill in the name of the component, or you can click on the navigator button, which allows you to use the Dialog Navigator.

If you select the navigator button, the Dialog Navigator appears on the screen. From the Dialog Navigator, you may select a Design Architect component design object from a list of files and design objects by clicking on the component name.

You can also select the symbol name by progressing one hierarchical level down from the component level. Click on the symbol name you want to select from the list of available symbols for the selected component.

When you **OK** the Dialog Navigator, it disappears. The name of the selected component is placed in the Component Name text entry field of the Open Symbol dialog box. This field can be modified as desired even after it has been filled in by the selection of the design object through the navigator.

If the values for the symbol_name, edit_mode, and environment_file should be other than the what you specified through the Dialog Navigator or the defaults, click on the **Yes** button next to the Options? field. This action displays the "long form" of the Open Symbol dialog box, and lets you change the values for any and all optional arguments.

If you have opened a transcript window on the Design Architect session, you will notice that the function $$open_symbol() is displayed in the transcript rather than $open_symbol(). The function, $$open_symbol() is a function that $open_symbol() calls. If you replay the transcript, the $$open_symbol() function will exhibit the same behavior as the $open_symbol() function.

Arguments

- **component_name (Component Name)**

  This argument is a text string specifying the pathname to the component.

- ***symbol_name (Symbol Name)***

  This argument is a text string defining which symbol to edit under the component. If not specified, the name defaults to the leaf name of the component.

- ***edit_mode (Open as:)***

  This argument can have one of the following values:

  @reavdonly (-Readonly): Indicates that the symbol is to be opened in read-only mode within the session. If there is already a window open to edit the requested symbol, an error message is issued and no window is opened.

  ⇒ **@editable** (-EDitable): The symbol can be edited.

- ***environment_file (Environment)***

  This argument is the pathname to an ASCII file containing functions to execute after the window is opened. Functions in this file may affect the environment of other windows of the same type.

Example(s)

The following example displays the function syntax for opening an existing symbol component, *$PROJECT/company_lib/d_flip_flop*. Note that there are no values specified for the optional arguments.

```
$open_symbol("$PROJECT/company_lib/d_flip_flop")
```

The following example shows the command syntax for opening a new symbol component, *$DESIGNS/acc_properties*.

```
ope sy  "$DESIGNS/acc_properties"
```

Related Functions

$begin_edit_symbol()
$end_edit_symbol()
$make_symbol()
$open_design_sheet()
$open_sheet()
$open_vhdl()
$set_edit_mode()
$update_from_interface()

$open_up()

Scope: schematic
Window: Schematic Editor

Usage

$open_up(*edit_mode*)

OPEn UP *edit_mode*

File > Open Up

Description

Opens the parent sheet of the currently viewed sheet in the context of a design viewpoint.

If you specify @readonly and a window is already open to edit the requested sheet, an error message is issued and no window is opened.

Arguments

- ***edit_mode (Readonly)***

  This argument indicates whether the sheet is to be opened in read-only or edit mode. It can have one of the following values: **@readonly** (-Readonly) or ⇒ **@editable** (-Editable).

Example(s)

The following example displays the function syntax opening the parent sheet for the viewpoint, *$DESIGNS/two_dff_ckt/vpt*.

```
$open_design_sheet("$DESIGNS/two_dff_ckt",
                                    "$DESIGNS/two_dff_ckt/vpt", "/", "sheet1")
$open_up()
```

Related Functions

$open_design_sheet() $open_down()

$open_vhdl()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$open_vhdl("vhdl_objectname", *"component_name*", *edit_mode*, *version*, *"initial_contents*", *"environment_file*", "*placeholder*", "*placeholder*", *filetype*)

OPEn VHdl "vhdl_objectname" *"component_name*" *edit_mode version -Initial_contents "initial_contents*" *-ENvironment "environment_file" filetype*

File > Open > VHDL
Session > Open VHDL

Description

Opens a VHDL Editor window on the specified version of the VHDL source design object.

If the VHDL source design object does not exist and a plain text file is specified, a new VHDL source design object will be created containing a copy of the plain text file.

When this function is executed from the menu or a command or function is typed without arguments on the command line, a dialog box appears. This dialog box includes a navigator button which, when selected, brings up a Dialog Navigator. The Dialog Navigator displays a list of objects, which includes VHDL source objects, compiled VHDL design object, and source and compiled plain text files. When you select a VHDL source object from this list, the VHDL source design object and the component name are determined from the selected entity and their names are entered in those fields in the dialog box.

If you select a plain text file from the Dialog Navigator, the selected plain text file is imported into the VHDL Editor window. If you select a compiled VHDL design object or a compiled VHDL plain text file, the corresponding sources are brought into the VHDL Editor window.

Depending upon whether the VHDL compiler was run on a plain text file or a VHDL source design object, the "plain_text" file or "vhdl_objectname" and "component" fields on the dialog box may be filled in.

Caution

Do not edit VHDL Editor files with any other editor, such as the Notepad Editor. Doing so will cause the version information saved in the database to become inconsistent. Edit VHDL Editor files only in the VHDL Editor.

Arguments

- **vhdl_objectname (VHDL Name)**

  This text string defines the pathname of the VHDL source object. If the design object does not exist, Design Architect creates it.

- ***component_name (Choose Component?)***

  This text string specifies the component object that the VHDL source object is in (if it exists). If the specified component does not exist, it is created.

- ***edit_mode (Open as:)***

  This argument indicates whether the VHDL source object is to be opened in read-only or edit mode. It can have one of the following values: **@readonly** (-Readonly) or ⇒ **@editable** (-EDitable).

- ***version (Number of VHDL)***

  This integer specifies the version number of the VHDL source object to open for viewing. When you specify a version number, you cannot edit that VHDL source object. If the specified version of the sheet does not exist, an error message is displayed. If this argument is not specified, the newest version is assumed, which is indicated by the number 0.

- ***plain_text_file (Import Plain Text from:)***

  This text string specifies the pathname to the text file that will be immediately imported to the VHDL Editor. This is the most convenient method to convert plain text HDL files to versioned VHDL source design objects.

- ***environment_file (Pathname for environment script)***

  This argument is the pathname to an ASCII file containing functions to execute after the window is opened. Functions in this file may affect the environment of other windows of the same type.

- ***placeholder***

  The two placeholder arguments are used to aid in formatting the Open VHDL dialog box and have no effect on the function. If you are calling the function in AMPLE userware, you must include the commas that separate each of these arguments if you specify a value for the filetype argument.

- ***filetype***

  This argument specifies the type of file to open Choose one of the following:

  ⇒ **@existing** (-existing): Indicates that the source may be either a plain text file or a versioned fileset. If the source file specified does not exist, a plain text file is created with the specified pathname.

  @fileset (-fileset): Indicates that the source specified is a versioned fileset.

  @plain_text (-plaintext): Indicates that the source specified is a plain text file.

Example(s)

The following function displays the function syntax for creating a VHDL design object, *$PROJECT_A/test_lib/mux/vhdl_model*. If the component name does not exist, it is created.

```
$open_vhdl("$PROJECT_A/test_lib/mux/vhdl_model")
```

The next example shows the function syntax for the converting a plain text ASCII file containing VHDL commands to a VHDL source object.

```
$open_vhdl("$PROJECT_A/test_lib/mux/adder", "my_component",
                                    @editable, 0, "my_plaintext_hdl_file", , ,@fileset)
```

Related Functions

$create_entity()
$get_compiled_vhdl_source_name()
$open_design_sheet()
$open_sheet()
$open_symbol()

$pivot()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: There must be at least one electrical object or comment object selected in the active window.

Usage

$pivot(degree_angle)

PIVot degree_angle

(Symbol) Symbol Body & Pins > Rotate/Flip > Pivot > -90 |90 |180 |As Specified
(Symbol, Schematic) Mixed Selection > Rotate/Flip > Pivot >
(Schematic) Instance > Rotate/Flip > Pivot > -90 |90 |180 |As Specified
(Schematic) Edit > Edit Commands > Edit Operations > Pivot >
(Symbol) Edit > Edit Operations > Pivot > -90 |90 |180 |As Specified

Description

Pivots selected electrical, symbol, or comment objects individually about their own origins.

Net segments attached to pins on the selected instances "stretch" to the new position.

If the owner of selected property text is also selected, the property text pivots along with the object to which it is attached, but always appears in either left-to-right or bottom-to-top orientation.

If the owner is not selected, the selected property text pivots to the specified number of degrees. The pivot operation preserves the connectivity of the pivoted objects; automatic connections are not made (not-dots may result).

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box. If the orientation of the property text is at 0 degrees, the horizontal justification controls

left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_sheet(), $open_design_sheet(), $update(), and $replace() functions.

Arguments

- **degree_angle (Degrees)**

  This argument defines an integer specifying degrees to pivot. This argument pivots selected objects around the basepoint of the group of selected objects. If text or electrical objects are being pivoted, the increment must be a multiple of 90. Any increment is legal for pivoting comment and symbol graphics. Positive values pivot items counter-clockwise; negative values pivot items clockwise.

Example(s)

The following example displays the function syntax for pivoting a selected comment graphic on the currently active schematic sheet clockwise 90 degrees.

```
$pivot(-90)
```

Related Functions

$copy()
$flip()
$move()
$replace()
$rotate()
$update()

$place_active_symbol()

Scope: schematic
Window: Schematic Editor

Usage

$place_active_symbol([location], *replace_mode, name_value_pairs*)

PLAce ACtive Symbol [location] *replace_mode name_value_pairs*

(Active Symbol) > Add Active Symbol
(Schematic) Add > Instance > Active Symbol
(Schematic) Edit > Edit Commands > Add Electrical > Instance > Active Symbol

Description

Places the current active symbol at the specified location.

The active symbol is the last symbol that was added to the current active window with the $set_active_symbol() function or the $add_instance() function. The behavior of this function is just like that of the $add_instance() function when adding another instance of the last instance added.

When invoking this function from a menu, or from a command line without specifying a location, use the mouse to drag the ghost image of the symbol to the desired location. You can also place the active symbol by clicking the Select mouse button in the active symbol window, then clicking at the desired location.

If one or more properties on the component symbol are set to @protect, @variable, or @nonremovable mode, you can override the associated property values, using the repeating name/value argument pair to reassign new values. Name/value pairs are saved with an active symbol so that when it is placed on a sheet, the properties specified with the last $add_instance() are used.

If you change a property value when you instantiate the component symbol, the property is flagged as Value_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For more information, refer to the $open_sheet(), $open_design_sheet(), $update(), and $replace() function descriptions.

Properties on the symbol and the instance that are Value_Modified appear in report windows as "Value Modified". A Value Modified property is also

Attribute_Modified. Property values that are marked Value_Modified can be unmarked using the $mark_property_value(@notmodified) function, or by choosing the **Miscellaneous > Mark Property Value** menu item and clicking the stepper button on the prompt bar to display "notmodified" in the Modified? field.

Arguments

- **location (Location)**

  This argument describes the coordinates that identify the origin of the instance of the active symbol specified in user units.

- ***replace_mode (Prop Merge)***

  This argument is obsolete in V8.1 and later releases. Replacement functionality is discussed in the $open_sheet() and $update() function descriptions.

- ***name_value_pairs (Name, Value)***

  This is a vector that contains a repeating argument pair that specifies a name and an associated value of a symbol body property. Name is a text string specifying a property name whose value is to be modified on the instance. Value is a text string specifying an instance-specific value for the property value.

  Both function and command modes require the names and values to be quoted, and brackets around the argument.

  The repeating name/value argument pair supports the enumeration of instance-specific values for symbol properties. An error message is issued if an attempt is made to change the value of a property that is set to @fixed mode on the symbol.

  If the property does not exist on the symbol, the property is added to the instance with the specified value and the property type defaulting to the type declared for the property.

  Name_value_pairs are for symbol body properties only. If you specify a pin property name that is on the symbol, you will not modify that pin property value. Instead, a symbol body property with that pin property name and value is added to the instance.

Example(s)

The following example displays the use of the $place_active_symbol() function. Two instances of the $portin component are placed on the currently active sheet, the first instance by invoking the $$add_instance() function and the second instance by invoking the $place_active_symbol() function.

```
$$add_instance("$MGC_GENLIB/portin", "portin", [-0.3, 5.0])
$place_active_symbol([1.4, 3.6])
```

Related Functions

$add_instance()
$get_active_symbol()
$get_active_symbol_history()
$mark_property_value()
$open_sheet()
$replace()
$set_active_symbol()
$set_active_symbol_history()
$update()

$print_all_sheets()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite: A default printer must be specified before this function is called.

Usage

$print_all_sheets("component", *stop_level*, *preview*, *filter*)

PRInt ALl Sheets "component" *stop_level -preview filter*

Description

Prints all sheets in the specified hierarchy.

The preview switch can be used to select specific sheets in the hierarchy for printing.

Arguments

- **component (Component Path)**

  A string data type that specifies the pathname to the top-level component in the hierarchy.

- ***stop_level* (Stop Level)**

  An optional integer data type that specifies the level at which to stop printing sheets. If the stop_level argument is set to zero, all levels are printed. The default is 0.

- ***preview*** **(Preview)**

  An optional name data type that determines whether or not a preview dialog box appears. The possible choices are:

  @preview (-Preview): Display the preview dialog box. This allows selection of specific sheets to print, rather than printing all sheets.

  ⇒ **@nopreview** (-NOPreview): Do not display the preview dialog box.

- ***filter*** **(Filter)**

  An optional vector data type of strings. If a sheet pathname contains one of the strings specified, that sheet is not printed. Wildcards are not permitted in the strings and each string is case sensitive.

  In command syntax, the brackets surrounding the vector are omitted.

Returned Value

One of two possible values:

VOID The sheets printed without error.

FALSE The sheets in the component hierarchy could not be opened.

Example(s)

In the following example, all sheets in the component heirarchy of "/usr/designs/7496" are printed, excluding sheets with "$PHASE1" in the pathname:

```
$print_all_sheets("/usr/designs/7496", 0, @nopreview, "$PHASE1")
```

Related Functions

$print_design_sheets() $print_schematic_sheets()

$print_design_sheets()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite: A viewpoint should be open in the Session window.

Usage

$print_design_sheets()

PRInt DEsign Sheets

Description

Prints all sheets in a design that display annotations.

If a design sheet window is not open when this function is executed, the last design viewpoint set for edits will identify the design viewpoint by executing the $set_viewpoint() function.

Example(s)

The following example prints all the design sheets in a design that displays the annotations.

```
$print_design_sheets()
```

Related Functions

$get_viewpoint() $open_design_sheet() $set_viewpoint()

$print_schematic_sheets()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$print_schematic_sheets("component_name", "schematic_name")

PRInt SChematic Sheets "component_name" "schematic_name"

Description

Prints all of the sheets in a schematic.

Arguments

- **component_name (Component Name)**

  This text string specifies the name of the component**.**

- **schematic_name (Schematic Name)**

  This text string specifies the name of the schematic.

Example(s)

The following function example prints all the sheets under the schematic "schematic" for the component *your_home/da/add_det*.

$print_schematic_sheets("your_home**/da/add_det", "schematic")**

Related Functions

$print_design_sheets()

$protect()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: There must be at least one object selected.

Usage

$protect()

PROtect

Miscellaneous > Protect > Selected

Description

Adds all the selected objects to the set of protected items.

Protected items are ignored by subsequent item selection functions; consequently, they cannot be edited until they are unprotected. The selection filter is not used.

Protected items remain protected from one editing session to the next, until you issue the $unprotect() or $unprotect_area() function. You cannot select the property text owned by a protected item; you must unprotect the item first.

Example(s)

The following example protects all selected electrical and comment objects.

```
$protect()
```

Related Functions

$protect_area() $unprotect() $unprotect_area()

$protect_area()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$protect_area([protection_area])

PROtect AREa [protection_area]

Miscellaneous > Protect > By Area:

Description

Adds all the objects within the specified rectangular region to the set of protected items.

Protected items are ignored by subsequent item selection functions; consequently, they cannot be edited until they are unprotected. The selection filter is not used. Protected items remain protected from one editing session to the next, until you issue the $unprotect() or $unprotect_area() function. You cannot select the property text owned by a protected item; you must unprotect the item first.

Arguments

- **protection_area (Area)**

  This argument pair defines the coordinates indicating diagonal corners of the protection rectangle specified in user units.

Example(s)

The following example displays the function syntax for protecting all electrical and comment objects within the specified region, [1.2, 1.2] and [4.5, 6.0].

```
$protect_area([[1.2, 1.2], [4.5, 6.0]])
```

Related Functions

$protect() $unprotect() $unprotect_area()

$recalculate_properties()

Scope: schematic
Window: Schematic Editor

Usage

$recalculate_properties()

RECalculate PRoperties

(Schematic) Miscellaneous > Recalculate Properties

Description

Recalculates all property expressions on a design sheet that has been opened in the context of a design viewpoint.

Property changes that affect evaluated values of property expressions on a design sheet are not automatically updated. In order to view the newly-changed values, you must issue the $recalculate_properties() function.

Example(s)

The following example invokes the $recalculate_properties() function after adding the property "a_prop" to the design sheet from the viewpoint *your_home/lib_A/dff/vpt*. Notice that the property value is an unevaluated expression. If a $set_evaluations() function set evaluations to @on previous to the $recalculate_properties() function, the expression would evaluate to "6".

```
$open_design_sheet("your_home/lib_A/dff", "your_home/lib_A/dff/vpt",
                                                        "/", "sheet1")
$show_annotations()
$add_property("a_prop", "(1 + 2 + 3)", [0.32, -0.68], @expression, @on,
                                                              @nopin)
$recalculate_properties()
```

Related Functions

$hide_annotations() $set_evaluations() $show_annotations()

$reconnect_annotations()

Scope: schematic

Usage

$reconnect_annotations(old_pathname, *new_pathname*, hier)

REConnect ANnotations

Miscellaneous > Reconnect Annotations:

Description

The $reconnect_annotations() function is used to reconnect the back annotations from an object that no longer exists in the design to an object that does exist in the design. This function can only be used when editing in the context of a design.

An object with annotations can be removed from a design if it is deleted, then re-added with a different name or internal handle. The results of a check sheet can be used to get the design pathname of the object that no longer exists. The second argument, if supplied is the handle of the object which will receive the annotations. If the second argument is omitted, then there must be one object selected which will receive the annotations. If the object which was deleted from the design was a hierarchical instance, and there are annotations to the objects below it in the hierarchy, then specifying the @hier switch causes all annotations on objects below the deleted instance to be reconnected to objects with matching names below the new instance. If @local is specified, then only the annotations on the object are reconnected. If the object is an instance, then the annotations on both the instance, and all of its pins are reconnected.

Arguments

- **old_pathname (Old Pathname)**

  A text string that specifies the pathname of the deleted object.

- ***new_pathname (New Pathname)***

  A text string that specifies the pathname of the new object to which the annotations are to be attached. If omitted, exactly one object must be selected and the annotation are connected to it..

- **hier (Hierarchy)**

  ⇒ **@hier** (Hierarchy): - If the object to which the annotations are reconnected is a hierarchal instance, then reconnect all annotations below the deleted instance to objects with the same name under the new instance.

  @local (Local): Only connect the annotations to the specified object, even if the object is a hierarchical instance.

Example(s)

The following function moves the annotations from a hierarchical instance that used to be named /I$73 to a new instance with a handle name of /I$429. The annotations below the deleted instance are kept and attached to objects with the same name.

```
$reconnect_annotations("/I$73", "/I$429", @hier)
```

Related Functions

$$check()
$clear_unattached_annotations()

$redo()

Scope: da_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$redo()

REDO

Most popup menus > Undo > Redo
Edit > Redo

Description

Returns the application to the state existing prior to the previous $undo() function.

Redo is available only if an $undo() function has been previously issued, and no undoable functions have been executed since the $undo() function.

Example(s)

The following example returns the application to the state that existed before the $undo() function was issued.

```
$set_undo_level(2) $select_all(, @comment)
$delete()
$undo()
$undo()
$redo()
$redo()
```

Related Functions

$undo()

$remove_comment_status()

Scope: symbol
Window: Symbol Editor
Prerequisite: At least one symbol component must be selected in the active window.

Usage

$remove_comment_status()

REMOVe COmment Status

(Symbol) Edit > Remove Comment Status

Description

Removes comment status from selected symbol components.

This function operates on selected symbol components that were created by the $convert_to_comment() function, and turns off their comment status (the color of the selected symbol components change color). The components are now instantiable. If the selected objects are not symbol comments, no action is taken.

Example(s)

The following example removes the comment status of comment text that was previously created by the $convert_to_comment() function.

```
$add_text("This is comment text.", [7.1, 0.5])
$convert_to_comment()
$remove_comment_status()
```

Related Functions

$convert_to_comment()

$reopen_selection()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$reopen_selection()

REOPEn SElection

Most popup menus > Select > Reopen Selection

Description

Reopens the most recently closed selection set to accept additional selected items.

If the current selection set is closed, it is reopened.

Example(s)

The following example displays the function syntax for reopening the most recently closed selection set.

```
$select_area([[2.1, -0.3], [3.8, 5.3]], , , , @instance)
$select_vertices(@nets, [[0.8, 0.2], [4.5, 6.8]])
$close_selection()
$reopen_selection()
```

Related Functions

$close_selection()

$reselect()

$replace()

Scope: schematic

Usage

$replace("component_name", "*symbol_name*", *property_merge*, *warning_flag*, *update_active_symbol*, *name_value_pairs*)

REPlace "component_name" "*symbol_name*" *property_merge warning_flag update_active_symbol name_value_pairs*

(Active Symbol) Replace Selected > Clear | Auto | Symbol | Instance
(Schematic) Instance > Replace > Active Symbol | From Library Menu | Other
(Schematic) Edit > Replace > Active Symbol | From Library Menu | Other

Description

Replaces selected instances in the schematic edit sheet with the most recent version of the specified component.

The properties on the new instance are a merge of the selected instance's properties with the symbol properties of the replacing component. If you do not specify a property_merge option, all instance-only properties are deleted and all other properties are set to the values on the replacement component. The replacement symbol becomes the active symbol.

When a component library is displayed in the palette, you can choose **Replace Instance** from the palette popup menu to replace an instance, whether it is selected or not. This menu item lets you specify that the next library selection is to be used for a $replace() rather than an $add_instance(). The menu item toggles to **Add Instance** immediately after you choose it, which allows you to get out of replace mode. If no instances are selected, you are prompted to select an instance and the replacement component.

Arguments

- **component_name (Component Name)**

  This text string specifies the pathname of the component used to replace the selected instance(s).

- ***symbol_name (Symbol Name)***

  This text string specifies which symbol of the component to use. If not specified, the symbol name defaults to the component name.

- ***property_merge (Merge Type)***

  This argument describes how properties on an instance are to be modified with respect to new symbol property values. It can have one of the following values:

  ⇒ **@clear** (clear): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values.

  @symbol (symbol): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol values. If the Attribute_Modified flag is not set on a property whose value is updated, then the attributes are also updated.

  @instance (instance): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance.

  @auto (auto): Symbol body graphics are updated. All instance-only properties remain unchanged. If a Value_Modified property is not owned by the new symbol, the Value_Modified property value is deleted; otherwise, the Value_Modified property value remains unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If the Attribute_Modified flag is not set on a property whose value is updated, then the attributes are also updated.

- ***warning_flag (Warn)***

  This argument controls the display of warnings or serious discrepancies between the selected instance and the replacing component. It can have one of two values: ⇒ **@warn** (-Warn) or **@nowarn** (-NOWarn).

- ***update_active_symbol (Update)***

  This argument controls whether or not the active symbol is set to the symbol used in the replace command. It can have one of two values: ⇒ **@update** (-Update) or **@noupdate** (-NOUpdate).

- ***name_value_pairs (Property Name, Value)***

  This optional vector of text strings specifies one or more property names and associated values of symbol body properties. Name specifies a property whose value is to be modified on the instance. Value specifies an instance-specific value for the property. The repeating name/value argument pair supports the enumeration of instance-specific values for symbol properties. Both function and command modes require the names and values to be quoted, and brackets around the argument: ["name1", "value1", ..., "*nameN*", "*valueN*"]

  An error message is issued if an attempt is made to change the value of a property that is set to @fixed mode on the symbol.

  If the property does not exist on the symbol, the property is added to the instance with the specified value, and the property type defaults to the type declared for that property.

  Name_value_pairs are for symbol body properties only. If you specify a pin property name that is on the symbol, you will not modify that pin property value. Instead, a symbol body property with that pin property name and value is added to the instance.

Example(s)

The following example displays the function syntax for replacing selected instances. The replacement is *$MGC_LSLIB/74ls00*. The type of replacement is clear. This indicates that instance-only properties are deleted, and all other properties are reset to the properties on the current version of the replacing symbol.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], , , , @instance)
$replace("$MGC_LSLIB/74ls00",  "74ls00", @clear)
```

Related Functions

$add_instance()
$change_property_stability_switch()
$change_property_stability_switch()
$change_property_stability_switch()
$update()

$replace_with_alternate_symbol()

Scope: schematic
Window: Schematic Editor
Prerequisite: Exactly one instance must be selected in the active window.

Usage

$replace_with_alternate_symbol(merge_type);

REPlace WIth Alternate Symbol merge_type

(Schematic) Instance>Replace>Alternate Symbol>Auto|Clear|Symbol|Instance
(Schematic) Edit>Replace>Alternate Symbol>Auto|Clear|Symbol|Instance

Description

Replaces the selected instance with the next available symbol from the same component.

This function is especialy useful when your component contains versions of the symbol designed for rotated placement.

Arguments

- **merge_type (Merge Type)**

  This argument describes how properties on an instance are to be modified with respect to alternate symbol property values. It can have one of the following values:

  ⇒ **@auto** (auto): Symbol body graphics are updated. All instance-only and Value_Modified properties remain unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If the Attribute_Modified flag is not set on a property whose value is updated, then the attributes are also updated.

  @clear (clear): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values.

  @symbol (symbol): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol

values. If the Attribute_Modified flag is not set on a property whose value is updated, then the attributes are also updated.

@instance (instance): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance.

Examples

The following example selects an instance in the area [[1.2,-1.5],[3.1,2.8]] and then replaces that instance with another symbol from the same component using the $replace_with_alternate_symbol() function, both function and command syntax are shown:

```
$select_area([[1.2,-1.5],[3.1,2.8]],,,,@instance)
$replace_with_alternate_symbol(@auto)
sel ar [[1.2,-1.5],[3.1,2.8]] -instance
rep wi a s -auto
```

Related Functions

$add_instance() $replace() $update()

$$report_check()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$$report_check(*window, transcript, filemode, filename, type, special, pins, symbolbody, interface, userrule*)

REPort CHeck *window transcript filemode filename type special pins symbolbody interface userrule*

Report > Check > All | Summary | As Specified
Check > Report > Check > All | Summary | As Specified

Schematic Editor Usage

$$report_check(*window, transcript, filemode, filename, type, instance, special, net, frame, parameter, expression, pins, owner, overlap, notdots, closedots, dangle, initprops, userrule, annotations*)

REPort CHeck *window transcript filemode filename type instance special net frame parameter expression pins owner overlap notdots closedots dangle initprops userrule annotations*

Report > Check > All | Summary | As Specified
Check > Report > Check > All | Summary | As Specified

Description

Creates a report containing the check status of the various check categories.

These check categories determine what checks are performed and reported at check time for the requested objects. You can request information about all values set by the $set_check internal state functions using the @all switch.

If you invoke this function from the menu, a dialog box is displayed for you to select the categories of checking that you want included in the report. The report that is generated contains the specified set of values and the current status of the selected check categories. You can display the report in either a popup window, a transcript window, and/or a file.

Arguments

- ***window (Display in Window)***

  This argument determines whether the information is displayed in a popup window. It can have one of these two values: **@window** (-Window) or **@nowindow** (-NOWindow). The default is the value of the $get_report_window() internal state function.

- ***transcript (Write to Transcript)***

  This argument controls whether information is displayed in a transcript window. It can have one of two values: **@transcript** (-TRanscript) or **@notranscript** (-NOTRanscript). The default is the value of the $get_report_transcript() internal state function.

- ***filemode (File Mode)***

  This argument indicates how the contents of the report are placed in the specified file defined by the value of the report_filename internal state variable or by the file_name argument. The default is the value of the $get_report_filemode() internal state function. It can have one of three values:

  @add (-ADd): Write the report to the end of the specified file. If the file does not exist, it is created.

  @replace (-Replace): Write the report to the specified file, replacing any existing information that was stored in that file. If the file does not exist, it is created.

  @nofile (-NOFile): Do not write the check report to a file.

- ***filename (File)***

  This argument is a text string that specifies the pathname of the file in which the information is stored. If this argument is specified, it overrides but does not replace the report_filename internal state variable. If it is not specified, the value of the report_filename internal state variable is used.

- ***type (Categories)***

  This argument provides control over the information content of the check report. It can have one of three values:

  @all (-ALl): Reports on the current status of all checks. Subsequent category selection switches are ignored.

  ⇒ **@category** (-CAtegory): Causes the individual categories as specified in the subsequent arguments to be reported.

  @summary (-SUmmary): Provides only a summary report indicating whether the sheet passed check. Subsequent category switches are ignored.

  Table 2-5 provides a summary of the remaining $$report_check() arguments. Each argument can have one of two values. If set, the value of the corresponding check internal state variable is displayed in the subsequent report. If not specified, the value of an argument is not set.

Table 2-5. Summary of Report Check Switches

Function Syntax	Command Syntax	Valid in:
@symbolbody @nosymbolbody	-SYMbolBody - NOSYMbolBody	Symbol Editor
@interface @nointerface	-INTerface - NOINTerface	Symbol Editor
@instance @noinstance	-Instance - NOInstance	Schematic Editor
@special @nospecial	-SPecial - NOSPecial	Symbol Editor Schematic Editor
@net @nonet	-Net - NONet	Schematic Editor
@frame @noframe	-FRame - NOFRame	Schematic Editor
@parameter @noparameter	-PArameter - NOPArameter	Schematic Editor

Table 2-5. Summary of Report Check Switches

Function Syntax	Command Syntax	Valid in:
@expression @noexpression	-EXpression - NOEXpression	Schematic Editor
@pins @nopins	-PIns - NOPIns	Symbol Editor Schematic Editor
@owner @noowner	-OWner - NOOWner	Schematic Editor
@overlap @nooverlap	-OVerlap - NOOVerlap	Schematic Editor
@notdots @nonotdots	-NOTDots - NONOTDots	Schematic Editor
@closedots @noclosedots	-CLosedots - NOCLosedots	Schematic Editor
@dangle @nodangle	-DAngle - NODAngle	Schematic Editor
@initprops @noinitprops	-INItprops -NOINItprops	Schematic Editor
@userrule @nouserrule	-Userrule - NOUserrule	Symbol Editor Schematic Editor
@annotations @noannotations	-Annotations - NOAnnotations	Schematic Editor

Example(s)

The following function example reports the list of checks for instances, nets, and frames on an active schematic window.

```
$$report_check( , , , , , @instance, , @net, @frame)
```

The next command example changes the way in which the check reports are generated. No popup window or transcript displays the check report. The report is stored in a file called *$DESIGNS/checks/rep_chk_129*. Only symbol pin, symbol body, and symbol interface check information is reported.

```
rep ch  -now  -notr  "$DESIGNS/checks/rep_chk_129"  -symp  -symb  -symi
```

Related Functions

$$check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter())
$select_area()
$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_report()

Related Internal State Functions$set_check_annotations()

$set_check_closedots()
$set_check_dangle()
$set_check_expression()
$set_check_frame()
$set_check_pins()
$set_check_initprops()
$set_check_instance()
$set_check_net()
$set_check_notdots()
$set_check_overlap()
$set_check_owner()
$set_check_parameter()
$set_check_special()
$set_check_symbolbody()
$set_check_symbolpin()
$set_check_symbolspecial()
$set_check_symboluserrule()
$set_check_userrule()
$set_report_filename()
$set_report_filemode()
$set_report_transcript()
$set_report_window()
$set_check_annotations()

$report_default_property_settings()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$report_default_property_settings(*window, transcript, file_mode, file_name, property_names*)

REPort DEfault Property Settings *window transcript file_mode file_name property_names*

Report > Default Property Settings

Description

Displays the legal owners and types of specified electrical and comment properties.

Valid owners of the properties are instances, nets, frames, pins, and comment graphics. If no global sheet owners are declared for a property by the $set_property_owner() function, the argument list is empty.

The function also displays the default types for specified properties. Possible types are: string, number, expression, and triplet. If no specific property type was specified through the $set_property_type() function, the list will be empty.

If no global sheet owners are declared for a property through the $set_property_owner() function, the report displays all owners as the default. If no specific property types are declared through the $set_property_type() function, the report displays all types as "string".

You can display the contents of the report in either a popup window, a transcript window, and/or a file, either specified when invoking the function, or specified by the report_filename internal state variable.

Arguments

- ***window (Window)***

  This argument determines whether the information is displayed in a popup window. It can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow). The default is the value of the $get_report_window() internal state function.

- ***transcript (Transcript)***

  This argument indicates whether the report is displayed in the transcript window. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript). The default is the value of the $get_report_transcript() internal state function.

- ***file_mode (File Mode)***

  This argument indicates how the contents of the report are placed in the file specified by the report_filename internal state variable or the file_name argument. It can have one of three values:

  @add (-Add): Write the report to the end of the specified file.

  @replace (-Replace): Write the report to the specified file and replace any existing information that was stored in that file.

  @nofile (-NOFile): The report does not get written to a file.

  If this argument is specified, it overrides but does not replace the report_filemode internal state variable. If it is not specified, the value of the report_filemode internal state variable is used.

- ***file_name (File Name)***

  This argument is a text string that specifies the pathname of the file in which the information is stored.

  If this argument is specified, it overrides but does not replace the report_filename internal state variable. If it is not specified, the value of the report_filename internal state variable is used.

- ***property_names (Property Names)***

  This argument list is an optional, repeating string specifying the properties of interest. If not specified, the report is for all properties that have types or owners declared on the sheet with either the $set_property_type() or $set_property_owner() function.

Example(s)

The following example displays the function syntax for listing all the legal owners and types of the following properties: "ttl", "in0", "in1", and "mux". The information is displayed in a report window, but is not displayed in the transcript window. In addition, the information in the report is stored in the designated report file, and replaces the previous contents.

```
$report_default_property_settings(@window, @notranscript, @replace, ,
                                  "ttl, "in0", "in1", "mux")
```

The next example displays the command syntax for listing all the legal owners and types for the "rise" and "fall" properties. The information is stored in the designated report file, and is appended to the existing contents of that file.

```
rep de p s -add "rise" "fall"
```

Related Functions

$$report_check()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter()
$set_property_owner()
$set_property_type()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$report_groups()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$report_groups(*window*, *transcript*, *filemode*, "*filename*")

REPort GRoups *window transcript filemode* "*filename*"

Report > Groups

Description

Opens a report window in which it lists the user-defined names of groups of design objects.

Group names are assigned to selected objects with the $group() function.

Arguments

- ***window (Window)***

  This argument determines whether the information is displayed in a popup window or written to a file. It can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow). The default is the value of the $get_report_window() internal state function.

- ***transcript (Transcript)***

  This argument indicates whether the report is displayed in the transcript window. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript). The default is the value of the $get_report_transcript() internal state function.

- ***file_mode (File Mode)***

  This argument indicates how the contents of the report are placed in the file specified by the file_name argument. Choose one of the following values: **@add** (-Add), **@replace** (-Replace), or **@nofile** (-NOFile). The default is the value of the $get_report_filemode() internal state function.

- ***file_name (File Name)***

  This argument is a text string that specifies the pathname of the file in which the information is to be stored. The default is the value of the $get_report_filename() internal state function.

Example(s)

The following example lists all group names in a report window and adds the information to a file named "da_report".

```
$report_groups(@window, , @add, "da_report")
```

Related Functions

$change_group_visibility()
$group()
$select_group()

$report_interfaces()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$report_interfaces("*component_name*", "*interface_name*", *window, transcript, file_mode, file_name*)

REPort INterface "*component_name*" "*interface_name*" *window transcript file_mode file_name*

Report > Interfaces > This Design | Other:

Description

Reports information contained in the specified interface(s) of the given component.

The report contains the following information for each interface: the interface name, the number of pins, and all model entries. Each model entry in the report includes the type of model, pathname to the model, and all labels on the model.

If you do not specify the name of a component, this function reports interface information for the component in which the object in the currently active window resides.

You can display the contents of the report in either a popup window, a transcript window, and/or a file, which can be specified explicitly, or by the report_filename internal state variable.

Arguments

- ***component_name (Component Name)***

  Text string containing the pathname of the component you want to examine. If not specified (or if you chose the **Report > Interfaces > This Design** menu item), this function reports information about the interfaces for the design in which the symbol or schematic being edited resides.

- ***interface_name (Interface Name)***

  This is a text string specifying the name of the interface to examine. If not specified, all interfaces are examined.

- ***window (Window)***

  This argument determines whether the information is displayed in a popup window or written to a file. It can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow). The default is the value of the $get_report_window() internal state function.

- ***transcript (Transcript)***

  This argument indicates whether the report is displayed in the transcript window. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript). The default is the value of the $get_report_transcript() internal state function.

- ***file_mode (File Mode)***

  This argument indicates how the contents of the report are placed in the file specified by the report_filename internal state variable or by the file_name argument. It can have one of the following values:

  @add (-Add): Write the report to the end of the specified file.

  @replace (-Replace): Write the report to the specified file, and replace any existing information that was stored in that file.

  @nofile (-NOFile): The report is not written to a file.

  If this argument is not specified, the value of the $get_report_filemode() internal state function is used.

- ***file_name (File Name)***

  This argument is a text string that specifies the pathname of the file in which the information is to be stored. The default is the value of the $get_report_filename() internal State function.

Example(s)

In this example, assume you are editing the symbol *$MGC_GENLIB/rip/1X2*. The following function reports all interfaces for the component *$MGC_GENLIB/rip*:

```
$report_interfaces("$MGC_GENLIB/rip")
```

The next example shows the command syntax for the previous example.

```
rep in "$MGC_GENLIB/rip"
```

In the following example, assume you are editing the sheet *your_home/designs/my_design/schematic/sheet1*. Both of the following functions report all interfaces for the component *your_home/designs/my_design*:

```
$report_interfaces()
$report_interfaces("your_home/designs/my_design")
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter()
$save_sheet()
$update_from_interface()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$report_interfaces_selected()

Scope: schematic
Window: Schematic Editor
Prerequisite: Only one instance must be selected.

Usage

$report_interfaces_selected()

Report > Interfaces > Selected

Description

Reports information about the interface(s) of the selected instance.

The report contains the following information: the interface name, the number of pins, and all model entries. Each model entry in the report includes the type of model, pathname to the model, and all labels on the model. The values of the following internal state variables are used: report_window, report_transcript, report_filemode, and report_filename.

Example(s)

The following example displays the function syntax for reporting all interfaces associated the selected instance on the schematic sheet.

```
$report_interfaces_selected()
```

The next example displays the function syntax for instantiating, then reporting the interface "1X8".

```
$$add_instance("$MGC_GENLIB/rip", "8X1", [-4, 6])
$report_interfaces_selected()
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_object()
$report_panels()
$report_parameter()
$save_sheet()
$update_from_interface()

$report_object()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: If no handles are specified, there must be at least one selected object in the active window.

Symbol Editor Usage

$report_object(*attachedproperty, comment, logicalsymbol, pin, property, symbolbody, textattr, window, transcript, file_mode, file_name, handles*)

REPort OBject *attachedproperty comment logicalsymbol pin property symbolbody textattr window transcript file_mode file_name handles*

Schematic Editor Usage

$report_object(*attachedpin, attachedproperty, comment, frame, instance, net, pin, property, textattr, window, transcript, file_mode, file_name, handles*)

REPort OBject *attachedpin attachedproperty comment frame instance net pin property textattr window transcript file_mode file_name handles*

Description

Creates a report for requested objects or, if no handles are specified, for selected objects of the types indicated by the arguments.

If the function is invoked by its corresponding menu item, a dialog box is displayed. You can display the contents of the report in either a popup window, a transcript window, and/or a file.

Property attributes listed in report windows may include "-Not Visible" and "-Hidden". If both are listed, the property was hidden when added, and the property visibility has not been changed. If "-Hidden" is listed without "-Not Visible", the property visibility was changed to visible on the sheet.

Arguments

- ***attachedpin (Attached Pins)***

  This argument is valid in the Schematic Editor and has one of two values:

  ⇒ **@attachedpin** (-AttachedPIn): Lists the pins attached to selected instance and symbol objects including pin handles, pin names, attached vertices, locations, and attached nets.

  @noattachedpin (-NOAttachedPIn): Does not list the attached pin information.

- ***attachedproperty (Attached Properties)***

  This argument can have one of two values:

  @attachedproperty (-AttachedPRoperty): Lists the property handle name/value pairs attached to selected objects including their location, type, and switch settings (such as -Hidden). When reporting on an instance in the Schematic Editor, this option also lists any property switches as they came from the symbol.

  ⇒ **@noattachedproperty** (-NOAttachedPRoperty): Does not list attached property information.

- ***comment (Comments)***

  This argument controls whether comment information is reported. It can have one of two values: **@comment** (-COmment) or ⇒ **@nocomment** (-NOCOmment). If @comment is specified, the report displays handle, location, type, and if comment text is reported, the orientation and text value of selected comment objects.

- ***frame (Frames)***

  This argument is valid for the Schematic Editor. It can have one of two values: **@frame** (-Frame) or ⇒ **@noframe** (-NOFrame). If @frame is specified, the report lists IF, FOR, and CASE frame information including handles, location information, and orientation.

- ***instance (Instances)***

  This argument is valid for the Schematic Editor. If set, the report lists information about selected instances including handle names, pathnames, location, merge type, orientation, and version numbers. Choose one of two values: **@instance** (-Instance) or ⇒ **@noinstance** (-NOInstance).

- ***logicalsymbol (Logical Symbol)***

  This argument is valid for the Symbol Editor and can have one of two values:

  @logicalsymbol (-Logicalsymbol): Lists all properties (name, value, and switches) belonging to the logical symbol. A property belongs to the logical symbol if it is attached to a piece of the symbol body, if it has been added with no owning graphics by the $add_property() function, or if it existed on the interface and was added to the logical symbol through the $open_symbol() or $update_from_interface()function.

  ⇒ **@nologicalsymbol** (-NOLogicalsymbol): Does not list logical symbol information.

- ***net (Nets)***

  This argument is valid for the Schematic Editor. It controls whether the report lists information about selected nets including handle names, net names, attached net vertices and their handles, locations, attached vertices, attached pins and owning instances, and vertex pin names. Choose one of two values: **@net** (-Net) or ⇒ **@nonet** (-NONet).

- ***pin (Pins)***

  This argument determines if the report lists information about symbol pins on a schematic sheet. If specified, the report lists information about pins on a symbol, including the compiled pin name, handle names, and locations. It can have one of two values: **@pin** (-PIn) or ⇒ **@nopin** (-NOPIn).

- ***property (Properties)***

  This argument can have one of two values:

  @property (-PRoperty): Lists all properties including handle names, property names, property values, property types, location information, and switch settings (for example, -Hidden). In the Schematic Editor, if the

property is an instance property, this option also lists property switches from the symbol.

⇒ **@noproperty** (-NOPRoperty): Does not list property information.

- ***symbolbody (Symbol Bodies)***

  This argument is valid for the Symbol Editor and can have one of two values:

  @symbolbody (-Symbolbody): Lists information about selected non-comment symbol objects including handle names, locations, orientation, and object types.

  ⇒ **@nosymbolbody** (-NOSymbolbody): Does not list symbol body information.

- ***textattr (Text Attributes)***

  This argument can be one of two values:

  @textattr (-TExtattr): Lists the text attribute settings for all text otherwise being reported. The information includes justification, orientation, height, switches, and font values.

  ⇒ **@notextattr** (-NOTextattr): Does not list the text information.

- ***window (Display in Window)***

  This argument determines whether information is displayed in a popup window. It can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow). If this argument is not specified, the value of the $get_report_window() internal state function is used.

- ***transcript (Write to Transcript)***

  This argument indicates whether the report is displayed in the transcript window. It can have one of two values: **@transcript** (-TRanscript) or **@notranscript** (-NOTRanscript). The default is the value of the $get_report_transcript() internal state function.

- ***file_mode (File Mode)***

  This argument indicates how the contents of the report are placed in the file specified in the report_filename internal state variable or the file_name argument. This argument overrides but does not replace the report_filemode internal state variable. If it is not specified, the value of the report_filemode internal state variable is used. It can have one of three values:

  @add (-Add): Write the report to the end of the specified file.

  @replace (-Replace): Write the report to the specified file, and replace any existing information that was stored in that file.

  @nofile (-NOFile): The report is not written to a file.

- ***file_name (File)***

  This text string specifies the pathname of the file in which the information is stored. If not specified, the value of $get_report_filename() is used.

- ***handles (Handle)***

  This is a repeating text string that specifies an object handle.

Example(s)

The following example specifies reporting on instances, nets, and properties of selected objects in a schematic window. In addition, the information is not reported in a popup information window, but goes directly to the file specified by the report_filename internal state variable.

```
$report_object(, , , , @instance, @net, , @property, , @nowindow)
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_panels()
$report_parameter()
$select_area()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$report_panels()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$report_panels*(window, transcript, file_mode, file_name*)

REPort PANels *window transcript file_mode file_name*

Report > Panels

Description

Lists the names and locations of all panels in either a popup window, a transcript window, and/or a file.

Arguments

- ***window (Window)***

  Determines whether information is displayed in a popup window. This argument overrides but does not replace the file specified with $set_report_window(). If it is not specified, the $get_report_window() internal state function value is used. It can have one of the two values: **@window** (-Window) or **@nowindow** (-NOWindow).

- ***transcript (Transcript)***

  Indicates whether the report is displayed in the transcript window. This argument overrides but does not replace the report_transcript internal state variable. If it is not specified, the value of the report_transcript internal state variable is used. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript).

- ***file_mode (File Mode)***

  Indicates how the contents of the report are placed in the file specified by the report_filename internal state variable, or the file_name argument. This argument overrides but does not replace the report_filemode internal state variable. If it is not specified, the value of the report_filemode internal state variable is used. It can have one of three values:

  ⇒ **@add** (-Add): Append the report to the specified file.

  @replace (-Replace): Write the report to the specified file, and replace any existing information that was stored in that file.

  @nofile (-NOFile): Do not write to a file.

- ***file_name (File Name)***

  This argument is a text string that specifies the pathname of the file in which the information is stored. If this argument is specified, it overrides but does not replace the report_filename internal state variable. If it is not specified, the value of the report_filename internal state variable is used.

Example(s)

The following example displays the function syntax for listing the names and locations of all the panels defined on the active sheet. A window containing the report is displayed and the information is also stored in the designated report file. The new information replaces any information that exists in the report file.

```
$report_panels(@window, , @replace)
```

In the next example, the report is not displayed in a report window, but only stored in the designated report file. The information is appended to whatever existed in the report file.

```
rep pan  -add  -nowindow
```

Related Functions

$add_panel()
$delete_panel()
$hide_panel_border()
$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_parameter()
$show_panel_border()
$view_panel()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$report_parameter()

Scope: schematic
Window: Schematic Editor

Usage

$report_parameter(*window, transcript, file_mode, file_name*)

REPort PARameter *window transcript file_mode file_name*

Report > Parameter
Check > Report > Parameter

Description

Lists the design parameters declared with the $set_parameter() function.

You can display the contents of the report in either a popup window, transcript window, or file.

Arguments

- ***window (Window)***

  Determines whether information is displayed in a popup window. This argument overrides but does not replace the report_window internal state variable. If it is not specified, the value of the report_window internal state variable is used. It can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow).

- ***transcript (Transcript)***

  Indicates whether the report is displayed in the transcript window. This argument overrides but does not replace the report_transcript internal state variable. If it is not specified, the value of the report_transcript internal state variable is used. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript).

- ***file_mode (File Mode)***

  Indicates how the contents of the report are placed in the file specified by the report_filename internal state variable. If this argument is specified, it overrides but does not replace the report_filemode internal state variable. If it is not specified, the value of the report_filemode internal state variable is used. It can have one of three values:

  @add (-Add): Write the report to the end of the specified file.

  @replace (-Replace): Write the report to the specified file, and replace any existing information that was stored in that file.

  @nofile (-NOFile): The report is not written to a file.

- ***file_name (File Name)***

  Text string specifying the pathname of the file in which the information is stored. If this argument is specified, it overrides but does not replace the report_filename internal state variable. If it is not specified, the value of the report_filename internal state variable is used.

Example(s)

The following example displays the function syntax for listing all the parameters specified by the $set_parameter() function within the active window. The report is displayed in a report window. In addition, the information in the report is stored in the designated report file, replacing the previous contents.

```
$report_parameter(@window, , @replace)
```

Related Functions

$delete_parameter()
$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$set_parameter()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$reselect()

Scope: da_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$reselect()

RESELect

Most popup menus > Select > Reselect

Description

Selects the previously closed selection set (called the reselection set).

If the current selection set is open, this function adds the contents of the reselection set to the current selection set, leaving the current selection set open. If the current selection set is closed, the current (closed) selection set becomes the reselection set. The current reselection set becomes the new selection set and is automatically opened.

Example(s)

In the following example, the selection set is closed. Then, another selection set is started. When the $reselect() function is invoked, the contents of the closed selection set are added to the currently opened selection set. Thus, comments, nets, and instances are selected in the active schematic window.

```
$select_all( , , @instance)
$select_all(, , , , , , , @vertex)
$close_selection()
$select_all(@comment)
$reselect()
```

Related Functions

$reopen_selection()
$select_all()
$select_area()
$unselect_all()
$unselect_area()

$revalidate_models()

Scope: symbol
Window: Symbol Editor
Prerequisite: The symbol must have passed check, been registered, and saved.

Usage

$revalidate_models()

(Symbol) Miscellaneous > Revalidate Models

Description

Validates all of the models that are registered with the same interface as the specified symbol.

Symbol model entries are validated against the last version written to disk.

Validation is only attempted if the model entry is currently marked as invalid and, if it is not a schematic or VHDL model entry (those are always marked invalid). If the model validation is successful, the model entry is marked valid. If it fails, an error message is displayed.

Example(s)

The following function syntax revalidates all the models associated with the symbol "flip_flop" for the component *your_home/da/my_lib/d_flip_flop*.

```
$open_symbol("your_home/da/my_lib/d_flip_flop", "flip_flop")
$revalidate_models()
```

Related Functions

$report_interfaces()

$report_interfaces_selected()

$rotate()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected in the active window.

Usage

$rotate(degree_angle)

ROTate degree_angle

(Symbol) Symbol Body & Pins > Rotate/Flip > Rotate >
(Symbol, Schematic) Mixed Selection > Rotate/Flip > Rotate >
(Schematic) Add_Route > Rotate/Flip > Rotate > -90 | 90 | 180 | As Specified
(Schematic) Instance > Rotate/Flip > Rotate > -90 | 90 | 180 | As Specified
(Schematic) Edit > Edit Commands > Edit Operations > Rotate >
(Symbol) Edit > Edit Operations > Rotate > -90 | 90 | 180 | As Specified

Description

Rotates all selected electrical and comment objects as a unit around the basepoints.

Net segments attached to pins on the selected instances "stretch" to the new location.

The rotate operation preserves the connectivity of the rotated objects; automatic connections are not made (not-dots may result).

For property text, the justification is the location of the fixed justification point relative to the text as viewed from a position where the text reads normally. The property text is always displayed left-to-right or bottom-to-top. In order to ensure this, the text may be flipped around inside its own bounding box to read correctly. The justification points remain stationary within the bounding box.

If the orientation of the property text is at 0 degrees, the horizontal justification controls left-to-right placement on the display. If the property text is rotated 90 degrees, the horizontal justification controls bottom-to-top placement on the display.

If you change the appearance of property text, the property value is flagged as Attribute_Modified. This flag can affect if and how a property is updated when a sheet is opened or explicitly updated, or when a symbol instance is replaced. For information, refer to the $open_design_sheet(), $open_sheet(), $update(), and $replace() functions.

Arguments

- **degree_angle (Degrees)**

  An integer specifying the degrees of rotation. If electrical objects, text, and comment graphics are being rotated, the value must be a multiple of 90. Positive values rotate items counter-clockwise; negative values rotate items clockwise.

Example(s)

The following example displays the function syntax for rotating a selected electrical object counter-clockwise 180 degrees from its original position.

```
$rotate(180)
```

The next example shows the command syntax for rotating a selected comment text object clockwise 90 degrees from its original position.

```
rot -90
```

Related Functions

$connect() $disconnect() $move()
$copy() $flip() $pivot()

$route()

Scope: schematic
Window: Schematic Editor
Prerequisite: If route type is @selected, at least one net segment and at least two pin vertices must be selected, or at least two selected vertices must have attached properties. If route_type is @connected, at least one instance must be selected.

Usage

$route(*route_type*)

ROUte *route_type*

(Schematic) Mixed Selection > Route > Selected | Connected
(Schematic) Net > Route > Selected | Connected
(Schematic) Edit > Edit Commands > Add Electrical > Route >

Description

Replaces segments between selected vertices with an orthogonal net.

The router avoids instance extents and comment objects. It also avoids running nets on top of other nets. The router orthogonalizes a graphically connected net such that neither selected vertices with properties nor selected pin vertices are deleted. The router utilizes the pin-snap grid for the routing grid. If selected vertices are not on the grid, they are not routed. The function has no effect on selected non-vertex objects.

If @selected is chosen, upon completion of this function, all selected terminal vertices are unselected. If @connected is chosen, the segments routed are automatically selected upon completion of this function. This permits rapid use of the router following instantiation and moving of instances.

Routing performance is faster if the pin-snap grid is set to a value larger than one pin interval during the route operation, then set back for component instantiation.

Arguments

- ***route_type (Type)***

  This argument determines the type of routing. It can have one of two values:

  ⇒ **@selected** (-Selected): Route all net segments between selected vertices.

  @connected (-Connected): Route net segments between connected pins of selected instances. Given a multi-segment net, only the two segments closest to the pins are rerouted, unless additional net vertices are selected.

Example(s)

The following example displays the function syntax for routing all net segments connected to pins of selected instances.

```
$select_area([[1.0, 1.0], [4.0, 6.5]], , , , @instance, , , , , , ,@vertex)
$route(@connected)
```

The next example displays the command syntax for replacing all segments between the selected vertices with an orthogonal net.

```
sel ar  [[1.2, -3.4], [2.3, 3.5]]  -vertex
rou  -selected
```

Related Functions

$select_nets()

$select_vertices()

Related Internal State Functions

$set_autoroute()

$run_erc()

Scope:	schematic (Component Status Personality Module)
Window:	Schematic Editor
Prerequisite:	Before invoking Design Architect, you should either have a location map in the default location, $MGC_HOME/etc/mgc_location_map, or set the environment variable MGC_LOCATION_MAP to the pathname to a location map.

Usage

$run_erc("erc_pathname", "*viewpoint*")

RUN ERc "erc_pathname" "*viewpoint*"

Analysis > Run ERC

Description

Opens a viewpoint on the design containing the sheet in the active window, adds the Comp property as a primitive, checks the design using the specified QuickCheck Electrical Rules Check (ERC) file, writes a file to be used by the $find_instance() function, then displays the check report in a notepad window.

$run_erc() places two files in the design directory: *erc.report* and *inst.report*. The first file is the one displayed by this function. The second file is used by the $find_instance() function to open the appropriate sheet when an instance handle is provided. After editing your design, *inst.report* will not be valid; you need to invoke $run_erc() to update the file.

Arguments

- **erc_pathname**

  This is the pathname to an ERC rules file. The default is the previously specified pathname if this function was invoked during the current editing session. If no pathname is specified for the first invocation during an editing session, it defaults to a compiled rules file provided by Mentor Graphics and located at *$MGC_RLS_LIB/sys/qcheck/qcheck_rules.bin*.

- ***viewpoint (Viewpoint)***

  This string specifies the name of the viewpoint through which the design is checked. If no viewpoint is specified, a temporary viewpoint is used for the check, then discarded.

Example(s)

This example uses the rules in *$HOME/qcheck/config_data/qcheck_rules.bin* to check the design containing the sheet in the active window.

```
$run_erc("$HOME/qcheck/config_data/qcheck_rules.bin")
```

Related Functions

$find_instance()

$save_sheet()

Scope: schematic
Window: Schematic Editor

Usage

$save_sheet([*register_interfaces*], [*unregister_interfaces*], [*add_labels*], [*remove_labels*])

SAVe SHeet -*Register* [*register_interfaces*] -*Unregister* [*unregister_interfaces*] -*Label* [*add_labels*] -*Unlabel* [*remove_labels*]

(Schematic) File > Save Sheet > Default Registration | Change Registration/Label

Description

Writes the schematic data to the disk for the design being viewed in the active window.

If the Schematic Editor was invoked in the context of a design viewpoint, both the back-annotation and source sheet information are saved.

Registering a schematic with an interface provides a hierarchical connection between instances of symbols of that component to the component's schematic being saved. Since multiple schematic models may be registered with a single interface (providing multiple implementations of a design), labels specified at save sheet time are used along with the Model property on the instance of the symbol to determine which schematic model to use for analysis. The schematic is selected by matching the Model property with the schematic's label.

The following discussion is based on the items in the **File > Save Sheet** menu.

When you invoke the **File > Save Sheet** menu item, the **Default Registration** menu item is automatically executed as the default action. If the schematic sheet is new, and a default interface does not exist, then a default interface (with no pin and property information) is created with the same name as the leaf of the component name; the sheet is then registered with the default interface.

If the schematic sheet is new, but a default interface already exists, then the sheet is registered with the default interface. In both cases, the following labels are added to the schematic sheet entry: "$schematic" and the schematic name. If no

other schematic or HDL models are registered with the interface, the schematic is registered and assigned the label "default".

If you are saving an existing sheet, registration to the current interface does not change.

When the **File > Save Sheet > Change Registration/Label** menu item is invoked, a dialog box is displayed in the active window. This dialog box allows you to register the schematic sheet with one or more interfaces, assign multiple labels to the sheet, unregister one or more interfaces currently associated with the sheet, and remove multiple labels associated with the sheet.

Arguments

- ***register_interfaces (Add Registration to Interfaces)***

  This argument is a vector of text strings that identify interface names. Schematic sheets can be registered with multiple interfaces.

- ***unregister_interfaces (Delete Registration From Interfaces)***

  This argument is a vector of text strings that identify interface names. This argument deletes the registration of a schematic sheet from all specified interfaces. The unregistration from these interfaces occurs before the registration with new interfaces.

- ***add_labels (Add Labels)***

  This argument is a vector of text strings that identify labels to add to the sheet model when registered with the interfaces specified in the register_interfaces argument.

- ***remove_labels (Remove Labels)***

  This argument is a vector of text strings that identify labels to be removed from the sheet model as currently registered with the interfaces specified in the register_interfaces argument. The deletion of labels takes place before the addition of new labels.

Example(s)

The following example is displayed in function syntax. This example saves the schematic, *your_home/da/my_lib/add_det*, registers it with the "add_det" interface, and adds another label, "schematic_new" to the list of labels.

```
$open_sheet("your_home/da/my_lib/add_det", "schematic_new", "sheet1")
$save_sheet( ["add_det"], , ["schematic_new"])
```

In the next example, the $save_sheet() function is displayed in command syntax. This example saves the schematic, *your_home/da/my_lib/design_1*, and registers it with the "design_mgc" interface. No others labels, besides the default labels, are added.

```
ope sh  "your_home/da/my_lib/design_1"   "schematic"   "sheet1"
sav sh  -r   ["design_mgc"]
```

Related Functions

$save_sheet_as()
$save_symbol()
$save_symbol_as()
$set_edit_mode()

$save_sheet_as()

Scope: schematic
Window: Schematic Editor

Usage

$save_sheet_as("component_name", "*schematic_name*", "*sheet_name*", [*register_interfaces*], [*unregister_interfaces*], [*add_labels*],

SAVe SHeet As "component_name" "*schematic_name*" "*sheet_name*" *-REGister* [*register_interfaces*] *-UNRegister* [*unregister_interfaces*] *-Addlabels* [*add_labels*] *-REMovelabels* [*remove_labels*] *replace_mode*

(Schematic) File > Save Sheet As

Description

Writes the schematic sheet to the disk, using the name specified by the name arguments for the design being viewed in the active window.

An error message is issued if a sheet already exists with that name and the @replace switch was not specified.

Registering a schematic with an interface provides a hierarchical connection between instances of symbols of that component to the component's schematic being saved. Since multiple schematic models may be registered with a single interface (providing multiple implementations of a design), labels specified at save sheet time are used along with the Model property on the instance of the symbol to determine which schematic model to use for analysis. The schematic is selected by matching the Model property with the schematic's label.

When you invoke the **File > Save Sheet As** menu item, a dialog box is displayed for you to enter a component name and registration information.

Arguments

- **component_name (Component)**

  A text string specifying the pathname of the component being saved.

- ***schematic_name (Schematic Name)***

  A text string specifying the name of a schematic representation of the component. If schematic_name is not specified, it defaults to "schematic".

- ***sheet_name (Sheet Name)***

  A text string specifying the name of the sheet to be saved. If not specified, the name defaults to "sheet1".

- ***register_interfaces (Add Registration to Interfaces)***

  A vector of text strings that identify interface names. Schematic sheets can be registered with multiple interfaces.

- ***unregister_interfaces (Delete Registration from Interfaces)***

  A vector of text strings that identify interface names. This argument deletes the registration of a schematic sheet from all specified interfaces. The unregistration from these interfaces occurs before the registration with new interfaces.

- ***add_labels (Add Labels)***

  A vector of text strings that identify labels to add to the sheet model when registered with the interfaces specified in the register_interfaces argument.

- ***remove_labels (Remove Labels)***

  A vector of text strings that identify labels to be removed from the sheet model as currently registered with the interfaces specified in the register_interfaces argument. The deletion of labels takes place before the addition of new labels.

- ***replace_mode (Replace Existing Sheet)***

  Controls whether an existing sheet of the same name is replaced by the new sheet. The argument can have one of two values: **@replace** (-REPlace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

In the following example, a new sheet is created using the $save_sheet_as() function.

$save_sheet_as("your_home**/da/my_lib/nand", "alt_schem", "sheet2")**

Related Functions

$save_sheet()

$save_symbol()

Scope: symbol
Window: Symbol Editor

Usage

$save_symbol(*update_switch, force_switch, @defaultsym, @defaultifc,* "*interface*", *@unregister*)

SAVe SYmbol *update_switch force_switch -DefaultSym -DefaultIfc -Register* "*interface*" *-UNRegister*

(Symbol) File > Save Symbol > Default Registration | Change Registration | Delete Registration

Description

Writes the symbol to the disk for the design being viewed in the active window.

You can have multiple interfaces within a single component. However, you can have only one default interface within that component. When you designate an interface to be the default interface, you must specify the @defaultifc switch and the interface name.

You can also have multiple symbols registered to a single interface. However, only one of those symbols can be designated as the default symbol for that interface. In order to designate a symbol to be the default symbol registered to the interface, you must specify the @defaultsym switch.

If the @unregister switch is set, the symbol is unregistered from its existing interface. The symbol now is not registered with any interface. If the symbol is not registered with an interface, the symbol is written to disk independent of any interfaces. This allows the write of incomplete or incorrect data which you may not want forced into the interface. Note that the symbol cannot be instantiated until it is registered again.

If neither the interface nor the @unregister switch is specified, and the symbol is already registered with an interface, the symbol is written to disk. In addition, the interface is updated to reflect any pin/property changes to the symbol. Other symbols registered with the same interface may be marked invalid if the pins/properties are inconsistent with the interface.

If the symbol has passed check, but does not match the currently registered interface, only the symbol itself is saved. The interface is not updated unless the @update switch is present. Then the interface is updated to reflect the pin and property attributes of the symbol. Any other models registered with the interface will be marked invalid.

If the symbol is unchecked or has not passed check, the symbol is not saved unless the @force switch is present. Then the symbol is saved but the interface is not updated.

The following discussion is based on the menu items in the **File > Save Symbol** menu.

When you invoke the **File > Save Symbol** menu item, the **Default Registration** menu item is invoked. If the symbol is a new symbol, the symbol is registered with the default interface and marked as the default symbol for that interface. If no interface exists, an interface with its name the same as the symbol name is created and marked as the default. In both cases, the @defaultsym and @defaultifc switches are set. If the default interface exists and the symbol contents do not match the interface, you are queried as to whether you want to update the interface to match the symbol.

If you want to update the interface to match the symbol, the @update switch is set. If the symbol is unchecked or failed check, you are queried as to whether you want to save the symbol. If you want to save the symbol, the @force switch is set.

If you are saving an existing symbol, the registration does not change. If the symbol contents do not match the interface, you are queried as to whether you want the @update switch set. If the symbol is unchecked or failed check, you are queried as to whether you want the @force switch set.

When you invoke the **File > Save Symbol > Delete Registration** menu item, the following actions occur. If the symbol is new or currently unregistered, it will remain unregistered after it has been saved. If the symbol exists and is registered, you will be queried whether you want to delete the registration of the symbol with the interface. If so, the symbol is written out and its registration with the interface is deleted.

When you choose the **File > Save Symbol > Change Registration**, a dialog box is displayed, allowing you to perform any or all of the following actions: (1) delete the symbol's registration from an interface, (2) mark the symbol as the default symbol for its interface, (3) register the symbol with a different interface, (4) mark the interface as the default for the component, (5) force the symbol to be saved if symbol is unchecked or failed check, and (6) force an update of the interface to match the symbol contents.

Arguments

- ***update_switch (Overwrite Interface?)***

  The absence or presence of this switch when the interface does match the symbol contents or when the symbol has not passed check, has no meaning. This argument can have one of two values:

  @update (-UPdate): If the symbol contents do not match the currently registered interface, the symbol is saved and the interface is updated to match the symbol. Any other models currently registered with the interface are marked invalid.

  ⇒ **@noupdate** (-NOUPdate): If the symbol contents do not match the currently registered interface, the interface is not updated; only the symbol is saved.

- ***force_switch (Force Save If Unchecked?)***

  The presence or absence of this switch when the symbol passes check has no meaning. This argument can have one of two values:

  @force (-Force): If the symbol is unchecked or fails check, the symbol is saved anyway; the interface is not updated.

  ⇒ **@noforce** (-NOForce): If the symbol is unchecked or fails check, the symbol is not saved.

- ***@defaultsym (Mark Symbol As Default for Interface?)***

  When this switch is present, it indicates that the symbol is designated as the default symbol model for the interface with which the symbol is registered. If another symbol is currently the default symbol for the interface, this symbol becomes the default. If this switch is present, but no interface is specified, and the symbol is currently unregistered, the symbol is registered with an interface of the same name as the leaf name of the component and the symbol is designated as the default for that interface. There can only be one default symbol per interface. The symbol is given a label of "default_sym", which will be visible if you execute the $report_interfaces() function.

- ***@defaultifc (Mark This Interface As Default?)***

  This switch specifies that the interface being registered should be marked as the default interface for this component. There can be only one default interface per component.

- ***interface (Register With Interface)***

  This argument is a text string that is the name of the interface with which to register the symbol. A symbol can be registered with only one interface. If the symbol is currently registered with an interface, its registration changes. If interface is not specified and the symbol is already registered with an interface, the registration does not change.

- ***@unregister (Delete Registration?)***

  This switch removes the symbol registration with an interface.

Example(s)

In the following example, the $save_symbol() function displays the function syntax. This example saves the "nand3" symbol, in the component *your_home/da/my_lib/nand*, registers it with the default interface "nand3" (the interface name defaulted from the symbol name), and marks it as the default symbol.

```
$open_symbol("your_home/da/my_lib/nand", "nand3") $save_symbol( , , @defaultsym , @defaultifc)
```

The next example displays the command syntax. Another symbol is created for the same component as specified in the previous example. This symbol is not the default symbol, but is registered with the default interface for component "nand", which is "nand3".

```
ope sy  "your_home/da/my_lib/nand"   "nand2" sav sy
```

Related Functions

$save_sheet()
$save_sheet_as()
$save_symbol_as()
$set_edit_mode()

$save_symbol_as()

Scope: symbol
Window: Symbol Editor

Usage

$save_symbol_as("component_name", "*symbol_name*", "*interface*", *@defaultsym, @defaultifc, replace_mode*)

SAVe SYmbol As "component_name" "*symbol_name*" "*interface*" *-DefaultSym -DefaultIfc replace_mode*

(Symbol) File > Save Symbol As

Description

Writes the symbol to the disk, using the name specified by the component_name and symbol_name, for the symbol being viewed in the active window.

An error message is issued if symbol_name already exists and the @replace switch was not set.

You can have multiple interfaces within a single component. However, you can have only one default interface within that component. When you designate an interface to be the default interface, you must specify the @defaultifc switch and the interface name.

You can also have multiple symbols registered to a single interface. However, only one of those symbols can be designated as the default symbol for that interface. In order to designate a symbol to be the default symbol registered to the interface, you must specify the @defaultsym switch. The interface is updated to reflect any pin/property changes to the symbol. Other symbols registered with the same interface may be marked invalid if the pins/properties are inconsistent with the interface.

When you invoke the **File > Save Symbol As** menu item, a Save Symbol As dialog box is displayed, allowing you to perform any or all of the following actions: (1) specify the component name, (2) replace the existing symbol with the newly-modified symbol, (3) specify the symbol name, (4) mark the symbol as the default symbol for its interface, (5) specify the interface name, and (6) mark the interface as the default for the component.

If you have opened a transcript window on the Design Architect session, you will notice that the function $$save_symbol_as() is displayed in the transcript rather than $save_symbol_as(). The function, $$save_symbol_as() is a function that $save_symbol_as() calls. If you replay the transcript, the $$save_symbol_as() function will exhibit the same behavior as the $save_symbol_as() function.

Arguments

- **component_name (Component Name)**

  A text string specifying the pathname of the component in which to save the symbol.

- ***symbol_name (Symbol Name)***

  A text string that defines the name of the symbol. If not specified, the name defaults to the leaf name of the component.

- ***interface (Interface Name)***

  A text string specifying the name of the interface with which to register the symbol. A symbol can be registered with only one interface.

- ***@defaultsym (Mark as the Default Symbol?)***

  When this switch is present, it indicates that the symbol is designated as the default symbol model for the interface with which the symbol is registered. If another symbol is currently the default symbol for the interface, this symbol becomes the default.

  If this switch is present, but no interface is specified, the symbol is registered with an interface of the same name as the leaf name of the component and the symbol is designated as the default for that interface. There can only be one default symbol per interface. The label "default_sym" is attached to the symbol, and is visible if you execute the $report_interfaces() function.

- ***@defaultifc (Mark as the Default Interface?)***

  Marks the interface with which the symbol is being registered as the default interface for this component. There can be only one default interface per component.

- ***replace_mode (Replace Existing Symbol)***

  Controls whether the new symbol replaces an existing symbol of the same name. Choose one of two values: **@replace** (-Replace) or ⇒ **@noreplace** (-NOReplace).

Example(s)

The following function example opens a symbol "nand2" from the component, *your_home/da/my_lib/nand_gates*. Assume that the symbol has been modified so that it has an additional input. The modified symbol is saved as "nand3", the interface that is registered is called "nand3" and the symbol is the default symbol for that "nand3" interface. The original nand2 symbol remains unmodified.

```
$open_symbol("your_home/da/my_lib/nand_gates", "nand2")
$save_symbol_as("your_home/da/my_lib/nand_gates", "nand3",  "nand3",
                                                        @defaultsym)
```

Related Functions

$save_sheet()
$save_sheet_as()
$save_symbol()
$set_edit_mode()

$scale()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one symbol or comment object must be selected.

Usage

$scale(x_percent, *y_percent*)

SCAle x_percent *y_percent*

(Symbol) Edit > Edit Operations > Scale
(Schematic) Draw > Scale
(Schematic) Edit > Edit Commands > Edit Operations > Scale Comment

Description

Changes the proportions of selected symbol and comment objects with respect to the basepoint.

An x_percent value must always be supplied. The y_percent value is optional. When the x_percent value is equal to the y-percent value, the selected objects are scaled isotropically (evenly in both directions, such that the original proportions are maintained).

By specifying different x_percent and y_percent values, you can distort objects along either axis.

The values you enter represent "percentage of the original size". A value of 100 or 100.0 produces no change. Values less than 100.0 result in selected objects being reduced. Values greater than 100.0 result in selected objects being enlarged. Legal percentage values range from 0 to 10,000. For convenience, a value of 0 is equivalent to 100.0, and produces no change.

Lines, arcs, circles, polylines polygons, rectangles, and text may be scaled. When scaling a circle or text, the minimum value of x_percent or y_percent is used to change the radius of the circle or the height of the text.

Arguments

- **x_percent (X Percent)**

  This argument defines a real number specifying a percentage of the original size of the object along the horizontal plane.

- ***y_percent (Y Percent)***

  This argument defines a real number specifying a percentage of the original size of the object along the vertical plane. The default is 100.

Example(s)

The following example displays the function syntax for changing the proportions of the selected comment graphics objects in the active schematic window 200% in the x direction and 150% in the y direction.

```
$scale(200, 150)
```

The next example displays the command syntax for changing the proportions of the selected symbol objects in the active symbol window 50% in the x direction and 75% in the y direction.

```
sca 50 75
```

$scroll_down_by_unit()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_down_by_unit()

Description

Scrolls the view of the contents in the active window down by one application-defined unit, enabling you to move incrementally from the current cursor position to the bottom of the viewable area.

The unit of measurement defined by Design Architect is one-eighth of the displayed area, if the grid is not visible. If the grid is displayed, one unit is equal to one minor grid interval.

Example(s)

The following example scrolls down the view into the active window.

```
$scroll_down_by_unit()
```

Related Functions

$scroll_vt()

$scroll_down_by_window()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_down_by_window()

Description

Scrolls the view into the active window down by one-fourth the height of the window.

This functionality enables you to move from the currently displayed contents to the bottom of the viewable area.

Example(s)

The following example scrolls down, one-fourth of the active window's height.

```
$scroll_down_by_window()
```

Related Functions

$scroll_vt()

$scroll_hz()

Scope: bed_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$scroll_hz(percentage)

SCRoll HZ percentage

View > Scroll Horizontally > Left | Right

Description

Horizontally scrolls by the specified percentage of the active window.

It can display the area either to the left or the right of the currently visible area. The percentage is relative to the current cursor position. Supply a positive integer from 0 to 100.

Arguments

- **percentage**

  A number that specifies the percentage of the viewable area to scroll. The range is 0 through 100, inclusive.

Example(s)

This example scrolls 20% of the window width.

```
$scroll_hz(20)
```

Related Functions

$scroll_vt()

$scroll_left_by_unit()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_left_by_unit()

Description

Scrolls the view of the contents in the active window to the left by one application-defined unit, enabling you to move incrementally from the current window position to the left of the viewable area.

The unit of measurement defined by Design Architect is one-eighth of the displayed area, if the grid is not visible. If the grid is displayed, one unit is equal to one minor grid interval.

Example(s)

To scroll left by one unit, type the following in a popup command line:

$scroll_left_by_unit()

Related Functions

$scroll_hz()

$scroll_left_by_window()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_left_by_window()

Description

Scrolls the view into the active window to the left, one-fourth the width of the window.

This functionality enables you to move from the currently displayed contents to the left side of the viewable area.

Example(s)

To scroll left by half the window's width, type the following in a popup command line:

```
$scroll_left_by_window() $scroll_left_by_window()
```

Related Functions

$scroll_hz()

$scroll_right_by_unit()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_right_by_unit()

Description

Scrolls the view of the contents in the active window to the right by one application-defined unit, enabling you to move incrementally from the current window position to the right side of the viewable area.

The unit of measurement defined by Design Architect is one-eighth of the displayed area, if the grid is not visible. If the grid is displayed, one unit is equal to one minor grid interval.

Example(s)

To scroll one unit to the right, type the following in a popup command line:

```
$scroll_right_by_unit()
```

Related Functions

$scroll_hz()

$scroll_right_by_window()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_right_by_window()

Description

Scrolls to the right, one-fourth the width of the active window.

This functionality enables you to move from the currently displayed contents to the right side of the viewable area.

Example(s)

To scroll half the window's width to the right, type the following in a popup command line:

```
$scroll_right_by_window() $scroll_right_by_window()
```

Related Functions

$scroll_hz()

$scroll_up_by_unit()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_up_by_unit()

Description

Scrolls the view of the contents in the active window up one application-defined unit, enabling you to move incrementally from the current cursor position to the top of the viewable area.

The unit of measurement defined by Design Architect is one-eighth of the displayed area, if the grid is not visible. If the grid is displayed, one unit is equal to one minor grid interval.

Example(s)

To scroll up one minor grid interval, type the following in a popup command line:

$scroll_up_by_unit()

Related Functions

$scroll_vt()

$scroll_up_by_window()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$scroll_up_by_window()

Description

Scrolls the view into the active window up one-fourth the height of the window.

This functionality enables you to move from the currently displayed contents to the top of the viewable area.

Example(s)

To scroll up one-fourth the window height, type the following in a popup command line:

$scroll_up_by_window()

Related Functions

$scroll_vt()

$scroll_vt()

Scope: bed_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$scroll_vt(percentage)

SCRoll VT percentage

View > Scroll Vertically > Up | Down

Description

Scrolls the contents of the active window vertically by the specified percentage.

It can display the area above or below the currently visible area. The percentage is relative to the current cursor position. Supply a positive integer from 0 to 100.

Arguments

- **percentage**

  A number that specifies the percentage to scroll within the area. The range is 0 through 100 to scroll through the existing extent of the diagram. Slightly larger or smaller values can scroll past the edge of the existing diagram.

Example(s)

To scroll by 50% of the height of the window, type the following in a popup command line:

$scroll_vt(50)

Related Functions

$scroll_hz()

$select_all()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$select_all(*@comment, @pin, @property, @symbolbody, @text*)

SELect ALl *-COmment -PIn -PRoperty -SYMbolBody -Text*

Most popup menus > Select > All >
Edit > Select > All >

Schematic Editor Usage

$select_all(*@comment, @frame, @instance, @pin, @property, @symbolpin, @text, @vertex*)

SELect ALl *-COmment -Frame -Instance -PIn -PRoperty -SYMbolPin -Text -Vertex*

Most popup menus > Select > All >
Edit > Select > All >

Description

Selects objects in the active window based on the selection switches chosen, or on the values of the select internal state variables.

These switches correspond to the select internal state variables. These select internal state variables define what is called the "selection filter"; that is, it defines what objects can be selected from the active window. You can change the "selection filter" by changing the values of the internal state variables, by issuing a $setup_select_filter() function, or by overriding the values by specifying $select_all() switches.

Specifying the $select_all() switches does not replace the values of the associated internal state variables; they are only valid for the current selection action.

If you choose the **Select > All > Anything** menu item, all objects in the active window are selected. This menu item does not use the selection filter. If you choose the **Select > All > Filtered** menu item, all objects that are selectable (as specified by the selection filter) are selected. If you select any other menu item,

selection is performed on the particular object you specified overriding the value of the associated select internal state variable for this select action only. It does not change the value of the associated select internal state variable.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly selected objects (left-most takes precedence over lowest).

Arguments

- ***@comment (Comment)***

  This switch selects all comment graphics in the active window. The value of the select_comment internal state variable is overridden for this time only.

- ***@frame (Frame)***

  This switch is valid in the Schematic Editor and selects all frames in the active window. The value of the select_frame internal state variable is overridden for this time only.

- ***@instance (Instance)***

  This switch is valid in the Schematic Editor and selects all instances in the active window. The value of the select_instance internal state variable is overridden for this time only.

- ***@pin (Pin)***

  This switch selects all instance pins and symbol pins on a schematic sheet and all symbol pins on a symbol. The value of the select_pin internal state variable is overridden for this time only.

- ***@property (Property)***

  This switch selects all property text in the active window. The value of the select_property internal state variable is overridden for this time only.

- ***@symbolbody (Symbol Body)***

  This switch is valid in the Symbol Editor and selects all symbol graphics in the active symbol window. The value of the select_symbolbody internal state variable is overridden for this time only.

- ***@symbolpin (Symbol Pin)***

  This switch is valid in the Schematic Editor and selects all symbol pins in the active window. The value of the select_symbolpin internal state variable is overridden for this time only.

- ***@text (Comment Text)***

  This switch selects all comment text in the active window. The value of the select_text internal state variable is overridden for this time only.

- ***@vertex (Vertex)***

  This switch is valid in the Schematic Editor and selects all vertices in the active window. The value of the select_vertex internal state variable is overridden for this time only.

Example(s)

The following $select_all() function example shows the values of the arguments for selecting all objects in the currently active schematic window.

```
$select_all(@comment, @frame, @instance, @pin, @property, @symbolpin,
                                                    @text, @vertex)
```

The following example displays the command syntax for selecting all net vertices on the active schematic window.

```
sel al   -vertex
```

Related Functions

$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$setup_select_filter()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

Related Internal State Functions

$set_select_comment()
$set_select_exterior()
$set_select_frame()
$set_select_instance()
$set_select_net()
$set_select_pin()
$set_select_property()
$set_select_segment()
$set_select_symbolbody()
$set_select_symbolpin()
$set_select_text()
$set_select_vertex()

$select_area()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$select_area([select_area], *@comment, @exterior, @pin, @property, @symbolbody, @text*)

SELect ARea [select_area] *-COmment -Exterior -PIn -PRoperty -SYMbolBody -Text*

Most popup menus > Select > Area >
Most popup menus > Select > Exterior >
Edit > Select > Area >
Edit > Select > Exterior >

Schematic Editor Usage

$select_area([select_area], *@comment, @exterior, @frame, @instance, @net, @pin, @property, @segment, @symbolpin, @text, @vertex*)

SELect ARea [select_area] *-COmment -Exterior -Frame -Instance -Net -PIn -PRoperty -SEgment -SYMbolPin -Text -Vertex*

Most popup menus > Select > Area >
Most popup menus > Select > Exterior >
Edit > Select > Area >
Edit > Select > Exterior >

Description

Selects objects in a given area in the active window based on the selection switches chosen, or on the values of the select internal state variables.

The $select_area() function places objects onto a selection list that are (1) allowed by the select switches, and (2) contained (or in the case of the @exterior switch, not contained) in a specified area. These switches correspond to the select internal state variables. These select internal state variables define what is called the "selection filter"; that is, it defines what objects can be selected from the active window. The Select (left) mouse button executes the $select_area() function.

You can change the "selection filter" by changing the values of the internal state variables, by issuing a $setup_select_filter() function, or by overriding the values by specifying $select_area() switches. Specifying the $select_area() switches does not replace the values of the associated internal state variables; they are only valid for the current selection action.

If you choose the **Select > Area > Anything** or **Select > Exterior > Anything** menu item, all objects in the active window are selected. This menu item does not use the selection filter. If you choose the **Select > Area > Filtered or Select > Exterior > Filtered** menu item, all objects that are selectable (as specified by the selection filter) are selected.

If you select any other menu item, selection is performed on the particular object you specified, overriding the value of the associated select internal state variable for this select action only. It does not change the value of the associated select internal state variable.

All menu items bring up a prompt bar requesting the selection area. If you select the **Options** button on the prompt bar, an options dialog box appears on the screen allowing you to override the value of the associated internal state variable for any or all selection switches. If the specified switches are not appropriate for the current edit mode, a message is issued.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

When the select area is specified as a single point, the $select_area() function looks within the select_aperture for the closest object of any type allowed by the select filter. If that object is unselected, it becomes selected. If that object is already selected, it becomes unselected (the select state toggles). Note that this single point select/unselect always uses the selection filter, but never the unselection filter, to determine what types of objects can be selected or unselected.

Arguments

- **select_area (Area)**

  This argument pair defines the coordinates indicating both corners of the selection rectangle specified in user units.

- ***@comment (Comments)***

  This switch selects all comment graphics in the defined area. The value of the select_comment internal state variable is overridden for this time only.

- ***@exterior (Selection Will Occur)***

  This switch selects only items completely outside the defined area. The default, which is the enclosed and intersecting objects, is overridden for this time only.

- ***@frame (Frames)***

  This switch is valid in the Schematic Editor and selects all frames in the defined area. The value of the select_frame internal state variable is overridden for this time only.

- ***@instance (Instances)***

  This switch is valid in the Schematic Editor and selects all instances in the defined area. The value of the select_instance internal state variable is overridden for this time only.

- ***@net (Nets)***

  This switch is valid in the Schematic Editor and selects all nets in the defined area. The value of the select_net internal state variable is overridden for this time only.

- ***@pin (Pins)***

  This switch selects all instance pins and symbol pins on a schematic sheet, and all symbol pins on a symbol, in the defined area. The value of the select_pin internal state variable is overridden for this time only.

- ***@property (Properties)***

  This switch selects all properties in the defined area. The value of the select_property internal state variable is overridden for this time only.

- ***@segment (Segments)***

  This switch is valid in the Schematic Editor. When the point or area specified for a select operation falls on a net segment, the vertices on either end of the segment will be selected and the net segment will be highlighted. The value of the select_segment internal state variable is overridden for this time only.

- ***@symbolbody (Symbol Bodies)***

  This switch is valid in the Symbol Editor and selects all symbol graphics in the defined area. The value of the select_symbolbody internal state variable is overridden for this time only.

- ***@symbolpin (Symbol Pins)***

  This switch is valid in the Schematic Editor and selects all symbol pins in the defined area. The value of the select_symbolpin internal state variable is overridden for this time only.

- ***@text (Comment Text)***

  This switch selects all comment text in the defined area. The value of the select_text internal state variable is overridden for this time only.

- ***@vertex (Vertices)***

  This switch is valid in the Schematic Editor and selects all vertices in the defined area and highlights contained segments. The value of the select_vertex internal state variable is overridden for this time only.

Example(s)

The following $select_area() function example shows the values of the arguments when only properties are selected within a specified area in the currently-active schematic sheet.

```
$select_area([[-11.3, -0.8], [10.2, 6]], , , , , , , @property)
```

The next example displays the command syntax for selecting all objects within a specified area in the active symbol window.

```
sel ar  [[-1.0, 2.4], [5.5, 4.7]]  -comment  -pin  -property  -symbolbody   -text
```

Related Functions

$select_all()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$setup_select_filter()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

Related Internal State Functions

$set_select_comment()
$set_select_exterior()
$set_select_frame()
$set_select_instance()
$set_select_net()
$set_select_pin()
$set_select_property()
$set_select_segment()
$set_select_symbolbody()
$set_select_symbolpin()
$set_select_text()
$set_select_vertex()

$select_branches()

Scope: schematic
Window: Schematic Editor

Usage

$select_branches()

SELect BRanches

Most popup menus > Select > Attached > Branches
Edit > Select > Attached > Branches

Description

Selects the entire branch of any net containing selected vertices on a schematic sheet.

A branch is defined as the portion of a net between junction dots, pins, or dangling vertices.

Example(s)

The following example displays the function syntax for selecting the entire branch of any if the selected vertices.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], , , , , @net)
$select_branches()
```

Related Functions

$select_all()
$select_area()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_by_handle()

Scope: da_report and da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: Data must be written to disk (using $save(), for example) before operations on handles of objects.

Usage

$select_by_handle(*view_mode*, handles)

SELect BY Handle *view_mode* handles

Most popup menus > Select > By Handle
Edit > Select > By Handle

Description

Selects all unprotected objects (schematics, symbols, and comments) with the specified handles.

In order to select objects by their handles, you must first do some operation that causes data to be written to disk, such as a $$check(), $save_sheet(), or $report_object() function; this means you cannot create an object, and immediately select that object by its handle.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

When the menu item is invoked or the command or function is typed without arguments on the command line, a dialog box is displayed allowing you to enter multiple handle names.

Arguments

- **handles (Handle)**

  A list of text strings specifying unique handles.

- ***view (Center View?)***

  This argument can have one of two values:

  @view (-View): Centers the selected objects in the current view and zooms in or out so the view is defined by the extent of the selected objects.

  ⇒ **@noview** (-NOView): Does not center the selected objects in the current view.

Example(s)

The following example shows the function syntax for selecting two symbol instances by their handles, "I$24" and I$28, respectively, from the active schematic sheet.

```
$select_by_handle( ,"I$24, "I$28")
```

The next example shows the command syntax for selecting a net by its handle, "N$45", from the active schematic sheet. The selected net is centered in the current view of the window.

```
sel by h  -view  "N$45"
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_by_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$select_by_property(*union_mode,* property_name_value_type_triplets)

SELect BY Property *union_mode* property_name_value_type_triplets

Most popup menus > Select > By Property >
Edit > Select > By Property >

Description

Selects objects based on the property names, values, and types specified. Multiple property name/value/type sets can be specified with this function.

If only the property name is specified, all objects that own a property with that name are selected; the property can have any value or type. If only the property value is specified (property_name is a null string), all objects that own a property with that value are selected. If only the property type is specified, all objects that own a property with that type are selected.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly selected objects (left-most takes precedence over lowest).

When you invoke the function through a menu, a dialog box is displayed. If you invoke the function through the command line, a prompt bar is displayed.

Arguments

- **property_name_value_type_triplets (Name-Value-Type Trios)**

  This argument is a repeating string composed of three values: property_name, property_value, and property_type.

  - property_name (Property Name)

This argument is a text string containing the property name owned by objects to be selected. This argument is a part of a repeating argument list that also includes a property value and property type. If VOID or a null string are used, this indicates that any property name can be matched with a specified property value and/or property type.

- property_value (Value)

  Property value is an non-case-sensitive text string containing the property value corresponding to property_ name. If property value is specified, and property type is not specified, property values are compared on a character-by-character basis. If property type is specified, only properties sharing both value and type are selected.

  Property_value is a part of a repeating argument list that also includes property name and property type. If VOID or a null string is used, this indicates that any property value can be matched with a specified property name and/or property type.

- property_type (Type)

  Property_type is a text string containing the type of legal property values for property name. It can have one of the following values:

  "**string**": The value of the property name must be a string. Only owners of properties whose property type is a string are selected if both property name and value match.

  "**number**": The value of the property name must be a real number or an integer. Only owners of properties whose property type is a number are selected if both property name and value match.

  "**expression**": The value of the property name must be an expression (in quotes). Only owners of properties whose property type is an expression are selected if both property name and value match.

  "**triplet**": The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties. Each of

the three values may be a number, an expression, or a string which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

If only one value is specified, it is used for the best-case, typical, and worst-case values. If two values are specified, the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics tools that recognize triplets are analysis tools (for example, QuickSim II), and timing calculation tools.

Property_type is a part of a repeating argument list that also includes the property name and value. If this argument is not specified, the property value can be any type.

- ***union_mode (Property Union / Property Intersection)***

  This argument can have one of three values:

  @union (-Union): Indicates that if more than one property name/value/type set is specified, objects having at least one of the indicated property sets will be selected.

  ⇒ **@nounion** (-NOUnion): Only objects having all the indicated property sets will be selected.

  @property_text (-Property_text): Indicates that the properties themselves, rather than the property owners, will be selected.

Example(s)

The following example displays the function syntax for selecting electrical or comment objects that have the property names of "in_a" and "in_b".

$select_by_property(, "in_a", , , "in_b")

The next example displays the command syntax for selecting electrical or comment objects having property names of "in_c" and "in_d", and values "indicator_c" and " indicator_d", respectively. Note the commas between argument values. In this example, it is necessary to include commas in the command syntax in order to specify null values for the property name/value/type arguments that are omitted. If all name/value/type arguments are specified, commas are not needed.

sel by p "in_c", "indicator_c", , "in_d", "indicator_d"

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_by_property_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$select_by_property_type(property_type)

SELect BY Property Type property_type

Most popup menus > Select > By Property >
Edit > Select > By Property >

Description

Selects objects based on the property type(s) specified.

All objects that own a property of the designated type are selected. Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly selected objects (left-most takes precedence over lowest).

When you invoke the function through a menu or through the command line with no argument, a prompt bar is displayed for you to specify a property type.

Arguments

- **property_type (Type)**

  Property_type is a repeating text string containing the type of property values owned by objects you want to select. Choose one or more of the following values:

  @string: Only owners of properties whose type is a string are selected.

  @number: Only owners of properties whose type is a number are selected.

  @expression: Only owners of properties whose type is an expression are selected.

  @triplet: Only owners of properties whose type is a triplet (three-valued property, containing the best, typical, and worst-case values) are selected.

Example(s)

The following example displays the function syntax for selecting electrical or comment objects that have expressions for property values.

```
$select_by_property_type(@expression)
```

The next example displays the command syntax for selecting objects that have text strings for property values.

```
sel by p t  string
```

Related Functions

$select_by_property()
$unselect_by_property()
$unselect_by_property_type()

$select_group()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$select_group("group_name")

SELect GRoup "group_name"

Most popup menus > Select > Group
Edit > Select > Group

Description

Selects all objects in the named group.

The group name was previously assigned to the objects with the $group() function. When this function is invoked with no group name, a prompt bar is displayed for you to enter the name.

The basepoint is reset to the left-most, lowest origin of selected objects.

Arguments

- **group_name (Group Name)**

  This argument is a text string that specifies the name of a group of objects.

Example(s)

The following example selects all objects in a group named "group_a".

```
$select_group("group_a")
```

Related Functions

$group()
$change_group_visibility()
$ungroup()

$select_instances()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one pin on an instance must be selected.

Usage

$select_instances()

SELect INSTances

Most popup menus > Select > Attached > Instances
Edit > Select > Attached > Instances

Description

Selects all unselected instances that have selected pins.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

Example(s)

The following example displays the function syntax for selecting instances on already selected pins.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], , , , , ,  @pin)
$select_instances()
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_nets()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one pin on an instance must be selected.

Usage

$select_nets()

SELect NEts

Most popup menus > Select > Attached > Nets
Edit > Select > Attached > Nets

Description

Selects all unselected net segments and vertices of nets that have at least one selected net segment or vertex.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

Example(s)

The following example displays the function syntax for selecting all unselected net segments and vertices that have at least one selected net segment or vertex.

```
$select_area([[1.2, -0.3], [2.4, 6.4]], , , , , , , , , , , @vertex)
$select_nets()
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_pins()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_pins()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one instance must be selected in an active window.

Usage

$select_pins()

SELect PIns

Most popup menus > Select > Attached > Pins
Edit > Select > Attached > Pins

Description

Selects pins of selected instances.

Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

Example(s)

This example displays the syntax for selecting pins on already selected instances.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], , , , @instance)
$select_pins()
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_property_owner()
$select_vertices()
$unselect_all()
$unselect_area()
$unselect_by_property()
$unselect_property_owner()

$select_property_owner()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$select_property_owner([location])

SELect PRoperty Owner [location]

Most popup menus > Select > Property Owner
Edit > Select > Property Owner

Description

Selects the owner of a visible property text string.

An owner is the item to which property value text is assigned with the $add_property() function.

The cursor does not have to be placed directly over the text. The function selects the owner of the portion of text closest to the given location, if the text is a displayed property value. If the text is comment text, an error is issued.

Arguments

- **location (At Location)**

  This argument defines the coordinates indicating a location over a portion of property text whose owner is to be selected, specified in user units.

Example(s)

The following example displays the function syntax for selecting the owner of the property at the specified location.

```
$select_property_owner([1.2, 5.3])
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_vertices()
$setup_page()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$select_template_name()

Scope: hdtxt_area
Window: VHDL Editor
Prerequisite: The insertion cursor must be placed on the line that contains the template, positioned either before the template or within the closing brackets.

Usage

$select_template_name()

SELect TEmplate Name

Templates > Select Name
VHDL Popup Menu> Templates > Select Name

Description

Selects the next VHDL template name on the current line by searching for text between the following types of brackets: "<>", "{}", or "[]".

The following list describes the selection criteria.

1. If the cursor is on the opening delimiter of a template name, that template name is selected.

2. Otherwise, if the cursor is not at the beginning of the line, a search backward is performed to see if the cursor is in a template. The search never goes beyond the beginning of the line. Paired delimiters are ignored during this search. If the cursor is within a template, that template name is selected.

3. Otherwise, starting at the current cursor position, a forward search is performed for an open delimiter. If one is found, a search is performed for the corresponding closing delimiter. These searches never go beyond the end of the line.

4. When a candidate template is found, the cursor is positioned to the beginning of the template name and the template is selected. If auto-delete mode is on, the internal auto-delete flag is set so that entering characters at the cursor will cause the template name to be deleted.

If no beginning delimiter or ending delimiter is found on the current line, an error message is issued.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Example(s)

The following example displays the function syntax for selecting a template on the current line.

```
$select_template_name()
```

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$set_compiler_options()
$set_template_directory()

$select_text()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$select_text(area)

SELect TExt area

Description

Selects only text objects in the specified area in the active window.

It selects property text, comment text, and symbol body text (in Symbol window) in the defined area. If no text exists in the specified area, no objects are selected.

Arguments

- **area**

  This argument pair specifies the coordinates of diagonally opposite corners of the selection area. To type the selection, the first element is the x coordinate, the second element is the y coordinate, and the optional third element is the window name: [[x1, y1, "window"], [x2, y2, "window"]]. To define the area using the mouse, press the Select mouse button at one corner of the selection area, drag the mouse to the diagonally opposite corner of the area, and release the mouse button.

Example(s)

The following example displays the function syntax for selecting text.

```
$unselect_all() $select_text([[1.2, 3.4, "Schematic#2"],
                              [3.5, 1.0, "Schematic#2"]]) $unselect_all()
```

Related Functions

$select_area()

$select_vertices()

Scope: schematic
Window: Schematic Editor

Usage

$select_vertices(vertex_type, [area])

SELect VErtices vertex_type [area]

Description

Selects either pin or net vertices within a defined area.

When the $select_vertices() function is issued, all pin or net vertices within the rectangular area defined by the two sets of coordinates are selected, and all net segments bounded by selected vertices are highlighted. When a vertex within a defined area is both a pin and a net vertex, it is selected as belonging to the type of vertex specified in the function.

Arguments

- **vertex_type (Type)**

  This argument specifies whether to select pin vertices or net vertices. It must have one of the following values: **@pins** or ⇒ **@nets** (only net vertices are selected).

- **area (Area)**

  This argument pair defines coordinates indicating both points of the defined area specified in user units.

  When the prompt bar appears, press the Select mouse button at one edge of the rectangle, drag the mouse to the opposite edge of the area, and release the mouse button.

Example(s)

The following example displays the function syntax for selecting net vertices within the defined area, [[0.8, 0.2], [5.5, 5.8]].

```
$select_vertices(@nets, [[0.8, 0.2], [5.5, 5.8]])
```

The next example shows the command syntax for selecting pin vertices within the same defined area.

```
sel ve  pins  [[0.8, 0.2], [5.5, -5.8]]
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$select_vertices()
$setup_page()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$sequence_text()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$sequence_text("*prefix*", first_index, "*suffix*", *step*)

SEQuence TExt "*prefix*" first_index "*suffix*" *step*

(Symbol) Symbol Body & Pins > Properties > Sequence
(Symbol, Schematic) Property/Text > Sequence Text
(Symbol) Edit > Properties > Sequence Text
(Schematic) Draw > Properties > Sequence Text
(Schematic) Instance > Properties > Sequence Text
(Schematic) Net > Properties > Sequence Text
(Schematic) Edit > Edit Commands > Properties > Sequence Text

Description

Allows assignment of sequenced property values.

Text sequencing operates on a single property name, which is determined by the top-most, left-most selected property. Selected properties of different names are ignored.

A dialog box is displayed for you to enter new property values. After you click on OK, a message is displayed telling you the next new text value; click the Select mouse button on each piece of text to change. To exit from the change text mode, click one of the other mouse buttons.

This is a single undoable function. The edit window is frozen while the property values are being sequenced. The window is updated to show the new text values when you exit the change text mode.

Arguments

- **first_index (Beginning Index Number)**

  This argument is an integer specifying the value to assign to the first selected property. If not specified, the value used in the last call to this function during the current editing session is used. If not specified, and this is the first call to this function, "1" is used.

- ***prefix (New Prefix)***

  This string specifies the prefix for the sequenced property values. If not specified, the value last specified during this session is used.

- ***suffix (New Suffix)***

  This string specifies the suffix for the sequenced property values. If not specified, the value last specified during this session is used.

- ***step (Skip By)***

  This integer specifies the difference between sequenced property values. If not specified, either the last value specified or "1" is used.

Example(s)

The following example shows the function syntax to assign the values "a_2", "a_4", "a_6", ... to the selected properties.

```
$sequence_text("a_", 2, "", 2)
```

Related Functions

$auto_sequence_text()

$set_active_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_active_symbol("component", "symbol", "parameters", "alias")

(Active Symbol) Choose Symbol
(Active Symbol) Activate Selected

Description

Specifies a new active symbol to be instantiated whenever the $place_active_symbol() function is issued.

If the active symbol window is visible, the specified symbol will be displayed there.

Arguments

- **component**

  This argument is the pathname to the component that contains the desired symbol. If not specified, the default is the component in which the current active symbol resides.

- ***symbol***

  This argument specifies the name of the particular symbol you want to activate. If none is specified, the default symbol for the named component is chosen to be the active symbol.

- ***parameters***

  This argument is a vector specifying property name/value pairs to attach to an instance of this symbol when it is placed on a sheet.

- ***alias***

  This argument is a user or library defined name to help the user identify the symbol. If specified, the alias, rather than the component name and symbol name, is displayed in the Active Symbol window and its history list.

Example(s)

This example displays the use of the $set/$get_active_symbol() functions. After

```
$set_active_symbol("$PROJ_DA/da/instance", "instance", ["a", "b"],
                                                    "my_new_symbol")
```

Entering the function

```
$get_active_symbol()
```

or

```
$get_active_symbol(@path)
```

will return something similar to:

```
//  ["$PROJ_DA/da/instance", 15, "$PROJ_DA/da", "instance", "instance"]
```

Related Functions

$add_instance() $get_active_symbol() $replace()

$set_active_symbol_history()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_active_symbol_history("vector", clear)

(Active Symbol) Symbol History > List | Back | Forward | Remove

Description

Adds items to the active symbol history list, or replaces the items in the list.

A history list is a list of previously active symbols. Each item in the list is a vector of the alias, the component pathname, the symbol name, and any instance-specific property name/value pairs. You can preload the history list with commonly used components to speed up the process of adding symbol instances.

Arguments

- **vector**

  This is a vector of history list items. A history list item is a vector of the alias, the component pathname, the symbol pathname, and any instance-specific property name/value pairs.

- **clear**

  This argument specifies whether to replace the symbol history list, or append items to the list. You can specify one of two values:

- **@clear**: Replace the contents of the active symbol history list with the given vector.

  ⇒ **@append**: Append the given vector to the active symbol history list.

  @current_number: This argument is for Mentor Graphics use only.

Example(s)

This example shows how to preload the active symbol history list with some commonly used components. This can be placed in a file to be read at the beginning of an editing session.

```
$set_active_symbol_history(
   [  ["portin", "$MGC_GENLIB/portin", "portin", [] ],
      ["portout", "$MGC_GENLIB/portout", "portout", [] ],
      ["portbi", "$MGC_GENLIB/portbi", "portbi", [] ],
      ["offpage.in", "$MGC_GENLIB/offpage.in",
                                              "offpage.in",[] ],
      ["offpage.out", "$MGC_GENLIB/offpage.out ",
                                            "offpage.out", [] ],
      ["offpage.bi", "$MGC_GENLIB/offpage.bi", "offpage.bi",
                                                          [] ],
      ["ground", "$MGC_GENLIB/ground", "ground", [] ],
      ["vcc", "$MGC_GENLIB/vcc", "vcc", [] ],
      ["", "$MGC_GENLIB/rip", "1X2", [] ]
   ],
   @append);
```

Related Functions

$add_instance()
$get_active_symbol_history()
$set_active_symbol()

$set_basepoint()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_basepoint([location])

SET BAsepoint [location]

Setup > Set Basepoint

Description

Changes the basepoint of the selected objects to the specified location.

If any electrical objects are currently selected, the new basepoint will be snapped to the pin grid.

Arguments

- **location (At Location)**

  This defines the coordinates of the new basepoint location in user units.

Example(s)

In the following example, the basepoint for the selected comment objects is reset.

```
$select_area([[0, 0], [5 5]], @comment)
$set_basepoint([0, 0])
```

Related Functions

$setup_page()

$set_color()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_color("color", *comment, frame, instance, pin, net, dot, symbol*)

SET COlor "color" *comment frame instance pin net dot symbol*

(DA Session) Setup > Set > Color
Setup > Grid/Report/Color > Color

Description

Resets the color for the selected class(es) of design objects session wide.

The $set_color() function is used to tailor class(es) of design objects (comment, frames, pins, and so on) to any color available on the node. This overrides the default color for this design object class. All objects of this type session-wide (all objects in all sheets in all windows), appear in the selected color. Unlike the related function, $set_color_config(), the background color is not affected by this function.

The setting made by this function can be reset to defaults by $set_color_config(). The colors shown in Table 2-6 are the default colors for black and white backgrounds. The list of colors defined under the color argument description are those that you (with a color node) can select for the first argument of $set_color().

You can only change the colors of design objects. Therefore, the colors for select, protect, and highlight cannot be changed from the defaults. Properties always take the color of the object they are attached to, so they cannot be set independently. Properties that are not attached to an object (graphic logical symbol properties in Table 2-6) always display in light gold.

Table 2-6. Default Colors for Black and White Backgrounds

Object	Black Background	White Background	Valid Applications
Frames	green	green	Schematic Editor
Instance	cyan	darkblue	Schematic Editor
Pins	magenta	magenta	Symbol Editor Schematic Editor
Nets	lightgold	black	Schematic Editor
Comments	green	green	Symbol Editor Schematic Editor
Dots	lightgold	black	Symbol Editor Schematic Editor
Symbols	cyan	darkblue	Symbol Editor
Graphic Logical Symbol Properties	lightgold	lightgold	Symbol Editor Schematic Editor
Select	white	black	Symbol Editor Schematic Editor
Protect	lightgray	yellow	Symbol Editor Schematic Editor
Highlight	medium-aquamarine	medium-aquamarine	Symbol Editor Schematic Editor

Arguments

- **color (Color)**

  This argument is a text string that is a valid color. Valid colors are:

aquamarine	irismistm	odysseybluem
black	irismistvd	odysseybluevd
blue	khaki	orange
blueviolet	lightblue	orangered
brown	lightgold	orchid
cadetblue	lightgray	palegreen
coral	lightgrey	pink
cornflowerblue	lightsteelblue	plum
cyan	limegreen	red
darkblue	magenta	salmon
darkgreen	maroon	sandybrown
darkolivegreen	mediumaquarmarine	seagreen
darkorchid	mediumblue	sienna
darkslateblue	mediumforestgreen	skyblue
darkslategray	mediumgoldenrod	slateblue
darkslategrey	mediumorchid	springgreen
darkturquoise	mediumseagreen	ssspressod
dimgray	mediumslateblue	ssspressol
dimgrey	mediumspringgreen	ssspressom
firebrick	mediumturquoise	ssspressovd
forestgreen	mediumvioletred	steelblue
gold	midnightblue	tan
goldenrod	midorilimed	thistle
gray	midorilimel	turquoise
green	midorilimem	violet
greenyellow	midorilimevd	violetred
grey	navy	wheat
indianred	navyblue	white
irismistd	odysseyblued	yellow
irismistl	odysseybluel	yellowgreen

- ***comment (Comments)***

  This argument controls whether color is reset for comments. It can have one of the two following values: **@comment** (-COMment) or **@nocomment** (-NOCOMment).

- ***frame (Frames)***

  This argument determines if color is reset for frames. It can have one of the two following values: **@frame** (-Frame) or **@noframe** (-NOFrame).

- ***instance (Instances)***

  This argument determines if color is reset for instances. It can have one of the two following values: **@instance** (-Instance) or **@noinstance** (-NOInstance).

- ***pin (Pins)***

  This argument determines if color is reset for pins. It can have one of the two following values: **@pin** (-Pin) or **@nopin** (-NOPin).

- ***net (Nets)***

  This argument determines if color is reset for nets. It can have one of the two following values: **@net** (-Net) or **@nonet** (-NONet),

- ***dot (Dots)***

  This argument determines if color is reset for dots. It can have one of the two following values: **@dot** (-Dot) or **@nodot** (-NODot).

- ***symbol (Symbol Bodies)***

  This argument controls whether color is reset for symbol bodies. It can have one of the two following values: **@symbol** (-Symbol) or **@nosymbol** (-NOSymbol).

Example(s)

The following example changes all nets in all opened schematic windows to blue.

```
$set_color("Blue", , , , , @net)
```

The following example shows the command syntax to change the color of all symbol bodies in all opened schematic windows to green.

```
SET COlor  "Green" , , , , , , , @symbol
```

Related Functions

$set_color_config()

$setup_color()

$set_color_config()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_color_config(color_mode)

SET COlor Config color_mode

(DA Session) Setup > Set > Color Config

Description

Changes the background color and resets design object colors to defaults for all design objects and all windows.

This function is used to reset the default colors for the window background (which is either black or white) and the design objects displayed in that background. Invoking this function to change the background resets all design objects in all windows to their default colors. Objects currently displayed are repainted in their appropriate defaults and the background is changed, if necessary.

No color changes occur if the new background color matches the old background color, unless you have previously-tailored individual design objects, using the related function, $set_color().

If colors have been changed using $change_color(), this function resets all colors to their default colors. This function resets all design objects and all backgrounds in all windows session-wide.

Table 2-6, on page 2-523, displays the default object colors for black and white backgrounds.

Arguments

- **color_mode (Color)**

  Specifies the background color: **@white** or **@black**.

Example(s)

The following example resets the background color to black. If the color for nets was previously set to "blue", resetting the background color to black, resets the net color to its default, "lightgold".

```
$set_color_config(@black)
```

Related Functions

$set_color()

$set_compiler_options()

Scope: hdtxt_area
Window: VHDL Editor

Usage

$set_compiler_options()

SET COmpiler Options

Compile > Set Options

Description

Displays the Compiler Options dialog box for the language being edited (usually VHDL) by calling the language specific function.

This lets you set the compiler options to use when the $compile() function is invoked.

For complete information about the compiler options, refer to "Creating and Compiling Source Code" in the *System-1076 Design and Model Development Manual*.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$select_template_name()
$set_template_directory()
$set_vhdl_compiler_options()

$set_default_parts_menu()

Scope: palette_area and schematic
Window: Schematic Editor

Usage

$set_default_parts_menu("*menu_name*")

Description

Sets the default parts menu to the specified name.

This function lets you name the default component library that is displayed when you choose the **Libraries > Display Default Palette** menu item. If the specified pathname is invalid, the **Libraries > Display Default Palette** menu item does nothing. This function may be called from schematic level startup files.

Arguments

- ***menu_name***

  This string specifies the pathname of the component library you want as the default. If no pathname is specified, the currently displayed palette menu is the default.

Example(s)

The following example sets *$PROJECT/designs/abc_lib* to be the default component library:

```
$set_default_parts_menu("$PROJECT/designs/abc_lib")
```

$set_edit_mode()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_edit_mode(edit_mode)

SET EDit Mode edit_mode

File > Set Edit Mode On/Off

Description

Changes the mode of the schematic or symbol window from edit to read-only or from read-only to edit.

If multiple windows are open into the same design, and the mode of one window is changed, the mode of all windows is changed.

This function issues an error and does not execute under the following conditions: (1) edits have not been saved in any edit view, and Set Edit Mode Off is requested, (2) Set Edit Mode On is requested, but the sheet could not be opened for edit (for example, concurrency conflicts with another user, wrong operating system file protections, or (3) Set Edit Mode On is requested, but the version has changed since the window was opened. All windows open onto the same sheet must be in the same edit mode.

Arguments

- **edit_mode (Mode)**

  This argument specifies whether the window is in edit mode or view-only mode. It must have one of two values:

  ⇒ **@on**: Enable editing.

  @off: Disable editing, making the window viewable only.

Example(s)

The following example displays the function syntax for setting the edit mode to on.

```
$set_edit_mode(@on)
```

The following example displays the command syntax for setting the edit mode to off.

```
set ed m off
```

Related Functions

$get_edit_mode()
$open_design_sheet()
$open_sheet()
$open_symbol()
$open_vhdl()

$set_evaluations()

Scope: schematic
Window: Schematic Editor

Usage

$set_evaluations(evaluation_mode)

SET EValuations evaluation_mode

Setup > Annotations/Evaluations > Toggle Annotations

Description

Toggles viewing of evaluated expressions in the source and/or the back-annotated data aspect of the design viewpoint.

The viewing of evaluated expressions is determined by the edit mode of the source sheet and the value of the annotation_visibility internal state variable.

Arguments

- **evaluation_mode (Mode)**

  This argument enables or disables the evaluation of expressions. It must have one of two values:

  ⇒ **@on**: Evaluation is enabled and expressions are evaluated.

  @off: Evaluation is disabled. Expressions are not evaluated.

Example(s)

In the following example, evaluated expressions on the design viewpoint are enabled.

```
$set_evaluations(@on)
```

Related Functions

$hide_annotations()
$merge_annotations()
$open_design_sheet()
$recalculate_properties()
$save_sheet()
$show_annotations()

Related Internal State Functions

$set_annotation_visibility()

$set_grid()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$set_grid(*grids_per_pin, minor_multiple, major_multiple, show_mode, snap_mode*)

SET GRid *grids_per_pin minor_multiple major_multiple show_mode snap_mode*

Setup > Grid/Report/Color > Grid

Description

Configures and displays the grid for the active window.

Schematic sheets and symbols have two grid patterns to help locate and position objects and text on the sheet. These are:

- The first grid, called the *pin grid*, is used to constrain electrical objects, including pins, nets, vertices, and symbol pins to the pin grid. The spacing of the pin grid is established using either the $setup_page() function or the $set_pin_spacing() internal state function.

- The second grid, called the *snap grid*, controls the placement of non-electrical objects such as comments, text, and properties.

When enabled, both grids help you place electrical and comment objects at precise locations, that is, on the pin and grid points, respectively.

The $set_grid() function performs three basic types of actions affecting the grid pattern: (1) adjusts the dimensions of the grid squares based on pin_spacing, (2) adjusts the display characteristics (minor_multiple, major_multiple, the @show switch), and (3) controls cursor positions on the editing sheet (the @snap switch). Grid spacing can be turned on to aid in placing objects at precise locations on grid points.

When the menu item is invoked, or the command or function is typed without arguments on the command line, a dialog box is displayed in the active window for you to enter the grid settings. The defined grid is displayed immediately (if

@show is set). Changes made with the $set_grid() function affect the active window only. Each window can have independent grid settings, allowing different object placement characteristics for each window.

The number used for each of the three grid settings must be a divisor of 1920. If the number you specify is not a divisor of 1920, the next larger divisor will be used. For example, if you specify "7" for one of the grid settings, Design Architect will use "8" for that setting. Valid numbers include 1, 2, 3, 4, 5, 6, 8, 10, 12, ... Numbers not supported include 7, 9, 11, 13, 14, ... If the system uses a number other than the one you specify, you will receive a warning message.

Default grid values are displayed in the following table.

Table 2-7. Default Grid Values

Arguments	Symbol Editor	Schematic Editor	Logical Cable Editor
Grids Per Pin	4	4	4
Minor Multiple	1	1	1
Major Multiple	4	4	4
Show	@show	@show	@show
Snap	@snap	@snap	@snap

In the Schematic Editor, instances are scaled to fit the current pin grid (as specified by the pin spacing) of the schematic sheet being edited. In the Symbol Editor, symbols are created according to the pin grid, and are then scaled when instantiated.

Arguments

- ***grids_per_pin (Grids Per Pin)***

  This argument is a positive, real number specifying the number of grid points to be established between each pin (a value of 5 means 5 grid points within 1 pin space).

  If grids_per_pin > 1, a finer grid is established by placing grids_per_pin grid points between each pin spacing interval. This is useful during symbol creation for establishing a fine snap grid to control precise alignment of symbol graphics and properties. The pin_grid is used for symbol pin placement.

  If grids_per_pin < 1 (but greater than 0), a coarser grid is established, by expanding the snap grid beyond the pin_spacing established with the $set_pin_spacing() or $setup_page() functions. This restricts object placement (both electrical and comment objects) to the new grid.

  When @snap is set, electrical object placement is restricted to the established grid points. However, if snap is off, the electrical object placement will be restricted to the underlying pin grid established by the sheet's pin_spacing function.

  Using a coarse grid effectively "spreads out" the design objects. At a later time the grid can be set to a finer resolution allowing additional objects to be placed. This is typically done for sheets when you want the grid points to have a coarser granularity than the pin grid.

- ***minor_multiple (Minor Multiple)***

  An integer that controls the point display by specifying the number of grid locations between displayed grid points (if @show is specified). If @snap is specified, the cursor snaps to every grid point, no matter which points are visible. Also, instance pins and nets always snap to the pin grid.

- ***major_multiple (Major Multiple)***

  An integer that causes every Nth visible grid point to be highlighted with a large dot (if @show is specified). This can be used to highlight pin spacing or to note relative distances between various objects.

- ***show_mode (Show)***

  Controls the visibility of the grid points. Snapping still occurs if @snap is set. This argument can have one of two values:

  @show (-SHow): Grid points are displayed as specified with minor_multiple and major_multiple.

  @noshow (-NOSHow): Grid points are not displayed.

- ***snap_mode (Snap)***

  Controls the grid cursor placement on grid points. It can have one of two values:

  @snap (-SNap): Restricts graphic cursor placement to grid points. Two graphic cursors are shown, one smoothly tracking the mouse (called the *pointer*), and one always indicating the nearest grid point and restricting the cursor movement for electrical and comment objects to be aligned with the grid points (called the *moving pointer*).

  @nosnap (-NOSNap): Does not restrict graphic cursor placement to grid points. The pointer moves freely during edit operations, and the moving pointer does not appear at all.

Example(s)

In the following example (on a symbol), the pin spacing is set to 0.125 inches, with comments snapping to 0.025 inches. The minor grid points show each grid point, and the major grid points show the pin grid.

```
$set_pin_spacing(0.125)
$set_grid(5, 1, 5, @show, @snap)
```

The next example sets the pin spacing on a schematic sheet to 0.125 inches. Objects will snap to the pin grid, the visible dots (minor multiple) show each grid point, and the crosses (major multiple) identify a one-inch alignment grid on the schematic. Major multiple * pin spacing = Major dot spacing (8 * 0.125" = 1")

```
$set_user_units(@inch)
$set_pin_spacing(0.125)
$set_grid(1, 1, 8, @show, @snap)
```

Related Functions

$setup_net()
$setup_page()

Related Internal State Functions

$set_orthogonal()
$set_orthogonal_angle()
$set_snap()
$set_pin_spacing()

$set_next_active_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_next_ active_symbol()

SET NExt Active Symbol

(Active Symbol) Next Symbol

Description

Activates the next symbol (graphical representation) of the current component.

If the active symbol window is visible, the new symbol is displayed in it. You can place this symbol on a sheet using the $place_active_symbol() function. Pressing the Ctrl-a keys also executes this function.

Example(s)

Assuming the 1X2 bus ripper symbol is currently active, the following example activates the 1X3 bus ripper symbol

```
$get_next_active_symbol()
```

Related Functions

$add_instance()
$get_active_symbol()
$set_active_symbol()
$set_previous_active_symbol()
$get_next_active_symbol()
$hide_active_symbol_window()
$is_active_symbol_window_visible()
$place_active_symbol()
$show_active_symbol_window()

$set_origin()

Scope: symbol
Window: Symbol Editor

Usage

$set_origin([location])

SET ORigin [location]

Setup > Set Origin

Description

Specifies the origin of a symbol.

The origin is snapped to a pin-spacing grid point. On a symbol, the origin is a reference point on the symbol that is used for placing, copying, and moving instances of that symbol on a schematic sheet.

Arguments

- **location (At Location)**

  This argument defines the coordinate indicating the new location of the origin of the component specified in user units. In the prompt bar, click the Select mouse button at the location.

Example(s)

The following example displays the function syntax for setting the origin of a symbol to [-1.25, 0.375].

```
$set_origin([-1.25, 0.375])
```

The next example displays the command syntax for the previous example.

```
set or  [-1.25, 0.375]
```

Related Functions

$add_instance() $get_grid() $setup_page()

$set_parameter()

Scope: schematic
Window: Schematic Editor

Usage

$set_parameter(parameter_name_value_type_triplets)

SET PARameter parameter_value_type_triplets

Check > Parameters > Set

Description

Assigns values to parameters in FOR, IF, and CASE expressions, and in parameterized property value expressions on a schematic sheet.

The $$check() function generates warnings for all expression variables that have not been assigned some initial value, if the check_parameter internal state variable is set to @all.

Values assigned with the $set_parameter() function are persistent; the values are saved when the sheet is saved.

When the menu item is invoked, a dialog box is displayed in the active window. When the command or function is typed without arguments on the command line, a prompt bar is displayed.

Arguments

- **parameter_name_value_type_triplets (Name, Value, Type Trios)**

  This argument is a repeating string that is composed of three values: parameter_name, parameter_value, and parameter_type.

  - parameter_name (Name)

    This argument is a text string specifying the name of an expression variable (parameter) to which you want to assign a value.

- parameter_value (Value)

  This argument is a text string specifying the value that will be assigned to parameter_name.

- parameter_type (Parameter Type)

  This argument is a text string that specifies the type of parameter value. It can have one of the following values:

  "string": The value of parameter_name must be a string. If parameter_type has not been declared for this sheet, the parameter_type is set to "string".

  "number": The value of parameter_name must be a real number or integer.

  "expression": The value of the parameter must be an expression (in quotes).

  "triplet": The value of parameter_name must be a three-valued property. Each of the three values may be a number, an expression, or a string which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

Enter the values in the following form:

"parameter_name1", "parameter_value1", "parameter_type1", ..., "*parameter_nameN*", "*parameter_valueN*", "*parameter_typeN*"

Example(s)

The following example displays the function syntax for setting parameter "in_a" to the value of 4.

```
$set_parameter("in_a", "4", "number")
```

The next example displays the command syntax for setting the parameter "bit_width" to the value of 5.

```
set par  "bit_width"  "5"  "number"
```

Related Functions

$$check() $get_parameter() $report_parameter()
$delete_parameter()

Related Internal State Functions

$set_check_parameter()

$set_previous_active_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_previous_ active_symbol()

SET PRevious Active Symbol

(Active Symbol) Next Symbol > Previous Symbol

Description

For components having multiple symbols, this function activates the previous symbol in the list of symbols for the current component (not necessarily the previous active symbol).

If the active symbol window is visible, the symbol is displayed in that window. This function does not appear in the transcript; instead, the $set_active_symbol() function is transcripted with the component name and new active symbol name, as shown in the example.

You can place this symbol on a sheet by choosing the **Add Active Symbol** item from the popup menu in the Active Symbol window, or by clicking the Select mouse button in the Active Symbol window, dragging the ghost image, then clicking the Select mouse button at the desired location for the symbol.

Example(s)

The *$MGC_GENLIB/rip* component has the following symbols:

16X1	1X4	3X1
1X1	1r1	4X1
1X2	1r2	8X1
1X3	2X1	

The following functions activate two of these bus ripper symbols:

```
$show_sub_palette("rip")
$set_active_symbol("$MGC_GENLIB/rip", "1X3", [], "");
$set_active_symbol("$MGC_GENLIB/rip", "3X1", [], "");
```

Next, enter:

```
$set_previous_active_symbol()
```

This activates the previous symbol (2X1) in the list of symbols for the *$MGC_GENLIB/rip* component, as shown in the transcript:

```
$set_active_symbol("$MGC_GENLIB/rip", "2X1", [], "");
```

Related Functions

$get_active_symbol()
$get_next_active_symbol()
$hide_active_symbol_window()
$is_active_symbol_window_visible()
$show_active_symbol_window()
$place_active_symbol()
$set_active_symbol()
$set_next_active_symbol()
$add_instance()

$set_property_owner()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$set_property_owner(*comment*, *pin*, *symbolbody*, *net*, property_names)

SET PRoperty Owner *comment pin symbolbody net* property_names

Setup > Property Owner/Type > Property Owner

Schematic Editor Usage

$set_property_owner(*comment*, *frame*, *instance*, *net*, *pin*, property_names)

SET PRoperty Owner *comment frame instance net pin* property_names

Setup > Property Owner/Type > Property Owner

Description

Defines the types of objects that may own particular properties.

It is not required before adding properties to an object, but is provided so you can constrain property ownership. If you do not use this function, any object may own any property, except SLD properties.

The following are SLD properties:

Class	Inst	Pin
Frexp	Net	Rule
Global		

The first time this function is called, an owner list is created for the named properties. Subsequent callings naming the same properties add objects to that owner list. To remove objects from the property owner list, use the $delete_property_owner() function.

If a property name has been declared legal for certain objects through the $set_property_owner() function, the $add_property()function will fail after an attempt to add that property to any other kind of object.

When an instance with a Class property attached is placed on a sheet, or updated, the properties on the pins are propagated to the net vertices under the pins, if the properties may be owned by nets and do not already exist. If you wish to propagate properties in this manner, you must explicitly declare "net" as a legal owner of the desired properties using the $set_property_owner() function in the Symbol Editor.

When this function is invoked through its associated menu item, or the command or function is typed with no arguments on the command line, a dialog box is displayed for you to enter the property name and specify the owner(s).

Arguments

- ***comment (Comments)***

  Choose either **@comment** (-Comment) or **@nocomment** (-NOComment).

- ***frame (Frames)***

  This argument is valid in the Schematic Editor. Choose either **@frame** (-Frame) or **@noframe** (-NOFrame).

- ***instance (Instances)***

  This argument is valid in the Schematic Editor. Choose either **@instance** (-Instance) or **@noinstance** (-NOInstance).

- ***net (Nets)***

  Choose either **@net** (-Net) or **@nonet** (-NONet). In the Symbol Editor, declaring "net" as a legal owner of a property attached to a pin on a "Class instance" (Class property exists on the symbol) causes the property to be propagated from the symbol pin to the instance pin's vertex (net) when the symbol is instantiated, if that property does not already exist on the net.

- ***pin (Pins)***

  Choose either **@pin** (-Pin) or **@nopin** (-NOPin).

- ***symbolbody (Symbol Bodies)***

  This argument is valid in the Symbol Editor. Choose either **@symbolbody** (-Symbolbody) or **@nosymbolbody** (-NOSymbolbody).

- **property_names (Property Name)**

  This text string specifies one or more property name(s) that may be owned by specific types of object(s).

  All of the following options add, or explicitly do not add, objects to the list of legal owners of the specified properties. The default action is the previous setting during the current editing session or, if this function has not been executed in the current editing session, objects are not added to the list of legal owners.

Example(s)

The following example displays the function syntax in the Symbol Editor for setting the following property names as symbolbody properties.

```
$set_property_owner( , , @symbolbody, "symbol_prop1", "symbol_prop2",
                                                    "symbol_prop3")
```

The next example displays the command syntax in the Symbol Editor for setting the "new_comp" property to have three owners: comment, pin, and symbolbody.

```
set pr o -comment -pin -symbolbody "new_comp"
```

Related Functions

$add_property()

$delete_property_owner()

$set_property_type()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Usage

$set_property_type(*property_type*, property_names)

SET PRoperty Type *property_type* property_names

Setup > Property Owner/Type > Type

Description

Sets the default type for the values of given property names, when assigned to objects in the active window.

Property values must have an explicit type, which can be overridden with the $add_property() function. The $set_property_type() function provides a convenient method of declaring the property type of a given property before actually adding that property to an object.

The $set_property_type() function essentially attaches a default type to a property name or a series of names. This value is overridden if the $add_property() function is executed with a value for property_type.

When the menu item is invoked, or the command or function is typed with no arguments on the command line, a dialog box is displayed.

Arguments

- **property_names (For Property Name)**

  A list of text strings specifying the user-defined property names with a specified type.

- ***property_type (Property Type)***

  The type of property_name defaults to one of the following values:

  ⇒ **@string** (-String): The value of property_name defaults to a string.

  @number (-Number): The value of property_name defaults to a real number or integer.

  @expression (-Expression): The value of the property defaults to an expression (in quotes).

  @triplet (-Triplet): The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties.

  Each of the three values may be a number, an expression, or a string which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

  If only one value is specified, it is used for the best-case, typical, and worst-case values. If two values are specified, then the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics applications that recognize triplets are analysis (for example, QuickSim II), and timing calculation applications.

Example(s)

The following example displays the function syntax for setting the following properties "comp" and "ref" to default to only "string" values.

```
$set_property_type(@string, "comp", "ref")
```

The following example sets "rise" and "fall" property values to "triplet" values.

```
set pr t  -triplet  "rise"  "fall"
```

Related Functions

$add_property()

$set_property_owner()

$set_search_path()

Scope: schematic
Window: Schematic Editor

Usage

$set_search_path(*directory_paths*)

SET SEarch Path *directory_paths*

Setup > Other Options > Search Path

Description

Specifies directory names in which to search for components for instantiation.

The current working directory is used if the search path is not set, or it can be explicitly included with ".". The new value of the search path is returned. When invoked from the menu, a dialog box is displayed for you to enter one or more directories. You need to set the search list for each editing session; it is not retained from one editing session to another.

Arguments

- ***directory_paths (Directories)***

  A repeating text string specifying an ordered sequence of directories used to resolve references. If omitted, the current search list is used. The directory pathnames should not have a trailing "/".

Example(s)

The following example displays the function syntax for setting the search path for component references to the directory *your_home/design_dir*.

```
$set_search_path("your_home/design_dir")
```

Related Functions

$add_instance() $get_search_path()

$set_template_directory()

Scope: hdtxt_area
Window: VHDL Editor

Usage

$set_template_directory("template_directory")

SET TEmplate Directory "template_directory"

Templates > Set Directory

Description

Sets the directory that contains the VHDL templates used when the $expand_template_name() and $insert_template() functions are invoked.

If the function is never issued, the default directory is *$MGC_HOME/pkgs/vhdl_ed/vhdl_templates*.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Arguments

- **template_directory**

  This argument specifies the directory that contains the VHDL templates.

Example(s)

The following example sets the directory that contains VHDL templates to *$MGC_HOME/pkgs/vhdl_ed/vhdl_templates*.

```
$set_template_directory("$MGC_HOME/pkgs/vhdl_ed/vhdl_templates")
```

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()

$set_userrule_error()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_userrule_error("error_string")

Description

Reports the check userrule errors from within a userrule macro file during userrule checks.

These errors are reported as part of the userrule category of the check output.

Arguments

- **error_string**

  This argument is a text string that is reported as an error under the check userrule category of checks.

Example(s)

This example shows how $set_userrule_error() could be used within a userrule macro file.

```
{
        $set_userrule_error("Overloaded output on I$17/Q.");
}
```

Related Functions

$$check()
$$setup_check_sheet()
$set_userrule_warning()

Related Internal State Functions

$set_check_userrule()
$set_check_symboluserrule()

$set_userrule_warning()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_userrule_warning("warning_string")

Description

Reports check userrule warnings from within a userrule macro file during the userrule checks.

These warnings are reported as part of the userrule category of check output.

Arguments

- **warning_string**

  This argument is a text string that is reported as a warning under the check userrule category of checks.

Example(s)

In the following example, the function $set_userrule_warning() is executed from within a userrule macro file:

```
{
        $set_userrule_warning("Input capacitance of I$12/IN3 exceeded.");
}
```

Related Functions

$$check()
$$setup_check_sheet()
$set_userrule_error()

Related Internal State Functions

$set_check_userrule()
$set_check_symboluserrule()

$set_vhdl_compiler_options()

Scope: hdtxt_area
Window: VHDL Editor

Usage

$set_vhdl_compiler_options("*work_library*", "*mapping_library*", "*mapping_names*", *"interface_name", std_mode, constraint_mode, assert_mode, list_mode, synthesis_mode, replace_interface_mode*)

Description

Sets the compiler options for the next VHDL compile in the session.

It is called by the $set_compiler_options() function, which is accessible through the **Compile > Set Options** menu item, and displays a dialog box in which you can enter the desired options.

For complete information about the compiler options, refer to "Creating and Compiling Source Code" in the *System-1076 Design and Model Development Manual*.

For information about other VHDL Editor functions that are not described in this manual, refer to the *Notepad User's and Reference Manual*.

Arguments

- ***work_library***

  This text string contains the pathname to a directory in which the compiled design units will be placed. If this argument is omitted, the work_library is the same directory in which the source file resides.

- ***mapping_library***

  This text string contains the pathname(s) to file(s) that contain the logical library to physical name mappings. The pathnames are assumed to be relative to the source file directory.

  The compiler automatically looks for the following library mapping files in the order listed:

  - $MGC_HOME/pkgs/sys_1076_base/lib/system.lmf
  - your_home/.sys_1076_.lmf
  - $MGC_WD/.sys_1076.lmf
  - <source_code_filename>.lmf

  In the last bullet item, if you compile a source file called *aoi_e*, the compiler looks for a library mapping file called *aoi_e.lmf* in the same directory as the source code. If you create library mapping files with other names, you must specify the complete path to the one you want when compiling.

  Any mapping of identical logical names occurring in the later files supersedes the mapping in the files checked earlier by the compiler. For example, assume the following logical-to-physical mapping is located in *your_home/.sys_1076_.lmf*:

  ```
  my_lib  your_home/lib_node/global_lib
  ```

  Next, assume the following logical-to-physical mapping is located in *aoi_e.lmf* in the same directory as the source code:

  ```
  my_lib  your_home/buddy/personal_lib
  ```

  The first mapping of `my_lib` in *your_home/.sys_1076_.lmf* is overwritten by the second mapping in *aoi_e.lmf*.

  For more information on this concept, see "Library Mapping" in the *System-1076 Design and Model Development Manual*. Any identical mapping specified with the mapping_names argument overrides the mapping in any of the *.lmf* mapping files. The default value of the mapping_library option is a null string.

- ***mapping_names***

  This argument is a string of logical library, physical library pairs. The format is "*logical_name1 physical_name1... logical_nameN physical_nameN*". This argument lets you specify individual logical-to-physical mappings at the argument level. These mappings override any logical name mappings described in the files specified by the mapping_library argument. By default, the value of this argument is a null string.

- ***interface_name (Interface Name)***

  This text string determines the name of the component interface to create or replace. If no component interface currently exists, the name you supply becomes the name of the default component interface. For complete information about rules concerning interface_name, see "Creating and Compiling Source Code" in the *System-1076 Design and Model Development Manual*.

- ***std_mode***

  This argument can have one of two values:

  @std: Indicates that compiler error messages are to be issued for any language constructs supported by the Mentor Graphics analyzer, but are not a part of the standard documented in the IEEE STD 1076-1987, *IEEE Standard VHDL Language Reference Manual*. These constructs are Mentor Graphics extensions to the standard VHDL.

  ⇒ **@nostd**: Indicates that compiler error messages are to be issued for any language constructs.

- ***constraint_mode***

  This argument can have one of two values:

  ⇒ **@constraint**: Enables array subscript bounds-checking and subrange-checking on assignments to variables. Array bounds-checking is always done.

  @noconstraint: Disables array subscript bounds-checking and subrange-checking.

- ***assert_mode***

  This argument can have one of two values:

  ⇒ **@assert**: Causes the source code to be generated for VHDL concurrent and sequential assert statements.

  @noassert: No code is generated for these statements.

- ***list_mode***

  This argument can have one of two values:

  @list: Causes the VHDL compiler to generate a listing file. This list file contains the source, any errors, warnings, or note messages generated, compiler information, and other similar data. The file has a *.lst* extension. The name of the list file is the same as the source file name. The file is located in the current working directory.

  ⇒ **@nolist**: Does not generate a listing file.

- ***synthesis_mode***

  This argument can have one of two values:

  @synthesis: Compiles a System-1076 model that was written for synthesis. The compiler checks the model against a set of rules which help to determine if the model can be synthesized.

  ⇒ **@nosynthesis**: Compiles a System-1076 model written for VHDL.

- ***replace_interface_mode***

  This argument can have one of two values:

  @replace_interface: Causes the compiler to replace the interface with the information contained in the System-1076 entity declaration, rather than the information contained on the corresponding symbol. This switch has no effect on System-1076 models that are not associated with a symbol, or if the interface information in the entity declaration (number of signals/pins and the mode of each signal/pin) matches the corresponding information on the associated symbol.

  ⇒ **@noreplace_interface**: Does not replace the interface.

Example(s)

The following function example maps a logical library name, *my_lib*, to a physical library name, *your_path/test/lib_a*. In addition, when the VHDL source is compiled, a listing file is generated that contains the source, and any warnings, errors, or notes generated during the compilation.

```
$set_vhdl_compiler_options( , , "my_lib  your_path/test/lib_a", , , , @list)
```

Related Functions

$cancel_compile()
$compile()
$delete_template_name()
$expand_template_name()
$insert_template()
$select_template_name()
$set_compiler_options()
$set_template_directory()

$set_viewpoint()

Scope:	da_session
Window:	IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite:	No design sheets should be open in this session in the context of a different viewpoint.

Usage

$set_viewpoint("component_name", "viewpoint_name", existing, “viewpoint_type”)

SET VIewpoint "component_name" "viewpoint_name"

(DA Session) Setup > Set > Viewpoint...

Description

Sets the viewpoint of the session.

If no design sheets are open in this session in the context of a different viewpoint, the specified viewpoint is used as the session viewpoint.

The last two arguments allow DA to explicitly create a viewpoint of a specified type, or to unset the viewpoint.

Arguments

- **component (Component Name)**

  A text string specifying the pathname of the component to be edited.

- **viewpoint_name (Viewpoint Name)**

  A text string that specifies the viewpoint pathname. If the viewpoint name contains no "/", the viewpoint pathname is assumed to be relative to the component name. If the viewpoint exists, the Schematic Editor is invoked on that specific design viewpoint. If the viewpoint does not exist, a default viewpoint is created with the primitive property of "comp" and PCB-specific visible properties. The root of the viewpoint is either the default interface, if it exists, or a schematic model with the name "schematic", if the schematic model exists. If the viewpoint is not specified, it is assumed to be of the name "pcb_design_vpt" in the component directory.

If the design_viewpoint does not have an associated back-annotation object, the back-annotation object is attached to the viewpoint with the same name as the viewpoint name.

If the parent instance has the Source_Edit_Allowed property with the value of "false", the source design sheet cannot be opened for editing. If Source_Edit_Allowed is absent on the parent instance, or if it has the value of "true", the edit mode of the source design sheet can be set to either on or off. If the design sheet is opened for read-only, annotations on the source sheet are not permitted.

- **existing**

  This argument can have one of the following values:

  ⇒ **@existing**: Set the session viewpoint to the specified existing viewpoint.

  @create: Create a viewpoint by the specified name and type.

  @none: Unset the session viewpoint so that source sheets will be edited by default.

- ***viewpoint_type***

An optional string that specifies the type of viewpoint to create if the @create argument is specified. The default is “PCB”.

Example(s)

The following function example sets the viewpoint of the session to the component *$PROJECT_B/test_lib/dff* and its viewpoint, *$PROJECT_B/test_lib/dff/vpt*.

```
$set_viewpoint("$PROJECT_B/test_lib/dff", "$PROJECT_B/test_lib/dff/vpt",
@existing)
```

Related Functions

$get_viewpoint()
$open_design_sheet()
$print_design_sheets()

$setup_annotated_property_text()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Schematic Editor Usage

$setup_annotated_property_text(*font, height, hjustification, vjustification, orientation, transparency*,*visibility, apply*)

SETUp ANNotated PRoperty Text *-FOnt font -HEight height -HJustification hjustification -VJustification vjustification -Orientation orientation -Transparency transparency -VIsibility visibility -Apply*

Setup > Annotated Property Text

Description

The $setup_annotated_property_text() function sets up the annotated property text attributes that are used when you add annotated property text. You must be editing in the context of a design viewpoint. When you choose the menu item, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***font_name (FOnt)***

  A text string that specifies the font. This replaces the value of the annot_property_font internal state variable. Fonts and font registry files are located in *$MGC_HOME/registry/fonts*. Folio (scalable) fonts in this directory have a "-scaled" suffix, such as *helvetica-scaled*. The default value is “stroke”.

- ***textheight (HEight)***

  A real number that sets text height to the specified value. This replaces the value of the annot_property_height internal state variable. The default value is 0.1875.

- ***hjustification (Horizontal Justification)***

  Sets the horizontal justification. This replaces the value of the annot_property_hjustification internal state variable. It can have one of three values: ⇒ **@left**, **@center**, or **@right**.

- ***vjustification (Vertical Justification)***

  Sets the vertical justification. This replaces the value of the annot_property_vjustification internal state variable. It can have one of three values: **@top**, **@center**, or ⇒ **@bottom**.

- ***orientation (Orientation)***

  Sets the orientation to one of the following values: ⇒ **0** or **90** degrees. This replaces the value of the annot_property_orientation internal state variable.

- ***transparency (Transparency)***

  Determines whether objects under a text string are visible. This replaces the value of the annot_property_transparency internal state variable. It can have one of two values: ⇒ **@on** (objects under a text string are visible) or **@off** (objects under a text string are not visible).

- ***text_visibility (VIsibility)***

  Determines whether property text is visible. This replaces the value of the annot_property_visibility internal state variable. It can have one of two values: ⇒ **@on** (visible) or **@off** (hidden).

- ***apply (Apply)***

  This argument controls whether or not the new text attributes are applied to all existing annotations on the sheet. This argument can have a value of ⇒ **@noapply** or **@apply**.

Example(s)

The following example displays the function syntax for setting up property text that uses the "stroke" font. The height is 0.1875, the justification is @left for horizontal and @top for vertical. The text orientation is 0, objects under a text string are visible, and the property text is visible.

```
$setup_annotated_property_text("stroke", 0.1875, @left, @top, 0, @on, @on)
```

The next example shows the command syntax in the Symbol Editor for setting up annotated property text that uses the font family "helvetica", height is 0.375, justification is center for horizontal and bottom for vertical, orientation is 0, objects under the text font are not visible, the visibility switch is set to visiblev.

```
setu ann pr t  -fo "helvetica"  -he 0.375  -hj center -vj bottom  -o 0  -t off  -vi
                                                                                on
```

Related Functions

$setup_property_text()
$change_property_font()
$change_property_height()

Related Internal State Functions

$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_transparency()
$set_property_visibility()
$set_property_vjustification()

$setup_check_schematic()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$setup_check_schematic(*check_filename, check_filemode, check_window, check_transcript, schematicuserrulefile, overall_check_setting, schematicinterface, schematicspecial, schematicinstance, schematicnet, schematicuserrule*)

SETUp CHeck SChematic *check_filename check_filemode check_window check_transcript -SChematicuserruleFile schematicuserrulefile overall_check_setting -SCHematicINTerface schematicinterface -SCHematicSpecial schematicspecial -SCHematicINStance schematicinstance -SCHematicNet schematicnet -SCHematicUserrule schematicuserrule*

Setup > Check > Schematic
Check > Set Defaults > Schematic
Check > Schematic > Set Defaults

Description

Sets the values of a specified set of internal state variables to determine what schematic checks are performed at check time.

This function displays a dialog box when the menu item is invoked, to configure the schematic check internal state variables. These settings determine which types of errors/warnings are reported when the $$check() function is invoked.

Each schematic check internal state variable specifies a class of schematic checks. You have the option of specifying whether checks of a particular class are performed, and whether errors and/or warnings are reported.

If the check argument is set to @errorsonly, only errors are reported. If the check argument is set to @all, both errors and warnings are reported. If the check argument is set to @noerrors, neither errors or warnings are reported.

The schematic checks and the internal state variables control the error reporting. The specific error and warning messages associated with each of check internal

state variables are discussed in their related $set and $get internal state functions in Chapter 3, "Internal State Function Dictionary."

Arguments

The values of the internal state variables associated with schematic checking can be replaced by specifying values for appropriate schematic check setting options with the $setup_check_schematic() function.

Each check-setting option represents a category of schematic checks. The description for each option indicates which values can be used with that option. Most of them have one of the following three values:

@all (-Option All): Both errors and warnings are reported.

@errorsonly (-Option Errorsonly): Only errors are reported.

@nocheck (-Option NOCheck): The category of checks is not performed.

These options are position-dependent for functions, and are specified by the option value (the @ character is required), with the exception of the overall check setting, schematicuserrule macro file, window, and file options. The following example displays the function syntax when you are setting all the check settings to @all, with the exception of the schematicinterface check setting option, which is set to @errorsonly:

```
$setup_check_schematic( , , , , ,  @all, @errorsonly)
```

When entered as a command, the options are position-independent, and are specified as a switch and value (with the same exceptions as in functions):

```
SETUp CHeck  SCHematic  -All  -SCHematicINTerface errorsonly
```

The $setup_check_schematic() function options are listed in Table 2-8. The left column shows the argument name (check category) and the possible values when entered as a function. The center column shows the command syntax for each argument; if variations of arguments are also registered, they are shown beneath the command syntax. The last column provides the name of the internal state function called by each option and a brief description of the option.

If you are reading this online, the first column contains hyperlinks to the corresponding *$set_* internal state function descriptions, which include more information about conditions that cause errors and warnings in each check category.

Table 2-8. $setup_check_schematic() Options

Category **Function Syntax**	**Command Syntax**	**Description**
check_filename "filename"	"filename"	$set_check_filename(). Specifies the name of the output file in which to place error messages generated by the $$check() function.
check_filemode @add @replace @nofile	-ADd -Replace -NOFile	$set_check_filemode(). Indicates how contents of the check report are placed in the file specified by the check_filename argument. If @add or @replace is specified and the file does not exist, it is created. If you specify @nofile, the check report is not saved.
window @window @nowindow	-Window -NOWindow	$set_report_window(). Determines if check results should be displayed in a popup window.
transcript @transcript @notranscript	-TRanscript -NOTranscript	$set_report_transcript(). Controls whether check results are displayed in a transcript window.
schematicuserrulefile "filename"	-USERRULEF *"filename"* -U *"filename"* -UF *"filename"*	$set_schematicuserrules_file(). Specifies the pathname to a file containing user-defined checks for all sheets of the schematic. This is used when schematicuserrule is set to @all. *This check category has been disabled for the V8.x release.*

Table 2-8. $setup_check_schematic() Options [continued]

Category Function Syntax	Command Syntax	Description
overall_check_setting @all @errorsonly @nocheck	-ALl -ERrorsonly -NOCheck	This argument lets you set all schematic check categories to the same default. If any other check options are set, those settings override the overall_check_setting. This is provided primarily for users who prefer using the command line rather than menus.
schematicinterface @all @errorsonly @nocheck	-SChematicINTerface all errorsonly nocheck -SCHEMATICINTerface	$set_check_schematicinterface( ). Specifies whether errors and warnings are reported for interfaces for all sheets of the schematic.
schematicspecial @all @errorsonly @nocheck	-SChematicSpecial all errorsonly nocheck -SCHEMATICS	$set_check_schematicspecial(). Determines if the $$check() function reports errors and warnings about improper usage of special symbols connecting multiple sheets in the schematic.
schematicinstance @all @errorsonly @nocheck	-SChematicINStance all errorsonly nocheck -I -SCHEMATICINS	$set_check_schematicinstance() . Determines if instances on all sheets of the schematic are checked for unique names.
schematicnet @all @errorsonly @nocheck	-SChematicNet all errorsonly nocheck -NE -SCHEMATICN	$set_check_schematicnet(). Specifies whether nets on all sheets of the schematic are checked for unique names and for shorted nets.

Table 2-8. $setup_check_schematic() Options [continued]

Category Function Syntax	Command Syntax	Description
schematicuserrule @all @nocheck	-SChematicUserrule all nocheck -U -SCHEMATICU	$set_check_schematicuserrule() . Specifies whether user-defined checks are performed on multi-sheet schematics. The file containing the checks is specified by the schematicuserrulefile option.

Example(s)

The following function example sets the checking to errors only for all schematic checks.

```
$setup_check_schematic( , , , , , , @errorsonly, @errorsonly, @errorsonly,
                                                @errorsonly, @nocheck)
```

The next command example sends the check report to a file called *$PROJECT_A/reports/check_127*. The check report is not sent to the transcript window.

```
setu ch sc  -notranscript  -replace   "$PROJECT_A/reports/check_127"
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()
$setup_check_symbol()

Related Internal State Functions

$set_check_filemode()
$set_check_filename()
$set_check_schematicinstance()
$set_check_schematicinterface()
$set_check_schematicnet()
$set_check_schematicspecial()
$set_check_schematicuserrule()
$set_check_transcript()
$set_check_window()
$set_schematicuserrules_file()

$$setup_check_sheet()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$$setup_check_sheet(*check_filename, check_filemode, check_window, check_transcript, userrulefile, overall_check_setting, instance, special, net, frame, parameter, expression, pins, owner, overlap, notdots, closedots, dangle, initprops, userrule, annotations*)

SETUp CHeck SHeet *check_filename check_filemode check_window check_transcript -UserruleFile userrulefile overall_check_setting -Instance instance -SPecial special -NEt net -FRame frame -PArameter parameter -EXpression expression -PIns pins -OWner owner -OVerlap overlap -NOTDots notdots -Closedots closedots -Dangle dangle -INItprops initprops -Userrule userrule -Annotations annotations*

Setup > Check > Sheet
Check > Set Defaults > Sheet
Check > Sheet > Set Defaults

Description

Sets the values of a specified set of internal state variables to determine what sheet checks are performed at check time.

This function displays a dialog box when the menu item is invoked to configure the sheet check internal state variables. These settings determine which types of errors/warnings are reported when the $$check() function is invoked.

Each sheet check internal state variable specifies a class of sheet checks. You have the option of specifying whether checks of a particular class are performed, and whether errors and/or warnings are reported.

If the check argument is set to @errorsonly, only errors are reported. If the check argument is set to @all, both errors and warnings are reported. If the check argument is set to @noerrors, neither errors or warnings are reported.

The sheet checks and the internal state variables control the error reporting. The specific error and warning messages associated with each of the check internal state variables are discussed in their related $set and $get internal state functions in Chapter 3, "Internal State Function Dictionary."

Arguments

The values of the sheet internal state variables associated with checking can be replaced by specifying values for appropriate sheet check setting options with the $$setup_check_sheet() function.

Each check-setting option represents a category of checks. The description for each option indicates which values can be used with that option. Most of them have one of the following three values:

@all (-Option All): Both errors and warnings are reported.

@errorsonly (-Option Errorsonly): Only errors are reported.

@nocheck (-Option NOCheck): The category of checks is not performed.

These options are position-dependent for functions, and are specified by the option value (the "@" character is required), with the exception of the overall check setting, the userrule macro file, and the window and file options. The following example displays the function syntax when you are setting all the check settings to @all, with the exception of the instance check setting option, which is set to @errorsonly:

```
$$setup_check_sheet( , , , , , @all, @errorsonly)
```

When entered as a command, the options are position-independent, and are specified as a switch and value (with the same exceptions as the function):

```
SETUp CHeck SHeet  -All  -INstance errorsonly
```

The $$setup_check_sheet() function options are listed in Table 2-9. The left column shows the argument name (check category) and the possible values when entered as a function. The center column shows the command syntax for each argument; if variations of arguments are also registered, they are shown beneath the command syntax. The last column provides the name of the internal state function called by each option and a brief description of the option.

If you are reading this online, the first column contains hyperlinks to the corresponding *$set_* internal state function descriptions, which include more information about conditions that cause errors and warnings in each check category.

Table 2-9. $$setup_check_sheet() Options

Category **Function Syntax**	**Command Syntax**	**Description**
check_filename "filename"	"filename"	$set_check_filename(). Specifies the name of the output file in which to place error messages generated by the $$check() function. This is used only if check_filemode is @add or @replace.
check_filemode @add @replace @nofile	-ADd -Replace -NOFile	$set_check_filemode(). Indicates how contents of the check report are placed in the file specified by the check_filename argument. If @add or @replace is specified and the file does not exist, it is created. If you specify @nofile, the check report is not saved.
window @window @nowindow	-Window -NOWindow	$set_report_window(). Determines if check results should be displayed in a popup window.
transcript @transcript @notranscript	-TRanscript -NOTranscript	$set_report_transcript(). Controls whether check results are displayed in a transcript window.
userrulefile "filename"	-UserruleFile *"filename"* -F -USERRULEF	$set_userrules_file(). Specifies the pathname to a file containing user-defined checks for individual internal state variables when the userrule argument is @all.

Table 2-9. $$setup_check_sheet() Options [continued]

Category **Function Syntax**	**Command Syntax**	**Description**
overall_check_setting @all @errorsonly @nocheck	-ALl -ERrorsonly -NOCheck	This argument lets you set all sheet check categories to the same setting. If any other check options are set, those settings override the value of the overall_check_setting. This argument is provided primarily for users who prefer using the command line rather than menus.
instance @all @errorsonly @nocheck	-Instance all -Instance errorsonly -Instance nocheck	$set_check_instance(). Specifies whether the $$check() function reports errors and warnings about instance properties and about the symbol referenced by the instance.
special @all @errorsonly @nocheck	-SPecial all -SPecial errorsonly -SPecial nocheck	$set_check_special(). Determines if the $$check() function reports errors and warnings about improper usage of special symbols, such as net connectors, bus rippers, on/off-page connectors, and ports.
net @all @errorsonly @nocheck	-Net all -Net errorsonly -Net nocheck	$set_check_net(). Indicates whether the $$check() function reports errors and warnings about net names and properties.
frame @all @errorsonly @nocheck	-FRame all -FRame errorsonly -FRame nocheck	$set_check_frame(). Determines if frame construction and property errors and warnings are reported by the $$check() function.
parameter @all @errorsonly @nocheck	-PArameter all -PArameter errorsonly -PArameter nocheck	$set_check_parameter(). Indicates whether the $$check() function lists all variables that are required to evaluate property values on a sheet.

Table 2-9. $$setup_check_sheet() Options [continued]

Category Function Syntax	Command Syntax	Description
expression @all @errorsonly @nocheck	-EXpression all -EXpression errorsonly -EXpression nocheck	$set_check_expression(). Specifies whether expressions on a sheet are identified by the $$check() function.
pins @all @errorsonly @nocheck	-PIns all -PIns errorsonly -PIns nocheck	$set_check_pins(). Indicates whether the $$check() function identifies symbol pins left on a sheet.
owner @all @errorsonly @nocheck	-OWner all -OWner errorsonly -OWner nocheck	$set_check_owner(). Determines if the $$check() function reports inconsistencies between properties and property owners.
overlap @all @errorsonly @nocheck	-OVerlap all -OVerlap errorsonly -OVerlap nocheck	$set_check_overlap(). Indicates whether overlapping instances are reported by the $$check() function.
notdots @all @errorsonly @nocheck	-NOTDots all -NOTDots errorsonly -NOTDots nocheck	$set_check_notdots(). Specifies whether the $$check() function reports not-dot locations.
closedots @all @errorsonly @nocheck	-Closedots all -Closedots errorsonly -Closedots nocheck	$set_check_closedots(). Specifies whether the $$check() function reports the locations of closedots.
dangle @all @errorsonly @nocheck	-Dangle all -Dangle errorsonly -Dangle nocheck	$set_check_dangle(). Indicates if the $$check() function reports the locations of dangling nets and pins.
initprops @all @errorsonly @nocheck	-INItprops @all -INItprops @errorsonly -INItprops @nocheck	$set_check_initprops. Determines if the $$check() function reports conflicting Init property values on nets.

Table 2-9. $$setup_check_sheet() Options [continued]

Category Function Syntax	Command Syntax	Description
userrule @all @nocheck	-Userrule all -Userrule nocheck	$set_check_userrule. Specifies whether user-defined checks are executed. If set to @all, the file used is specified by the userrulefile argument.
annotations @all @errorsonly @nocheck	-Annotations all -Annotations errorsonly -Annotations nocheck	$set_check_annotations(). Specifies whether the $$check() function reports on annotations.

Example(s)

This function sets the instance, net, and frame checking to @errorsonly:

```
$$setup_check_sheet( , , , , , , @errorsonly, , @errorsonly, @errorsonly)
```

The next example displays the command syntax for the previous example:

```
setu ch sh  -instance errorsonly  -net errorsonly  -frame errorsonly
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()
$setup_check_symbol()

Related Internal State Functions

$set_check_closedots()
$set_check_dangle()
$set_check_expression()
$set_check_frame()
$set_check_pins()
$set_check_initprops()
$set_check_instance()
$set_check_net()
$set_check_notdots()
$set_check_overlap()
$set_check_owner()
$set_check_parameter()
$set_check_special()
$set_check_userrule()
$set_report_filename()
$set_report_filemode()
$set_report_transcript()
$set_report_window()
$set_userrules_file()
$set_check_annotations()

$setup_check_symbol()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$setup_check_symbol(*check_filename, check_filemode, check_window, check_transcript, userrulefile, overall_check_setting, special, pin, symbolbody, interface, userrule*)

SETUp CHeck SYmbol *check_filename check_filemode check_window check_transcript -UserruleFile userrulefile overall_check_setting -SPecial special -Pin pin -SYmbolbody symbolbody -Interface interface -Userrule userrule*

Setup > Check
Check > Set Defaults

Description

Sets the values of a specified set of internal state variables to determine what symbol checks are performed at check time.

This function displays a dialog box when the menu item is invoked to configure the symbol check internal state variables. These settings determine which types of errors/warnings are reported when the $$check() function is invoked.

Each symbol check internal state variable specifies a class of symbol checks. You have the option of specifying whether checks of a particular class are performed, and whether errors and/or warnings are reported.

If the check argument is set to @errorsonly, only errors are reported. If the check argument is set to @all, both errors and warnings are reported. If the check argument is set to @noerrors, neither errors or warnings are reported.

The symbol checks and the internal state variables control the error reporting. The specific error and warning messages associated with each of the check internal state variables are discussed in their related $set and $get internal state functions in Chapter 3, "Internal State Function Dictionary."

Arguments

The values of the internal state variables associated with symbol checking can be replaced by specifying values for appropriate symbol check setting options with the $$check() function.

Each check-setting option represents a category of symbol checks. The description for each option indicates which values can be used with that option. Most of them have one of the following three values:

@all (-Option All): Both errors and warnings are reported.

@errorsonly (-Option Errorsonly): Only errors are reported.

@nocheck (-Option NOCheck): The category of checks is not performed.

These options are position-dependent for functions, and are specified by the option value (the @ character is required), with the exception of the overall check setting, symbol userrule macro file, and window and file options. The following example displays the function syntax when you are setting all the check settings to @all, with the exception of the symbolspecial check setting option, which is set to @errorsonly:

```
$setup_check_symbol( , , , , , @all, @errorsonly)
```

When entered as a command, the options are position-independent, and are specified as a switch and value (same exceptions as with the function):

```
SETUp CHeck SYMbol -All -SYMbolSpecial errorsonly
```

The $setup_check_symbol() function options are listed in Table 2-10. The left column shows the argument name (check category) and the possible values when entered as a function. The center column shows the command syntax for each argument; if variations of arguments are also registered, they are shown beneath the command syntax. The last column provides the name of the internal state function called by each option and a brief description of the option.

If you are reading this online, the first column contains hyperlinks to the corresponding *$set_* internal state function descriptions, which include more

information about conditions that cause errors and warnings in each check category

Table 2-10. $setup_check_symbol() Options

Category **Function Values**	**Command Syntax**	**Description**
check_filename "filename"	"filename"	$set_check_filename(). Specifies the name of the output file in which to place error messages generated by the $$check() function. This is used only if check_filemode is @add or @replace.
check_filemode @add @replace @nofile	-ADd -Replace -NOFile	$set_check_filemode(). Indicates how contents of the check report are placed in the file specified by the check_filename argument. If @add or @replace is specified and the file does not exist, it is created. When you specify @nofile, the check report is not saved.
window @window @nowindow	-Window -NOWindow	$set_report_window(). Determines if the results of a $$check() function should be displayed in a popup window.
transcript @transcript @notranscript	-TRanscript -NOTranscript	$set_report_transcript(). Controls whether check results are displayed in a transcript window.
userrulefile "filename"	-UserruleFile *"filename"* -F -USERRULEF	$set_symboluserrules_file(). Specifies the pathname to a file containing user-defined checks for individual internal state variables when the userrule option is @all.

Table 2-10. $setup_check_symbol() Options [continued]

Category Function Values	Command Syntax	Description
overall_check_setting @all @errorsonly @nocheck	-ALl -Errorsonly -NOCheck	Sets all symbol check categories to the same default setting. Any other check options that are set override the overall_check_setting. This is provided for users who prefer using the command line instead of menus.
special @all @errorsonly @nocheck	-SPecial all -SPecial errorsonly -SPecial nocheck	$set_check_symbolspecial(). Determines if special symbols such as net connectors, bus rippers, on/off-page connectors, and ports, are checked for proper construction.
pin @all @errorsonly @nocheck	-PIn all -PIn errorsonly -PIn nocheck	$set_check_symbolpin(). Indicates whether symbol pin name and property errors and warnings are reported.
symbolbody @all @errorsonly @nocheck	-SYmbolbody all -SYmbolbody errorsonly -SYmbolbody nocheck -SYMBODY	$set_check_symbolbody. Specifies whether errors and warnings about symbol body properties and graphics are reported.
interface @all @errorsonly @nocheck	-Interface all -Interface errorsonly -Interface nocheck	$set_check_symbolinterface(). Specifies whether the $$check() function reports errors and warnings with respect to the symbol's registered component interface.
userrule @all @nocheck	-Userrule all -Userrule nocheck	$set_check_ symboluserrule(). Specifies whether the $$check() function performs user-defined checks on a symbol.

Example(s)

The following function example sets the checks for symboluserrule to @all, and the symboluserrules_file is set to "$PROJECT_XYZ/symbols/wkr_sym_chks".

```
$setup_check_symbol( , , , , "$PROJECT_XYZ/symbols/wkr_sym_chks")
```

This following command example changes the overall check setting to @errorsonly. This means that all individual checks are now set to @errorsonly.

```
setu ch sy -errorsonly
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()
$$setup_check_sheet()

Related Internal State Functions

$set_check_filemode()
$set_check_filename()
$set_check_symbolbody()
$set_check_symbolpin()
$set_check_symbolspecial()
$set_check_symboluserrule()
$set_check_transcript()
$set_check_window()
$set_symboluserrules_file()

$setup_color()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$setup_color("color", *comment*, *frame*, *pin*, *net*, *symbol*)

SETUp COlor "color" *comment frame pin net symbol*

(DA Session) Setup > Setup Defaults > Color

Description

Sets the default colors for all design objects of a given type.

When you choose this item from the pulldown menu, a dialog box is displayed. When you choose a color from the scrolling list of colors, a color bar on the dialog box shows you the actual color you have chosen. Click the buttons for the design objects for which the specified color is the default. If you wish to change the color of one particular object, use the $change_color() function.

Arguments

- ***color (Color)***

  A quoted text string that may be one of the following colors:

aquamarine	irismistm	odysseybluem
black	irismistvd	odysseybluevd
blue	khaki	orange
blueviolet	lightblue	orangered
brown	lightgold	orchid
cadetblue	lightgray	palegreen
coral	lightgrey	pink
cornflowerblue	lightsteelblue	plum
cyan	limegreen	red
darkblue	magenta	salmon
darkgreen	maroon	sandybrown
darkolivegreen	mediumaquarmarine	seagreen
darkorchid	mediumblue	sienna
darkslateblue	mediumforestgreen	skyblue
darkslategray	mediumgoldenrod	slateblue
darkslategrey	mediumorchid	springgreen
darkturquoise	mediumseagreen	ssspressod
dimgray	mediumslateblue	ssspressol
dimgrey	mediumspringgreen	ssspressom
firebrick	mediumturquoise	ssspressovd
forestgreen	mediumvioletred	steelblue
gold	midnightblue	tan
goldenrod	midorilimed	thistle
gray	midorilimel	turquoise
green	midorilimem	violet
greenyellow	midorilimevd	violetred
grey	navy	wheat
indianred	navyblue	white
irismistd	odysseyblued	yellow
irismistl	odysseybluel	yellowgreen

- ***comment (Comments)***

  This argument specifies whether the default color of comment objects should be the specified color. Choose one: **@comment** (-Comment) or **@nocomment** (-NOComment).

- ***frame (Frames)***

  This argument specifies whether the default color of frames should be the specified color. Choose one: **@frame** (-Frame) or **@noframe** (-NOFrame).

- ***pin (Pins)***

  This argument specifies whether the default color of pins should be the specified color. Choose one: **@pin** (-Pin) or **@nopin** (-NOPin).

- ***net (Nets)***

  This argument specifies whether the default color of nets should be the specified color. Choose one: **@net** (-Net) or **@nonet** (-NONet).

- ***symbol (Symbols)***

  This argument specifies whether the default color of symbol bodies should be the specified color. Choose one: **@symbol** (-Symbol) or **@nosymbol** (-NOSymbol)

Example(s)

The following example sets the default color for frames and symbols to be auqamarine:

```
$setup_color("Aquamarine", , @frame, , , @symbol)
```

The next example shows the command syntax for setting the default color of comment objects to slateblue:

```
SETUp COlor "Slateblue" -Comment
```

Related Functions

$change_color() $set_color() $set_color_config()

$setup_comment()

Scope: schematic
Window: Schematic Editor

Usage

$setup_comment(*line_style, line_width, fill_type, "font_file", textheight, hjustification_type, vjustification_type, orientation_type, text_transparency*)

SETUp COMment *-Style line_style -Width line_width -FIll fill_type -FOnt "font_name" -HEight textheight -HJustification hjustification_type -VJustification vjustification_type -Orientation orientation_type -Transparency text_transparency*

Setup > Net/Comment/Page > Comment

Description

Sets up the comment graphic and comment text attributes that are used when creating schematic comments.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values. The values of these arguments change values of the internal state variables relating to comment text and graphics.

Arguments

- ***line_style (Style)***

  This argument sets the line style. This replaces the value of the line_style internal state variable. It can have one of four values: **@solid**, **@dot**, **@longdash**, or **@shortdash**.

- ***line_width (Width)***

  This argument sets the line width in pixels. This replaces the value of the line_width internal state variable. It can have one of four values: **@p1**, **@p3**, **@p5**, or **@p7**.

- ***fill_type (Fill Type)***

  This argument sets the polygon fill. This replaces the value of the polygon_fill internal state variable. It can have one of three values: **@clear**, **@solid**, or **@stipple**.

- ***font_name (Font)***

  This text string specifies the registered font family in which the font is defined. This replaces the value of the text_font internal state variable. Fonts and font registry files are located in *$MGC_HOME/registryfonts*. Folio (scalable) fonts in this directory have a "-scaled" suffix, such as *helvetica-scaled*.

- ***textheight (Height)***

  This argument is a real number in user units that specified text height. This replaces the value of the text_height internal state variable.

- ***hjustification_type (Horizontal Justification)***

  This argument sets the horizontal justification. This replaces the value of the text_hjustification internal state variable. It can have one of three values: **@left**, **@center**, or **@right**.

- ***vjustification_type (Vertical Justification)***

  This argument sets the vertical justification. This replaces the value of the text_justification internal state variable. It can have one of three values: **@top**, **@center**, or **@bottom**.

- ***orientation_type (Orientation)***

  This argument sets the orientation to one of the following values: 0, or 90 degrees. This replaces the value of the text_orientation internal state variable.

- ***text_transparency (Text Transparency)***

  This argument determines whether objects under a text string are visible. This replaces the value of the text_transparency internal state variable. It can have one of two values: **@on** (objects under a text string are visible) or **@off** (objects under a text string are not visible).

Example(s)

The following example sets up the environment for schematic comments. The line style is set to solid, line width is set to @p3, fill type is set to @clear, the font family is set to "helvetica", the comment text height is set to 0.1875, the justification is set to @left for horizontal and top for @vertical, the orientation is set to 0, and objects under the text is @visible.

```
$setup_comment(@solid, @p3, @clear, "helvetica", 0.1875, @left, @top, 0,
@on)
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_net()
$setup_page()
$setup_property_text()
$setup_report()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_line_style()
$set_line_width()
$set_polygon_fill()
$set_text_font()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_transparency()
$set_text_vjustification()

$setup_default_viewpoint()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$setup_default_viewpoint("viewpoint_name", *"viewpoint_type"*)

Description

The $setup_default_viewpoint() function tells DA that this user wants to edit in design context. It also sets the defaults for the name of viewpoints that will be edited, and their type in case one needs to be created. A call to this function should be put in a user's da_session.startup file if the user wants to edit in design context by default.

Arguments

- **viewpoint_name (Design Viewpoint Name)**

  String specifying the name of viewpoints to open by default. The default value is "pcb_design_vpt".

- **viewpoint_type (Design Viewpoint Name)**

  String specifying the type of viewpoints to create by default. The default value is "PCB".

Example(s)

To setup the session so that viewpoints named engr_vpt of the type Sim_Fault_Path_Grade are opened by default, put the following in a da_session.startup script:

```
$setup_default_viewpoint("engr_vpt", "Sim_Fault_Path_Grade");
```

Related Functions

$set_viewpoint()
$open_design_sheet()

$setup_net()

Scope: schematic
Window: Schematic Editor

Usage

$setup_net(*net_width, net_style, orthogonal_mode, angle_direction, snap_mode, dot_size, dot_style, ripperdots_mode, closedot, bus_width autoroute_mode, autoripper_mode,* "*component_name*", "*symbol_name*")

SETUp NEt *-Width net_width -STyle net_style -Ortho orthogonal_mode -Angle angle_direction -SNap snap_mode -DotSIze dot_size -DotSTyle dot_style -RipperDots ripperdots_mode -CLosedot closedot -BUS_WIDTH bus_width -ROUTE autoroute_mode -RIPPER autoripper_mode -RIP_COMPONENT "component_name" -RIP_SYMBOL "symbol_name"*

Setup > Net/Comment/Page > Net

Description

Sets up attributes that are used when creating nets.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***net_width***

  This argument specifies the net width in pixels. This replaces the value of the net_width internal state variable. It can have one of three values: **@p1**, **@p3**, **@p5**, or **@p7**.

- ***net_style (Set Net Style)***

  This argument specifies the net style. This replaces the value of the net_style internal state variable. It can have one of four values: **@solid**, **@dot**, **@longdash**, or **@shortdash**.

- ***orthogonal_mode (Set Ortho)***

  This argument defines whether nets will be snapped to the horizontal or vertical at input of each net vertex. This replaces the value of the orthogonal internal state variable. It can have one of two values: **@on** or **@off**.

- ***angle_direction (Set Snap Angle)***

  This argument is a real number that specifies the maximum angle at which to orthogonally snap nets during creation. This replaces the value of the orthogonal_angle internal state variable.

- ***snap_mode (Set Snap)***

  This argument determines if the pins snap to the grid. This replaces the value of the snap internal state variable. It can have one of two values: **@on** (pins snap to the grid) or **@off** (pins do not snap to the grid).

- ***dot_size (Set Dot Size)***

  This argument is a real number that specifies the size of dots in user units. Size is the length of the side of a square dot, or the diameter of a round dot. This replaces the value of the dot_size internal state variable. The specified dot size affects existing dots, as well as subsequent dots.

- ***dot_style (Set Dot Style)***

  This argument specifies the dot style. This replaces the value of the dot_style internal state variable. Existing dots, as well as subsequent dots, are displayed in the specified dot style. Dot style can be one of two values: **@square** or **@circle**.

- ***ripperdots_mode (Set Ripper Dots)***

  This argument indicates whether junction dots appear where bus rippers join bus lines on a schematic sheet. This replaces the value of the ripper_dot internal state variable. It can have one of the following values: **@on** (junction dots appear) or **@off** (junction dots do not appear).

- ***closedot (Set Close Dots)***

  This argument determines whether close-dots are displayed on the sheet. This replaces the value of the close_dot internal state variable. It can have one of two values: **@on** (displayed) or **@off** (not displayed).

- ***bus_width (Set Bus Width)***

  This argument specifies the bus width in pixels. This replaces the value of the bus_width internal state variable. It can have one of three values: **@p3**, **@p5**, or **@p7**.

- ***autoroute_mode (Set AutoRoute)***

  This argument specifies whether the router is called to automatically orthogonally route nets between the initial and terminal vertices upon completion of a net creation or a move operation. This replaces the value of the autoroute internal state variable. It can have one of two values: **@on** (nets are automatically routed) or **@off** (router is not called).

- ***autoripper_mode (Set AutoRipper)***

  This argument indicates whether single bit bus rippers are automatically instantiated during net creation when the current net width is set to "1" (default wire width), and if one of the input vertices falls on a net segment with width greater than "1" (default bus width is "3"). This replaces the value of the autoripper internal state variable.

  It can have one of the following values: **@on** (bus rippers are instantiated) or **@off** (no bus rippers are instantiated during net creation.

- ***component_name (Component Name)***

  This is a text string specifying the pathname to the ripper component. This replaces the name of the component in the ripper_symbol_pathname internal state variable.

- ***symbol_name (Symbol Name)***

  This text string defines which ripper symbol to use. If the ripper symbol is not registered with the component interface, the ripper symbol cannot be instantiated. This replaces the name of the symbol in the

ripper_symbol_pathname internal state variable. If no ripper symbol name is specified, the default symbol of the default interface is used.

Example(s)

The following example displays the function syntax for setting up the environment for subsequent creation of nets in an active schematic window. The net width is p3 and the net style is longdash. Nets are not snapped orthogonally and the pins are snapped to the grid. Dot style is a square and size is 0.025 inches. Junction dots appear where bus rippers join bus lines.

```
$setup_net(@p3, @longdash, @off, , @on, 0.025, @square, @on)
```

The next example sets the net width to p1, net style to solid, dot size and style to 0.025 inch diameter circles, and bus width to p3. Nets up to a 30 degree angle are snapped horizontally or vertically, and pins are snapped to grid points. Junction dots and close-dots are displayed. The nets are automatically and orthogonally routed during creation, and single bit bus rippers are automatically instantiated during net creation, if the conditions described for autoripper_mode are met.

```
$setup_net(@p1, @solid, @on, 30, @on, 0.025, @circle, @on, @on, @p3,
                                    @on, @on, "$MGC_GENLIB/rip", "1x1")
```

Here is the command syntax for the previous example.

```
SETU NE  -w p1  -st solid  -o on  -a 30  -sn on  -dsi 0.025  -dst circle  -rd on
                                    -cl on  -bus_width p3  -route on  -ripper on
                  -rip_component "$MGC_GENLIB/rip"  -rip_symbol "1x1"
```

Related Functions

$add_net()
$auto_sequence_text()
$sequence_text()
$set_grid()
$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_page()
$setup_property_text()
$setup_report()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_autoripper()
$set_autoroute()
$set_dot_size()
$set_dot_style()
$set_net_style()
$set_net_width()
$set_orthogonal()
$set_orthogonal_angle()
$set_snap()
$set_ripper_dot()
$set_ripper_symbol_pathname()

$setup_page()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$setup_page(pin_spacing, user_units)

SETUp PAge pin_spacing user_units

(Symbol) Setup > Other Options > Page
(Schematic) Setup > Net/Comment/Page > Page

Description

Specifies the pin spacing for a symbol or schematic sheet.

The "pin" user unit is typically used for symbols because the instantiated symbol takes on the units of the sheet. Page borders are not enforced. You can automatically add a comment border/title block when you open a new sheet, if desired. This functionality is found in the Open Sheet Options dialog box. To add a border and title to an existing sheet, choose the **Edit > Add Sheet Border** pulldown menu item.

Arguments

- ***pin_spacing (Pin Space)***

  This argument is a real number specifying the pin spacing. This replaces the value of the pin_spacing internal state variable.

- ***user_units (User Units)***

  This argument specifies the units in which the pin spacing is determined. This replaces the value of the user_units internal state variable. It must have one of four values: **@inch**, **@cm**, **@mm**, or **@pin**.

Example(s)

The following example displays the function syntax for setting the pin spacing to .25 inches on the currently-active sheet.

```
$setup_page(.25, @inch)
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_net()
$setup_report()
$setup_property_text()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_pin_spacing()
$set_user_units()

$setup_property_text()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$setup_property_text(*font_name*, *textheight*, *hjustification_type*, *vjustification_type*, *orientation_type*, *text_transparency*, *text_visibility_switch*, *text_stability_switch*)

SETUp PROperty Text *-FOnt font_name -HEight textheight -HJustification hjustification_type -VJustification vjustification_type -Orientation orientation_type -Transparency text_transparency -Visibility_Switch text_visibility_switch -Stability_Switch text_stability_switch*

Setup > Property Text

Schematic Editor Usage

$setup_property_text(*font_name*, *textheight*, *hjustification_type*, *vjustification_type*, *orientation_type*, *text_transparency*, *text_visibility*)

SETUp PROperty Text *-FOnt font_name -HEight textheight -HJustification hjustification_type -VJustification vjustification_type -Orientation orientation_type -Transparency text_transparency -VIsibility text_visibility*

Setup > Property Text

Description

Sets up the property text attributes used when adding property text.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***font_name (Font)***

  A text string that specifies the registered font family in which the font is defined. This replaces the value of the property_font internal state variable. Fonts and font registry files are located in *$MGC_HOME/registry/fonts*. Folio (scalable) fonts in this directory have a "-scaled" suffix, such as *helvetica-scaled*.

- ***textheight (Height)***

  A real number that sets the height to the specified text height. This replaces the value of the property_height internal state variable.

- ***hjustification_type (Horizontal Justification)***

  Sets the horizontal justification. This replaces the value of the property_hjustification internal state variable. It can have one of three values: **@left**, **@center**, or **@right**.

- ***vjustification_type (Vertical Justification)***

  Sets the vertical justification. This replaces the value of the property_vjustification internal state variable. It can have one of three values: **@top**, **@center**, or **@bottom**.

- ***orientation_type (Orientation)***

  Sets the orientation to one of the following values: 0 or 90 degrees. This replaces the value of the property_orientation internal state variable.

- ***text_transparency (Transparency)***

  Determines whether objects under a text string are visible. This replaces the value of the property_transparency internal state variable. It can have one of two values: **@on** (objects under a text string are visible) or **@off** (objects under a text string are not visible).

- ***text_visibility (Visibility)***

  Determines whether property text is visible on instance-specific properties. This argument is valid in the Schematic Editor. This replaces the value of the property_visibility internal state variable. It can have one of two values: **@on** (visible) or **@off** (hidden).

- ***text_visibility_switch (Visibility Switch)***

  Determines the visibility of property text of instantiated symbols. This argument is valid only in the Symbol Editor. It replaces the value of the property_visibility_switch internal state variable and can have one of two values:

  @hidden: Property text is not visible on the instance. Once a property has been set to hidden, it can only be selected by its handle.

  @visible: Property text is visible on the instance.

- ***text_stability_switch (Stability Switch)***

  Determines the type of operations that can be performed on the property on an instance of the symbol. This argument is valid only in the Symbol Editor. This replaces the value of the property_stability_switch internal state variable. It can have one of four values:

  @fixed: Property values cannot be altered or deleted on any instance on a schematic sheet. Graphic attributes can be modified using the $change_property_<attribute> functions.

  @protected: Property values and their graphic attributes can be altered on an instance at instantiation time on a schematic sheet. However, once instantiated, the instance-specific property value or property attribute cannot be changed.

  @variable: Property values and their graphic attributes can be altered on an instance at instantiation time and through the $change_property or $change_text functions.

  @nonremovable: Property values and their graphic attributes can be altered on an instance at instantiation time and changed through the $change_property and $change_text functions, but the property cannot be deleted from the instance.

- ***text_update_switch (Update Switch)***

  This argument is obsolete in V8.1 and later releases. Replacement functionality is discussed in the $open_sheet() and $update() function descriptions.

Example(s)

The following example displays the function syntax in the Schematic Editor for setting up property text that uses the "stroke" font, height is 0.1875, justification is @left for horizontal and @top for vertical, orientation is 0, objects under the text font are visible, and the property text is visible.

```
$setup_property_text("stroke", 0.1875, @left, @top, 0, @on, @on)
```

The next example shows the command syntax in the Symbol Editor for setting up property text that uses the font family "helvetica", height is 0.375, justification is center for horizontal and bottom for vertical, orientation is 0, objects under the text font are not visible, the visibility switch is set to visible, and the stability switch is set to protected.

```
setu pro t  -fo "helvetica"  -he 0.375  -hj center -vj bottom  -o 0  -t off  -vs
                                                                visible -ss protected
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_net()
$setup_page()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_property_font()
$set_property_height()
$set_property_hjustification()
$set_property_orientation()
$set_property_transparency()
$set_property_visibility()
$set_property_vjustification()

$setup_report()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$setup_report("*file_name*", *file_mode*, *window*, *transcript*)

SETUp REport "*file_name*" *file_mode window transcript*

(DA Session) Setup > Setup Defaults > Report
Report > Set Report Defaults

Description

Specifies whether reports are displayed in a popup window, a transcript window, and/or stored in a file.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***file_name (File)***

  Specifies the pathname of the report file. This replaces the value of the report_filename internal state variable.

- ***file_mode (File Mode)***

  Indicates how the contents of the report are placed in the specified file. This replaces the value of the report_filemode internal state variable. It can have one of three values: **@add** (-Add), **@replace** (-Replace), or **@nofile** (-NOFile).

- ***window (Display in Window)***

  Controls whether the results of the $report functions are displayed in a popup window. This replaces the value of the report_window internal state variable. The argument can have one of two values: **@window** (-Window) or **@nowindow** (-NOWindow).

- ***transcript (Write to Transcript)***

  Controls whether reports are displayed in a transcript window. This replaces the value of the report_transcript internal state variable. It can have one of two values: **@transcript** (-Transcript) or **@notranscript** (-NOTranscript).

Example(s)

The following $setup_report() function example indicates that all subsequent reports will be saved in a file, *$PROJECT_A/group3/report_file*. The @replace value indicates that the every time a report is stored in this file, it replaces its previous contents.

```
$setup_report("$PROJECT_A/group3/report_file", @replace)
```

The following example displays command syntax to indicate that all subsequent reports will be saved in *$PROJECT_B/da_report_file*. The -Add switch indicates that every time a new report is stored in this file, it is added to the current contents of the file.

```
setu re "$PROJECT_B/da_report_file"  -a
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_net()
$setup_page()
$setup_property_text()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()
$set_report_window()

$setup_select_filter()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$setup_select_filter(*comment, exterior, pin, property, symbolbody, text*)

SETUp SElect Filter *comment exterior pin property symbolbody text*

Setup > Select Filter

Schematic Editor Usage

$setup_select_filter*(comment, exterior, frame, instance, net, pin, property, segment, symbolpin, text, vertex*)

SETUp SElect Filter *comment exterior frame instance net pin property segment symbolpin text vertex*

Setup > Select Filter

Description

Sets up what type of objects are currently selectable.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***comment (Comments)***

  This replaces the value of the select_comment internal state variable, and controls whether comment graphics within the selection area will be selected. This argument can have one of two values: **@comment** (-COmment) or **@nocomment** (-NOCOmment).

- ***exterior (Exterior)***

  This replaces the value of the select_exterior internal state variable, and specifies whether objects outside a region are selectable. This argument can have one of two values: **@exterior** (-Exterior) or **@noexterior** (-NOExterior).

- ***frame (Frames)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_frame internal state variable, and determines whether frames within the selection area will be selected. It can have one of two values: **@frame** (-Frame) or **@noframe** (-NOFrame).

- ***instance (Instances)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_instance internal state variable, and determines whether instances within the selection area will be selected. It can have one of two values: **@instance** (-Instance) or **@noinstance** (-NOInstance).

- ***net (Nets)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_net internal state variable, and specifies whether nets are selectable. It can have one of two values: **@net** (-Net) or **@nonet** (-NONet).

- ***pin (Pins)***

  This replaces the value of the select_pin internal state variable. This argument specifies whether instance pins and symbol pins on a schematic sheet, and symbol pins on a symbol, are selectable. It can have one of two values: **@pin** (-PIn) or **@nopin** (-NOPIn).

- ***property (Properties)***

  This replaces the value of the select_property internal state variable. This argument specifies whether properties within the selection area are selectable. It can have one of two values: **@property** (-PRoperty) or **@noproperty** (-NOPRoperty).

- ***segment (Segments)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_segment internal state variable. It can have one of two values:

  @segment (-SEgment): Specifies that when the point or area specified for a select operation falls on a net segment, the vertices at either end of the segment will be selected and the segment, itself, will be highlighted.

  @nosegment (-NOSEgment): Specifies that net segment vertices are not automatically selected when that net segment is within the select area. When @nosegment is specified, the selection of vertices is determined by the value of the select_vertex internal state variable and the arguments specified for the select operation.

- ***symbolbody (Symbol Bodies)***

  This argument is valid in the Symbol Editor. This replaces the value of the select_symbolbody internal state variable and specifies whether symbol graphics are selectable. It can have one of two values: **@symbolbody** (-SYMbolBody) or **@nosymbolbody** (-NOSYMbolBody).

- ***symbolpin (Symbol Pins)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_symbolpin internal state variable, and specifies if symbol pins only are selectable. It can have one of two values: **@symbolpin** (-SYMbolPin) or **@nosymbolpin** (-NOSYMbolPin).

- ***text (Comment Text)***

  This replaces the value of the select_text internal state variable. This argument specifies whether comment text within the selection area will be selected. It can have one of two values: **@text** (-Text) or **@notext** (-NOText).

- ***vertex (Vertices)***

  This argument is valid in the Schematic Editor. This replaces the value of the select_vertex internal state variable and specifies whether vertices are selectable. It can have one of two values: **@vertex** (-Vertex) or **@novertex** (-NOVertex).

Example(s)

This example displays the function syntax for specifying what types of objects are currently selectable in the active schematic sheet. In this case, comments, frames, instances, nets, and properties are selectable. When the $select_all() function is invoked, all objects specified are selected, except pins.

```
$setup_select_filter(@comment, , @frame, @instance, @net, , @property)
$select_all(@comment, @frame, @instance, @pin, @property)
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_page()
$setup_property_text()
$setup_net()
$setup_select_filter()
$setup_symbol_body()
$setup_unselect_filter()

Related Internal State Functions

$set_select_comment()
$set_select_exterior()
$set_select_frame()
$set_select_frame()
$set_select_net()
$set_select_pin()
$set_select_property()
$set_select_segment()
$set_select_symbolbody()
$set_select_symbolpin()
$set_select_text()
$set_select_vertex()

$setup_symbol_body()

Scope: symbol
Window: Symbol Editor

Usage

$setup_symbol_body(*line_style, line_width, fill_type, "filename", textheight, hjustification_type, vjustification_type, orientation_type, text_transparency, dot_size, dot_style, orthogonal_mode*)

SETUp SYmbol Body *-STyle line_style -Width line_width -FIll fill_type -FOnt "filename" -HEight textheight -HJustification hjustification_type -VJustification vjustification_type -ORIentation orientation_type -Transparency text_transparency -DotSIze dot_size -DotSTyle dot_style -ORTho orthogonal_mode*

Setup > Symbol Body

Description

Sets up the graphic attributes used when creating symbol graphics and symbol text.

If the menu item is invoked, a dialog box is displayed showing the arguments and their current values.

Arguments

- ***line_style (Line Style)***

  This argument specifies the line style. This replaces the value of the line_style internal state variable. It can have one of four values: **@solid**, **@dot**, **@longdash**, or **@shortdash**.

- ***line_width (Line Width)***

  This argument specifies the line width in pixels. This replaces the value of the line_width internal state variable. It can have one of four values: **@p1**, **@p3**, **@p5**, or **@p7**.

- ***fill_type (Fill Type)***

  This argument specifies the polygon fill. This replaces the value of the polygon_fill internal state variable. It can have one of three values: **@clear**, **@solid**, or **@stipple**.

- ***filename (Text Font)***

  This text string specifies the registered font family in which the font is defined. This replaces the value of the text_font internal state variable. Fonts and font registry files are located in */idea/pkgs/base.m/fonts*.

- ***textheight (Text Height)***

  This argument is a real number in user units that determines symbol text height. This replaces the value of the text_height internal state variable.

- ***hjustification_type (Horizontal Justification)***

  This argument specifies symbol text horizontal justification. This replaces the value of the text_hjustification internal state variable. It can have one of three values: **@left**, **@center**, or **@right**.

- ***vjustification_type (Vertical Justification)***

  This argument specifies symbol text vertical justification. This replaces the value of the text_vjustification internal state variable. It can have one of three values: **@top**, **@center**, or **@bottom**.

- ***orientation_type (Text Orientation)***

  This argument specifies symbol text orientation in degrees. This replaces the value of the text_orientation internal state variable. It can have one of the following values: **0** (text is displayed horizontally) or **90** (text is displayed vertically).

- ***text_transparency (Text Transparency)***

  This argument determines whether or not objects under a text string are visible. This replaces the value of the text_transparency internal state variable. It can have one of two values: **@on** (objects are visible) or **@off** (objects are not visible).

- ***dot_size (Dot Size)***

  This argument defines a real number specifying the diameter or length of a side for dots in user units. This replaces the value of the dot_size internal state variable.

- ***dot_style (Dot Style)***

  This argument sets the style of dots. This replaces the value of the dot_style internal state variable. It can be one of two values: **@square** or **@circle**.

- ***orthogonal_mode (Ortho)***

  This argument defines whether symbol body graphics (lines and polylines) will snap horizontally or vertically at each endpoint. This replaces the value of the orthogonal internal state variable. It can have one of two values: **@on** (snapped) or **@off** (not snapped).

Example(s)

This example displays the function syntax for setting up the environment for symbol graphics and comments. The line style is set to longdash, line width is set to @p5, fill type is set to @solid, font family is "stroke", text height is set to 0.1875, text justification is set to @left for horizontal and @center for vertical. In addition, orientation is set to 0, objects under a text string are @visible, dot size is set to 1, and dot style is set to @square.

```
$setup_symbol_body(@longdash, @p5, @solid, "stroke", 0.1875, @left,
                                                  @center, 0, @on, 1, @square)
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_net()
$setup_page()
$setup_property_text()
$setup_select_filter()
$setup_unselect_filter()

Related Internal State Functions

$set_dot_size()
$set_dot_style()
$set_line_style()
$set_line_width()
$set_orthogonal()
$set_orthogonal_angle()
$set_polygon_fill()
$set_text_font()
$set_text_height()
$set_text_hjustification()
$set_text_orientation()
$set_text_transparency()
$set_text_vjustification()

$setup_unselect_filter()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor

Symbol Editor Usage

$setup_unselect_filter(*comment, exterior, pin, property, symbolbody, text*)

Schematic Editor Usage

$setup_unselect_filter(*comment, exterior, frame, instance, net, pin, property, segment, symbolpin, text, vertex*)

Description

Sets up what type of objects are currently unselectable.

The unselect filter is not used when point selection performs unselection.

Arguments

- ***comment***

  This replaces the value of the unselect_comment internal state variable. This argument determines whether comment graphics are unselectable: **@comment** or **@nocomment**.

- ***exterior***

  This replaces the value of the unselect_exterior internal state variable. This argument specifies whether objects outside of a region are unselectable: **@exterior** or **@noexterior**.

- ***frame***

  Valid in the Schematic Editor. This replaces the value of the unselect_frame internal state variable, and specifies whether frames are unselectable: **@frame** or **@noframe**.

- ***instance***

  Valid in the Schematic Editor. This replaces the value of the unselect_instance internal state variable, and specifies whether instances are unselectable: **@instance** or **@noinstance**.

- ***net***

  Valid in the Schematic Editor. This replaces the value of the unselect_net internal state variable, and specifies whether nets are unselectable: **@net** or **@nonet**.

- ***pin***

  This replaces the value of the unselect_pin internal state variable. This argument specifies if instance pins and symbol pins on a schematic sheet, and symbol pins on a symbol are unselectable: **@pin** or **@nopin**.

- ***property***

  This replaces the value of the unselect_property internal state variable. This argument specifies whether properties are unselectable: **@property** or **@noproperty**.

- ***segment***

  Valid in the Schematic Editor. This replaces the value of the unselect_segment internal state variable and specifies whether net segments are unselectable: **@segment** or **@nosegment**.

- ***symbolbody***

  Valid in the Symbol Editor. This replaces the value of the unselect_symbolbody internal state variable, and specifies if symbol graphics are unselectable: **@symbolbody** or **@nosymbolbody**.

- ***symbolpin***

  Valid in the Schematic Editor. This replaces the value of the unselect_symbolpin internal state variable, and specifies whether symbol pins are unselectable: **@symbolpin** or **@nosymbolpin**.

- ***text***

  This replaces the value of the unselect_text internal state variable, and specifies whether comment text is unselectable: **@text** or **@notext**.

- ***vertex***

  This argument is valid in the Schematic Editor. This replaces the value of the unselect_vertex internal state variable, and specifies whether vertices are unselectable: **@vertex** or **@novertex**.

Example(s)

The following example displays the function syntax defining which types of objects are currently unselectable in the active schematic window. In this case, frames, instances, and properties are unselectable. When the $unselect_all() function is invoked, only nets are unselected.

```
$setup_unselect_filter( , , @frame, @instance, , , @property)
$unselect_all( , @frame, @instance, , @property)
```

Related Functions

$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()
$setup_comment()
$setup_page()
$setup_property_text()
$setup_net()
$setup_select_filter()
$setup_symbol_body()

Related Internal State Functions

$set_unselect_comment()
$set_unselect_frame()
$set_unselect_instance()
$set_unselect_net()
$set_unselect_pin()
$set_unselect_property()
$set_unselect_segment()
$set_unselect_symbolbody()
$set_unselect_symbolpin()
$set_unselect_text()
$set_unselect_vertex()

$show_active_symbol_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$show_active_symbol_window()

SHOw ACtive Symbol Window

(DA Session) MGC > Setup > Setup Defaults > Session

Description

Displays the graphics and default body properties for the active symbol.

This window is placed at the top of the palette space, and the palette is resized to fit. The component name and symbol name, or the alias, if specified, are shown at the bottom of the window. You can specify visibility of the active symbol window in the MGC Setup Session dialog box.

Example(s)

This example displays the active symbol window above the palette menu.

```
$show_active_symbol_window()
```

Related Functions

$add_instance()
$get_next_active_symbol()
$hide_active_symbol_window()
$is_active_symbol_window_visible()
$place_active_symbol()
$set_next_active_symbol()
$show_status_line()

Related Internal State Functions

$set_active_symbol()

$show_annotations()

Scope: schematic
Window: Schematic Editor

Usage

$show_annotations()

SHOw ANnotations

Setup > Annotations/Evaluations > Toggle Annotations

Description

Makes back-annotated properties visible and editable.

If any property values are modified, they are reflected only in the back annotation object. This function is meaningful only in the context of a design viewpoint. The back-annotated property values are displayed in a different color than the source property values.

Example(s)

This example shows the function syntax to view and edit back-annotation properties of the design sheet on the viewpoint *$DESIGNS/dff/vpt*.

```
$open_design_sheet("$DESIGNS/dff", "$DESIGNS/dff/vpt", "/", "sheet1")
$show_annotations()
```

The next example displays the command syntax to view and edit the back-annotation properties of the design sheet on the viewpoint *your_home/da/mux_dir/cpu/pcb_vpt*.

```
ope de s  "your_home/da/mux_dir/cpu"
                    "your_home/da/mux_dir/cpu/pcb_vpt"  "/MUX1"  "sheet1"
sho an
```

Related Functions

$hide_annotations()

$merge_annotations()

$show_comment()

Scope: schematic
Window: Schematic Editor

Usage

$show_comment()

SHOw COmment

Setup > Other Options > Comment Visibility On

Description

Displays comment text and graphics on a schematic sheet.

Comments are visible by default. This function does not perform any action unless a $hide_comment() function was previously invoked.

Example(s)

The following example displays the function syntax for displaying comment text and graphics.

```
$hide_comment()
$show_comment()
```

Related Functions

$hide_comment()

$show_context_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$show_context_window()

SHOw COntext Window

(DA Session) MGC > Setup > Setup Defaults > Session

Description

Turns on the display of the context window in the session.

The context window displays a window indicating the portion of the symbol or sheet that is visible in the editing window.

Example(s)

This example displays the syntax for displaying the context window.

```
$show_context_window()
```

Related Functions

$hide_context_window()

$is_context_window_visible()

$show_panel_border()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$show_panel_border(*panel_names*)

SHOw PAnel Border *panel_names*

View > Panel > Show Panel Border > All Panels on Sheet | By Panel Name

Description

Displays borders of the named panels.

If invoked through the menu, a dialog box is displayed in the active window allowing you to specify multiple panel names.

Arguments

- ***panel_names (Panel Name)***

  This repeating text string specifies the name(s) of the panel(s) to display. If no panel names are specified, all defined panel borders are displayed.

Example(s)

The following example displays the function syntax for displaying the "mux_pic" panel in the currently active window.

```
$show_panel_border("mux_pic")
```

The next example shows the command syntax for the previous example.

```
sho pa b "mux_pic"
```

Related Functions

$add_panel()
$delete_panel()
$hide_panel_border()
$report_panels()
$view_panel()

$show_registration()

Scope: symbol
Window: Symbol Editor

Usage

$show_registration()

SHOw REgistration

Description

Displays the name of the component interface with which the symbol is currently registered.

Example(s)

The following example displays the function syntax for displaying the name of the component interface with which the symbol, *your_home/da/my_lib/nand*, is registered.

```
$open_symbol("your_home/da/my_lib/nand", "nand")
$show_registration()
```

Related Functions

$save_symbol()

$show_status_line()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$show_status_line()

SHOw STatus Line

MGC > Setup > Session
Session > MGC > Setup > Session

Description

Displays the status line in an editor.

This function sets the status_line_visibility internal state function which determines the default shown on the Setup Session dialog box.

Example(s)

The following example displays the function syntax for displaying the status line.

```
$show_status_line()
```

Related Functions

$hide_status_line()

$is_status_line_visible()

$slice()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$slice()

(no command syntax)

(symbol)Edit > Edit Operations > Slice:
(schematic)Edit > Edit Commands > Edit Operations > Slice Comment:

Description

The $slice() function is an interactive function that allows you to cut a geometic object into two or more pieces.

You slice an object, by first selecting the object, then choosing the Slice menu pick or by typing $slice() on the command line. You create a slice line by pressing the left mouse button, dragging the mouse across the object, then releasing the mouse button.

The selected object is first “exploded” into the lines that define it, then the lines are sliced by the slicing line. This does not apply to arcs and circles. An arc is sliced into 2 or 3 arcs, depending on how many times the slicing line passes through the arc. A circle is sliced into two arcs if and only if the slicing line passes into and back out of the circle. If there is only one intersection between the circle and the slicing line, no slice will occur.

In all cases, the original object is deleted and in it’s place are the new objects created by the slice. The new objects do not have any relationship with the old object. You have the ability to choose whether only one of the new sliced objects inherits the properties from the original object or whether all new sliced objects inherit the properties. In either case, all of the property values are displayed in exactly the same diagram location as the original property values. If a box is split into 6 pieces, for example, and there was one property on the original graphics, each of the 6 lines will have that property and there will be 6 property values at the same diagram location. If you want only one piece of sliced graphics to inherit the properties, you may choose that option, then only one property value will replace the original.

The only way to get the original geometry back is to execute an undo and have the system bring it back.

Example(s)

Typing the following function in a command line displays the prompt bar for a slice operation:

```
$slice()
```

Related Functions

$stretch()

$snap_to_grid()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object must be selected.

Usage

$snap_to_grid()

SNAp TO Grid

Setup > Set Grid Snap On/Off
(Schematic) Edit > Edit Commands > Edit Operations > Snap To Grid
(Symbol) Edit > Edit Operations > Snap To Grid

Description

Snaps comment objects and properties to the nearest "snap" grid coordinates.

The origins of individual objects are snapped to grid. Electrical objects (such as nets and instances) always snap to the pin grid. Comments and properties snap to the snap grid, if it is turned on.

Example(s)

The following example snaps any comment objects and properties on the active sheet to the nearest grid coordinate.

```
$snap_to_grid()
```

Related Functions

$get_grid() $set_grid()

$sort_handles()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$sort_handles([handles], *method*, *block_size*, *block_offset*)

Description

Returns an array whose elements are the same elements as the input array, but sorted as specified by the method, block_size, and block_offset arguments.

This function allows you to sort an array of handles or strings in three ways: a standard ASCII string sort, a special handle sort that sorts first by handle type and then by handle number, or a sort by location that sorts the handles top-to-bottom and left-to-right, according to the extents of the objects. You can also break the array into blocks of elements, and then you can sort the blocks by some key element within them.

Arguments

- **handles**

  This is a vector of strings to sort. You can use functions such as $get_objects() to obtain vectors of handles to sort.

  Enter one or more text string values in the form:

  ["handle_name1", ..., "*handle_nameN*"]

- ***method***

  Choose one of the following methods for sorting handles:

  @handles: The handle sort performs a normal ASCII sort on the handle type portion of each handle (I$ before N$), then further sorts each handle-type group in numerical order.

  @plaintext: The plain text sort does not distinguish between numbers and alphabetic characters; each element in an array is treated as a string, and sorting is done strictly by comparing characters holding the same positions in their strings.

Consider an array containing the two strings, I$101 and I$21. The first two characters in each string match and so do not affect sorting, but the third characters are "1" and "2". Because "1" comes before "2", the plain text sort would place I$101 before I$21. The plain text sort is the default method.

The following example illustrates the difference between the handle and plain text methods of sorting:

Handle (ASCII) sort:	I$4	I$21	I$101	N$31	N$101
Plain text sort:	I$101	I$21	I$4	N$101	N$31

@location: This method sorts the handles top-to-bottom, left-to-right, according to their extents.

- ***block_size***

  This argument is an integer specifying how many elements of the handle array should be grouped together as a block for sorting. The default is 1, meaning that each element in the array is sorted individually.

- ***block_offset***

  This argument is an integer specifying which element within a block to sort. The default is 1, which means the first string in each block is compared with the first string in other blocks for sorting.

Example(s)

The first example shows a typical plain text sort.

```
$writeln($sort_handles(["w$", "c$", "x$", "a$11", "a$2", "a$0"], @plaintext,
                                                                    1, 1))
//  ["a$0", "a$11", "a$2", "c$", "w$", "x$"]
```

The second example shows a handle sort.

```
$writeln($sort_handles(["w$", "c$", "x$", "a$11", "a$2", "a$0"], @handles,
                                                                    1, 1))
//  ["a$0", "a$2", "a$11", "c$", "w$", "x$"]
```

The third example shows a handle sort of blocks of two.

```
$writeln($sort_handles(["w$", "c$", "x$", "a$11", "a$2", "a$0"], @handles,
                                                                  2, 1))
//  ["a$2", "a$0", "w$", "c$", "x$", "a$11"]
```

The fourth example shows a handle sort of blocks of two using the second element in each block as the sort key.

```
$writeln($sort_handles(["w$", "c$", "x$", "a$11", "a$2", "a$0"], @handles,
                                                                  2, 2))
//  ["a$2", "a$0", "x$", "a$11", "w$", "c$"]
```

Related Functions

$get_objects()

$sort_handles_by_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$sort_handles_by_property([handles])

Description

Removes all non-property handles and sorts the remaining list of property text handles according to the property names associated with them, then returns a vector of vectors.

Each inner vector consists of a property name string followed by each of the original property text handles whose property has the given property name.

Arguments

- **handles**

  This is a vector of property text handles to sort. For example:

  ["T$10", "T$40", "T$102", "T$109", "T$202"]

Example(s)

The following example displays the syntax for sorting handles by property.

```
$writeln($sort_handles_by_property(["T$10", "T$40", "T$102",
                                    "T$109", "T$202"])
```

The transcript will show:

```
$writeln([["INST", "T$10", "T$40"], ["NET", "T$102", "T$109", "T$202"]])
// [["INST", "T$10", "T$40"], ["NET", "T$102", "T$109", "T$202"]]
```

Related Functions

$get_property_attributes()

$stretch()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$stretch()

(symbol)Edit > Edit Operations > Stretch:
(schematic)Edit > Edit Commands > Edit Operations > Stretch Comment:

Description

The $stretch() function is an interactive function that allows you to stretch the shape of a geometric object.

You stretch an object, by first selecting the object, then clicking the STRETCH icon or typing STR on the command line. You then click the left mouse button next to a corner or edge and drag the mouse to stretch the object. A second click ends the operation and the graphical object is redrawn to the new shape. All properties remain on the stretched object.

Circles are stretchable in the same fashion that they are created, by dragging from a point on the circle with the anchor point being the circle's center. Likewise, an arc is anchored at its endpoints for an edge stretch and anchored at the other endpoint for a corner stretch. A line has no edge stretch defined, but can be stretched from either of its endpoints.

Example(s)

Typing the following command displays a prompt bar for a stretch operation:

STR

Related Functions

$slice()

$string_to_literal()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$string_to_literal("string_argument")

Description

Returns either the given argument or the literal value, if the argument was a string.

This function is used to assist in the execution of macros translated from pre-V8 releases, in the case where a V8.x function requires a literal parameter rather than a string.

Arguments

- **string_argument**

  This argument is a text string that can be any AMPLE value.

Example(s)

The following example displays the use of the $string_to_literal() function.

```
$writeln($string_to_literal("foo"))
```

In the transcript, you will see:

```
    $writeln(@foo)
//  @foo
```

$undo()

Scope: da_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$undo()

UNDO

Most popup menus > Undo > Undo
Edit > Undo

Description

Reverses the action of the previous undoable function called in any open window (active, or not).

If the previous function is not undoable, Design Architect will undo the next undoable function executed before the non-undoable function.

You can undo more than one level; the level is specified by the $set_undo_level() internal state function. The $undo() function also unselects items just selected, if no functions were executed since the selection.

Undo applies to the current selection data model of the window where the undo occurs. Therefore, undo applies to all views on that data model.

If the value of the undo_level internal state variable is 0, or if the stack of up to undo_level number of undoable actions has been emptied by previous undos, this function has no effect.

You cannot use the $undo() function in a dofile.

Example(s)

The following example undoes the two previous function calls. In this example, the two $undo() functions reverse the action of the previous two functions, returning the design to the state it was in before all the comments were deleted.

```
$set_undo_level(2)
$select_all(@comment)
$delete()
$undo() $undo()
```

Related Functions

$redo()

Related Internal State Functions

$set_undo_level()

$unfreeze_window()

Scope: bed_window and hdtxt_area
Window: Schematic Editor, Symbol Editor, and VHDL Editor

Usage

$unfreeze_window(*force_switch*)

UNFREeze WIndow *force_switch*

Description

Resumes graphic updates to symbol and schematic windows.

The $freeze_window() and $unfreeze_window() functions share a counter that partially controls graphic updates to symbol and schematic windows. Graphic updates are suspended if the counter is non-zero. If the counter is positive, the value is decremented when $unfreeze_window() is called.

Arguments

- ***force (Force)***

  This argument lets you set the counter to zero, rather than decrement it. It can have one of the following values:

  @force (-Force): Counter is set to zero.

  ⇒ **@noforce** (-NOForce): Counter is decremented by one.

Example(s)

The following example resumes graphic updates to all windows.

```
$unfreeze_window()
```

Related Functions

$freeze_window()

$ungroup()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$ungroup(name)

UNGROup name

Miscellaneous > Ungroup

Description

Removes the grouping of all objects in a specified group.

The objects are not deleted; only the knowledge of their grouping is removed.

Arguments

- **name**

  This text string specifies the name of a group of objects which should no longer be grouped together.

Example(s)

The following example removes the definition of a group of objects named "test_a". The objects in the group are untouched.

```
$ungroup("test_a")
```

Related Functions

$group() $change_group_visibility()

$unhighlight_by_handle()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: The objects with the specified handles must already be highlighted.

Usage

$unhighlight_by_handle(handles)

UNHIGhlight BY Handle handles

Miscellaneous > Unhighlight > By Handle

Description

Unhighlights the objects, including property text, whose handles are specified.

When the menu item is invoked or the command or function is typed with no arguments, a dialog box is displayed for you to enter handles.

Arguments

- **handles (Handle)**

  This argument is a repeating text string specifying unique object handles.

Example(s)

The following example displays the function syntax when unhighlighting two nets by their handles, N$15 and N$54, from the active schematic sheet.

```
$unhighlight_by_handle("N$14", "N$54")
```

The next example displays the command syntax for the previous example.

```
unhig by h  "N$14"  "N$54"
```

Related Functions

$highlight_by_handle()
$highlight_property_owner()
$unhighlight_property_owner()

$unhighlight_property_owner()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$unhighlight_property_owner([point])

UNHIGhlight PRoperty Owner [point]

Miscellaneous > Unhighlight > Property Owner

Description

Unhighlights the owner of a visible property string.

The cursor need not be directly over the text string. If the text closest to the given location is property text, the owner is unhighlighted. If the text is comment text, an error is issued. If the text owner is not highlighted, no action is taken.

Arguments

- **point (At Location)**

  This location defines the coordinates (in user units) of a point on or nearest to a piece of property text whose owner is to be unhighlighted.

Example(s)

The following example unhighlights the owner of a visible property text string that is closest to the location [1.2, 4.2].

```
$unhighlight_property_owner([1.2, 4.2])
```

Related Functions

$highlight_property_owner()

Related Internal State Functions

$set_select_aperture()

$unprotect()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$unprotect()

UNPROtect

Miscellaneous > Unprotect > All

Description

Removes objects from select protection and adds the objects to the selection list.

The objects must have been previously protected with the $protect() or $protect_area() function.

Whenever an object is selected, the basepoint is automatically reset at the origin of the newly selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly selected objects (left-most takes precedence over lowest).

Example(s)

This example unprotects all protected objects and adds them to the selection list.

```
$unprotect()
```

Related Functions

$protect() $protect_area() $unprotect_area()

$unprotect_area()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$unprotect_area([protection_area])

UNPROtect ARea [protection_area]

Miscellaneous > Unprotect > By Area

Description

Removes objects from select protection and then adds the objects to the selection list.

The objects must have been previously protected with the $protect() or $protect_area() function. Whenever an object is selected, the basepoint is automatically reset to the origin of the newly-selected object. If several objects are selected concurrently, the basepoint is reset to the left-most, lowest origin of the newly-selected objects (left-most takes precedence over lowest).

Arguments

- **protection_area (Area)**

  This argument pair defines coordinates indicating diagonally opposite corners of the protection rectangle specified in user units.

Example(s)

This example displays the syntax for unprotecting all electrical and comment objects within the area [1.2, 1.2] and [4.5, 6.0] on the active sheet.

```
$unprotect_area([[1.2, 1.2], [4.5, 6.0]])
```

Related Functions

$protect() $protect_area() $unprotect()

$unselect_all()

Scope: da_report, schematic, and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical object or comment object must be selected.

Symbol Editor Usage

$unselect_all(*@comment, @pin, @property, @symbolbody, @text*)

UNSELect ALl *-COmment -PIn -PRoperty -SYMbolBody -Text*

Most popup menus > Unselect > All >
Edit > Unselect > All >

Schematic Editor Usage

$unselect_all(*@comment, @frame, @instance, @pin, @property, @symbolpin, @text, @vertex*)

UNSELect ALl *-COmment -Frame -Instance -PIn -PRoperty -SYMbolPin -Text -Vertex*

Most popup menus > Unselect > All >
Edit > Unselect > All >

Description

Unselects objects in the active window based on the specified unselection switches.

These switches correspond to the unselect internal state variables. These unselect internal state variables define what is called the "unselection filter"; that is, it defines what objects can be unselected from the active window. You can change the "unselection filter" by changing the values of the internal state variables, by issuing a $setup_unselect_filter() function, or by overriding the values by specifying $unselect_all() switches.

Specifying the $unselect_all() switches does not replace the values of the associated internal state variables; they are only valid for the current unselection action.

If you choose the **Unselect > All > Anything** menu item, all objects in the active window are unselected. This menu item does not use the unselection filter. If you

choose the **Unselect > All > Filtered** menu item, all objects that are unselectable (as specified by the unselection filter) are selected. If you select any other menu item, unselection is performed on the particular object you specified overriding the value of the associated unselect internal state variable for this select action only. It does not change the value of the associated unselect internal state variable.

This function does not change the sheet basepoint location.

Arguments

- ***@comment (Comment)***

  This switch unselects all comment graphics in the active window.

- ***@frame (Frame)***

  This switch is valid in the Schematic Editor and unselects all frames in the active window.

- ***@instance (Instance)***

  This switch is valid in the Schematic Editor and unselects all instances in the active window.

- ***@pin (Pin)***

  This switch unselects all instance pins and symbol pins on a schematic sheet or symbol pins on a symbol.

- ***@property (Property)***

  This switch unselects all properties in the active window.

- ***@symbolbody (Symbol Body)***

  This switch is valid in the Symbol Editor and unselects all symbol graphics on the symbol.

- ***@symbolpin (Symbol Pin)***

  This switch is valid in the Schematic Editor and unselects all symbol pins.

- ***@text (Comment Text)***

  This switch unselects all comment text in the active window.

- ***@vertex (Vertex)***

  This switch is valid in the Schematic Editor and unselects all vertices in the active window.

Example(s)

The following example shows the function syntax for unselecting all objects in the currently active schematic window.

```
$unselect_all(@comment, @frame, @instance, @pin, @property,
                                        @symbolpin, @text, @vertex)
```

The next example shows the command syntax for unselecting all objects in an active symbol.

```
unsel al -comment -pin -property -symbolbody -text
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

Related Internal State Functions

$set_unselect_comment()
$set_unselect_frame()
$set_unselect_instance()
$set_unselect_net()
$set_unselect_pin()
$set_unselect_property()
$set_unselect_segment()
$set_unselect_symbolbody()
$set_unselect_symbolpin()
$set_unselect_text()
$set_unselect_vertex()

$unselect_area()

Scope: schematic and symbol
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical object or comment object must be selected.

Symbol Editor Usage

$unselect_area([unselect_area], *@comment, @exterior, @pin, @property, @symbolbody, @text*)

UNSELect AREa [unselect_area] *-COmment -Exterior -PIn -PRoperty -SYMbolBody -Text*

Most popup menus > Unselect > Area >
Most popup menus > Unselect > Exterior >
Edit > Unselect > Area >
Edit > Unselect > Exterior >

Schematic Editor Usage

$unselect_area([unselect_area], *@comment, @exterior, @frame, @instance, @net, @pin, @property, @segment, @symbolpin, @text, @vertex*)

Command: UNSELect AREa [unselect_area] *-COmment -Exterior -Frame -Instance -Net -PIn -PRoperty -SEgment -SYMbolPin -Text -Vertex*

Most popup menus > Unselect > Area >
Most popup menus > Unselect > Exterior >
Edit > Unselect > Area >
Edit > Unselect > Exterior >

Description

Removes objects from the current selection set based on specified unselection switches.

The $unselect_area() function unselects objects that are (1) allowed by the unselect switches, and (2) contained (or in the case of the @exterior switch, not contained) in a specified area. These unselect switches correspond to the unselect internal state variables which define the "unselection filter"; that is, it defines what objects can be unselected from the active window. This function does not change the sheet basepoint location.

You can change the "unselection filter" by changing the values of the internal state variables, by issuing a $setup_unselect_filter() function, or by overriding the values by specifying $unselect_area() switches. Specifying the $unselect_area() switches does not replace the values of the associated internal state variables; they are only valid for the current unselection action.

Arguments

- **unselect_area (Area)**

  This argument pair defines the coordinates indicating diagonally opposite corners of the unselection rectangle, specified in user units.

- ***@comment (Comments)***

  This switch unselects all comment graphics in the defined area.

- ***@exterior***

  This switch unselects only items completely outside the defined area.

- ***@frame (Frames)***

  This switch is valid in the Schematic Editor and unselects all frames in the defined area.

- ***@instance (Instances)***

  This switch is valid in the Schematic Editor and unselects all instances in the defined area.

- ***@net (Nets)***

  This switch is valid in the Schematic Editor and unselects all nets in the defined area.

- ***@pin (Pins)***

  This switch unselects all instance pins and symbol pins on a schematic sheet and all symbol pins on a symbol in the defined area.

- ***@property (Properties)***

  This switch unselects all properties in the defined area.

- ***@segment (Segments)***

  This argument is valid in the Schematic Editor and unselects all net segments in the defined area.

- ***@symbolbody (Symbol Bodies)***

  This argument is valid in the Symbol Editor and unselects all symbol graphics in the defined are.

- ***@symbolpin (Symbol Pins)***

  This argument is valid in the Schematic Editor and unselects all symbol pins in the defined area.

- ***@text (Comment Text)***

  This argument unselects all comment text in the defined area.

- ***@vertex (Vertices)***

  This argument is valid in the Schematic Editor and unselects all vertices in the defined area and highlights contained segments.

Example(s)

The following $unselect_area() example shows the function syntax of the arguments when only instances, pins, and properties are unselected within a specified area of the currently-active schematic window.

```
$unselect_area([[-11.3, -0.8], [-0.9, 9]], , , , @instance, , @pin, @property)
```

The next example displays the command syntax for unselecting everything in the specified area in an active symbol window.

```
unsel ar [[2.5, 0.12], [5.4, 5.7]]  -comment -pin -property -symbolbody -text
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$unselect_all()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

Related Internal State Functions

$set_unselect_comment()
$set_unselect_frame()
$set_unselect_instance()
$set_unselect_net()
$set_unselect_pin()
$set_unselect_property()
$set_unselect_segment()
$set_unselect_symbolbody()
$set_unselect_symbolpin()
$set_unselect_text()
$set_unselect_vertex()

$unselect_by_handle()

Scope: da_report and da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical object or comment object must be selected in the active window.

Usage

$unselect_by_handle(handles)

UNSELect BY Handle handles

Most popup menus > Unselect > By Handle
Edit > Unselect > By Handle

Description

Unselects the object(s) whose handles are specified.

When you invoke the menu item, or type in the command or function without any arguments, a dialog box is displayed, allowing you to enter multiple handle names.

Arguments

- **handles (Handle)**

  A list of text strings specifying unique handles.

Example(s)

The following example displays the function syntax for unselecting instances, I$23 and I$26, on the active schematic sheet.

```
$unselect_by_handle("I$23", "I$26")
```

The next example shows the command syntax for unselecting comments, C$12, C$14, and C$24.

```
unsel by h  "C$12"  "C$14"  "C$24"
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$unselect_all()
$unselect_area()
$unselect_by_property()
$unselect_property_owner()
$unselect_vertices()

$unselect_by_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one object with the specified property name and the optional property value and/or property type must be selected in the active window.

Usage

$unselect_by_property(*union_mode, except_mode,*
property_name_value_type_triplets)

UNSELect BY Property *union_mode except_mode*
property_name_value_type_triplets

Most popup menus > Unselect > By Property > Name-Value-Type
Edit > Unselect > By Property > Name-Value-Type

Description

Unselects all electrical or comment objects having the specified property_name and, if specified, having the corresponding property_value or property_type.

You can specify multiple property name/value/type sets. If only the property name is specified, all objects that own a property with that name are unselected; the property can have any value or type. If only the property value is specified (property_name is a null string), all objects that own a property with that value are unselected. If only the property type is specified, all objects that own a property of that type are unselected.

If the @except switch is specified, objects having all (or, if the @union switch is specified, at least one) of the indicated property names or values are not unselected.

When this function is invoked through a menu, a dialog box is displayed. If the function is invoked through the command line with no arguments, a prompt bar is displayed.

Arguments

- **property_name_value_type_triplets (Name-Value-Type Trios)**

  This is a repeating string composed of three values: property_name, property_value, and property_type.

  - **property_name (Property Name)**: This text string contains the name of the property attached to objects to be unselected. This is the first of three parts of a repeating argument list. If a VOID or null string is used, it indicates that any property name can be matched with a specified property value and/or type.

  - **property_value (Value)**: Property value is a text string containing the property value which corresponds to property_name. If property value is specified, and property type is not specified, property values are compared on a character-by-character basis. If property type is specified, only objects with these properties which share both value and type are unselected.

    Property_value is the second part of a repeating argument list that also includes property_name and property_type. If a VOID or a null string is used, any property value can be matched with a specified property name and/or property type.

  - **property_type (Type)**: Property_type is a text string that specifies the type of legal values for property_name. It can have one of the following values:

    "string": The value of the property name must be a string. Only owners of properties whose property type is a string are unselected if both property name and value match.

    "number": The value of the property name must be a real number or an integer. Only owners of properties whose property type is a number are unselected if both property name and value match.

    "expression": The value of the property name must be an expression (in quotes). Only owners of properties whose property type is an expression are unselected if both property name and value match.

"triplet": The value of property_name must be a three-valued property, containing the best-case, typical, and worst-case values for a property, such as for Rise and Fall or Temperature properties. Each of the three values may be a number, an expression, or a string which will evaluate to a number. These values must be separated by spaces or commas. If the value is an expression, it must be enclosed in matching parentheses. The entire argument must be in quotes.

If only one value is specified, it is used for the best-case, typical, and worst-case values. If two values are specified, the first is used for the best-case value, and the second is used for typical and worst-case values. The only Mentor Graphics applications that recognize triplets are analysis tools (for example, QuickSim II), and timing calculation tools.

Property_type is the third part of a repeating argument list that also includes the property name and value. If this argument is not specified, the property value can be any type.

Enter zero or more values in the following form:

"property_name1", "*property_value1*", "*property_type1*" , ..., "*property_nameN*", "*property_valueN*", "*property_typeN*"

- ***union_mode (Property Union / Property Intersection)***

  This argument can have one of two values:

  @union (-Union): Indicates that if more than one property name/value/type set is specified, objects having at least one of the indicated property sets will be unselected.

  ⇒ **@nounion** (-NOUnion): Only objects having all the indicated property sets will be unselected.

- **@property_text** (-Property_text): Indicates that the properties themselves, rather than the property owners, will be unselected.

- ***except_mode (Unselection Will Include)***

  This argument can have one of two values:

  @except (-Except): Indicates that selected objects should be removed from the selection set, except those having all the specified property name/value/type sets.

  ⇒ **@noexcept** (-NOExcept): All selected objects are removed from the selection set.

  If both @except and @union switches are specified, selected objects are removed from the selection set, except those having at least one of the specified property name/value/type sets.

Example(s)

The following example displays the function syntax for unselecting the properties Rise and Fall that have property values of "5 0 5" and "10 0 10", respectively. They must also be of type triplet.

```
$unselect_by_property(, , "Rise", "5 0 5", "triplet", "Fall", "10 0 10", "triplet")
```

The next example shows the command syntax for unselecting properties "COMP" and "REF" that have any value and are of any type. The commas specify null values for omitted arguments. If all arguments are specified, commas are not necessary.

```
unsel by p , ,  "COMP",  ,  ,  "REF"
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_property_owner()
$unselect_vertices()

$unselect_by_property_type()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$unselect_by_property_type(property_type)

UNSELect BY Property Type property_type

Most popup menus > Unselect > By Property > Type Only
Edit > Unselect > By Property > Type Only

Description

Unselects objects based on the property type(s) specified.

All objects that own a property of the designated type are unselected. When you invoke the function through the menus, a dialog box is displayed. If you invoke the function through the command line, a prompt bar is displayed.

Arguments

- **property_type (Type)**

  Property_type is string containing the type of property values owned by the objects you want to unselect. It can have one or more of the following values: **@string**, **@number**, **@expression**, or **@triplet**.

Example(s)

The following example displays the function syntax for unselecting electrical or comment objects that have expressions for property values.

```
$unselect_by_property_type(@expression)
```

The next example displays the command syntax for unselecting objects that have text strings for property values.

```
unsel by p t string
```

Related Functions

$select_by_property()
$select_by_property_type()
$unselect_by_property()

$unselect_property_owner()

Scope: da_window
Window: Schematic Editor and Symbol Editor
Prerequisite: At least one electrical object or comment object must be selected.

Usage

$unselect_property_owner([point])

UNSELect PRoperty Owner [point]

Most popup menus > Unselect > Property Owner
Edit > Unselect > Property Owner

Description

Unselects the owner of a visible property text string.

The cursor does not have to be placed directly over the text. The function unselects the owner of the portion of text closest to the given location, if the text is property text. If the text is comment text, an error is issued.

Arguments

- **point (At Location)**

  This argument defines the coordinates of a piece of property text whose owner is to be unselected, specified in user units.

Example(s)

The following example displays the function syntax for unselecting the owner of property which is found at the specified location.

```
$unselect_property_owner([1.23, 0.97])
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$setup_page()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_vertices()

$unselect_vertices()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one pin or net vertex must be selected in the active window.

Usage

$unselect_vertices(vertex_type, [area])

UNSELect VErtices vertex_type [area]

Description

Unselects either pin or net vertices within a defined rectangular area on a schematic sheet.

It differs from $unselect_area() function with the @vertex switch set, in that it distinguishes between pin vertices and net vertices.

Arguments

- **vertex_type (Type)**

  This argument specifies which type of vertices to unselect. It can be one of two values: **@pins** or **@nets**. The default is @nets.

- **area (Area)**

  This argument pair defines coordinates indicating diagonally opposite corners of a rectangular region, specified in user units.

Example(s)

The following example displays the function syntax for unselecting net vertices within the specified area, [[1.2, 3.1], [5.7, 7.9]].

```
$unselect_vertices(@nets, [[1.2, 3.1], [5.7, 7.9]])
```

The next example shows the command syntax for unselecting pin vertices within the specified area, [[1.2, 3.1], [5.7, 7.9]].

```
unsel ve pins [[1.2, 3.1], [5.7, 7.9]]
```

Related Functions

$select_all()
$select_area()
$select_branches()
$select_by_handle()
$select_by_property()
$select_instances()
$select_nets()
$select_pins()
$select_property_owner()
$setup_page()
$unselect_all()
$unselect_area()
$unselect_by_handle()
$unselect_by_property()
$unselect_property_owner()

$update()

Scope: schematic
Window: Schematic Editor
Prerequisite: At least one instance must be selected in the active window.

Usage

$update(*property_merge, warn_action, name_value_pairs)*

UPDate *property_merge warn_action name_value_pairs*

(Schematic) Instance > Update > Auto | Clear
(Schematic) Edit > Update > Auto | Clear

Description

Updates selected instances on the schematic edit sheet with the current version of the same symbol.

If you do not specify a property_merge option, instance-only and Value_Modified properties are not changed, and all other properties are reset to the values on the latest symbol (Update -Auto).

Arguments

- ***property_merge (Type)***

  This argument describes how properties on an instance are to be modified with respect to new symbol property values. It can have one of the following values:

  @clear (clear): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values.

  ⇒ **@auto** (auto): Symbol body graphics are updated. All instance-only properties remain unchanged. If a Value_Modified property is not owned by the new symbol, the Value_Modified property value is deleted; otherwise, the Value_Modified property value remains unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If the Attribute_Modified

flag is not set on a property whose value is updated, then the attributes are also updated.

- ***warn_action (Warn)***

  This argument controls the display of warnings or serious discrepancies between the selected instance and the current version. It can have one of two values: ⇒ **@warn** (-WArn) or **@nowarn** (-NOWArn).

- ***name_value_pairs (Property Name, Value)***

  This optional vector of text strings specifies one or more property names and associated values of symbol body properties. Name specifies a property whose value is to be modified on the instance. Value specifies an instance-specific value for the property. The repeating name/value argument pair supports the enumeration of instance-specific values for symbol properties. Both function and command modes require the names and values to be quoted, and brackets around the argument: ["name1", "value1", ..., "*nameN*", "*valueN*"]

  An error message is issued if an attempt is made to change the value of a property that is set to @fixed mode on the symbol.

  If the property does not exist on the symbol, the property is added to the instance with the specified value, and the property type defaults to the type declared for that property.

  Name_value_pairs are for symbol body properties only. If you specify a pin property name that is on the symbol, you will not modify that pin property value. Instead, a symbol body property with that pin property name and value will be added to the symbol instance when it is updated.

Example(s)

The following example displays the function syntax for updating the selected instances. The type of update is set to @auto. This indicates that all instance-only and Value_Modified properties are remain unchanged, and all other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], , , , @instance)
$update(@auto)
```

The next example displays the command syntax where the type of update is set to symbol. This indicates that instance-only remain unchanged, and all other properties are reset to the current symbol values.

```
sel ar  [[1.2, -0.34], [4.5, 2.4]]  -instance
upd  -clear  -warn
```

Related Functions

$add_instance() $mark_property_value() $replace()

$update_all()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$update_all()

UPDate ALl

File > Update All

Description

Synchronizes all sheets and symbols open in a Design Architect session.

It forces an immediate save of all open sheets and symbols, then reloads annotations on any sheets that are open in design context.

The following steps are performed:

1. Perform a check operation on all symbols open in the Design Architect session.
2. Write all symbols open in the session.
3. Perform an Update -Instance on every instance and every sheet open in the session.
4. Perform a Check operation on all sheets open in the session.
5. Write all sheets in the same manner as the $save_sheet() function.
6. Reload annotations on any sheets open in design context, and reopen any sheets that are open in read-only mode, or if source edits are off for design sheets.

The $update_all() function aborts on errors detected during any of the previous steps. If you correct the error conditions, the function can resume. If a sheet that was previously opened in design context no longer exists in the design context, the sheet is automatically removed from the session.

This function is typically invoked if some changes are made to a sheet that need to be propagated to other sheets. For example, if two sheets are open in the design context and a property change is made in one sheet that affects some property expressions in another sheet, $update_all() forces a write of both sheets and then all annotations are reloaded from the back-annotation object and all property expressions are recalculated.

Example(s)

The following example displays the function syntax for saving all opened design sheets on *your_home/da/des_sheets/design_1.vpt*.

```
$open_sheet("your_home/da/des_sheets", "schematic", "sheet1")
$open_symbol("your_home/da/des_sheets", "des_sheets")
$open_design_sheet("your_home/da/des_sheets/design_1",
                   "your_home/da/des_sheets/design_1.vpt", "/", "sheet1")
...
$update_all()
```

Related Functions

$open_design_sheet()
$open_sheet()
$open_symbol()
$save_sheet()

$update_all_sheets()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$update_all_sheets("component", *update_type*, *stop_level*, *preview*, [*filter*])

UPDate ALl Sheets "component" *-update_type stop_level -preview filter*

(Session) File > Update All > Sheets

Description

Opens all sheets in the specified hierarchy one at a time with the switch specified in the update_type argument.

It checks and saves each sheet after opening. The preview switch can be used to select specific sheet to update.

Arguments

- **component (Component Path)**

  A string data type that specifies the pathname to the component.

- ***update_type* (Update Type)**

  An optional name data type that specifies the type of update to preform. Possible choices are:

  @noupdate (-NOUPDATE): Instances are not automatically updated when the sheet is opened.

  ⇒ **@auto** (-AUTO): Symbol body graphics are updated. All instance-only and Value_Modified properties remain unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated.

  @instance (-INSTANCE): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain

unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance.

@symbol (-SYMBOL): Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol values. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated. Any new properties on the current symbol are added to the instance.

@clear (-CLEAR): Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values. Any new properties on the current symbol are added to the instance.

- ***stop_level*** **(Stop Level)**

  An optional integer data type that specifies the level at which to stop updating sheets. If the stop_level argument is set to zero, all levels are updated. The default is 0.

- ***preview*** **(Preview)**

  An optional name data type that determines whether or not a preview dialog box appears. The possible choices are:

  @preview (-Preview): Display the preview dialog box. This allows selection of specific sheets to update, rather than updating all sheets.

  ⇒ **@nopreview** (-NOPreview): Do not display the preview dialog box.

- ***filter*** **(Filter)**

  An optional vector data type of strings. If a sheet pathname contains one of the strings specified, that sheet is not updated. Wildcards are not permitted in the strings and each string is case sensitive.

  In command syntax, the brackets surrounding the vector are omitted.

Returned Value

One of two possible values:

VOID The sheets were updated without error.

FALSE The sheets in the component hierarchy could not be opened.

Example(s)

In the following example, all sheets in the component heirarchy of "/usr/designs/7496" are updated, excluding sheets with "$PHASE1" in the pathname:

```
$update_all_sheets("/usr/designs/7496", @auto, 0, @nopreview,
                                                    ["$PHASE1"])
```

Related Functions

$update()
$update_all()
$update_from_interface()
$update_title_block()

$update_from_interface()

Scope: symbol
Window: Symbol Editor

Usage

$update_from_interface("*interface_name*")

UPDate FRom Interface "*interface_name*"

Description

Updates the specified symbol's pin and property values from the interface.

If the symbol is registered with an interface, it is updated from that interface.

If the symbol is not currently registered, it can be updated from the specified interface. When editing a new symbol, this function is called to provide simple symbol generation. Design Architect creates a rectangular symbol body and generates the pins and properties described in the interface and places them on the symbol body. This can be used to automatically generate symbols using the information placed in the interface by the VHDL compiler.

You can call this function when a symbol already exists, but the interface has changed, requiring a new symbol. However, this function rarely does an adequate job of adding to an existing symbol. For best results, delete everything on the symbol before calling this function; then it will produce a reasonable looking symbol.

Arguments

- ***interface_name (Interface Name)***

  This text string specifies the name of the interface from which to update the current pin and property information in the active symbol window.

Example(s)

The following example displays the function syntax for updating the pin and property information on the symbol *your_home/da/my_symbol* using the "symbol_1" interface.

```
$open_symbol("your_home/da/my_symbol")
$update_from_interface("symbol_1")
```

Related Functions

$open_symbol()
$report_interfaces()
$save_sheet()
$show_registration()

$update_latched_version()

$update_title_block()

Scope: schematic
Window: Schematic Editor

Usage

$update_title_block()

UPDate TItle Block

Edit > Update Title Block

Description

Causes the title block on a sheet to show the name of the user editing the sheet, along with the date and time of the update.

You need to explicitly update the title block. It is not automatically updated when a sheet is saved.

This function does not allow you to change other information in the title block. To change text in the title block, select all of the text you wish to change, then click on the Change Value icon in the Text palette. Design Architect highlights the first text item to change; type the new value and press the Return key. The first value is changed, and the second text item is highlighted. Continue this sequence through all the text that you want to change.

A title block can only be created when a sheet border is added. The initial information is saved at that time. All objects in a title block are included in a group named "title_block".

Example(s)

The following example updates the title block, then saves the current editing sheet.

```
$update_title_block()
$save_sheet()
```

Related Functions

$add_sheet_border()

$unlatch_version()

$view_all()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$view_all()

VIEw ALl

(View) View All
(Context) View All
(Scroll bars) View All

Description

Shrinks or enlarges the image in the current window so the entire design is visible in the window.

The extents of the objects are calculated so that they can be drawn in the smallest window which can contain them.

Example(s)

The following example shows the function syntax for the viewing the entire sheet in the currently-active window.

```
$view_all()
```

Related Functions

$view_area()
$view_centered()
$view_panel()
$view_selected()

$view_area()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$view_area([area])

VIEw AREa ([area])

(View) View Area
(Scroll bars) View Area

Description

Displays the specified rectangle in the current window.

Arguments

- **area (Area)**

  This argument pair defines coordinates indicating diagonally opposite corners of a rectangular area specified in user units.

Example(s)

The following example displays the function syntax for viewing a specific region of the currently-active window.

```
$view_area([[0, 0.5], [1.0, 4.3]])
```

The next example shows the command syntax for the same example.

```
vie ar  [[0, 0.5], [1.0, 4.3]]
```

Related Functions

$view_all()
$view_centered()
$view_panel()
$view_selected()

$view_centered()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$view_centered([location])

VIEw CEntered [location]

(View) View Centered

Description

Centers the view on the point specified without changing the magnification of the view.

Arguments

- **location (Center of View)**

  This argument defines the coordinates indicating the new center of the window, specified in user units.

Example(s)

The following example displays the function syntax for centering the view of the design in the active window around [0, 0]

```
$view_centered([0, 0])
```

The next example shows the command syntax for the previous example.

```
vie ce [0, 0]
```

Related Functions

$view_all()
$view_area()
$view_panel()
$view_selected()

$view_panel()

Scope: bed_window and da_window
Window: Schematic Editor and Symbol Editor

Usage

$view_panel("panel_name")

VIEw PAnel "panel_name"

(View) Panel > View Panel

Description

Centers the named panel, changing the magnification as needed to display the entire panel.

Arguments

- **panel_name (Panel Name)**

  This argument is a text string specifying the name of the panel to be centered in the window.

Example(s)

The following example displays the function syntax for centering the panel "cpu_pic" inside the currently-active window.

```
$view_panel("cpu_pic")
```

The next example shows the command syntax for the previous example.

```
vie pa "cpu_pic"
```

Related Functions

$view_all()
$view_area()
$view_centered()
$view_selected()

$view_selected()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$view_selected()

VIEw SElected

(View) View Selected

Description

Centers the view on selected items.

Example(s)

The following example displays the function syntax for viewing selected objects on the currently-active schematic sheet.

```
$select_area([[1.2, -0.34], [4.5, 2.4]], @comment, , @frame, @instance,
        @net, @pin, @property, @segment, @symbolpin, @text, @vertex)
$view_selected()
```

Related Functions

$get_select_extent()
$view_all()
$view_area()
$view_centered()
$view_panel()

$was_saved()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$was_saved()

Description

Determines if unsaved edits exist in the active sheet.

If unsaved edits do not exist, the function returns **@true**, otherwise the function returns **@false**.

Example(s)

The following example displays the use of the $was_saved() function.

```
$writeln($was_saved())
```

In the transcript, you will see:

```
    $writeln(@true)
// @true
```

Related Functions

$get_check_status() $save_sheet() $save_symbol()

$zoom_in()

Scope: bed_window and da_window
Window: Schematic Editor and Symbol Editor

Usage

$zoom_in(factor)

ZOOm IN factor

(View) Zoom In >
(Context) Zoom In >
(Scroll bars) Zoom Out

Description

Expands the image size in the active window to show more detail in that window.

The image is zoomed in by the factor specified with respect to the center of the image. Factor must be greater than or equal to one. The plus (+) key on the numeric keypad is also defined to zoom in.

Arguments

- **factor (Scale Factor)**

  This argument is a positive real number that specifies the zoom in factor. The zoom in factor must be less than or equal to 1000. The default is 2.

Example(s)

This example shows the function syntax when the zoom-in factor is 2.

```
$zoom_in(2)
```

Related Functions

$view_all()
$view_area()
$view_panel()
$zoom_out()

$zoom_out()

Scope: bed_window and da_window
Window: Schematic Editor and Symbol Editor

Usage

$zoom_out(factor)

ZOOm OUt factor

(View) Zoom Out >
(Context) Zoom Out >
(Scroll bars) Zoom Out

Description

Zooms out from the center of the active window by the factor specified.

This function shrinks the area of the image in the active window to show less detail in that window. Factor must be greater than or equal to one. The minus (-) key on the numeric keypad is also defined to zoom out.

Arguments

- **factor (Scale Factor)**

  This argument is a positive real number that specifies the zoom factor. The zoom in factor must be less than or equal to 1000. The default is 2.0.

Example(s)

The following $zoom_out() function example shows the function syntax when the zoom-out factor is set to 1.1.

```
$zoom_out(1.1)
```

Related Functions

$view_all()
$view_area()
$view_panel()
$zoom_in()

Chapter 3
Internal State Function Dictionary

Introduction

This chapter documents the internal state functions used in Design Architect. An internal state function is a system-defined and maintained function that manipulates information relating to the current editor. Internal state functions do not change the current design, although they may change default settings that can affect the design when edits are made. Those functions which set and retrieve information directly relating to the current design are found in Chapter 2, "Function Dictionary".

The $set and $get internal state functions let you change the value of an internal state variable by passing an argument for the new value and retrieving the current value of an internal state variable, respectively. An internal state variable cannot be manipulated with the AMPLE assignment operator.

Note

Because most $get_ internal state functions do not require arguments, they do not have separate function description pages. Function usage and any additional information for $get_ functions are included with the corresponding $set_ function information in this chapter.

While using Design Architect, you have access to user interface, printer, and AMPLE functions and commands. These additional functions let you modify the user interface to meet your needs. You can use them to create and manipulate windows, set up a default printing environment, automate functionality, or change colors and fonts. For complete descriptions of user interface, printer, and AMPLE functions, refer to the following related manuals:

- *Common User Interface Reference Manual.* This manual describes the functions that let you modify the user interface and create interface components such as dialog boxes, prompt bars, and menus.

- *Common User Interface Manual.*. This manual shows you how to operate the user interface that delivers consistent behavior and appearance across all Mentor Graphics applications.

- *Printer Interface Reference Manual.*. This manual describes the printer and plotter user interface and functions, such as selecting a priority level, scaling or magnifying a design, or specifying a page layout.

- *AMPLE Reference Manual.*. This manual provides a complete description of each AMPLE function.

- *AMPLE User's Manual.*. This programming manual provides information, examples, and procedures for writing AMPLE scripts. Topics include function declaration, data types, scope, input and output, flow of control, transcripts, and startup files.

$set_annotation_visibility()

Scope: schematic
Window: Schematic Editor

Usage

$set_annotation_visibility(annotation_visibility)

$get_annotation_visibility()

Description

Determines whether annotated values are displayed and editable in the context of a design viewpoint.

Arguments

- **annotation_visibility**

  This argument determines whether annotated property values are displayed and editable. It must have one of two values: **@on** or **@off**.

Example(s)

In the following example, annotated properties are displayed and editable in the design viewpoint.

```
$set_annotation_visibility(@on)
```

Related Functions

$hide_annotations()
$show_annotations()
$merge_annotations()

$set_auto_update_mode()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_auto_update_mode(mode)

$get_auto_update_mode()

Description

Specifies whether an automatic update is performed when a sheet is opened, and specifies how to update instances at that time.

Because this function affects only the current Design Architect session, you may want to include it in a startup file.

The value returned by the $get_auto_update_mode() internal state function is used as the default value for the auto_update_mode argument to $open_sheet(), and $open_design_sheet() if you do not specify which mode to use when issuing those functions.

The auto_update_mode controls only automatic updates when a sheet is read. It does not specify a default merge for the $update() and $replace() functions.

Arguments

- **mode**

  This argument controls automatic updating and specifies how properties are updated. The mode can be one of the five following values:

  @noupdate: Instances are not automatically updated when a sheet is opened.

  @clear: Symbol body graphics are updated. All instance-only properties are deleted. All other properties and property attributes are reset to the current symbol values. Any new properties on the current symbol are added to the instance.

@symbol: Symbol body graphics are updated. The state of the Value_Modified flag is ignored. Instance-only properties remain unchanged. All other property values are reset to the current symbol values. If a property value is updated and the Attribute_Modified flag is not set, the attributes are also updated. Any new properties on the current symbol are added to the instance.

@instance: Symbol body graphics are updated. The state of the Value_Modified flag is ignored. All existing properties remain unchanged and the Value_Modified flag is set. Any new properties on the current symbol are added to the instance. Property attributes are not changed.

⇒ **@auto**: Symbol body graphics are updated. All instance-only and Value_Modified properties remain unchanged. All other properties are reset to the current symbol values. Any new properties on the current symbol are added to the instance. If the Attribute_Modified flag is not set on an updated property value, the attributes are also updated.

Example(s)

In the following example, the auto_update_mode current setting is returned, then reset. Subsequent sheets opened in the current Design Architect session will be automatically updated using the @instance option, unless otherwise specified with this function or with the $open_* function.

```
$get_auto_update_mode()
// @auto
$set_auto_update_mode(@instance)
```

Related Functions

$get_auto_update_inst_handles()
$open_sheet()
$replace()
$update()

$set_autoripper()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_autoripper(autoripper)

$get_autoripper()

Setup > Set Autoripper On/Off

Description

This function is now obsolete and has been replaced with the function $set_ripper_mode(). This function determined whether single bit bus rippers would be automatically instantiated after a net was routed to a bus if the current net width was "1" (default net width) and if one of the input vertices fell on a net segment with width greater than "1" (default bus width is "3").

If no symbol ripper pathname was set when autoripper_mode was turned on, the default $MGC_GENLIB ripper was initialized for the autoripper instantiation.

Arguments

- **autoripper**

  This argument specifies whether single bit bus rippers are automatically instantiated during net creation when certain net style conditions are met. It can have one of two values:

  ⇒ **@on**: Upon completion of net creation, bus rippers will be automatically instantiated where a net is routed to a bus with the bus pin located at the input vertex location.

  @off: No bus rippers will be automatically instantiated when net creation is completed.

Example(s)

In the following example bus rippers may be automatically instantiated during net creation.

```
$set_autoripper(@on)
```

Related Functions

$add_net()
$add_wire()
$auto_sequence_text()
$sequence_text()
$setup_net()

Related Internal State Functions

$set_ripper_symbol_pathname()

$set_autoroute()

Scope: schematic
Window: Schematic Editor

Usage

$set_autoroute(autoroute)

$get_autoroute()

Setup > Set Autoroute On/Off

Description

Determines whether nets are automatically orthogonally routed when a net is created or moved.

When the $set_autoroute() function is set to @on, after a net is created or moved, the router is called to route the nets between initial and terminal vertices. Use $get_autoroute() to find the current setting.

Arguments

- **autoroute**

  This argument specifies whether the net router is automatically called after you create or move a net. It can have one of two values: **@on** or ⇒ **@off**.

Example(s)

In the following example the nets are automatically orthogonally routed.

```
$set_autoroute(@on)
```

Related Functions

$add_net() $add_wire()

$set_autoselect()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_autoselect(autoselect)

$get_autoselect()

Setup > Other Options > Autoselect On/Off

Description

Specifies whether newly-created objects are selected after being created.

When the $set_autoselect() function is @on, newly-created objects are added to the selection set.

Arguments

- **autoselect**

  This argument is either: ⇒ **@on** or **@off**.

Example(s)

In the following example, objects will not be automatically selected after being placed on the active sheet.

```
$set_autoselect(@off)
```

Related Functions

$$add_arc()
$add_bus()
$add_circle()
$add_dot()
$add_frame()
$add_instance()
$add_line()
$add_net()
$add_pin()
$add_polygon()
$add_polyline()
$add_property()
$add_rectangle()
$add_text()
$add_wire()
$place_active_symbol()

$set_bus_width()

Scope: schematic
Window: Schematic Editor

Usage

$set_bus_width(width)

$get_bus_width()

Description

Specifies the width for subsequently created buses.

Use $get_bus_width() to find the current setting.

Arguments

- **width**

  This argument specifies the pixel width for subsequently created buses. It can have one of the following values: ⇒ **@p3**, **@p5**, or **@p7**.

Example(s)

In the following example, the width to be used for subsequent buses is set to 5 pixels.

```
$set_bus_width(@5)
```

Related Functions

$add_bus()

$setup_net()

$set_check_annotations()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_annotations(check_setting)

$get_check_annotations()

Description

Determines whether checks are done for annotations to fixed or protected properties, and whether checks for unattached annotations are done. These checks are only done when checking in design context.

Use the $get_check_annotations() function to determine the current setting.

Arguments

- **check_setting**

  This argument specifies what kind of checks are done under the annotations category. It can have one of the following values: ⇒ **@all**, **@errorsonly**, or **@nocheck**.

Example(s)

In the following example, the check setting is set to errors only.

```
$set_check_annotations(@errorsonly)
```

Related Functions

$$check()
$clear_unattached_annotations()
$reconnect_annotations()
$$setup_check_sheet()

$set_check_closedots()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_closedots(check_setting)

$get_check_closedots()

Description

Determines whether or not to check for the occurrence of close-dots in the schematic area.

A close-dot is an icon that appears on a vertex in the schematic edit area when a non-orthogonal net segment passes so close to the vertex that it is visually difficult to determine that they are not connected together.

This is not a required check, and it produces no errors. If the check_setting value is @all, the following warning condition is flagged by the $$check() function:

- Reports all vertices that visually overlap (are close-dots).

Arguments

- **check_setting**

  This argument sets the level of checking to one of three values: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the closedot check is set to @errorsonly.

```
$set_check_closedots(@errorsonly)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_dangle()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_dangle(check_setting)

$get_check_dangle()

Description

Specifies whether dangling nets and pins are identified by the $$check() function.

This is not a required check. If the check_setting value is @all, warning messages are issued for the following conditions:

- Dangling vertex (a vertex of a net, and which has not been marked as a dangle) has been found for the given nets <list of net/vertex handles).
- Dangling net (a set of net vertices with no attached pins, and which has not been marked as a dangle by the user) found <list of net handles>.
- Dangling pin (pin which is not attached to a net and has not been marked as a dangle by the user) found <list of instance/pin handles>.

Dangles can be marked as valid by attaching a Class property with the value of "dangle" to a vertex on the net or an instance pin. If this Class property with the value of dangle is found, then the vertex is not included in the check report. This can be accomplished on the symbol, if desired (for example, if Q and QB are outputs of a flip flop, they can be declared as valid dangling pins). You may need to execute a $set_property_owner() function to declare pins and/or nets as legal owners of the Class property before adding the property.

Arguments

- **check_setting**

  Choose one of the following to specify whether or not the $$check() function should identify dangling nets and pins: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for dangling pins and nets is set to @nocheck.

```
$set_check_dangle(@nocheck)
```

Related Functions

$$check()

$$setup_check_sheet()

$set_check_expression()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_expression(check_setting)

$get_check_expression()

Description

Determines whether or not the $$check() function identifies expressions on the sheet.

When the value is @all, the $$check() function identifies all expressions and their owners that require evaluation and identifies the parameters required by those expressions. This is independent of whether the expressions can be evaluated with the currently specified parameters. This check is not required by Mentor Graphics applications.

If the check_setting value is @all or @errorsonly, the following conditions are flagged as warnings by the $$check() function:

- Name <expr> is an expression which requires parameters <variable list>.
- The value of property <property name> on <object handle> is <expression>. It requires the following parameters. The Set Parameter command can be used to define them. <list of parameters>
- The range specification <range> within the name <name> on <handle> is an expression. It requires the following parameters. The Set Parameter command can be used to define them. <list of parameters>
- The frame expression (property Frexp) on <frame handle> requires the following parameters. The Set Parameter command can be used to define them. <list of parameters>

Arguments

- **check_setting**

  This argument sets the level of checking to one of three values: **@all**, **@errorsonly**, and ⇒ **@nocheck**.

Example(s)

In the following example, the check for expressions is set to @nocheck.

```
$set_check_expression(@nocheck)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

Related Internal State Functions

$set_check_parameter()

$set_check_filemode()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_filemode(check_filemode)

$get_check_filemode()

Description

Specifies how information is to be stored in the file defined by the check_filename internal state variable.

Arguments

- **check_filemode**

  This argument determines how information is to be stored in the file specified by the check_filename internal state variable. The check_filemode argument must be one of three values:

  @add: Write the report to the end of the file specified in the check_filename internal state variable. If the file does not exist, it is created.

  @replace: Write the report to the file specified in the check_filename internal state variable, replacing any existing information stored in that file. If the file does not exist, it is created.

  ⇒ **@nofile**: Do not write the report to any file.

Example(s)

In the following example, the file mode for generated messages during checking of a schematic or symbol is set to @replace.

```
$set_check_filemode(@replace)
```

Related Functions

$$report_check()
$$setup_check_sheet()
$setup_check_schematic()
$setup_check_symbol()

Related Internal State Functions

$set_check_filename()
$set_check_window()
$set_check_transcript()

$set_check_filename()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_filename(check_filename)

$get_check_filename()

Description

Specifies the name of the file in which all messages generated at check time will be stored if the value returned by $get_check_filemode() is @add or @replace.

Arguments

- **check_filename**

  This is a text string that is the pathname in which all messages generated at check time can be stored. The default is *da_check_file*.

Example(s)

In the following example, the file for generated messages during checking of a schematic or symbol is *$DESIGNS/check_messages* and check_filemode is set to either @add or @replace.

```
$set_check_filename("$DESIGNS/check_messages")
```

Related Functions

$setup_check_schematic()
$setup_check_symbol()
$$setup_check_sheet()

Related Internal State Functions

$set_check_filemode()
$set_check_window()
$set_check_transcript()

$set_check_frame()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_frame(check_setting)

$get_check_frame()

Description

Determines the type of checking that will be performed during check time on frames. This check is required by Mentor Graphics applications.

If the check_setting value is @all or @errorsonly, the following conditions are flagged as warnings or errors by the $$check() function:

Warnings:

- The frame expression (value of Frexp property) cannot be evaluated.
- The frame contains no instances.
- A property cannot be evaluated.

Errors:

- The frame border does not completely enclose an instance and its pins.
- The frame border overlaps the border of another frame.
- The frame must have a frame expression (value of Frexp property).
- The frame expression has invalid syntax.
- The value of a property has invalid syntax.

Arguments

- **check_setting**

  This argument can have one of three values that determine what type of checking will be performed on frames. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the frame check for checking schematics is set to @all.

```
$set_check_frame(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_initprops()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_initprops(check_setting)

$get_check_initprops()

Description

Determines whether mismatched Init property values will be reported at check time. This check is not required by Mentor Graphics applications.

If the check_setting value is @all or @errorsonly, the following conditions are flagged as errors by the $$check() function:

- A net has two different global components attached to it; for example, both Vcc and Ground attached to the same net.
- A net has an Init property value that does not match the Init property value on the pin of the attached global instance. This can result from adding a global Vcc to a net (causing the Init property on the net to have a value of 1SF), then adding a global Ground to the same net (causing the Init property value to change to 0SF), then deleting the Ground global. The result would be a net with Init = 0SF, but with a Global Vcc which specified Init = 1SF.
- A net has a forcing Init property value "xxF", but has no global attached to it. This can result from adding a global such as Vcc to a net, then deleting the global.

Arguments

- **check_setting**

  This argument can have one of three values that determine whether Init properties on nets will be checked and reported. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, checking for mismatched Init properties is set to @all.

```
$set_check_initprops(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_instance()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_instance(check_setting)

$get_check_instance()

Description

Determines the type of checking that will be performed during check time on instances.

If the check_setting value is @all or @errorsonly, the following conditions are flagged as errors or warnings by the $$check() function:

Errors:

- The Inst property value (instance name) must have valid syntax.
- The Inst property value (instance name) must be unique within the sheet.
- The instance references a version of a symbol which is not current.
- The instance references a symbol which does not currently exist.
- No symbol model exists for the instance.
- A property value on the instance or one of its pins has invalid expression syntax.

Warnings:

- An Inst property value cannot be evaluated.
- The Pin property value cannot be evaluated.
- A property value on the instance or one of its pins cannot be evaluated.
- <n> Inst property values (I$nnn) were found with inconsistent values; they have been updated with corrected instance handle(s).

You can add editable Inst property values of the form I$nnn to an instance or as part of the symbol, itself. The $$check() function validates that Inst property values of the form I$nnn or i$nnn are consistent with their respective handles. Design Architect automatically updates the Inst property value with the current instance handle when the symbol is instantiated, copied, or checked. For example, if an instance has an Inst property value of I$123 and the current handle of the same instance is I$234, the value of the Inst property is updated to I$234.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on instances. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the instance check for checking schematics is set to @nocheck.

```
$set_check_instance(@nocheck)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_net()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_net(check_setting)

$get_check_net()

Description

Determines the type of checking that will be performed during check time on nets. This is required by Mentor Graphics applications.

If the check_setting value is @all or @errorsonly, the following conditions are flagged as errors or warnings when the $$check() function is invoked:

Errors:

- The value of the Net property has invalid net name syntax.
- The range specified in the net name (the value of the Net property) conflicts with the range of a connected pin.
- Pins connected to an unnamed net have conflicting range specifications.
- The value of a property has invalid expression syntax.

Warnings:

- The net name (value of the Net property) cannot be evaluated.
- A property cannot be evaluated.
- The net has the same name as a global.
- Two globals are shorted.
- Net name <name> connects the following nets: <net> <net>.
- <n> Net property values (N$nnn) were found with inconsistent values; they have been updated with corrected net handle(s)

The $$check() function validates that Net property values of the form N$nnn or n$nnn are consistent with their respective handles. Design Architect automatically updates the Net property value with the current handle of the net when the sheet is checked. For example, if a net has a Net property value of N$235 and the current handle of that net is N$239, the value of the Net property is updated to N$239.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on nets. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the net check for checking nets on schematics is set to @all.

```
$set_check_net(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_notdots()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_notdots(check_setting)

$get_check_notdots()

Description

Specifies whether the $$check() function reports all not-dot locations on a schematic sheet. This check is not required.

If the check_setting value is @all, the following condition is flagged as a warning by the $$check() function:

- Not-dots exist on the schematic sheet <list of vertex handles>.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on not-dots. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

The following example specifies that not-dot locations are not checked.

```
$set_check_notdots(@nocheck)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_overlap()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_overlap(check_setting)

$get_check_overlap()

Description

Specifies whether the $$check() function reports on overlapping instances. This check is not required.

If the check_setting value is @all or @errorsonly, the following condition is flagged as an error by the $$check() function:

- Two instances are positioned such that the bounding box of one instance overlaps the bounding box of another. Note that the two instances may not actually visibly overlap.

If the check_setting value is @all, the following condition is flagged as a warning by the $$check() function:

- Class instances are positioned such that their bounding boxes may overlap those of other class or non-class instances. Each instance type is grouped separately within the warning message. Class instances are those that contain a Class property, for example ripper, portin, offpage, and netcon.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on overlapping instances. These values are: ⇒ **@all**, **@errorsonly**, **@nocheck**.

Example(s)

In the following example, the overlap check for checking instance overlap on schematics is set to @errorsonly.

```
$set_check_overlap(@errorsonly)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_owner()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_owner(check_setting)

$get_check_owner()

Description

Specifies whether the $$check() function reports any inconsistencies between properties and property owner specifications. This check is not required.

If the check_setting value is @all, the following warning conditions are flagged when the $$check() function is invoked:

- A Pin property is attached to an object other than a pin.
- The Inst property is attached to an object other than an instance.
- The Net property is attached to an object other than a net.
- A Global property is attached to an object other than an instance of type "Class G".
- The Rule property is attached to an object other than an instance of type "Class R" or "Class N", or a pin of a ripper instance.
- The Frexp property is attached to an object other than a frame.

Arguments

- **check_setting**

  This argument is one of three values that determine whether or not property ownership checking will be performed. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, inconsistencies between properties and property owner specifications are not checked.

```
$set_check_owner(@nocheck)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_parameter()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_parameter(check_setting)

$get_check_parameter()

Description

Specifies whether the $$check() function reports all variables used in expressions on a schematic sheet. This check is not required.

The expression may or may not have been defined by the $set_parameter() function.

When the value of the $set_check_parameter() function is @all, the $$check() function lists all parameters required to evaluate property values on the sheet. It does not identify all objects and properties that require evaluation. If the value of check_setting is @all, the following condition is flagged as a warning by the $$check() function:

- A parameter is required to evaluate the sheet <list of variable names>.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on uninitialized expression variables. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the parameter check for uninitialized expression variables on schematics is set to @nocheck.

```
$set_check_parameter(@nocheck)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

Related Internal State Functions

$set_check_expression()

$set_check_pins()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_pins(check_setting)

$get_check_pins()

Description

Determines whether or not symbol pins remaining on a sheet are identified by the $$check() function. This check is required.

If the value of check_setting is @all or @errorsonly, the following condition is flagged as an error when the $$check() function is invoked:

- Symbol pins have been left on a schematic sheet < list of pin handles>.

Arguments

- **check_setting**

  This argument sets the level of checking to one of three values: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for pins is set to @all.

```
$set_check_pins(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_schematicinstance()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor
Prerequisite: The $$check() function must have the @schematic switch set.

Usage

$set_check_schematicinstance(check_setting)

$get_check_schematicinstance()

Description

Determines whether instance names are checked on all sheets of the schematic, and instances not having unique names are listed. This check is not required.

If the value of check_setting is @all or @errorsonly, the $$check() function flags a non-unique instance name as an error.

Arguments

- **check_setting**

  This argument is one of three values that determine whether instances with non-unique names are reported. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for unique instance names is set to @all.

```
$set_check_schematicinstance(@all)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()

$set_check_schematicinterface()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_schematicinterface(check_setting)

$get_check_schematicinterface()

Description

Determines the type of checking that will be performed during check time on interfaces. This is not required by Mentor Graphics applications.

It is only meaningful if the @schematic switch is also set in the $$check() function.

If the value of check_setting is @all or @errorsonly, the following conditions are flagged as errors or warnings when the $$check() function is invoked:

Errors:

- A pin on the interface does not match any external net in the schematic.
- A port on the schematic has no matching pin in the interface.
- Schematic is not registered with any interface.

Warnings:

- A pin on the symbol (interface) has no matching port in the schematic.
- Interface has no pins.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on interfaces: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the schematic interface check for checking schematics is set to @errorsonly.

```
$set_check_schematicinterface(@errorsonly)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()

$set_check_schematicnet()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_schematicnet(check_setting)

$get_check_schematicnet()

Description

Determines whether schematic-wide net checks are performed such as checking for on/off-page connectors. This check is not required.

This check is performed only if the @schematic switch is set in the $$check() function.

If the value of check_setting is @all, the following conditions are flagged as warnings by the $$check() function:

- Net and global have same name within the schematic.
- Global nets shorted.

Arguments

- **check_setting**

  This argument is one of three values that determine whether on/off-page connectors and global nets are checked on the schematic. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for nets is set to @errorsonly.

```
$set_check_schematicnet(@errorsonly)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()

$set_check_schematicspecial()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_schematicspecial(check_setting)

$get_check_schematicspecial()

Description

Specifies whether to check for matching on- and off-page connectors between multiple sheets of a schematic. This check is not required.

This check is performed only if the @schematic switch is also set in the $$check() function.

If the value of check_setting is @all, the following conditions are flagged as warnings by the $$check() function:

- There is no on-page connector in the schematic which matches an off-page connector.
- There is no off-page connector in the schematic which matches an on-page connector.
- Two nets with the same name on different sheets of the schematic are not connected through off/on page connectors.

Arguments

- **check_setting**

  This argument is one of three values that determine if mismatched on- and off-page connectors are reported. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for special symbols connecting multiple sheets is set to @all.

```
$set_check_schematicspecial(@all)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()

$set_check_schematicuserrule()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_schematicuserrule(check_setting)

$get_check_schematicuserrule()

Description

Specifies whether the $$check() function should perform user-defined checks on a schematic. This check is not required.

If you require some specific checking of a schematic design, you can create a file containing those design rules, and specify the pathname to that file with the $set_schematicuserrules_file() internal state function. If the value of the check_schematicuserrule internal state variable is @all, your design rules file is executed only if the @schematic switch is set in the $$check() function.

This function differs from the $set_check_userrule() function because it provides checks across sheet boundaries. Use the $set_check_userrule() function to check a single sheet.


Note

Checking of user-defined rules for a schematic is not fully supported in V8.x. This function will be implemented in a later release, when more meaningful access to data across a multi-sheet schematic is allowed.

Arguments

- **check_setting**

  This argument can be one of two values that determine if user-defined checks will be performed on schematics. These values are:

  @all: Both errors and warnings from user-defined checks are reported.

  ⇒ **@nocheck**: User-defined checks are not performed.

Example(s)

In the following example, the check for user-defined checks is set to @nocheck.

```
$set_check_schematicuserrule(@nocheck)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()

Related Internal State Functions

$set_schematicuserrules_file()
$set_symboluserrules_file()
$set_userrules_file()

$set_check_special()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_special(check_setting)

$get_check_special()

Description

Specifies whether the $$check() function reports errors and warnings on special instances, such as bus rippers, net connectors, globals, off-page connectors, and ports. This check is required.

If the value of check_setting is @all, these conditions are flagged as errors or warnings by the $$check() function. If the value is @errorsonly, then only the errors are reported.

Errors:

- The pin of a port connector (instance Class P) must be connected to a named net.
- All nets attached to the pins of a net connector (instance Class C) must have the same width.
- A global (instance Class G) must have a Global property with a valid net name syntax.
- A bus ripper (symbol with Class R) must have a Rule property attached to the instance or the output pin.
- The Rule property of a bus ripper (instance Class R) must have valid subscript syntax.
- The output pin of a bus ripper (instance Class R) must be attached to a named net whose width matches the width specified by the Rule property.

- The input pin of a bus ripper (instance Class R) must be attached to a bus.
- The pin of an off-page connector must be connected to a named net.

Warnings:

- A net connector (instance Class C) connects two nets with the same name.
- Pins of a net connector (instance Class C) are not connected to named nets.
- The value of the Global property of a global (instance Class G) contains a subscript.
- The value of the Global property of a global (instance Class G) cannot be evaluated.
- The value of the Rule property of a bus ripper (instance Class R) cannot be evaluated.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on special instances. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for special Class instances on schematic sheets is set to @all.

```
$set_check_special(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

$set_check_symbolbody()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_symbolbody(check_setting)

$get_check_symbolbody()

Description

Specifies whether the $$check() function reports symbol body errors and warnings. This check is required.

If the value of check_setting is @all or @errorsonly, the following conditions are flagged as errors when the $$check() function is invoked:

- The symbol has no graphical representation.
- The same property appears more than once on the symbol body.
- Property <handle> cannot have a zero length name.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on a symbol body. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for errors on symbol bodies is set to @all.

```
$set_check_symbolbody(@all)
```

Related Functions

$$check()
$$report_check()
$setup_check_symbol()

$set_check_symbolinterface()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_symbolinterface(check_setting)

$get_check_symbolinterface()

Description

Determines whether the symbol's registered interface is checked. This check is not required.

This category of checks indicates when edits to the symbol may potentially overwrite the contents of the symbol's registered interface.

Any differences in pins or properties between the symbol and its currently registered interface are reported as warnings. If the symbol has not been registered yet, it compares the symbol with the currently-marked default interface. If warnings are generated, the symbol still passes check, but when the symbol is saved, you will be prompted to update the interface to reflect the changes to the symbol.

If the value of check_setting is @all, the following warnings are flagged by the $$check() function:

Warnings:

- The following pins on the symbol are not on the interface: <pin_names>
- The following pins on the interface are not on the symbol: <pin_names>
- A property on the symbol is not on the interface.
- A property <name/value> on the interface has changed to <value> on the symbol.
- A property on the interface is not on the symbol.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed with respect to the symbol's registered interface. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for errors on symbol interface is set to @all.

```
$set_check_symbolinterface(@all)
```

Related Functions

$$check()
$$report_check()
$setup_check_symbol()

$set_check_symbolpin()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_symbolpin(check_setting)

$get_check_symbolpin()

Description

Specifies whether the $$check() function reports symbol pin errors and warnings. This check is required.

If the value of check_setting is @all or @errorsonly, the following conditions are flagged as errors by the $$check() function:

Errors:

- A pin on the symbol has Pin property with invalid pin name syntax.
- The symbol has no pins and is not of type Class N.
- The value of a property on the pin has invalid expression syntax.
- Duplicate pin names are found on the symbol.
- The attributes of the Pin property must be fixed.
- All compiled pin names of a symbol are unique.

If the value of check_setting is @all, the following condition is flagged by the$$check() function:

Warning:

- Compiled pin name and pin name for a given pin are different.

Arguments

- **check_setting**

  This argument is one of three values that determine what type of checking will be performed on symbol pins. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for symbol pins on symbols is set to @nocheck.

```
$set_check_symbolpin(@nocheck)
```

Related Functions

$$check()
$$report_check()
$setup_check_symbol()

$set_check_symbolspecial()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_symbolspecial(check_setting)

$get_check_symbolspecial()

Description

The value of this function determines if special instances (those with Class property) are checked for proper construction. This check is required.

If the value of check_setting is @all or @errorsonly, the following conditions are flagged as errors by the $$check() function:

- A port connector (symbol with Class P) must have one and only one pin.
- An off-page connector (symbol with Class O) must have at least one pin.
- A net connector (symbol with Class C) must have at least two pins.
- A global (symbol with Class G) must have at least one pin.
- A bus ripper (symbol with Class R) must have one pin with Pin property value of "BUNDLE".
- A bus ripper (symbol with Class R) must have at least two pins.
- A null instance (symbol with Class N) must not have any pins.

Arguments

- **check_setting**

  This argument is one of three values that determine the level of checking performed on special symbols. These values are: ⇒ **@all**, **@errorsonly**, and **@nocheck**.

Example(s)

In the following example, the check for symbols representing special instances is set to @nocheck.

```
$set_check_symbolspecial(@nocheck)
```

Related Functions

$$check()
$$report_check()
$setup_check_symbol()

Related Internal State Functions

$set_check_schematicspecial()
$set_check_special()

$set_check_symboluserrule()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_symboluserrule(check_setting)

$get_check_symboluserrule()

Description

Specifies whether the $$check() function should perform user-defined checks on a symbol. This check is not required.

If you require specific checking of symbols, you can create a file containing those design rules, and specify the pathname to that file with the $set_symboluserrules_file() function. If the value of the check_symboluserrule internal state variable is @all, your design rules file is executed when the $$check()function is invoked on a symbol.

Arguments

- **check_setting**

  This argument is one of two values that determine if user-defined checks will be performed on symbols. These values are:

  @all: Both errors and warnings from user-defined checks are reported.

  ⇒ **@nocheck**: User-defined checks are not performed.

Example(s)

In this example, the check for user-defined checks on a symbol is set to @all.

```
$set_check_symboluserrule(@all)
```

Related Functions

$$check()
$$report_check()
$setup_check_symbol()

Related Internal State Functions

$set_schematicuserrules_file()
$set_symboluserrules_file()
$set_userrules_file()

$set_check_transcript()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_transcript(transcript_mode)

$get_check_transcript()

Description

Controls whether information is displayed in a transcript window at check time.

Transcript mode operation is controlled by the check_transcript internal state variable. Errors are always displayed in a transcript window unless @notranscript is specified as the transcript mode, or with the $$check() function @notranscript switch.

Arguments

- **transcript_mode**

  This argument controls whether the check results output is displayed in a transcript window during the execution of the $$check() function. It can have one of two values: ⇒ **@transcript** or **@notranscript**.

Example(s)

In the following example, the $set_check_transcript() function is set to @transcript, indicating that the results of the check report generated from the $$check() function will be displayed in the transcript window.

```
$set_check_transcript(@transcript)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()

Related Internal State Functions

$set_check_filemode()
$set_check_filename()
$set_check_window()

$set_check_userrule()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_userrule(check_setting)

$get_check_userrule()

Description

Specifies whether user-defined checks are executed on schematic sheets by the $$check() function. This check is not required.

If you require specific checking of an individual schematic sheet, you can create a file containing those design rules and specify the pathname to that file with the $set_userrules_file() internal state function. If the value of the check_userrule internal state variable is @all, your design rules file is executed when the $$check() function is invoked on a schematic sheet.

Arguments

- **check_sheetuserrule**

  This argument is one of two values that determine if user-defined checks will be performed on schematic sheets. These values are: **@all** or ⇒ **@nocheck**.

Example(s)

In the following example, the $set_check_userrule() function is set to @all, meaning the design rules for individual schematic sheets in a file previously specified with the userrules_file internal state variable will be executed by the $$check() function.

```
$set_check_userrule(@all)
```

Related Functions

$$check()
$$report_check()
$$setup_check_sheet()

Related Internal State Functions

$set_schematicuserrules_file()
$set_symboluserrules_file()
$set_userrules_file()

$set_check_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_check_window(window_mode)

$get_check_window()

Description

Controls whether information is displayed in a window at check time.

Check results can be displayed in a window and/or written to a file. File mode operation is controlled by the check_filemode and check_filename internal state variables. Errors are always displayed in a popup window unless @nowindow is specified as the default setting with the $set_check_window() function, or if @nowindow is specified with the $$check() function.

Arguments

- **window_mode**

  This argument controls whether the check results output is displayed in a separate window during the execution of the $$check() function. It can have one of two values:

  ⇒ **@Window**:A separate window is opened and the results of the $$check() function is displayed in this window.

  @noWindow:No window is opened to display the $$check() output. If $set_check_filemode() is set to @nofile, then $$check() output is sent to the transcript.

Example(s)

In the following example, the $set_check_window() function is set to @nowindow, indicating that the check results are not displayed in a popup window when the $$check() function is executing.

```
$set_check_window(@nowindow)
```

Related Functions

$$check()
$$report_check()
$setup_check_schematic()
$$setup_check_sheet()
$setup_check_symbol()

Related Internal State Functions

$set_check_filemode()
$set_check_filename()
$set_check_transcript()

$set_close_dot()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_close_dot(close_dot)

$get_close_dot()

Description

Specifies whether closedots are visible or hidden on a schematic sheet.

A closedot is an icon that appears on a vertex in the edit area when a non-orthogonal net segment passes so close to the vertex that it is visually difficult to determine that they are not connected together. Whether or not a closedot is displayed on a particular vertex also depends upon the zoom function of the sheet.

Arguments

- **close_dot**

  This argument determines if closedots appear on a schematic sheet. It can have one of two values: ⇒ **@on** or **@off**.

Example(s)

The following example turns on the visibility of closedots.

$set_close_dot(@on)

To find the current visibility setting for closedots, enter the following:

$get_close_dot()

Related Functions

$setup_net()

$set_check_closedots()

$set_dot_size()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_dot_size(dot_size)

$get_dot_size()

Description

Specifies the size of the junction, comment, and instantiated dots on a schematic sheet, and the size of graphic dots in a symbol.

Instantiated dots on a sheet are originally created on the instantiated symbol. When the graphic dot is created on a symbol, it inherits the characteristics of symbol dots. When the dot is instantiated on a schematic sheet, the dot inherits the characteristics of sheet dots.

Arguments

- **dot_size**

  This is a real number specifying the size of dots on a schematic sheet, or the size of dots in a symbol. The dot_size is the width of a square or the diameter of a circle.

Example(s)

In the following example, the size of the dot for comment graphics on a schematic sheet or symbol graphics on a symbol is set to 0.025.

```
$set_dot_size(0.025)
```

To find the current dot size, enter the following:

```
$get_dot_size()
```

Related Functions

$setup_net()

$setup_symbol_body()

$set_dot_style()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_dot_style(dot_style)

$get_dot_style()

Description

Specifies the style of the junction, comment, and instantiated dots on a schematic sheet, and the style of graphic dots in a symbol.

Instantiated dots on a sheet are originally created on the instantiated symbol. When the graphic dot is created on a symbol, it inherits the characteristics of symbol dots. When the dot is instantiated on a schematic sheet, the dot inherits the characteristics of sheet dots.

Arguments

- **dot_style**

  This argument is one of two values indicating the style of a dot. The value may be: **@square** or ⇒ **@circle**.

Example(s)

In the following example, the style of the dot for comment graphics on a schematic sheet, or symbol graphics on a symbol, is set to @circle.

```
$set_dot_style(@circle)
```

To find the current dot style, enter the following:

```
$get_dot_style()
```

Related Functions

$setup_net()

$setup_symbol_body()

$set_dynamic_rounding_precision()

Scope: bed_window
Window: Schematic Editor and Symbol Editor

Usage

$set_dynamic_rounding_precision(precision)

$get_dynamic_rounding_precision()

Description

Determines the number of significant digits that are displayed for all location coordinates entered with a dynamic.

This function only affects coordinates entered through a dynamic. Coordinates entered by any other method, such as by explicit typing, are not affected by this function.

Arguments

- **precision**

  This argument is an integer specifying the number of significant digits to be displayed for all location coordinates entered with a dynamic (point or rectangle, typically associated with a prompt bar field). The default is 4.

Example(s)

In the following example, the number of significant digits is set to 5.

```
$set_dynamic_rounding_precision(5)
```

$set_environment_dofile_pathname()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_environment_dofile_pathname(object_type, pathname)

$get_environment_dofile_pathname(object_type)

Description

Sets the pathname to an AMPLE dofile to be executed each time an object of the specified type is opened.

This function can be called from a user startup file or customized userware file. The specified pathname appears as the default for the "environment" field in a dialog box associated with a $open_* function. Changing the contents of the "environment" field does not change the default value, but does change the dofile executed for that particular $open_* call.

The dofile pathnames are not stored with the object and must be reset with each session invocation.

Arguments

- **object_type**

  A name data type that specifies the type of object associated with the startup dofile: **@sheet**, **@design_sheet**, **@symbol**, **@pla**, **@m**, **@kiss**, **@vhdl**, or **@equ**.

- **pathname**

  A pathname data type that specifies the location of the dofile to execute.

Returned Value

One of two possible values:

VOID	The specified object_type argument is invalid.
"pathname"	The dofile pathname currently associated with the specified object type. A sample returned pathname is as follows: **"/usr2/asic/phase3/dofiles/sch_dofile"**

Example(s)

In the following example, */usr/designs/dofiles/sch_dofile* is specified to execute when a schematic sheet is opened:

```
$set_environment_dofile_pathname(@sheet,
                                 "/usr/designs/dofiles/sch_dofile")
```

Related Functions

$open_design_sheet()
$open_down()
$open_sheet()
$open_source_code()
$open_symbol()
$open_up()
$open_vhdl()

$set_implicit_ripper()

Scope: da_session

Usage

$set_implicit_ripper(angle)

$get_implicit_ripper()

Description

Determines whether an implicitly ripped net is attached to a bundle at a 45- or 90-degree angle.

Arguments

- **angle**

  This argument may be one of the following values: ⇒ **@angle**, **@straight**.

Example(s)

The following example causes all implicitly ripped nets to be attached at a 90-degree angle to a bundle or bus.

```
$set_implicit_ripper(@straight)
```

Related Internal State Functions

$set_ripper_mode()
$set_ripper_query()
$setup_ripper()

$set_line_style()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_line_style(line_style)

$get_line_style()

Description

Specifies the default style for new lines, arcs, circles, rectangles, and polygons in comment graphics for schematic sheets, or graphic objects for symbols.

Arguments

- **line_style**

  This argument may be one of the four following values: ⇒ **@solid**, **@dot**, **@longdash**, or **@shortdash**.

Example(s)

In the following example, the line style for comment graphics on a schematic sheet, or symbol graphics on a symbol, is set to @solid.

```
$set_line_style(@solid)
```

Related Functions

$setup_comment()

$setup_symbol_body()

Related Internal State Functions

$set_line_width()

$set_polygon_fill()

$set_line_width()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_line_width(line_width)

$get_line_width()

Description

Specifies the default width for new lines, arcs, circles, rectangles, and polygons in comment graphics for schematic sheets, or symbol graphics.

Arguments

- **line_width**

  This argument may be one of the four following values: ⇒ **@p1**, **@p3**, **@p5**, or **@p7**.

Example(s)

In the following example, the line width for comment graphics on a schematic sheet, or symbol graphics on a symbol, is set to @p3.

```
$set_line_width(@p3)
```

Related Functions

$setup_comment()

$setup_symbol_body()

Related Internal State Functions

$set_line_style()

$set_polygon_fill()

$set_net_style()

Scope: schematic
Window: Schematic Editor

Usage

$set_net_style(net_style)

$get_net_style()

Description

Specifies the default net style for newly-created nets.

Arguments

- **net_style**

  This argument is one of four values indicating the net style. These values are: ⇒ **@solid**, **@dot**, **@longdash**, or **@shortdash**.

Example(s)

In the following example, the net style for nets on a schematic sheet is set to @longdash.

```
$set_net_style(@longdash)
```

The next example returns the current net style.

```
$get_net_style()
```

Related Functions

$setup_net()

Related Internal State Functions

$set_net_width()

$set_net_width()

Scope: schematic
Window: Schematic Editor

Usage

$set_net_width(net_width)

$get_net_width()

Description

Specifies the default width for subsequently-created nets. This function does not affect existing nets.

Arguments

- **net_width**

  This argument is one of the four following values indicating the width of the net, in pixels: ⇒ **@p1**, **@p3**, **@p5**, or **@p7**.

Example(s)

In the following example, the net width for schematic sheet is set to @p7.

```
$set_net_width(@p7)
```

The next example returns the current net width.

```
$get_net_width()
```

Related Functions

$setup_net()

Related Internal State Functions

$set_net_style()

$set_new_annotation_visibility()

Scope: schematic
Window: Schematic Editor

Usage

$set_new_annotation_visibility(*visible*, "property_name")

$get_new_annotation_visibility("property_name")

Description

Specifies whether a property of the given name is visible or hidden when it is back-annotated to the design, and does not already exist on the source object in the design.

This function cannot be called before a sheet is opened, nor can it be called after the sheet is opened because the annotations have already been applied as part of the opening process. You need to place calls to this function in a dofile which is read whenever a design sheet is opened, or the $open_up() and $open_down functions are called.

The dofile, *$HOME/mgc/setup_new_ba_properties.dofile*, is executed after the sheet has been read, but before the annotations are read and applied.

Design Architect will not issue an error or warning if this file does not exist. If the file exists, but the AMPLE syntax is incorrect, you will get an error message.

The $get_new_annotation_visibility() internal state function returns @true or @false for the visibility of the specified property name.

Arguments

- **Property_name**

  This argument specifies the name of a new property to be back-annotated to the design. When setting the visibility, you can specify more than one property name.

  When retrieving the visibility setting with $get_new_annotation_visibility(), you may specify only one property name.

- ***visible***

  This argument specifies whether the named properties will be visible or hidden. For $set_new_annotation_visibility(), choose either ⇒ **@hidden** or **@visible**.

  The $get_new_annotation_visibility() function returns **@true** or **@false** for the visibility of the specified property name.

Example(s)

The following example shows one line in the dofile *$HOME/mgc/setup_new_ba_properties.dofile*. It specifies that the new annotation properties "ba_prop_1" and "ba_prop_2"will be visible on the design sheet.

$set_new_annotation_visibility(@visible, "ba_prop_1", "ba_prop_2")

The next example is a complete dofile which resides at *$HOME/mgc/setup_new_ba_properties.dofile*.

```
{
   local original_mode = $set_transcript_mode(@off);
   $set_new_annotation_visibility(@hi dden, 'baprop1',
      'baprop2');
   $set_new_annotation_visibility(@hidden, 'baprop3',
      'baprop4');
   $set_transcript_mode(original_mode)
}
```

Related Functions

$hide_annotations()
$show_annotations()
$merge_annotations()

Related Internal State Functions

$set_annotation_visibility()

$set_orthogonal()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_orthogonal(orthogonal)

$get_orthogonal()

Description

Specifies if the object being edited should be restricted to horizontal/vertical movement during edit operations. This setting also affects the placement of some comment objects, including lines, polylines, and polygons.

Arguments

- **orthogonal**

  This argument indicates whether nets or comment objects are snapped to the horizontal or vertical at input of multiple points. The values may be: ⇒ **@on** or **@off**.

Example(s)

In the following example, the objects are snapped to the horizontal or vertical at input of each object sheet on schematic or symbol sheets.

```
$set_orthogonal(@on)
```

Related Functions

$setup_net() $setup_symbol_body()

$set_orthogonal_angle()

Scope: schematic
Window: Schematic Editor

Usage

$set_orthogonal_angle(orthogonal_angle)

$get_orthogonal_angle()

Description

Specifies the value that determines the maximum angle at which to orthogonally snap nets and certain comment objects, such as lines and polylines, during creation.

Arguments

- **orthogonal_angle**

  This argument is a real number specifying the maximum angle in degrees for orthogonal snapping of nets. The default is 44.9 degrees.

Example(s)

In the following example, the maximum angle at which nets snap orthogonally is 45 degrees.

```
$set_orthogonal_angle(45)
```

Related Functions

$setup_net()

$setup_symbol_body()

$set_pin_spacing()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_pin_spacing(pin_spacing)

$get_pin_spacing()

Description

Specifies pin spacing in user units. To find the current pin spacing, execute $get_pin_spacing().

Pin spacing in the symbol editor is always measured in pin-grid points, regardless of the user unit selected.

Arguments

- **pin_spacing**

  This argument is a real number indicating the length of space between pins.

Example(s)

In the following example, the current pin spacing is retrieved, then the pin spacing is set to .25 in user units on the active sheet.

```
$get_pin_spacing() //  0.20 $set_pin_spacing(.25)
```

Related Functions

$measure_distance()

$setup_page()

Related Internal State Functions

$set_user_units()

$set_polygon_fill()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_polygon_fill(polygon_fill)

$get_polygon_fill()

Description

Specifies whether new polygons and circles will be clear, solid, or stippled for comment graphics in schematic sheets and symbol graphics.

Arguments

- **polygon_fill**

  This argument is one of the three following values indicating the fill type: **@clear**, **@solid**, or **@stipple**.

Example(s)

The following example sets the polygon fill for circles, polygons, and rectangles:

```
$set_polygon_fill(@clear)
```

Related Functions

$setup_comment()

$setup_symbol_body()

Related Internal State Functions

$set_line_style()

$set_line_width()

$set_property_font()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_font(property_font)

$get_property_font()

Description

Specifies the name of a registered font family in which the font is defined for newly-created property text.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_font**

  This text string specifies the registered font family in which the font is defined. Fonts and font registry files are located in *$MGC_HOME/registry/fonts*.

Example(s)

In the following example, the font family to be used for newly-created property text is "helvetica".

```
$set_property_font("helvetica")
```

Related Functions

$setup_property_text() $change_property_font()

$set_property_height()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_height(property_height)

$get_property_height()

Description

Specifies the default height for newly-created property text.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_height**

  This argument is a real number indicating the current property text height.

Example(s)

In the following example, the height of newly-created property text is .1875 in user units.

```
$set_property_height(.1875)
```

Related Functions

$setup_property_text()

$change_property_height()

$set_property_hjustification()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_hjustification(property_hjustification)

$get_property_hjustification()

Description

Specifies the default horizontal justification for newly-created property text.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_hjustification**

  This argument may be one of the three following values indicating the horizontal justification for new property text: **@left**, **@center**, or **@right**.

Example(s)

In the following example, the horizontal justification of newly-created property text is @center.

```
$set_property_hjustification(@center)
```

Related Functions

$setup_property_text()

$change_property_justification()

$set_property_orientation()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_orientation(property_orientation)

$get_property_orientation()

Description

Specifies the default text orientation for newly-created property text.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_orientation**

  This argument is an integer indicating, in degrees, the orientation of the property text. Property orientation must be **0** or **90**.

Example(s)

In the following example, the orientation of newly-created property text is 90 degrees.

```
$set_property_orientation(90)
```

Related Functions

$setup_property_text()

$change_property_orientation()

$set_property_stability_switch()

Scope: symbol
Window: Symbol Editor

Usage

$set_property_stability_switch(property_stability_switch)

$get_property_stability_switch()

Description

Specifies the symbol default setting for how newly-created symbol properties can be modified on an instance.

Arguments

- **property_stability_switch**

  This argument determines the type of operations that can be performed on the specified property name on an instance of a symbol. It can have one of four values:

  @fixed: Property values cannot be altered or deleted on any instance on a schematic sheet.

  @protected: Property values and their graphic attributes can be altered on an instance at instantiation time on a schematic sheet. However, once instantiated, the instance-specific property value cannot be changed.

  ⇒ **@variable**: Property values and their graphic attributes can be altered on an instance at instantiation time and through the $change_property and $change_text functions.

  @nonremovable: Property values and their graphic attributes can be altered on an instance at instantiation time and changed through the $change_property and $change_text functions, but the property cannot be deleted from the instance.

Example(s)

In the following example, the symbol default setting for how newly-created symbols properties can be modified on an instance is set to @fixed. This indicates that property values cannot be altered or deleted on an instance.

```
$set_property_stability_switch(@fixed)
```

Related Functions

$setup_property_text()

$change_property_stability_switch()

Related Internal State Functions

$set_property_visibility_switch()

$set_property_transparency()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_transparency(property_transparency)

$get_property_transparency()

Description

Specifies whether objects beneath newly-created property text are transparent.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_transparency**

  This argument is one of two values indicating whether objects underneath property text are visible. These values are:

  ⇒ **@on**: Objects beneath the property text are visible.

  @off: Objects beneath the property text are not visible.

Example(s)

In the following example, objects beneath newly-created property text are visible.

```
$set_property_transparency(@on)
```

Related Functions

$setup_property_text()

$set_property_visibility()

Scope: schematic
Window: Schematic Editor

Usage

$set_property_visibility(property_visibility)

$get_property_visibility()

Description

Specifies whether newly-created instance-specific properties are visible.

Arguments

- **property_visibility**

  This argument is one of two values indicating whether newly-created instance-specific property text is visible. These values are:

  ⇒ **@on**: Set the visibility on.

  @off: Set the visibility off.

Example(s)

In the following example, newly created property text is not visible.

```
$set_property_visibility(@off)
```

Related Functions

$setup_property_text()

$change_property_visibility()

$set_property_visibility_switch()

Scope: symbol
Window: Symbol Editor

Usage

$set_property_visibility_switch(property_visibility_switch)

$get_property_visibility_switch()

Description

Specifies whether newly-created properties on an instance of a symbol are visible.

Arguments

- **property_visibility_switch**

  This argument is one of three values specifying whether properties are visible on an instance of a symbol. These values are:

  ⇒ **@hidden**: Property text becomes invisible. Once a property has been set to hidden, it can only be selected by its handle.

  @visible: Property text is visible.

Example(s)

In the following example, newly-created property text is visible.

```
$set_property_visibility_switch(@visible)
```

Related Functions

$setup_property_text()

$change_property_visibility_switch()

Related Internal State Functions

$set_property_stability_switch()

$set_property_vjustification()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_property_vjustification(property_vjustification)

$get_property_vjustification()

Description

Specifies the default vertical text justification for newly-created property text.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **property_vjustification**

  This argument may be one of the following three values specifying the default vertical text justification: **@top**, **@center**, or ⇒ **@bottom**.

Example(s)

In the following example, the vertical justification for newly-created text is @center.

```
$set_property_vjustification(@center)
```

Related Functions

$setup_property_text()

$change_property_justification()

$set_report_filemode()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_report_filemode(report_filemode)

$get_report_filemode()

Description

Specifies how information is to be stored in the file defined by the report_filename internal state variable.

Arguments

- **report_filemode**

  This argument is one of three values specifying how information is to be stored in the file defined by the value of the report_filename internal state variable. These values are:

  @add: Write the report to the end of the file specified by the value of the report_filename internal state variable.

  @replace: Write the report to the file specified by the value the report_filename internal state variable, replacing any existing information stored in that file.

⇒ **@nofile**: Do not write the report in any file.

Example(s)

In the following example, the information generated by a report (stored in the file specified by the report_filename internal state variable) is added to its existing contents.

```
$set_report_filemode(@add)
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter()
$setup_report()

Related Internal State Functions

$set_report_filename()
$set_report_transcript()
$set_report_window()

$set_report_filename()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_report_filename(report_filename)

$get_report_filename()

Description

Specifies the name of the file in which reports generated from the $$report_check(), $report_default_property_settings(), $report_interfaces(), $report_object(), $report_panels(), and $report_parameter() functions are stored, if the value of the report_filemode internal state function is either @add or @replace.

Arguments

- **report_filename**

  This text string specifies the name of the file in which to store reports.

Example(s)

In the following example, the file in which information generated by the $report functions is *your_path/designs/report_1*.

```
$set_report_filename("your_path/designs/report_1")
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_object()
$report_panels()
$report_parameter()
$setup_report()

Related Internal State Functions

$set_report_filemode()
$set_report_transcript()
$set_report_window()

$set_report_transcript()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_report_transcript(transcript_mode)

$get_report_transcript()

Description

Controls whether information is displayed in a transcript window when a $report_* function is executed.

Arguments

- **transcript_mode**

  This argument controls whether the output is displayed in a transcript window during the execution of a $report function. It can have one of two values:

  ⇒ **@transcript**: The output of a $report function is displayed in the transcript window.

  @notranscript: The output of a $report function is not displayed in the transcript window.

Example(s)

In the following example, the $set_report_transcript() function is set to @transcript, indicating that the output generated from a $report function will be displayed in the transcript window.

```
$set_report_transcript(@transcript)
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter()
$setup_report()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_window()

$set_report_window()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_report_window(window_mode)

$get_report_window()

Description

Controls whether information is displayed in a window during a $report_* function.

Arguments

- **window_mode**

  This argument controls whether output is displayed in a separate window during the execution of a $report function. It can have one of two values: ⇒ **@window** or **@nowindow**.

Example(s)

In the following example, the $set_report_window() function is set to @nowindow, indicating that the check report is not displayed in a popup window when the $report function is executing.

```
$set_report_window(@nowindow)
```

Related Functions

$$report_check()
$report_default_property_settings()
$report_interfaces()
$report_interfaces_selected()
$report_object()
$report_panels()
$report_parameter()
$setup_report()

Related Internal State Functions

$set_report_filemode()
$set_report_filename()
$set_report_transcript()

$set_ripper_dot()

Scope: schematic
Window: Schematic Editor

Usage

$set_ripper_dot(ripper_dot)

$get_ripper_dot()

Description

Specifies whether junction dots appear where bus rippers join bus lines on a schematic sheet.

Arguments

- **ripper_dot**

  This argument is one of two values specifying whether junction dots appear where bus rippers join bus lines. These values are: ⇒ **@on** or **@off**.

Example(s)

In the following example, junction dots will appear on bus rippers.

```
$set_ripper_dot(@on)
```

Related Functions

$setup_net()

$set_ripper_mode()

Scope: da_session

Usage

$set_ripper_mode(mode)

$get_ripper_mode()

Description

Determines whether the session uses implicit rippers, automatic ripper insertion, or neither, when wires are connected to buses and bundles.

The $get_ripper_mode() function returns the current ripper mode.


Note

This function replaces the $set_autoripper() function in previous releases.

Arguments

- **mode**

  Specifies how rippers are created when wires are attached to buses and bundles. Valid values include: ⇒ **@auto**, **@implicit**, or **@none**.

Example(s)

The following example sets the mode to @auto.

```
$set_ripper_mode(@auto)
```

Related Internal State Functions

$set_implicit_ripper()
$set_ripper_query()
$setup_ripper()

$set_ripper_query()

Scope: da_session

Usage

$set_ripper_query(query_state)

$get_ripper_query()

Description

Determines whether you are asked to supply a net name or bit number when using the $add_wire() function to route a single-bit net to a bundle or bus.

The $get_ripper_query() function returns the current ripper query state.

Arguments

- **query_state**

  Specifies whether or not the user wants to be quered.
  Valid values include: ⇒ **@on** or **@off**.

Example(s)

The following example sets the state to ask for the net name or bit number information.

```
$set_ripper_query(@on)
```

Related Internal State Functions

$set_ripper_mode()
$set_implicit_ripper()
$setup_ripper()

$set_ripper_symbol_pathname()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_ripper_symbol_pathname("component_name", "symbol_name")

$get_ripper_symbol_pathname()

Description

Specifies the default single bit bus ripper to automatically insert in newly created nets.

If the ripper symbol is not registered with a part interface, the ripper symbol cannot be instantiated.

The $get_ripper_symbol_pathname() internal state function returns a vector containing database location information about the default ripper symbol. This information includes the complete pathname, the version number, the component pathname, the component name, and the name of the net creation automatic bus ripper symbol.

Arguments

- **component_name**

  This argument specifies the pathname to the ripper component.

- **symbol_name**

  This text string specifies which ripper symbol to use. Only 1 by 1 rippers are allowed. Legal $MGC_GENLIB bus rippers are 1x1, 1x2, 1x3, 1x4, 1r1, and 1r2. If no symbol name is specified, the default symbol of the default interface is used.

Example(s)

In the following example, the default net ripper symbol is changed to "1r1".

```
$set_ripper_symbol_pathname("$MGC_GENLIB/rip", "1r1")
```

The next example displays the use of the $get_ripper_symbol_pathname() internal state function.

```
$writeln($get_ripper_symbol_pathname())
```

The transcript will be similar to the following:

```
    $writeln(["$MGC_GENLIB/rip/1X1", 1, "$MGC_GENLIB/rip/", "rip", "1X1"]);
//  ["$MGC_GENLIB/rip/1X1", 1, "$MGC_GENLIB/rip/", "rip", "1X1"]
```

Related Functions

$add_net()
$auto_sequence_text()
$sequence_text()
$setup_net()

Related Internal State Functions

$set_autoripper()

$set_schem_check_mode()

Scope: schematic
Window: Schematic Editor

Usage

$set_schem_check_mode(mode)

$get_schem_check_mode()

Description

Specifies whether a schematic check should save sheets that previously did not pass check, but now check successfully.

When sheets are saved, they are marked as either successfully checked, or not checked.

If you specify @autoschemsave, you avoid having to open, check, and save each previously unchecked sheet. The schematic check requires more time when automatically saving sheets than when it only checks sheets.

The $get_schem_check_mode() internal state function returns the current mode.

Arguments

- **mode**

  This switch can have one of two values:

  @schematic: Specifies that all sheets of a schematic are checked, but are not automatically saved.

  @autoschemsave: Specifies that $check() will save sheets which previously had not passed check, but now check successfully.

Example(s)

In the following example, the current schematic check mode is retrieved, then set to @autoschemsave.

```
$get_schem_check_mode()
// @schematic
$set_schem_check_mode(@autoschemsave)
```

Related Functions

$$check() $setup_check_schematic()

$set_schematicuserrules_file()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_schematicuserrules_file("schematicuserrules_file")

$get_schematicuserrules_file()

Description

Specifies the pathname to a file containing user-defined checks for a schematic design.

If you require specific checking of a schematic design, you can create a file containing those design rules and specify the pathname to that file with the $set_schematicuserrules_file() internal state function. If the value of the check_schematicuserrule function is @all, the file you specified is executed when the $$check() function is invoked with the @schematic argument.

You may add your own error and warning messages to the check report by calling the $set_userrule_warning() and $set_userrule_error() functions throughout the schematic userrule file.

This design rules file can be overridden using the schematicuserrules_file option of the $$check() function.

Arguments

- **schematicuserrules_file**

  This argument is a text string specifying the pathname to a file that contains design rules for a schematic design.

Example(s)

In the following example, the schematic userrules file are found in *sch_userrules/design_1*.

$set_schematicuserrules_file("sch_userrules/design_1")

Related Functions

$$check()
$set_userrule_error()
$set_userrule_warning()
$setup_check_schematic()

Related Internal State Functions

$set_check_schematicuserrule()
$set_symboluserrules_file()
$set_userrules_file()

$set_select_aperture()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_aperture(select_aperture_radius)

$get_select_aperture()

Setup > Other Options > Select Aperture

Description

Sets the pick aperture within which Design Architect will determine the closest object for single point selection.

The value of the select_aperture internal state variable specifies a scaling factor which is independent of the current user units setting.

The pick aperture value specified does not change after subsequent changes to user units; however, the effective pick aperture does change. For example, if the select_aperture_radius is 1.0 and user units are inches, the effective pick aperture is one inch. If user units are changed to millimeters, the effective pick aperture is one millimeter.

During point selection, the closest object within the specified select_aperture_radius is selected and added to the current select list (or removed from the select list if the object was previously selected).

During point selection, vertex and segment objects have a one-third pin space bias (priority) over other types of objects. Thus, if the cursor is within a one-third pin space radius of a vertex, the vertex is selected over the nearest segment or instance. This allows vertices to be easily selected over segments or instances, by placing the cursor near the vertex for selection.

Arguments

- **select_aperture_radius**

  This argument is a real number specifying the pick aperture multiplier. The effective pick aperture is computed by multiplying the select_aperture_radius by user units, making the default effective pick aperture 0.25 user units.

Example(s)

In the following example, the pick aperture that determines the closest object for single point selection is set to .15 user units.

```
$set_select_aperture(.15)
```

Related Functions

$select_all()

$select_area()

Related Internal State Functions

$set_user_units()

$set_select_comment()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_comment(select_comment)

$get_select_comment()

Description

Specifies whether comment graphics will be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_comment**

  This argument is one of two values indicating whether comment graphics will be selected. These values are: ⇒ **@comment** or **@nocomment**.

Example(s)

In the following example, comments will be selectable when $select_all() or $select_area() is executed without arguments.

```
$set_select_comment(@comment)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_exterior()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_exterior(select_exterior)

$get_select_exterior()

Description

Specifies whether objects outside a specified area will be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_exterior**

  This argument is one of two values indicating whether objects outside a specified area will be selected. The value can be: **@exterior** or ⇒ **@noexterior**.

Example(s)

In the following example, objects outside the specified area when the $select_all() or $select_area() is executed will be selectable.

```
$set_select_exterior(@exterior)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_frame()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_frame(select_frame)

$get_select_frame()

Description

Specifies whether frames can be selected when the $select_all() or $select area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_frame**

  This argument is one of two values indicating whether frames will be selected through the select filter. The value can be: **@frame** or ⇒ **@noframe**.

Example(s)

In the following example, frames will not be selectable when $select_all() or $select_area() is executed without arguments.

```
$set_select_frame(@noframe)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_instance()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_instance(select_instance)

$get_select_instance()

Description

Specifies whether instances can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_instance**

  This argument is one of two values indicating whether instances will be selected through the select filter. The value can be: ⇒ **@instance** or **@noinstance**.

Example(s)

In the following example, instances will not be selectable when $select_all() or $select_area() is executed.

```
$set_select_instance(@noinstance)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_net()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_net(select_net)

$get_select_net()

Description

Specifies whether nets can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_net**

  This argument is one of two values indicating whether nets will be selected through the select filter. The value can be: **@net** or ⇒ **@nonet**.

Example(s)

In the following example, nets will be selectable when $select_all() or $select_area() is executed.

```
$set_select_net(@net)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_pin()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_pin(select_pin)

$get_select_pin()

Description

Specifies whether instance or symbol pins on a schematic sheet or symbol pins on a symbol can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_pin**

  This argument is one of two values indicating whether pins will be selected through the select filter. The value can be: ⇒ **@pin** or **@nopin**.

Example(s)

In the following example, pins will be selectable when $select_all() or $select_area() is executed.

```
$set_select_pin(@pin)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_property(select_property)

$get_select_property()

Description

Specifies whether property text can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_property**

  This argument is one of two values indicating whether property text will be selected through the select filter. The value can be: **@property** or ⇒ **@noproperty**.

Example(s)

In the following example, properties will not be selectable when $select_all() or $select_area() is executed.

```
$set_select_property(@noproperty)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_segment()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_segment(select_segment)

$get_select_segment()

Description

Specifies whether net segments on a schematic sheet can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_segment**

  This argument is one of two values indicating whether net segments on a schematic sheet will be selected through the select filter. The value can be: ⇒ **@segment** or **@nosegment**.

Example(s)

In the following example, net segments will be selectable when $select_all() or $select_area() is executed.

```
$set_select_segment(@segment)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_symbolbody()

Scope: symbol
Window: Symbol Editor

Usage

$set_select_symbolbody(select_symbolbody)

$get_select_symbolbody()

Description

Specifies whether symbol body graphics and symbol text can be selected when the $select_all() or $select_area() function is executed without arguments.

Symbol text is considered to be part of the symbol body and is selected with the symbol body. This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_symbolbody**

  This argument is one of two values indicating whether symbol body graphics and symbol text will be selected. The value can be: ⇒ **@symbolbody** or **@nosymbolbody**.

Example(s)

In the following example, symbol bodies and symbol text will be selectable when $select_all() or $select_area() is executed.

```
$set_select_symbolbody(@symbolbody)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_symbolpin()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_symbolpin(select_symbolpin)

$get_select_symbolpin()

Description

Specifies whether or not symbol pins on a schematic sheet can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_symbolpin**

  This argument is one of two values indicating whether symbol pins will be selected on a schematic sheet. The value can be: **@symbolpin** or ⇒ **@nosymbolpin**.

Example(s)

In the following example, symbol pins will not be selectable when $select_all() or $select_area() is executed.

```
$set_select_symbolpin(@nosymbolpin)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_text()

Scope: da_report and da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_select_text(select_text)

$get_select_text()

Description

Specifies whether comment text inside the selection area can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_text**

  This argument is one of the following values indicating whether comment text will be selected through the select filter. These values are: **@text** or ⇒ **@notext**.

Example(s)

In the following example, comment text will not be selectable when $select_all() or $select_area() is executed.

```
$set_select_text(@notext)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_select_vertex()

Scope: schematic
Window: Schematic Editor

Usage

$set_select_vertex(select_vertex)

$get_select_vertex()

Description

Specifies whether net vertices can be selected when the $select_all() or $select_area() function is executed without arguments.

This function sets the select filter; the select filter is not used when arguments are specified with the $select_all() or the $select_area() function.

Arguments

- **select_vertex**

  This argument is one of two values indicating whether net vertices will be selected through the select filter. The value can be: ⇒ **@vertex** or **@novertex**.

Example(s)

In the following example, net vertices will be selectable when $select_all() or $select_area() is executed.

```
$set_select_vertex(@vertex)
```

Related Functions

$select_all()
$select_area()
$setup_select_filter()

$set_selection_model()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_selection_model(model)

$get_selection_model()

(DA Session only) Setup > Set > Individual/Additive Selection Model

Description

Specifies whether object selection is individual or additive.

This internal state function lets you change the selection model used by the Select mouse button. You can use the $get_selection_model() internal state function to find the current selection model. When using the individual selection model, you can force an additive selection by pressing Ctrl-Select mouse button.

Arguments

- **model**

  This argument is one of two values indicating which selection is used by the Select mouse button. The value can be one of the following:

  ⇒ **@additive**: Mouse selections continue to add to the selection set until the set is closed, due to an editing operation on the selection set.

  @individual: Each selection is preceded by a call to $unselect_all().

Example(s)

The following is displayed in the transcript when you activate the Session window, choose the **Setup > Set > Individual Selection Model** menu item, then choose the **Setup > Set > Additive Selection Model** menu item.

```
    $set_active_window("session");
    $set_selection_model(@individual);
//  Note: The selection model has been set to Individual.  Use Control-LMB
      to force an additive selection. (from: Uims/base_toolkit/ui_session_tk 81)
    $set_selection_model(@additive);
//  Note: The selection model has been set to Additive.
```

$set_snap()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_snap(snap)

$get_snap()

Description

Specifies whether object placement is snapped to the snap grid points in the current window.

This behavior is dependent upon the grid setting and pin spacing. The value of the $set_snap() function affects the placement of all objects. Pin placement is always restricted to the pin grid. When the value of this function is @on, comment objects are restricted to the finer grid (snap or pin). If the value is @off, comment objects can be placed anywhere; however, electrical objects always snap to the pin grid.

Multiple windows into the same view can have different snap characteristics. For example, one window may have $set_snap(@on), and another window can have $set_snap(@off), within a single Design Architect session. If you move or copy an object from one window to another, each window retains its pin snap setting. The object is snapped, or not snapped, to the grid based on the setting in the window to which the object is moved or copied.

Refer to the $set_grid() function starting on page 2-535 for a detailed description of grids and pin spacing.

Arguments

- **snap**

  This argument is one of two values indicating whether pin snapping is on. These values are: ⇒ **@on** or **@off**.

Example(s)

In the following example, comment objects are not snapped to the grid points on the currently-active sheet. However, electrical objects are restricted to the grid points. Pins are restricted to pin grid points.

```
$set_snap(@off)
```

Related Functions

$get_grid()
$set_grid()
$setup_net()

$set_symboluserrules_file()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_symboluserrules_file("symboluserrules_file")

$get_symboluserrules_file()

Description

Specifies the pathname to a file containing user-defined checks for symbols.

If you require specific checking of symbols, you can create a file containing those design rules, and specify the pathname to that file with this internal state function. If the value of the check_symboluserrule variable is @all, the file you specified is executed when the $$check() function is invoked on a symbol.

You can add error and warning messages to the check report by using the $set_userrule_error() and $set_userrule_warning() functions throughout the symbol userrules file.

Arguments

- **symboluserrules_file**

  A string specifying the pathname to a design rules file for symbols.

Example(s)

In the following example, the user-defined checks for symbols is found in *$DESIGNS/da/test/symbol_checks*.

```
$set_symboluserrules_file("$DESIGNS/da/test/symbol_checks")
```

Related Functions

$$check()
$set_userrule_error()
$set_userrule_warning()
$setup_check_symbol()

Related Internal State Functions

$set_schematicuserrules_file()
$set_check_symboluserrule()
$set_userrules_file()

$set_text_font()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_font("text_font")

$get_text_font()

Description

Specifies a filename containing the font definitions for comment text on a schematic sheet and symbol text on a symbol.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_font**

  This text string specifies the registered font family in which the font is defined. Fonts and font registry files are located in *$MGC_HOME/registry/fonts*.

Example(s)

In the following example, the font family for newly-created comment text or symbol text is "helvetica".

```
$set_text_font("helvetica")
```

Related Functions

$change_text_font()
$setup_comment()
$setup_symbol_body()

$set_text_height()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_height(text_height)

$get_text_height()

Description

Specifies the default height for newly-created comment text on a schematic sheet, and symbol text on a symbol.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_height**

  This argument is a real number specifying the default height for comment text and symbol text. The default in the Symbol Editor is 0.75. The default in the Schematic Editor is 0.1875.

Example(s)

In the following example, the height of newly-created comment or symbol text is .1875 in user units.

```
$set_text_height(.1875)
```

Related Functions

$change_text_height()
$setup_comment()
$setup_symbol_body()

$set_text_hjustification()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_hjustification(text_hjustification)

$get_text_hjustification()

Description

Specifies the default horizontal justification for newly-created comment text on a schematic sheet and symbol text on a symbol.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_hjustification**

  This argument is one of three values specifying the default horizontal justification for comment text and symbol text. These values are: ⇒ **@left**, **@center**, or **@right**.

Example(s)

In the following example, the horizontal justification of newly created comment or symbol text is @left.

```
$set_text_hjustification(@left)
```

Related Functions

$change_property_justification()
$setup_symbol_body()
$setup_comment()

$set_text_orientation()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_orientation(text_orientation)

$get_text_orientation()

Description

Specifies the default text orientation for newly-created comment text on a schematic sheet and symbol text on a symbol.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_orientation**

  This argument can be ⇒ **0**, **90**, **180**, or **270** degrees.

Example(s)

In the following example, the orientation of newly-created comment or symbol text is 90 degrees.

```
$set_text_orientation(90)
```

Related Functions

$setup_comment() $setup_symbol_body()

$set_text_transparency()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_transparency(text_transparency)

$get_text_transparency()

Description

Specifies whether objects beneath newly-created comment text on schematic sheets or symbol text on a symbol are visible.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_transparency**

  This argument is one of two values indicating whether objects beneath property text and comment text are visible. The value can be: ⇒ **@on** or **@off**.

Example(s)

In this example, objects beneath newly-created comment or symbol text are visible.

```
$set_text_transparency(@on)
```

Related Functions

$setup_comment()

$setup_symbol_body()

$set_text_vjustification()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_text_vjustification(text_vjustification)

$get_text_vjustification()

Description

Specifies the default vertical justification of newly-created comment text on a schematic sheet and symbol text on a symbol.

When editing in the context of a design viewpoint, this function is only valid in edit mode (invalid in read-only).

Arguments

- **text_vjustification**

  This argument is one of three values specifying the default vertical justification of comment text and symbol text. These values are: **@top**, **@center**, or ⇒ **@bottom**.

Example(s)

In the following example, the vertical justification for newly-created comment or symbol text is @bottom.

```
$set_text_vjustification(@bottom)
```

Related Functions

$change_text_justification()
$setup_symbol_body()
$setup_comment()

$set_undo_level()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_undo_level(undo_level)

$get_undo_level()

Setup > Other Options > Undo Level:

Description

Specifies the number of undo levels supported.

Arguments

- **undo_level**

  This argument is an integer specifying the number of undo levels supported. The default is 5.

Example(s)

In the following example, the $undo() function supports 10 levels of undo.

```
$set_undo_level(10)
```

Related Functions

$redo() $undo()

$set_unselect_comment()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_unselect_comment(unselect_comment)

$get_unselect_comment()

Description

Specifies whether comment graphics objects will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_comment**

  This argument is one of these two values indicating whether comment graphics objects will be unselected: ⇒ **@comment** or **@nocomment**.

Example(s)

In the following example, comments cannot be unselected when $unselect_all() or $unselect_area() is executed.

```
$set_unselect_comment(@nocomment)
```

Related Functions

$setup_unselect_filter()
$unselect_area()
$unselect_all()

$set_unselect_exterior()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_unselect_exterior(unselect_exterior)

$get_unselect_exterior()

Description

Specifies whether objects outside a specified area can be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_exterior**

  This argument is one of these two values indicating whether objects outside a specified area will be unselected: **@exterior** or ⇒ **@noexterior**.

Example(s)

In the following example, objects outside the specified area when the $unselect_all() or $unselect_area() is executed can be unselected.

```
$set_unselect_exterior(@exterior)
```

Related Functions

$setup_unselect_filter()
$unselect_area()
$unselect_all()

$set_unselect_frame()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_frame(unselect_frame)

$get_unselect_frame()

Description

Specifies whether frames will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_frame**

  This argument is one of these two values indicating whether frames will be unselected: ⇒ **@frame** or **@noframe**.

Example(s)

In the following example, frames will not be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_frame(@noframe)
```

Related Functions

$setup_unselect_filter()
$unselect_area()
$unselect_all()

$set_unselect_instance()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_instance(unselect_instance)

$get_unselect_instance()

Description

Specifies whether instances on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_instance**

  This argument is one of two values indicating whether instances will be unselected. The value can be: ⇒ **@instance** or **@noinstance**.

Example(s)

In the following example, instances will not be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_instance(@noinstance)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_net()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_net(unselect_net)

$get_unselect_net()

Description

Specifies whether nets on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_net**

  This argument is one of two values indicating whether nets will be unselected. The value can be either: ⇒ **@net** or **@nonet**.

Example(s)

In the following example, nets will be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_net(@net)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_pin()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_unselect_pin(unselect_pin)

$get_unselect_pin()

Description

Specifies whether instance or symbol pins on a schematic sheet or symbol pin on a symbol will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_pin**

  This argument is one of two values indicating whether pins will be unselected. The value may be either: ⇒ **@pin** or **@nopin**.

Example(s)

In the following example, pins will be unselected when $unselect_all() or $unselect_area() is executed with no arguments.

```
$set_unselect_pin(@pin)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_property()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_unselect_property(unselect_property)

$get_unselect_property()

Description

Specifies whether property text will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_property**

  This argument is one of two values indicating whether property text will be unselected. The value can be either: ⇒ **@property** or **@noproperty**.

Example(s)

In the following example, properties will not be unselected when $unselect_all() or $unselect_area() is executed with no arguments.

```
$set_unselect_property(@noproperty)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_segment()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_segment(unselect_segment)

$get_unselect_segment()

Description

Specifies whether net segments will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_segment**

  This argument is one of two values indicating whether net segments will be unselected. The value can be either: ⇒ **@segment** or **@nosegment**.

Example(s)

In the following example, net segments will not be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_segment(@nosegment)
```

Related Functions

$setup_unselect_filter()
$unselect_area()
$unselect_all()

$set_unselect_symbolbody()

Scope: symbol
Window: Symbol Editor

Usage

$set_unselect_symbolbody(unselect_symbolbody)

$get_unselect_symbolbody()

Description

Specifies whether symbol body graphics and text will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_symbolbody**

  This argument is one of two values indicating whether symbol body graphics and text will be unselected. The value can be: ⇒ **@symbolbody** or **@nosymbolbody**.

Example(s)

In the following example, symbol bodies will be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_symbolbody(@symbolbody)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_symbolpin()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_symbolpin(unselect_symbolpin)

$get_unselect_symbolpin()

Description

Specifies whether or not a symbol pin on a sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_symbolpin**

  This argument is one of two values indicating whether symbol pins will be unselected. The value can be: ⇒ **@symbolpin** or **@nosymbolpin**.

Example(s)

In the following example, symbol pins will not be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_symbolpin(@nosymbolpin)
```

Related Functions

$setup_unselect_filter()
$unselect_all()
$unselect_area()

$set_unselect_text()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_unselect_text(unselect_text)

$get_unselect_text()

Description

Specifies whether comment text on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_text**

  This argument is one of two values indicating whether comment text on a sheet will be unselected. The value can be either: ⇒ **@text** or **@notext**.

Example(s)

In the following example, comment text will not be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_text(@notext)
```

Related Functions

$setup_unselect_filter()
$unselect_area()
$unselect_all()

$set_unselect_vertex()

Scope: schematic
Window: Schematic Editor

Usage

$set_unselect_vertex(unselect_vertex)

$get_unselect_vertex()

Description

Specifies whether net vertices on a schematic sheet will be unselected when the $unselect_all() or $unselect_area() function is executed without arguments; it does not affect unselection through the unselection filter.

Arguments

- **unselect_vertex**

  This argument is one of two values indicating whether net vertices will be unselected. The value can be either: ⇒ **@vertex** or **@novertex**.

Example(s)

In the following example, net vertices will be unselected when $unselect_all() or $unselect_area() is executed without arguments.

```
$set_unselect_vertex(@vertex)
```

Related Functions

$unselect_all()
$unselect_area()
$setup_unselect_filter()

$set_userrules_file()

Scope: da_session
Window: IDW Component, IDW Hierarchy, Notepad, Schematic Editor, Session, Symbol Editor, Transcript, Userware, and VHDL Editor

Usage

$set_userrules_file("userrules_file")

$get_userrules_file()

Description

Specifies the pathname to a file containing user-defined checks for individual schematic sheets.

If you require specific checking of a schematic sheet, you can create a file containing those design rules, and specify the pathname to that file with the $set_userrules_file() internal state function. If the value of the check_userrule internal state variable is @all, the file you specified is executed when the $$check() function is invoked on a single sheet.

You can add error and warning messages to the check report by using the $set_userrule_error() and $set_userrule_warning() functions throughout the userrules file.

Arguments

- **userrules_file**

  A pathname to a file containing design rules for individual schematic sheets.

Example(s)

In the following example, the user-defined checks for individual schematic sheets are found in *$DESIGNS/userrules/sheet_1*.

```
$set_userrules_file("$DESIGNS/userrules/sheet_1")
```

Related Functions

$$check()
$set_userrule_error()
$set_userrule_warning()
$$setup_check_sheet()

Related Internal State Functions

$set_schematicuserrules_file()
$set_symboluserrules_file()
$set_check_userrule()

$set_user_units()

Scope: da_window
Window: Schematic Editor and Symbol Editor

Usage

$set_user_units(user_units)

$get_user_units()

Description

Defines the coordinate system for symbol and schematic sheets.

You can create symbols using any units you want; symbols are stored using pin units. When a symbol is placed on a sheet, the pin spacing is automatically set to the units used by the sheet. To find the current coordinate system, execute $get_user_units().

Arguments

- **user_units**

  This argument is one of four values indicating the specified coordinate system. These values are: **@inch**, **@cm**, **@mm**, or **@pin**.

  @pin is the default for symbols. The default for sheets is **@inch**.

Example(s)

In the following example, the current user unit measurement is retrieved, then reset to @inch.

```
$get_user_units() // @cm $set_user_units(@inch)
```

Related Functions

$setup_page()

Related Internal State Functions

$set_pin_spacing()

$setup_ripper()

Scope: schematic
Window: Schematic Editor

Usage

$setup_ripper(*mode, angle, query, dot, component, symbol, height*)

SETUp RIpper *mode angle query dot "component" "symbol" height*

Description

Specifies various settings associated with rippers.

Arguments

- ***mode***

  Specifies the default ripper type. Valid values include:

  @implicit (-IMplicit), which uses implicit rippers

  @auto (-AUto), which uses auto-rippers

  @none (-NOne), which uses no automatic ripping

- ***angle***

  Specifies the angle for an implicit ripper to be attached if the mode is set to @implicit. Valid values include: **@angled** and @**straight**.

- ***query***

  Specifies whether you are asked to supply a net name or bus bit while routing nets. Valid values include: **@on** and **@off**.

- ***dot***

  Specifies whether ripper dots are displayed. A ripper dot is a dot placed at the intersection of a ripper and a net. Valid values include: **@on** and **@off**.

- ***component***

  Specifies the pathname of the ripper component.

- ***symbol***

  Indentifies the symbol to use for the ripper. If the ripper is not registered with the component interface, the ripper symbol cannot be instantiated. If no symbol is specified, the default symbol of the default interface is used.

- ***height***

  Height for text added during implicit ripping.

Example

The following example causes rippers to be implicitly ripped, angled, and to prompt for a net name or bus bit.

```
$setup_ripper(@implicit, @angled, @on);
```

Related Internal State Functions

$set_implicit_ripper()
$set_ripper_dot()
$set_ripper_query()
$set_ripper_symbol_pathname()
$set_ripper_mode()

Chapter 4
Shell Command Dictionary

The command(s) described in this chapter invoke applications or utility programs that are used to create, edit, or manipulate schematic designs, VHDL source files, and symbols. They are issued from the input window of your workstation.

Shell Command Descriptions

All shell command descriptions use the following standard format:

- **shell_command.** The title of a reference page is the shell command itself. The title is followed by a brief description of the shell command.

- **Usage.** This shows how to use the shell command, with all arguments shown in the correct order. The uppercase characters in switches indicate the minimum set of characters that you must type. Arguments are in *italic* font. Literal characters that you enter are in bold font. The following special characters define arguments in the usage line:

  { } Braces specify that the argument may be repeated.

  [ ] Brackets specify that the argument is optional.

  | The vertical bar specifies that the argument is a one-of-n value. You can choose only one of the specified values.

  Do not enter any of these special characters when typing the command.

- **Description**. This contains a full description of the shell command's behavior. References to other documentation that may be helpful include hyperlinks to that information.

- **Arguments**. This provides a description of all required and optional arguments.
- **Examples**. This contains examples of shell command usage.
- **Related Shell Commands.** This contains associated shell commands. Each item is a hyperlink to the respective shell command reference page.

da

Usage

da [**-SChematic** *component [schematic*] *[sheet*]]
[**-SYmbol** *component [symbol*]]
[**-Vhdl** *vhdl_source*] *[hdl_arch | hdl_entity | hdl_pkg_hdr | hdl_pkg_body*]]
[**-Design** *component [viewpoint*] *[sheet*] *[instance*]]
[**-DISplay** *host:display*[.*screen*]]
[**-Fix_ids** *schematic*]
[**-Geometry** *widthxheight*[{+|-*}x_offset*{+|-}*y_offset*]]
[-**NODisplay**] [-**Readonly**] [-**NOSTartup**] [-**SErver**] [-**Usage**] [-**Help**]
[-**VErsion**]

Description

The da command invokes the Design Architect application. It displays the Session window in addition to any other application windows that you specified. If you invoke da without any arguments, you will invoke a Design Architect Session window, but no editing windows will be open. From the Session window, you are able to view, create, and modify schematic designs, VHDL source objects, symbols, and design viewpoints.

The working directory for the Design Architect session is the value of the $MGC_WD environment variable unless it is unset, in which case the path naming mechanism of the operating system on your particular workstation is used. The default path may include temporary mount points or workstation specific pathnames unsuitable for storage in designs.


Note

When referencing a design object, if you provide a relative pathname that does not begin with the dollar sign ($) character, that relative pathname will be converted to an absolute pathname, based on the value of the environment variable MGC_WD. You must ensure that the value of MGC_WD is set to the correct value for your current working directory. If is not set properly, an incorrect pathname for the reference may be stored.

The Design Architect Session may also rely heavily on a location map, which is specified by the $MGC_LOCATION_MAP environment variable.

For information about location maps and environmental variables, refer to "Design Management with Location Maps" in the *Design Manager User's Manual*.

For information about location map entries required by the VHDL compiler, refer to "Pathnames" in the *Getting Started with System-1076 Training Workbook*.

For information about startup files, see "DA Startup Files" in the *Design Architect User's Manual*.

Arguments

- ***-SChematic***

  Specifies that you want to edit an existing schematic sheet, or create a new schematic sheet.

- ***-SYmbol***

  Specifies that you want to edit an existing symbol, or create a new symbol.

- ***-Vhdl***

  Specifies that you want to create a new VHDL source object, or edit an existing one.

- ***-Design***

  Specifies that you want to edit an existing sheet in the context of a design viewpoint.

- ***component***

  Text string specifying the pathname to the schematic, symbol, design viewpoint, or VHDL component that you want to create or edit.

- ***schematic***

  Text string specifying the name of the schematic for a schematic design. If the schematic name is not specified, it defaults to "schematic".

- ***sheet***

  Specifies the name of the schematic sheet. If the sheet name is not specified, it defaults to "sheet1".

- ***symbol***

  Specifies the name of the symbol. If a symbol name is not specified, it defaults to the component name; if the component has a path prefix, the prefix is omitted.

- ***vhdl_source***

  Specifies the pathname of the VHDL source object.

- ***hdl_arch | hdl_entity | hdl_pkg_hdr | hdl_pkg_body***

  Indicates that the pathname given for the vhdl_source argument is actually a compiled VHDL model of the specified type whose source is to be opened, instead of being VHDL source, itself.

  Design Architect uses this argument to find the VHDL source object; if this argument is supplied, vhdl_source must be a compiled file of the type specified, rather than VHDL source. If this option is not specified, the specified vhdl_source argument actually is VHDL source.

- ***viewpoint***

  Specifies the name of the design viewpoint. If not specified, it defaults to "default".

- ***instance***

  Specifies the instance name. If not specified, it defaults to "/".

- **-Display** ***host*:*display*[.*screen*]**

  Specifies the name of the X server to use.

  The following list describes each of the parameters for the display switch:

host	The name of the machine to which the display is physically connected.
display	The display number (beginning at 0) for the specified host.
screen	The monitor number (beginning at 0) for the specified display. The default is 0.

- **-Fix_ids** *schematic*

  Specifies that Design Architect should locate and eliminate duplicate handles on sheets in the schematic.

  
  Caution

  Duplicate handles are found when the $$check() function is executed with the @schematic argument. If a schematic contains duplicate handles and they are not eliminated, Design Architect might crash and data could be corrupted.

- **-Geometry** width**x**height[{+|-}x_offset{+|-}y_offset]

  Specifies the initial size and location of the window.

  The following list describes each of the parameters for the geometry switch:

width	The width of the window, measured in pixels.
height	The height of the window, measured in pixels.
x_offset	The distance from the left or right edge of the screen, measured in pixels. The plus (+) and minus (-) indicators prior to the offset values control the edges used to measure the offset. A plus indicator causes the offset to be measured from the left edge of the screen to the left edge of the window. A minus indicator

causes the offset to be measured from the right edge of the screen to the right edge of the window.

y_offset The distance from the top or bottom edge of the screen, measured in pixels.

The plus (+) and minus (-) indicators prior to the offset values control the edges used to measure the offset. A plus indicator causes the offset to be measured from the top edge of the screen to the top edge of the window. A minus indicator causes the offset to be measured from the bottom edge of the screen to the bottom edge of the window.

- ***-NODisplay***

  Indicates that Design Architect is invoked in the background. It may be used by itself, or in conjunction with one of the editor switches, for example, -Symbol. This switch is useful when you have one or more tasks that can be automated and run in the background rather than in a window, such as opening a sheet, checking it, and saving it. The default is to display.

- ***-Readonly***

  Indicates that Design Architect is invoked in read-only mode. The default is edit mode.

- ***-NOSTartup***

  Invokes Design Architect without loading any custom Design Architect startup files. If you have a Notepad startup file, it will be loaded.

- ***-SErver***

  Specifies that Design Architect is to run as an ERI server in the background to process graphics for other applications. This server recognizes requests for a specific version of an object (not just latest). If the server fails to locate a design object, it transcripts to both the server output and to its ERI client. Any other switches or arguments specified with this switch are ignored.

- ***-Usage***

  Displays the command syntax. All other switches and arguments are ignored.

- ***-Help***

  Provides help information for the **da** command; all other switches and arguments are ignored and Design Architect is not invoked.

- ***-VErsion***

  Displays the version number of Design Architect. All other switches and arguments are ignored and Design Architect is not invoked. Version information is displayed in the header with all switch invocations.

Example(s)

The following example displays the shell command syntax to invoke Design Architect on the host machine "server1", with the specified session window size, and open the Schematic Editor window on a sheet named "*$DESIGNS/da/my_design/schematic/sheet1*".

```
$ da -sc $DESIGNS/da/my_design -display server1:0.0
                                        -geometry 900x900+62+190
```

The next example displays the shell command syntax for invoking Design Architect and opening a Symbol Editor window on an existing component "*$DESIGNS/da/test_lib/my_flip_flop*", with the symbol name set to "flip_flop_1".

```
$ da -sy $DESIGNS/da/test_lib/flip_flop  flip_flop_1
```

Appendix A
Custom Userware

This chapter contains information about customizing userware for Design Architect. The information is organized as follows:

- "Customization Guidelines", beginning on page A-2 describes maintenance levels required for a variety of customization tasks.
- "Design Architect Scopes", beginning on page A-3 describes scopes, scope hierarchy, and provides information about how Design Architect searches userware files for a particular function. This is intended for all users who want or need to customize their userware.
- "Simple Customizing", beginning on page A-11, describes how to find source files, and how to name and where to place customized userware files so Design Architect will load them at the proper time. This includes startup files and personality modules. Examples show how to customize the default title blocks, create new functions, and create new menus. This information should be sufficient for most users.
- "Advanced Customizing", beginning on page A-24, describes how to create and display a new palette menu, and how to add items to an existing menu. This information is for system administrators, site librarians, and library developers.

- "Recommendations", beginning on page A-49 lists recommended practices to follow when customizing Design Architect.

Caution

Do not use any undocumented functions when you customize userware; undocumented functions can change or be deleted at any time. Because some undocumented functions do appear in the transcript window, be careful when creating a function with text from the transcript window.

For detailed information, please refer to the *Customizing the Common User Interface* manual and the *AMPLE User's Manual*.

Customization Guidelines

When customizing a Mentor Graphics application, the type of customization performed determines the amount of rework necessary each time you upgrade to a new version of Mentor Graphics software. The following list describes the three levels of rework used in this appendix:

Light	The time required to make changes at each software update is minimal, well worth the productivity gains from customization.
Moderate	The time required to make these changes at each software update must be justified by productivity gains.
Heavy	The time necessary to perform this level of rework at each software update does not justify customization. Mentor Graphics does not provide support for customization tasks that fall into this category.

Table A-1 categorizes common customization tasks.

Table A-1. Customization Tasks Categorized by Re-work Level

Light	Moderate	Heavy
Creating New Functions Using Documented Userware	Overloading Documented MGC Functions	Creating New Functions Using Undocumented Userware
Creating New Menus	Adding to MGC Menus	Creating Userware Dependent on Window Sizes or Shapes

Both the "Simple Customizing" and "Advanced Customizing" chapters contain "Userware Example" subsections. Each of the userware listings call out the level of rework necessary to support a specific type of customization.

Design Architect Scopes

A *scope* is a portion of the environment in which userware or an AMPLE identifier has meaning. Userware scoping controls which functions and external variables are available in areas within an application. Each function has a scope associated with it. For example, some schematic editing functions such as $add_frame() and $add_net() have no meaning in the Symbol Editor, and so they are placed in the schematic scope, which is not accessible to the Symbol Editor. Other functions such as $move() and $copy() have meaning in all editors within Design Architect and, therefore, reside in the da_window scope which is available to all editors.

Scope hierarchy is the arrangement of scopes into successive levels, with each level subordinate to the one above. The scope hierarchy is determined by area containment. This means that a function defined in a particular window is available within that window, and also available in all other windows opened from within that original window. For example, a function defined in the DA Session window is available in all windows opened within that session, such as a schematic window and a symbol window.

Userware scopes and the arrangement of those scopes for each window in an application is determined by the application developers. You cannot change this hierarchy or add new scopes. However, you can add new functions to scopes in the hierarchy, or modify existing functions in the scope hierarchy.

When you are adding functionality to an application, the scope in which you place the userware determines which windows have access to that userware. Userware placed in the schematic scope is available in all schematic windows, but not in a symbol window. When a function is called, the scope hierarchy of the active window is searched, beginning at the top, until the function is found. If the function exists in more than one scope, the first function found that matches the specified name is executed.

Each scope has corresponding AMPLE files that contain all the AMPLE userware for that scope. These AMPLE files are stored in the Mentor Graphics Software Tree. The AMPLE files for scopes common to all Mentor Graphics Falcon Framework applications, including Design Architect, can be found in the following directory:

${MGC_HOME}/shared/pkgs/base.[platform]/userware/${LANG}

The AMPLE files for scopes specific to Design Architect can be found in the following directories:

${MGC_HOME}/pkgs/bed.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/des_arch.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/hdtxt.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/vhdl_ed.[platform]/userware/${LANG}

The AMPLE files for scopes specific to Design Architect personality modules can be found in the following directories:

${MGC_HOME}/shared/pkgs/cs_da.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/dsp_da.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/syn_blocks_da.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/pcb_da.[platform]/userware/${LANG}

${MGC_HOME}/shared/pkgs/vhdlwrite_da.[platform]/userware/${LANG}

The platform pattern in the directories above refers to a character string that uniquely identifies your host platform. You can use the following script to return the correct platform suffix for your workstation:

$MGC_HOME/bin/get_mgc_vco

In the following example, the pathname to the scope file for the ovl_area scope is based on the following conditions: the MGC_HOME shell environment variable is set to "*/usr2/mgc_tree*", your workstation is a SUN workstation, and the LANG shell environment variable is set to "En_US" (resolves to En_na in the mgc_lang_map file):

/usr2/mgc_tree/shared/pkgs/dme.sss/userware/En_na/ovl_area.ample

For detailed information on the MGC_HOME and LANG shell environment variables, refer to the *AMPLE User's Manual*.

Table A-2 shows the order in which scopes are searched for functions called from each window.

Table A-2. Scopes Searched in each Design Architect Window

Window Type	Scopes Searched
IDW Component	idw_component_list_area list_m_of_n_area list_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample idw_component_window framed_area da_session session_area ovl_area
IDW Hierarchy	idw_comp_gfx_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample idw_dh_window framed_area da_session session_area ovl_area

Table A-2. Scopes Searched in each Design Architect Window [continued]

Window Type	Scopes Searched
Notepad	notepad ptxt_area rtxt_area btxt_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area
Schematic Editor	schematic da_window bed_window area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area

Table A-2. Scopes Searched in each Design Architect Window [continued]

Window Type	Scopes Searched
Session	da_session session_area ovl_area framed_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample
Symbol Editor	symbol da_window bed_window area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area

Table A-2. Scopes Searched in each Design Architect Window [continued]

Window Type	Scopes Searched
Transcript	rtxt_area btxt_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area
Userware Editor	input_area ptxt_area rtxt_area btxt_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area

Table A-2. Scopes Searched in each Design Architect Window [continued]

Window Type	Scopes Searched
VHDL Editor	hdtxt_area ptxt_area rtxt_area btxt_area area dme_base_tk dme_do_tk dme_dn_tk plot_ui_tk ui_base ample framed_area da_session session_area ovl_area

You can find the name of the top level scope of the active window by entering the following statement in a popup command line:

$window_scope_name()

The name of the scope appears in the transcript. You can find the complete scope hierarchy for the active window by entering the following statement in a popup command line:

$ask_scope_frame_name()

This function displays the scope hierarchy in a list dialog box. The ample scope appears at the bottom of the list as "<no_name>" because you cannot add functionality to the ample scope after an application is invoked.

Simple Customizing

Plan carefully before you begin customizing. Your new and customized functions will be interacting with all other existing functions. Because other userware may be dependent upon menu items, it is usually better to add menu items using the $add_menu_item() function, rather than modifying existing menus. Library menus are discussed beginning on page A-29. For information about customizing other menus, refer to the *Customizing the Common User Interface* manual.

If you want to modify userware without overwriting, refer to "Modification of Functions" in the *AMPLE User's Manual*.

Startup Files

While startup files should not be used to define custom userware functions, they are the simplest method for customizing Design Architect.

For detailed information on startup files, refer to "DA Startup Files" in the *Design Architect User's Manual*. For an example of a personal startup file, refer to page A-17.

Source Location

Most people do not (and should not) have permission to alter source code files in the MGC_HOME directories. To customize a particular area of userware, copy the *.ample* file containing the functions you need to one of your directories, then alter your copy, and load it as described later in this appendix.

To find the location of the file you need to copy, choose the **MGC > Userware > Edit Source** pulldown menu item. Enter the name of the function (do not enter the parentheses) you want to alter in the prompt bar that appears.

For example, if you want to modify the $add_property() function for symbols, activate a symbol window and choose the **MGC > Userware > Edit Source** menu item. Enter "$add_property" in the prompt bar. The source file containing the definition of the Symbol Editor $add_property() function is displayed in a notepad window. The pathname of the file appears in the window title bar.

This method of finding the source location can help you identify functions that have been overwritten. You can also use $list_overwritten_functions() to ensure that you haven't overwritten important userware.

Most Design Architect userware is in one of the following directories:

${MGC_HOME}/shared/pkgs/des_arch/userware/${LANG}

or

${MGC_HOME}/pkgs/des_arch/userware/${LANG}

The first directory contains the *.ample* files, which are loaded at startup. The *$MGC_HOME/pkgs* directory contains *.dofile*, and *.ample_c* files, and other items such as the ASCII help files accessed from the **Help > More Help** menu.

Personality modules and VHDL editing functions are not in the *des_arch* package. Each personality module has its own package name such as *pcb_da*.

How to Load Userware

Userware may be loaded into Design Architect, or loaded and immediately executed by DA. Loading userware makes new functions available to the user, but does not immediately execute them. You can load userware by invoking the $load_userware() function or choosing the **MGC > Userware > Load** menu item in the DA session. This is useful when you want to test userware as you develop it.

When immediate execution of commands and functions in the userware file is required, you can use the $dofile() function. The $dofile() function executes statements outside of function declarations. If there is a function declaration in a *.dofile*, the function is loaded, but not executed; the function needs to be called to be executed.

Users and system administrators can also create startup files which are executed at DA invocation time, or the first time a new type of window is created. However, these cannot be compiled, and so are not recommended for extensive customizations, such as loading customized libraries and adding menu items to access those libraries.

For details about startup files, see "DA Startup Files" in the *Design Architect User's Manual* and "Startup Files" in the *AMPLE User's Manual*.

AMPLE_PATH Environment Variable

You can use the AMPLE_PATH environment variable to communicate the location of customized scope specific dofiles to Design Architect. This variable can contain one or more partial pathnames, separated by colons (:), to your userware files, which may reside anywhere on the network. For example, the following statements (in a Bourne shell) set and export the AMPLE_PATH variable:

```
AMPLE_PATH=$HOME/mgc_custom:$HOME/mgc/userware
export AMPLE_PATH
```

You can use the same statements in a Korn shell, or use a single statement:

```
export AMPLE_PATH=$HOME/mgc_custom:$HOME/mgc/userware
```

The search begins with the last pathname in the list, and works back to the first pathname in the list (right to left). Each new definition for a function replaces any previous definition in that scope.

All Falcon Framework applications will load userware, compiled or not, supplied in a directory specified in the AMPLE_PATH environment variable. The directory name you specify must contain another directory with the same name as the application package which contains the userware you want to load for that application.

For example, if you placed your schematic userware customizations in *$HOME/mgc_custom/des_arch/schematic.dofile*, you specify *$HOME/mgc_custom* as one of the pathnames in the AMPLE_PATH variable. This is explained in "Scope Specific Dofiles" on page A-14.

If the AMPLE_PATH variable does not exist, the system searches for userware files in the default location, *$HOME/mgc/userware/<pkg_name>*, where $HOME is an environment variable whose value is the pathname of the user's home directory.

If the AMPLE_PATH variable was created, but was not set, or was explicitly set to be blank (""), the system does not look in the default location; only application and site specific userware are loaded.

In addition to the normal Falcon userware loading options, Design Architect makes special accommodations for the creators of libraries which should appear in the Design Architect Schematic Editor **Libraries** menu, and for people developing Design Architect personality modules.

These features include:

- Scope specific dofiles
- DES_ARCH_PKGS_TO_LOAD environment variable
- Invoke-time Bourne Shell Scripts
- DES_ARCH_AUX_PKG_LIST environment variable
- Schematic menu files

The last two items in the list are discussed in "Advanced Customizing" beginning on page A-24. For complete information about the AMPLE_PATH variable and how userware is loaded, refer to the *Customizing the Common User Interface* manual and the *AMPLE User's Manual*.

Scope Specific Dofiles

An AMPLE_PATH pathname must have a subdirectory, *des_arch*, to indicate to Design Architect to load those files. Design Architect will execute userware in the following files during scope initialization if the files are located in *$AMPLE_PATH/des_arch:*

da_session.dofile	*da_window.dofile*
schematic.dofile	*symbol.dofile*

You can also have a userware file, *hdtxt_area.dofile*, which is not in this list. Design Architect looks for this file in *$AMPLE_PATH/hdtxt*, because the application package "hdtxt" defines the scope hdtxt_area (the VHDL window).

For example, assume you have the following customized userware files:

$HOME/mgc_custom/new/des_arch/schematic.dofile
$HOME/mgc_custom/des_arch/schematic.dofile
$HOME/mgc_custom/des_arch/da_window.dofile

Also assume you set your AMPLE_PATH variable as follows:

```
$ AMPLE_PATH=$HOME/mgc_custom/new:$HOME/mgc_custom
$ export AMPLE_PATH
```

After all standard Design Architect userware is loaded, your files are loaded in the following order:

1. *$HOME/mgc_custom/des_arch/da_window.dofile*
2. *$HOME/mgc_custom/des_arch/schematic.dofile*
3. *$HOME/mgc_custom/new/des_arch/schematic.dofile*

DES_ARCH_PKGS_TO_LOAD Environment Variable

Personality modules are packages of userware that are customized for use by downstream applications. For example , the PCB/DA personality module is supplied by Mentor Graphics and contains functionality that lets you more easily add and modify some properties needed for PCB applications. These personality modules are supplied by Mentor Graphics:

- **cs_da** = userware to interface with netlisters and the Component Status and Flow Manager tools.
- **dsp_da** = userware for DSP Station.
- **pcb_da** = userware for PCB designers.
- **quickvhdl_da** = userware to add QuickVHDL functionality.
- **syn_blocks_da** = userware for AutoLogic Blocks.
- **vhdlwrite_da** = userware to add VHDLwrite functionality.

A personality module is automatically loaded if the following are true:

- The package is named correctly: *$MGC_HOME/pkgs/*_da.*
- The file *$MGC_HOME/pkgs/*_da/*_da_env.sh* exists.

You can use the DES_ARCH_PKGS_TO_LOAD environment variable to control which automatically loading personality modules are loaded. When the variable contains the names of one or more packages, only those packages listed are loaded by DA. The value of the variable must be a quoted string of package names with each name separated by a space. For example, `"syn_blocks_da pcb_da analog_da cs_da esi_da"`. The packages are loaded in the order specified (first one listed is loaded first). Each new definition for a function replaces any previous definition in that scope.

If DES_ARCH_PKGS_TO_LOAD is not defined, DA will load all the automatically loading personality modules in the *$MGC_HOME/pkgs* directory. Set DES_ARCH_PKGS_TO_LOAD to "NONE" to indicate that no personality modules should be loaded from *$MGC_HOME/pkgs*. This is shown in the personal startup file example on page A-17.

If you want to limit which modules are loaded, specify their loading order, or prevent their loading, you must set DES_ARCH_PKGS_TO_LOAD prior to invoking Design Architect. Several possible approaches to setting this variable include:

- Setting the variable in *$HOME/.profile*.
- Writing a script to set and export the variable, then invoke Design Architect. For example, if you always want just the *syn_blocks_da* and *pcb_da* modules loaded, you could create a Bourne shell script having the following commands:

```
DES_ARCH_PKGS_TO_LOAD='syn_blocks_da pcb_da'
export DES_ARCH_PKGS_TO_LOAD
$MGC_HOME/bin/da
```

- You can also create a script for Design Architect to read at invocation time. This invocation shell script is discussed on page A-18.

Personal Startup Example

An ASIC Vendor wants to set up a toolkit where only their component libraries are available. Because all of their files are outside of the $MGC_HOME tree, they use AMPLE_PATH. They don't want any other libraries or personality modules to be loaded, but they do want to preserve the users' power to make userware changes in their *$HOME/mgc/userware* directory.

```
!/bin/sh
#
# ASIC_VENDOR Driver for DESIGN ARCHITECT
# This file is in a directory in the user's shell's $PATH,
# and will be executed when the user types:
#
#  asic_vendor_da
#
library_pathname="$MGC_HOME/user/asic_vendor/libraries"
echo "ASIC_VENDOR Driver for Design Architect,"
echo " version 1.1, 6/6/1992 ${library_pathname}"

if [ "${AMPLE_PATH}" = "" ]
then
   # set default search path and add new path
   AMPLE_PATH=${HOME}/mgc/userware:${library_pathname}
else
   AMPLE_PATH=${AMPLE_PATH}:${library_pathname}
fi
export AMPLE_PATH

# turn off all MGC personality modules
export DES_ARCH_PKGS_TO_LOAD=NONE

# unset to turn off loading of other packages
unset DES_ARCH_AUX_PKG_LIST
export DES_ARCH_AUX_PKG_LIST

$MGC_HOME/bin/da $@
```

Bourne Shell Invocation Scripts

During the invocation of DA, the script *$MGC_HOME/bin/da* automatically reads any Bourne shell scripts that are located and named appropriately. First it searches for:

*$MGC_HOME/pkgs/*_da/*_da_env.sh*

That is, it searches directories in *$MGC_HOME/pkgs* that end in "_da" for files which end in "_da_env.sh".

Then it will search:

$HOME/mgc/invoke_settings/da/.sh*

That is, it will search your home directory for an *mgc/invoke_settings/da* subdirectory, for files ending in ".sh".

It will execute the contents of each file in turn. The files should contain Bourne Shell code that announces their own presence (to aid in debugging) and modifies one or more environment variables appropriately. Setting environment variables such as AMPLE_PATH and DES_ARCH_AUX_PKG_LIST in invocation scripts gives you some control over the order in which userware is loaded. For information about System 5 Bourne shell programming, type "man sh" at the UNIX system prompt.

Invocation Script Example

In this example, a corporate CAD group wants to place its component libraries and associated userware in a project area. Because the libraries are not in the $MGC_HOME tree, they will be loaded using the AMPLE_PATH environment variable. AMPLE_PATH affects all Mentor Graphics applications so it will be set during the invocation of Design Architect, rather than encouraging users to set it in a shell. The current setting of the variable is supplemented, not replaced.

If you do not check the value of AMPLE_PATH and its value is null (""), and you attempt to set the variable as shown in the "else" statement in the example, you will get an error.

```
#!/bin/sh
#
# this file is $HOME/mgc/invoke_settings/da/megacorp.sh
#
# This script adds a pathname to the AMPLE_PATH environment
# variable which DA will check for userware and libraries.

library_pathname="$PROJECT/megacorp/libraries"

echo "Using ${library_pathname} version 0.1"
if [ "${AMPLE_PATH}" = "" ]
then
   # restore default search path and add new path
   AMPLE_PATH=${library_pathname}:${HOME}/mgc/userware
else
   AMPLE_PATH=${library_pathname}:${AMPLE_PATH}
fi
export AMPLE_PATH
```

Userware Examples

The following text shows sample customization tasks that require light maintenance for subsequent releases of Mentor Graphics software.

RoadMapper

The RoadMapper freeware tool (available from Mentor Graphics field offices) is a sheet-to-sheet offpage reference generator for Design Architect schematics. In general, the RoadMapper scans the sheets of a schematic design, collects information about the offpage connectors present in the design, and back-annotates the offpage connector instances to include special cross reference properties. Each cross reference property value is a string describing specific information about other sheets and "zones" on those sheets where that particular offpage connector net appears. Also, an ASCII file can be generated to provide a complete, sorted net map.

The following properties were added to comment borders to provide RoadMapper the necessary information to calculate the sheet-zone location information. Each property name with an example value is followed by a brief description of how RoadMapper uses the property value.

- **BLOCK = BORDER** -- This is used to calculate the border extent by using the attached object.
- **YZONES = 3, XZONES = 4** -- Specifies how many zones should be defined on each axis.
- **YLABEL = A, XLABEL = 1** -- Specifies the label to be used for the first zones, such as "4" or "D"; these then define the sequence for naming the remaining zones.
- **XORDER = A, YORDER = A** -- Defines the direction in which the labeling values should be changed along each axis. Legal values for these two properties are "D" (descending) and "A" (ascending).
- **CORNER = TL** -- Defines the corner of the design sheet that should be used as a starting point for labeling. Legal values for this property are "TL" (top-left), "TR" (top-right), "BL" (bottom-left), and "BR" (bottom-right).

Title Block Example

Rework Level: Light -- Custom title block functions require light maintenance.

This example describes how to customize title block information or change the format of the MGC STD sheet border. Be sure to change all border sizes that you will want to use. You will copy the functions from the $MGC_HOME tree into one of your own directories.

1. Create a directory *$HOME/mgc_custom/des_arch*.
2. Create a file *schematic.ample* in the *$HOME/mgc_custom/des_arch* directory.

3. Copy the functions in the following list for the desired sheet size(s) from *$MGC_HOME/shared/pkgs/des_arch/userware/$LANG/schematic.ample* to the file *$HOME/mgc_custom/des_arch/schematic.ample.*

$create_a_size_sheet()	$create_a_size_title_block()
$create_b_size_sheet()	$create_b_size_title_block()
$create_c_size_sheet()	$create_c_size_title_block()
$create_d_size_sheet()	$create_d_size_title_block()
$create_e_size_sheet()	$create_e_size_title_block()
$create_a0_size_sheet()	$create_a0_size_title_block()
$create_a1_size_sheet()	$create_a1_size_title_block()
$create_a2_size_sheet()	$create_a2_size_title_block()
$create_a3_size_sheet()	$create_a3_size_title_block()
$create_a4_size_sheet()	$create_a4_size_title_block()

The beginning of these functions in the *schematic.ample* file looks like this:

```
//#############################################################
//     $add_sheet_border and supporting functions
//#############################################################
```

You can customize the title block by changing the following lines which appear in each of the $create_*_size_title_block() functions:

```
// Company name and address.
$add_text("COMPANY NAME", [5.125, -1.75, active_window]);
$add_text("Address", [5.3125, -2.0625, active_window]);
$add_text("City", [5.25, -2.3125, active_window]);
```

To load your *schematic.ample* file, you need to set your AMPLE_PATH environment variable. The following Bourne shell statements set and export the AMPLE_PATH variable so your userware will be loaded:

```
$ AMPLE_PATH="$HOME/mgc_custom"
$ export AMPLE_PATH
```

Refer to "Userware Organization" in the *AMPLE User's Manual* for complete information about environment variables and loading customized userware.

Creating New Functions Using Documented Userware

Rework Level: Light -- Userware functions created using calls to documented Mentor Graphics functions require little or no maintenance from one release to the next. All user visible changes to documented functions are listed in release notes.

To make sure that userware functions do not overload Mentor Graphics functions, use a unique prefix at the beginning of all custom functions. In addition to preventing overloaded functions, the prefix alerts users to the origin of the function.

The following code block contains a sample userware function and command registration of the function. The prefix, 'vndr_', is used in the function name and during command registration. The prefix is not used with the 'c_int' external variable because the variable is removed after command registration

```
1  function vndr_part_copy( part :string,
2                           props : switch name [on, off],
3                           depth : label integer [0, 4]
4                           ), SEALED
5  {
6      $writes_file($stdout,
7          $strcat(   "The part string is  : ", part,
8                     "\nThe props switch is  : ", props,
9                     "\nThe depth label is  : ", depth, "\n"));
10 }
11 extern c_int = $register_command("par.t co.py", "vndr_");
12 $register_args("of.f", @off, c_int);
13 $register_args("d.epth", "depth", c_int);
14 $register_alias("pcopy", cint);
15 $undefine_id(@c_int);
```

Creating New Menus

Rework Level: Light -- New menus created in userware that call documented functions or custom userware functions require light maintenance.

New menus must be created for all custom menus, to delete a menu item from an existing menu, or to reorder the items on an existing menu. All menu types available in the Common User Interface are created with the $create_menu() function. The following lines show the syntax for the $create_menu() function:

$create_menu(Qscope_name', menu_type, 'menu_name', columns, 'bgd_color', items)

The following code block creates a pulldown menu for the VNDR menu bar item in Design Architect; Figure A-1 shows the resulting menu.

```
1  function vndr_pulldown_menu(),INVISIBLE
2  {
3  $create_menu("schematic", @pulldown,"vndr_pulldown",1,,
4      $menu_text_item("Display Library _Palette",
5          '$replace_part_palette("VNDR_Root_Palette")')
6  );
7  }
```

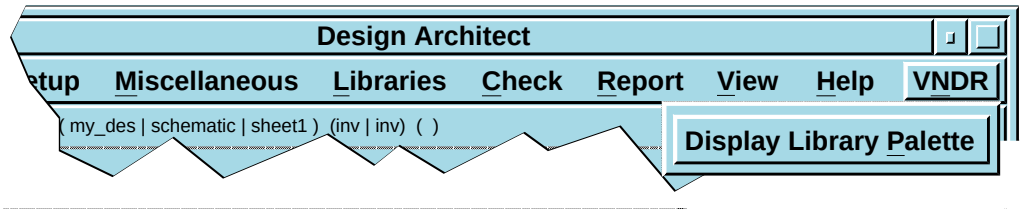


Figure A-1. Sample Menu Item

Advanced Customizing


Note

The following text is for component library developers and others who do major customization. **These methods alter the MGC Tree, and are not intended for most users.**

DES_ARCH_AUX_PKG_LIST Environment Variable

The DES_ARCH_AUX_PKG_LIST environment variable specifies a list of package names in the *$MGC_HOME/pkgs* directory that contain userware to be loaded into Design Architect scopes. When this variable is set, the specified packages are loaded, in addition to any automatically loaded userware packages. When DES_ARCH_PKGS_TO_LOAD is set, the packages specified by both of these variables are loaded.

You can place customized userware in *.ample* and *.dofile* files in *$MGC_HOME/pkgs/dir_name/userware/${LANG}* and instruct Design Architect to load it by setting the DES_ARCH_AUX_PKG_LIST variable to *dir_name*. If you assign multiple values to the variable, separate the values with colons (:).

For example, suppose you have three projects. Project A needs customized userware for the Symbol Editor. Project B needs customized userware for the Schematic Editor. Project C needs the customized userware from both the other projects. You will create the following two subdirectories in which to place your userware files:

$MGC_HOME/pkgs/project_a/userware/${LANG}
$MGC_HOME/pkgs/project_b/userware/${LANG}

Project A users need to set this variable:

```
$ DES_ARCH_AUX_PKG_LIST=project_a
$ export DES_ARCH_AUX_PKG_LIST
```

Users in Project B need to set this variable:

```
$ DES_ARCH_AUX_PKG_LIST=project_b
$ export DES_ARCH_AUX_PKG_LIST
```

Users in Project C need to set this variable to get both of the customizations:

```
$ DES_ARCH_AUX_PKG_LIST=project_a:project_b
$ export DES_ARCH_AUX_PKG_LIST
```

Design Architect will load any of the following files with *.ample* extensions, provided there is no **.ample_c* file, and will execute any of the following files with *.dofile* extensions in the *.../userware/${LANG}* directory:

da_session.ample	da_session.dofile
da_window.ample	da_window.dofile
schematic.ample	schematic.dofile
symbol.ample	symbol.dofile
hdtxt_area.ample	hdtxt_area.dofile

For better performance, you can compile *.ample* files into a single file, and place the compiled file in the *.../userware/${LANG}* subdirectory. The name of the compiled file must be the same as the package name.

For example, the pathname of the compiled file used by Project A in the previous example must be:

$MGC_HOME/pkgs/project_a/userware/${LANG}/project_a.ample_c

If there is no compiled userware in the directory, or the compiled file does not include userware for one or more scopes, DA will load uncompiled *.ample* files such as:

$MGC_HOME/pkgs/minico_da/userware/${LANG}/schematic.ample

DES_ARCH_AUX_PKGS_LIST Example

In this example, a group has received permission to place their userware inside the $MGC_HOME tree, so they can use DES_ARCH_AUX_PKGS_LIST to inform Design Architect of the location of userware to load. User settings of environment variables will be supplemented, not replaced.

```
#!/bin/sh
#
# This script adds a pkg name to the DES_ARCH_AUX_PKG_LIST
# environment variable which DA will check for in the
# $MGC_HOME tree to load userware and libraries.

library_package_name="minico_da"

echo "Using ${library_package_name} version 0.1"

if [ "${DES_ARCH_AUX_PKG_LIST}" = "" ]
then    DES_ARCH_AUX_PKG_LIST=${library_package_name}
else    DES_ARCH_AUX_PKG_LIST=
            ${DES_ARCH_AUX_PKG_LIST}:${library_package_name}
fi
export DES_ARCH_AUX_PKG_LIST
```

Environment Variable Summary

Table A-3 shows how to set environment variables to load the desired userware. In the AMPLE_PATH column, "default" is *$HOME/mgc/userware*.

Table A-3. Environment Variable Summary

Userware Loaded	DES_ARCH_ AUX_PKG_LIST	DES_ARCH_ PKGS_TO_LOAD	AMPLE_PATH
Only standard DA	unset	"NONE"	" " (blank)
Default userware: Custom in *$HOME/mgc/userware*	unset	"NONE"	unset
Default userware Userware not in default location	unset	"NONE"	set to default + desired directories
Default userware Auto-loading personality mods	unset	unset	unset
Default userware Specific personality modules and/or other pkgs in MGC tree	unset	set to desired packages	unset
Default userware Auto-loading personality mods Userware not in default location	unset	unset	set to default + desired directories
Default userware Auto-loading personality mods Other packages in MGC tree Userware not in default location	set to desired packages	unset	set to default + desired directories

Table A-3. Environment Variable Summary [continued]

Userware Loaded	DES_ARCH_ AUX_PKG_LIST	DES_ARCH_ PKGS_TO_LOAD	AMPLE_PATH
Auto-loading personality mods	unset	unset	" "
Auto-loading personality mods Other packages in MGC tree	set to desired packages	unset	" "
Auto-loading personality mods Userware not in default location	unset	unset	set to desired directories
Auto-loading personality mods Other packages in MGC tree Userware not in default location	set to desired packages	unset	set to desired directories
Specific personality modules and/or other pkgs in MGC tree	unset	set to desired packages	" "
Specific personality modules Userware not in default location	unset	set to desired packages	set to desired directories
Userware not in default location	unset	"NONE"	set to desired directories

Schematic Menus

The schematic.dofile File

A common use for the *schematic.dofile* is to call AMPLE functions that create library menu definitions.

When you want to access other component libraries, such as those from third-party vendors, the userware that defines the menus and adds them to the **Libraries** pulldown menu needs to be loaded. The following must be true:

- If the libraries are placed in the *$MGC_HOME* tree, then one or both of the following files must exist:

  $MGC_HOME/pkgs/lib_pkg_name/userware/${LANG}/
  schematic.ampl

  or

  $MGC_HOME/pkgs/lib_pkg_name/userware/${LANG}/
  lib_pkg_name.ample_c

- You also must have:

  $MGC_HOME/pkgs/lib_pkg_name/userware/${LANG}/
  schematic.dofile

- You must add the *lib_pkg_name* to the list of package names for the DES_ARCH_AUX_PKG_LIST environment variable, and export the variable.

The schematic.menu and schematic.ample Files

The following text contains an example of a *schematic.menu* file and a *schematic.ample file* and suggestions on how to use them.

Note

Some of the command lines in the following text have been adjusted so that they fit properly on the page.

HINTS:

1. Check that your HOME environment variable is set to /<yourpath>/<user_name> by typing "env" in a unix shell. If you do not have this variable, have your system administrator create it.

2. Create a directory called mgc/userware/des_arch in your home directory:

```
mkdir $HOME/mgc
mkdir $HOME/mgc/userware
mkdir $HOME/mgc/userware/des_arch
```

3. If you desire to create a userware directory elsewhere than at `$HOME/mgc/userware`, set the AMPLE_PATH environment variable to include that directory; otherwise, this step is not necessary. (See the discussion starting on page A-13.) The AMPLE_PATH should be added to your startup/login file so you will not have to set it each time you log in.

4. Copy the *schematic.ample* file to your userware directory:

```
cp $MGC_HOME/shared/pkgs/mgc_digital_uw/userware/default\
/schematic.ample
$HOME/mgc/userware/des_arch/schematic.ample
```

5. Copy the *schematic.menu* file to your userware directory:

```
cp $MGC_HOME/shared/pkgs/mgc_digital_uw/userware/default\
/schematic.menu
$HOME/mgc/userware/des_arch/schematic.menu
```

Use the *schematic.ample* and the *schematic.menu* files below as examples of how to modify your copy of the two files. In all the places that need changing, there are //comments indicating a CHANGE from the existing function TO the new function. Included also are the line numbers of where the function changes are located in the files.

6. Once you have completed your *schematic.ample* and *schematic.menu* files, test them by invoking Design Architect, open a sheet, and pulldown the libraries menu. Your top library name should now be in this menu. Check out the remainder of your library palette to ensure it works as desired.

7. Compile your *schematic.ample* file to speed up the invocation of Design Architect. This creates a file called des_arch.ample_c. This compiles ALL userware in your directory, so if you have subsequent changes to the source (.ample) files, you will need to delete the des_arch.ample_c file, make your changes and re-compile.

For Example:

```
compile_userware -i $HOME/mgc/userware -o $HOME/mgc/userware
-p des_arch
```

Examples of SCHEMATIC.MENU and SCHEMATIC.AMPLE:

```
Start of schematic.menu
//------------------------------------------------------------ //
//This schematic.menu file is meant for customising MGC released
// libraries/parts to Design Architect
// Date created : Thu Mar  5 14:06:38 SIN 1995 //
//------------------------------------------------------------

// Start a block so that local variables can be defined
{
// Turn transcripting off
local old_mode = $set_transcript_mode(@off);
// Call the function to build the toplevel menu

//-----------------------------------------------------
//------Line 16
//------CHANGE $MGC_Digital_Libraries_menu
//------TO     $custom_menu
//-----------------------------------------------------

$custom_menu();

// Add the toplevel menu to the DA library menu
//-------------------------------------------------------------
//----Line 18
//CHANGE $add_library_menu_item('MGC _Digital Libraries'
               ,"$replace_part_palette('MGC Digital Libraries')"
               , "mgc_libraries_pulldown");
```

```
//------TO      $add_library_menu_item('University _Libraries'
                ,"$replace_part_palette('UniversityLibraries')");

//-------------------------------------------------------------

$add_library_menu_item('University_Libraries'
              , "$replace_part_palette('University Libraries')");

// Return transcripting to its original level
$set_transcript_mode(old_mode);
// End the block
}
 End of schematic.menu.



Start of schematic.ample

//-------------------------------------------------------------
//
//    This schematic.ample file is meant for customising
//    MGC released libraries/parts to Design Architect
//
//    Date created : Mon Feb 10 10:23:53 SIN 1992
//
//    Change History:
//       o added character mnemonics to the pulldown menus for
//         keyboard manipulation in addition to mouse activation
...
//         feature
//         - Kuek Fong ( Sep 1995 )
//                                                          //-
-------------------------------------------------------------

//-------------------------------------------------------------
//------Line 42
//------CHANGE function $MGC_Digital_Libraries_menu(), INVISIBLE
//------TO     function $custom_menu(), INVISIBLE
//THIS MUST MATCH THE NAME IN THE SCHEMATIC.MENU FILE WHERE THE
//CALL TOFUNCTION TO BUILD TOP LEVEL MENU IS DEFINED
//-------------------------------------------------------------

function $custom_menu(), INVISIBLE
{
```

```
extern rom_logic = " ";     // logic selection for rom_lib only
extern logic = " ";         // logic selection for libraries
                            //other than rom_lib
extern casetype = " ";          // for symbol type selection
//-------------------------------------------------------------
//------Line 49
//------CHANGE $create_library_menu(@available
                        , @palette, "MGC Digital Libraries",,
//------TO     $create_library_menu(@available
                            , @palette, "University Libraries",,
//THIS MUST MATCH THE LIBRARY NAME DEFINED IN SCHEMATIC.MENU
//WHERE YOU ADD THE TOP LEVEL MENU TO THE DA LIBRARY NAME!!
//-------------------------------------------------------------

$create_library_menu("schematic", @palette, "University
Libraries",,

//-------------------------------------------------------------
//------Line 50 (see the NOTE below!)
//------ADD MENU TEXT ITEM TO BE INCLUDED IN MAIN PALETTE
// FOR EXAMPLE:    ,$menu_text_item("dev_lib"
                   , '$show_sub_palette("dev_lib")', , @off)
//-------------------------------------------------------------
,$menu_text_item("dev_lib",'$show_sub_palette("dev_lib"0',
,@off)

//------There are currently 32 text items in the above function.
//Change the library names to your own, and delete the extra
//entries as necessary.
//
//NOTE: Line numbers below are based on an un-edited
//schematic.palette! Use those numbers as a guide to find the
//functions listed.
//------DELETE lines 85 through 309. (See NOTE above!)
//-------------------------------------------------------------
//------Line 310   (See NOTE above!)
//-----CHANGE function $mgc_libraries_pulldown_menu(), INVISIBLE
//------TO  function $university_libraries_pulldown(), INVISIBLE
//-------------------------------------------------------------

function $university_libraries_pulldown_menu(), INVISIBLE {
$create_menu("schematic"
            ,@popup
//-------------------------------------------------------------
```

```
//------Line 314 (See NOTE above!)
//------CHANGE ,"mgc_libraries_pulldown"
//------TO     ,"university_libraries_pulldown"
//-------------------------------------------------------------

                ,"university_libraries_pulldown"
                 ,$menu_default_columns
                 ,$menu_default_color

      ,$menu_context_item(  "($is_diagram_in_edit_mode() )"
//-------------------------------------------------------------
//------Line 319 (See NOTE above!)
//------CHANGE  ,"Display _Libraries Palette"
              , "$replace_part_palette('MGC Digital Libraries')" )
//------TO      ,"Display _Libraries Palette"
              , "$replace_part_palette('UNIVERSITY  Libraries')" )
//THIS NAME MUST MATCH THE MENU NAME IN $CREATE_MENU IN THE TOP
//MENU FUNCTION CUSTOM_MENU REDEFINED AT THE BEGINNING OF THE
//FILE.
//-------------------------------------------------------------

         ,"Display _Libraries Palette"  , "$replace_part_palette
               ('UNIVERSITY Libraries')" )
                       ,$menu_context_item(  "($in_edit_mode )"
           ,"Set _Interfaces Defaults"    , "$init_global_types()
                 " ,,, "parts_interface_pulldown" )
    );
 }

//-------------------------------------------------------------
//                         Library Palettes Created On Demand
//
//-------------------------------------------------------------
-----------------
//   DEFINE YOUR DEVELOPMENT LIBRARY MENU BEGINNING ON LINE 331
//                          FOR EXAMPLE:
//------CHANGE
//function $ac_lib_menu(), INVISIBLE
//{
//      $create_library_menu( @available
//                           , @palette
//                           ,"ac_lib"
//                           , 1,
//          ,$menu_text_item("ground"
```

```
//,"$add_or_replace_instance('gen_lib','$MGC_GENLIB/ground')")
//         ,$menu_text_item("portin"
//,"$add_or_replace_instance('gen_lib','$MGC_GENLIB/portin')")
//          ...
//         ,$menu_text_item("74ac824"
//,"$add_or_replace_instance('ac_lib','$MGC_ACLIB/74ac824')")
//      );
//}
//------TO
//function dev_lib_menu(), INVISIBLE
//{
//      $create_menu("schematic"
//                   , @palette
//                   ,"dev_lib"
//                   , 1,
//,$menu_text_item("ground"
//,"$add_or_replace_instance('dev_lib','$MGC_GENLIB/ground')")
//          ,$menu_text_item("portin"
//,"$add_or_replace_instance('dev_lib','$MGC_GENLIB/portin')")
//          ,$menu_text_item("portout"
//,"$add_or_replace_instance('dev_lib','$MGC_GENLIB/portout')"
//          ,$menu_text_item("vcc"
//,"$add_or_replace_instance('dev_lib','$MGC_GENLIB/vcc')")
//       );
//}
//-------------------------------------------------------------

End of schematic.ample.
```

Design Architect Menu Customization Functions

The following text describes the $create_library_menu() and $add_library_menu_item() functions and provide examples for adding menus and menu items in Design Architect. The function $prompt_for_diagram_location() is also described which returns the interactive cursor input location in user units instead of pixels.

$create_library_menu()

This function is defined in the ui_base scope. The pathname is: *$MGC_HOME/shared/pkgs/des_arch/userware/${LANG}/ui_base.ample*.

Usage

$create_library_menu(instance_replace_mode, menu_type, "menu_name", *columns*, *bgd_color*, "item1", "*item2*", ... "*itemN*")

Description

Place the $create_library_menu() function in your *schematic.ample* file.

This function allows library developers to inform Design Architect about their support for calling $replace() on components listed in their menu. Library developers should use this function instead of $create_menu(). If they use $create_menu(), their menus will work in $$add_instance mode at all times.

The defaults for menu_name, columns, and bgd_color are values of internal variables set by the Session.

Arguments

- instance_replace_mode

  This argument determines whether instance replacement functionality is available in the palette popup menu. If it is available, "Replace Instance" appears in the palette popup menu when an instance is selected. After an instance has been replaced, the menu item toggles to "Add Instance". The

two possible values of instance_replace_mode are **@available** and ⇒ **@unavailable**.

- menu_type

  This is the name of the type of menu you are creating. Choose one of the following: ⇒ **@popup**, **@pulldown**, or **@palette**.

- menu_name

  This string specifies the name of the menu. The default is the value of the $menu_default_popup_name variable.

- items

  This repeating argument defines items in your menu. Each menu item must be quoted.

- columns

  This optional integer specifies the number of columns you want in your menu. It defaults to the value of the $menu_default_columns variable.

- bgd_color

  This optional string defines the background color for the menu. The default is the value of the $menu_default_color variable.

$add_library_menu_item()

This function is available in the schematic scope. The pathname is: *$MGC_HOME/shared/pkgs/des_arch/userware/${LANG}/schematic.ample*.

Usage

$add_library_menu_item("display_text", "*action*", "*submenu_name*")

Description

The $add_library_menu_item() function is to be used in the *schematic.dofile* file by library developers who want their menu access added to the Libraries pulldown menu. The developer calls this with his choice of display_text which is what will actually display in the pulldown.

Arguments

- display_text

  This string specifies the text that actually appears in the menu.

- action

  This will ordinarily be a call to make your palette menu appear in the palette area. This is the call "$replace_part_palette()" in the example at the end of this function definition. The action call should be placed inside of quotes, because it is a string.

- submenu_name

  This string is the name of the submenu, and is only needed if there is going to be a cascade menu off of this newly added menu item.

Example(s)

Here is an example of how the *mgc_digital_uw* package makes its call:

```
$add_library_menu_item("MGC _Digital Libraries",
          "$replace_part_palette('MGC Digital Libraries')",
                                    "mgc_libraries_pulldown");
```

"MGC Digital Libraries" is the display_text;
"$replace_part_palette('MGC Digital Libraries')" is the action;
"mgc_libraries_pulldown" is the submenu_name.

When this function is called, Design Architect creates the specified menu item and adds it onto the **Libraries** pulldown menu.

$add_or_replace_instance()

As a library developer, you should write a function that does exactly what you want it to do. The $add_or_replace_instance() function can serve as a guide if it does some or most of what you want. Once you have written your function, call it from your own menus. The pathname to the file in which the $add_or_replace_instance() function is defined is:

$MGC_HOME/shared/pkgs/mgc_digital_uw/userware/$LANG/schematic.ample

Copy the function to your own *schematic.ample* file, and edit the function to match your needs. Be sure to give the edited function a unique name. DO NOT name it "$add_or_replace_instance()". Also, user-defined functions should not begin with "$". If you do not rename the function, your function will overwrite the one supplied by Mentor Graphics, and the Mentor Graphics menu will not work correctly.

The following is a short version of the $add_or_replace_instance() function.

```
function sample_add_or_replace_instance( comp : string,
                 smbl : optional string { default = "" }
                                          ), INDIRECT
{
   if ($does_component_exist(comp) != "") {
        $set_active_symbol(comp,smbl);
        if (session_area@@$instance_replacement_mode == @off)
           $place_active_symbol();
        else
           $$replace(comp,smbl,@clear);
        $set_instance_replacement_mode(@off);
   else
        $message($format("Cannot find component %s. Please
        ensure logical name is defined or have the component
        installed.",comp),@warning);
}
```

Keep in mind that the $add_or_replace_instance() function is only a guide; it is not meant to be used "as is" by library developers. It was written specifically to be called by the Mentor Graphics gen_lib menus. Notice that the function exists only in the file in which it is used as a call from the menus defined by the same group.

If you want your menus to allow "replace" as well as "add" functionality, it is necessary to put the following line after the add or replace action is complete:

```
$set_instance_replacement_mode(@off);
```

This is the only way that the palette menu knows to change the popup menu item from "Replace Instance" back to "Add Instance".

$prompt_for_diagram_location()

Scope: bed

Usage

$prompt_for_diagram_location(@multi_window, @multi_window_paint, @ignor_grid)

Description

The $prompt_for_diagram_location() function is used as an argument in the $prompt_dynamic() function to retrieve the cursor location in user units. Another function $prompt_for_location() can be used, but is less useful because the location is returned in pixels.

Arguments

The arguments for this function can be specified in any order and include the following:

- **@multi_window**

  Enables inter-window dynamics. If omitted, the dynamic suspends whenever the mouse cursor is outside the active window. If specified, the dynamic resumes when the mouse cursor is over any Bed_window showing the same Bed_diagram as the active window. Dynamic graphics are only rendered in the window containing the mouse cursor. Note that a builtin command only “knows” that inter-window dynamics occurred by checking the area names returned in the Bed_diagram_location ...

- **@multi_window_paint**

  This argument enables multi-window rendering of dynamic graphics. If omitted, the dynamic only displays in the window containing the mouse cursor. If specified, the dynamic displays in all windows into the same diagram as the window containing the mouse cursor.

- **@ignore_grid**

  Does not return the nearest grid location.

Example

The following code shows how the $prompt_for_diagram_location() is used in the $$slide() function.

```
function $$slice(
    pt1 : diagram_location,
    pt2 : diagram_location,
    all_props : Boolean {default = FALSE}) {
    $invis_clear_saved_prompt();
    $slice(pt1, pt2, all_props);
}

function $$slice_prompt(),INVISIBLE
{
    $create_prompt("da_window", @$$slice, "Slice",
       $prompt_arg(@pt1, "First Point"),
       $prompt_dynamic(@pt1,
"($prompt_for_diagram_location(@multi_window, @multi_window
_paint)"),
       $prompt_arg(@pt2, "Second Point"),
       $prompt_dynamic(@pt2, "($prompt_for_diagram_line(pt1,
@wait_for_lmb_up, @multi_wi
ndow, @multi_window_paint))"),
    $prompt_arg(@all_props, "Copy Properties to all Comments")
    );
}
```

Related Functions

$prompt_for_location()
$prompt_dynamic()
$create_prompt()

Userware Examples

The following text shows sample userware customizations that vary in maintenance levels from light to heavy.

Adding a Palette Library Menu

Rework Level: Light -- New menus created in userware that call documented functions or custom userware functions require light maintenance.

The my_lib_menu() function in this example also belongs in the *schematic.ample* file. It shows how to add a palette library menu. This function should also be written with a unique name, so that it does not interfere with existing Mentor Graphics component library functions. The function should be written to include functionality necessary for the successful use of your customized library parts.

```
// This function defines the palette menu for your customized
// parts. These are sample parts.

function my_lib_menu(), INVISIBLE
{
      $create_library_menu( @available
                          , @palette
                          ,"my_lib"
                          , 1, ,$menu_text_item("ground",
"$sample_add_or_replace_instance('$MGC_GENLIB/ground')")
        ,$menu_text_item("portin",
"$sample_add_or_replace_instance('$MGC_GENLIB/portin')")
        ,$menu_text_item("portout",
"$sample_add_or_replace_instance($MGC_GENLIB/portout')")
        ,$menu_text_item("vcc",
"$sample_add_or_replace_instance('$MGC_GENLIB/vcc')")
        ,$menu_text_item("74act00",
"$sample_add_or_replace_instance('$MGC_ACTLIB/74act00')")
        ,$menu_text_item("74act11000",
"$sample_add_or_replace_instance($MGC_ACTLIB/74act11000')")
      );
}
```

The items below go into a *schematic.dofile* file. The function calls in this file add the menu(s) and menu item(s) that you defined in the *schematic.ample* file.

```
// Start a block so that local variables can be defined
{
// Turn transcripting off
        local old_mode = $set_transcript_mode(@off);
// Call the function to build the toplevel menu
        my_lib_menu();
// Add the toplevel menu to the DA library menu
        $add_library_menu_item('My _Library',
         "$replace_part_palette('my_lib')");
// Return transcripting to its original level
        $set_transcript_mode(old_mode);
// End the block
}
```

Adding to MGC Menus

Rework Level: Moderate -- Adding to existing menu items requires little maintenance unless the name of a menu changes from one release to the next. Also, when adding items to context-sensitive menus (for example, the popup menus in the Design Architect schematic window), check the names of the menus at each release.

Items are added to an existing menu with the $add_menu_item() function. The syntax for the function is as follows:

```
$add_menu_item(menu, item, menu_name);
```

When calling the $add_menu_item() function, use either the menu argument or the menu_name argument, not both of the optional arguments. The menu and menu_name arguments are described in the following list:

menu	The menu id. This is the value returned when the $create_menu() function is called. If this value is not stored in an external variable then the value is lost.
menu_name	The text string that is the menu name.

The names of the default popup, palette, and menu bars for a scope are stored in reserved AMPLE variables: $menu_default_popup_name, $menu_default_palette_name, and $menu_default_menu_bar_name respectively. The simplest way to determine the name of the menu is to activate the window associated with the menu and then call the $writeln() function with the appropriate reserved AMPLE variable name as an argument. If this method fails, examine the source userware to determine the menu name.

The following code block shows an example call to $add_menu_item(). Notice the use of the reserved AMPLE variable in the function call to minimize the potential for rework in a future software release.

```
1  $add_menu_item(,$menu_bar_item("V_NDR","vndr_pulldown"),
2                 $menu_default_menu_bar_name);
```

The code block that follows could be placed in the *schematic.dofile* file to customize the menus in Design Architect; the list explains the code block:

Line(s)	Action(s)
2 and 8	Stores the existing transcript mode in the "trans_mode" local variable and then restores transcripting to original mode.
3-4	Add the "VNDR" item to the menu bar.
5-6	Add the "VNDR Library" item to the Libraries pulldown menu.
7	Stores the name of the default palette menu for later use.

```
1  {
2  local trans_mode = $set_transcript_mode(@off);
3  $add_menu_item(, $menu_bar_item("V_NDR",
4      "vndr_pulldown"), $menu_default_menu_bar_name);
5  $add_library_menu_item('V_NDR Library',
6      '$replace_part_palette("VNDR_Root_Palette")');
7  extern vndr_dpal = $menu_default_palette_name;
8  $set_transcript_mode(trans_mode);
9  }
```

Creating New Functions Using Undocumented Userware

Rework Level: Heavy -- Custom userware created using undocumented Mentor Graphics functions must be examined at each software update. Undocumented functions may change at any time without notice.

Undocumented functions allow Mentor Graphics engineers to make changes without affecting the general user population. Customizers creating userware with undocumented functions must assume the responsibility for updating their code at each software release. Mentor Graphics will not document changes to these functions and customer support contracts do not cover undocumented functions. Because of the heavy maintenance involved and because Mentor Graphics does not provide customer service for this type of customization we recommend against using this technique.

One potential reason for customizing an undocumented function is to use a window or scope initialization function (the existence of these functions is documented in the AMPLE User's Manual) to cause some action to occur when a window or scope is opened. Always preserve the original function prior to an overloaded declaration and then call the preserved function from within the overloaded version of the function. The following code block shows the $window_init() function for the notepad scope. This overloaded version of the function loads a custom palette whenever a notepad window is opened, based on the value of the session_area@@notepad_palette external variable:

```
 1  extern vndr_window_init = $window_init;
 2
 3  function $window_init(), invisible
 4  {
 5      vndr_window_init();
 6      switch (session_area@@notepad_palette)
 7      {
 8          case "Techinit" :
 9          {
10              replace_palette("Techinit"); $resize_palette();
11              break;
12          }
13          case "Test" :
14          {
15              $replace_palette("Test"); $resize_palette()
16              break;
17          }
18      }
19  }
```

Recommendations

Here are a few recommendations to make your customizing easier:

- Look at existing Mentor Graphics userware for examples of how to use AMPLE. Look in:

  $MGC_HOME/shared/pkgs/des_arch/userware/En_na

- Create a separate file that adds to Mentor Graphics userware, instead of modifying the Mentor Graphics userware. This will make maintenance much easier as you receive new releases.

- Create separate palettes and menus, rather than changing or adding directly to Mentor Graphics palettes and menus. This also makes maintenance easier.

- Do not create userware that is dependent upon screen locations. Creating any userware that is dependent on the size or position of any portion of an application window is not only going to require a large amount of maintenance from one software release to another, but may require changes for each platform that Mentor Graphics supports.

Appendix B
Data Types

Table B-1 lists all data types available in Design Architect. For more information on data types, see the *AMPLE User's Manual*.

Table B-1. Common Data Types

Argument Constraint	**Description**
Boolean	A name literal that has one of two values: @true or @false.
Callable	A function name.
Complex	A complex number in the format [real_part, imaginary_part]
Enum	A vector of zero or more numbers in the format [number1, ..., numberN]
Form	The location in memory of a dialog box, including the dialog box site and gadgets.
Form_gadget	The location in memory of a dialog box gadget.
Form_site	The location in memory of a dialog box site, including gadgets.
Form_site_value	The location in memory of a dialog box site.
Integer	A number that must be an integral number.

Table B-1. Common Data Types [continued]

Argument Constraint	Description
Location	The first element in each location is the x coordinate, the second element is the y coordinate, and the third element, which is optional, is the window name: [[x1, y1, "*window*"], [x2, y2, "*window*"], [x3, y3, "*window*"]]
Menu	The location in memory of a menu, including menu items.
Menu_item	The location in memory of a menu item.
Name	A name literal value. In function usage each name value is preceded by an @ character. In command usage, omit the ampersand.
Number	A number, including integer, real, or scientific notation.
Pathname	A string that specifies the location of a file in the directory hierarchy. The pathname must be in the format required by your workstation.
Polylocation	A vector of zero or more locations in the format: [location1, ..., locationN]
Polyrectangle	A vector of zero or more rectangles in the format [rectangle1, ..., rectangleN]
Real	A number that is a floating point number.
Rectangle	A two element vector of locations in the format: [location1, location2]
Status	A data object consisting of a numeric value and additional parameters.

Table B-1. Common Data Types [continued]

Argument Constraint	Description
String	A value that must be quoted with single or double quotes if it begins with an up-arrow (^) or a square bracket ([), or it contains commas, white space, semicolons, or pound signs (#). Repeating text strings use the form: [string1, ..., stringN]
Vector	A collection of zero or more values or vectors in the format: [element1, ..., elementN]

Appendix C
VHDL Editor Templates

This appendix contains the names and contents of the VHDL Editor templates that are available when you are creating or modifying VHDL source text within Design Architect.

Following is a list of VHDL templates. For a detailed syntax description of these templates, refer to the *Mentor Graphics VHDL Reference Manual*.

.,_association_list
.,_discrete_range
.,_enum_literal
.,_identifier_list
.,_index_constraint
.,_name_list
.,_selected_waveforms
.,_sensitivity_list
.,_waveform
.,index_subtype_definition
..
.;_generic_list
.;_interface_declaration
.;_port_list
.BUS
.ELSE
.ELSIF
.TRANSPORT
.actual_parameter_part
.after
.architecture_identifier
.condition_clause
.expression

.formal_=>
.func_proc_body
.guard_expression
.index_specification
.label
.report
.sensitivity_clause
.severity
.signal_kind
.static_expression
.subtype_indication
.timeout_clause
.waveform
.when_condition
ARCHITECTURE
ARRAY
ASSERT
ATTRIBUTE
BLOCK
CASE
COMPONENT
CONSTANT
ENTITY
EXIT
FILE
FOR
FUNCTION
GENERIC
IF
LIBRARY
LOOP
NEXT
NULL
PACKAGE
PORT
PROCEDURE
PROCESS
RETURN

SIGNAL
SUBTYPE
TYPE
USE
VARIABLE
WAIT
WHEN
WHILE
WITH
access_type_definition
alias_declaration
architecture_body
array_type_definition
assertion_statement
association_list
attribute_declaration
attribute_specification
binding_indication
block_configuration
block_declarative_item
block_specification
case_statement
case_statement_alternative
choices
component_declaration
component_instantiation_statement
concurrent_assertion_statement
concurrent_procedure_call
concurrent_statement
conditional_signal_assignment
conditional_waveform
configuration_declaration
configuration_declarative_item
configuration_item
configuration_specification
constant_declaration
constrained_array_definition
constraint

direction
disconnection_specification
discrete_range
element_declaration
entity_aspect
entity_class
entity_declaration
entity_declarative_item
entity_name_list
entity_specification
entity_statement
entity_statement_part
enumeration_type_definition
exit_statement
file_declaration
file_type_definition
floating_type_definition
full_type_declaration
generate_statement
generation_scheme
generic_clause
generic_map_aspect
identifier_list
if_statement
incomplete_type_declaration
instantiation_list
integer_type_definition
interface_constant_declaration
interface_declaration
interface_list
interface_signal_declaration
interface_variable_declaration
iteration_scheme
library_clause
loop_statement
mode
next_statement
null_statement

options
package_body
package_body_declarative_item
package_declaration
package_declarative_item
physical_type_definition
port_clause
port_map_aspect
procedure_call_statement
process_declarative_item
process_statement
range
record_type_definition
return_statement
secondary_unit_declaration
selected_signal_assignment
sensitivity_list
sequential_statement
severity
signal_assignment_statement
signal_declaration
subprogram_body
subprogram_declaration
subprogram_declarative_item
subtype_declaration
type_declaration
type_definition
unconstrained_array_definition
variable_assignment_statement
variable_declaration
wait_statement

Appendix D
Component Status Personality Module

The Component Status Personality Module is an optional software customization package for Design Architect and Design Viewpoint Editor. In addition to the Component Status tool, other products are accessible from within Design Architect when they are installed and loaded correctly. These include AutoLogic BLOCKS, EDIF Netlist Read/Write, Schematic Generator, EDIF Schematic Read, VHDL Netlist, and Analogy Corporation's Saber technology.

This personality module (cs_da package) is intended for environments where formal documentation procedures are required, or external parties (such as military) require specific information. Install the cs_da package if you want Flow Manager to manage your designs.

Do not install this personality module if you are not using Flow Manager.

The following subsections provide information about installing and loading the userware described in this addendum.

Applications/Options

You need to install the following applications and options, in addition to Design Architect, for the userware to behave as described in this addendum:

- Component Status Personality Module (cs_da)
- AutoLogic BLOCKS (syn_blocks_da, syn_kiss, syn_m, syn_equ, syn_pla)
- EDIF Schematic Read/Write (esi_da, enread, sg, enwrite, miflist, vhdlnet)

Environment Variables

In addition to installing the optional software in the $MGC_HOME tree, there are certain environment variables that must be set prior to invoking Design Architect. These may be set in an invocation script that you place in your *$HOME/mgc/invoke_settings/da* directory. The file must have a *.sh* suffix.

The following list describes the environment variables used with the Component Status Personality Module. An example of an invocation script is on page D-4. For more information about setting environment variables and how they affect the loading of customized userware, refer to Appendix A, "Custom Userware".

- **$MGC_HOME**: Specifies the location of Mentor Graphics software.

- **$MGC_LOCATION_MAP**: Specifies the pathname to your location map. If your location map is not in either *$MGC_HOME/etc/mgc_location_map* or *$MGC_HOME/shared/etc/mgc_location_map*, then you need to set this variable. For information about location maps, refer to "Managing Data with Location Maps" in *Managing Mentor Graphics Software*.

- **$ANALOGY_SABER**: When set to "available", this variable causes the **Saber** pulldown menu to appear in the Design Architect schematic windows for use by Analogy with their Saber technology.

- **$MGC_COMPONENT_STATUS**: When set to "FULL", this variable indicates that you want to run the Component Status tool.

- **$DES_ARCH_PKGS_TO_LOAD**: Specifies a list of package names (separated by colons) in the *$MGC_HOME/pkgs* directory that contain userware to be loaded into Design Architect scopes. This variable is used to control automatically loading packages. It defines an exact list of userware packages to load, and the order in which they are loaded.

  Any automatically loading packages not specified in this list will not be loaded. Packages are loaded in the order specified (after all standard Design Architect userware is loaded).

- **$DES_ARCH_AUX_PKG_LIST**: Specifies a list of package names (separated by colons) in the *$MGC_HOME/pkgs* directory that contain userware to be loaded into Design Architect scopes. When this variable is set, the specified packages are loaded, in addition to any automatically loaded userware packages. This variable is used to add manually loaded packages to the list of userware to load.

- **$MGC_RLS_LIB and $MGC_DEV_LIB**: Specify the locations of released libraries and development libraries, respectively. These variables are not required; they are used by the Library Management System to show pathnames to libraries.

- **AMPLE_PATH**: Specifies one or more locations from which userware should be loaded. Each directory name you specify must contain a subdirectory having the application package name. This subdirectory contains the userware you want to load for that application.

  For example, if you placed your schematic userware customizations in *$HOME/mgc_custom/des_arch/schematic.dofile*, you specify *$HOME/mgc_custom* as one of the pathnames in the AMPLE_PATH variable.

  The search begins with the last pathname in the list, and works back to the first pathname in the list (right to left). Each new definition for a function replaces any previous definition in that scope.

An example of an invocation script is shown in the following code block:

```
#!/bin/sh
#
# this file is $HOME/invoke_settings/da/session/sh
# This script sets environment variables so the
# Component Status Personality Module will be loaded.

echo  setting ANALOGY_SABER and MGC_COMPONENT_STATUS

ANALOGY_SABER='available'
MGC_COMPONENT_STATUS='FULL'
export ANALOGY_SABER
export MGC_COMPONENT_STATUS
MGC_LOCATION_MAP=$HOME/mgc/mgc_location_map
export MGC_LOCATION_MAP
```

This section describes the additional functionality in the Design Architect userware when optional software is installed and you have indicated through the DES_ARCH_AUX_PKG_LIST and DES_ARCH_PKGS_TO_LOAD environment variables that the software is to be used. These variables are described in the "Environment Variables" beginning on page D-2, and discussed in more detail in the "Custom Userware" Appendix.

DA Palettes and Menus

The Design Architect menus have been enhanced to include some items based upon whether the required software for those items is currently installed and/or certain shell environment variables are set.

All Scopes

The first time you save a design object, a dialog box is displayed in which you provide design information. You can access this information by choosing the **MGC > Show Component Status** pulldown menu item, and selecting a design object through the navigator. A report window displays information about the object, such as object type, protection, object size, project/user/customer identification, job status, accounting number, security classification, date created, and time/date last used.

DA Session

The Session palette is shown on the left in Figure D-1. The first three rows and the last row of icons are always present in the palette. The **Open LogicLib** icon is visible only when the *syn_blocks_da* package is installed. In addition to the *syn_blocks_da* package, the appropriate language package (*syn_kiss*, *syn_m*, *syn_equ*, and *syn_pla*) must be installed for the **Open Kiss**, **Open M**, **Open Equ**, and **Open Pla** icons to be visible.

Clicking the Select mouse button on any of these icons displays a dialog box in which you specify the pathname of the source file you wish to open. For information about these functions, refer to "Overview and Key Concepts" in the *AutoLogic BLOCKS Manual*.

The **Import EDIF Netlist** icon is visible only if *$MGC_HOME/bin/enread* and *$MGC_HOME/bin/sg* are available. For information about importing EDIF netlists, refer to the *EDIF Netlist User's and Reference Manual*.

The *esi_da* package must be installed and loaded for the **Import EDIF Schematic** icon to be visible in the palette. For information about importing EDIF schematic files, refer to the *EDIF Schematic Interface (ESI) User's and Reference Manual*.

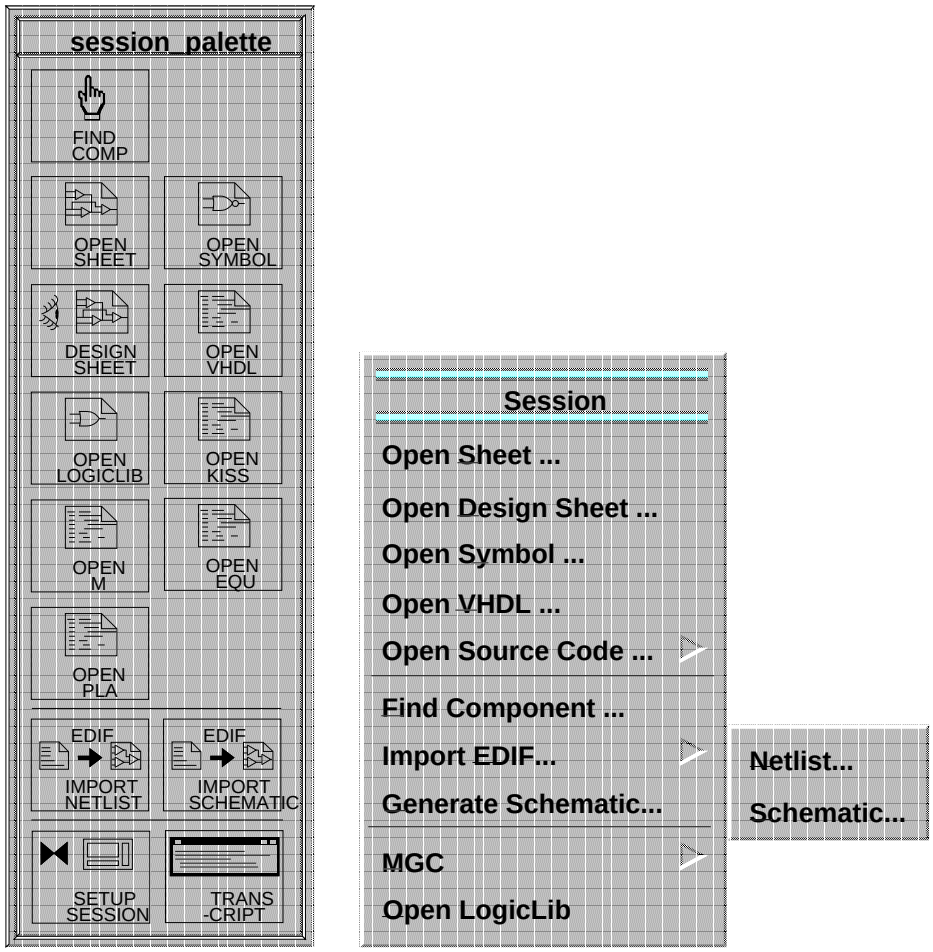


Figure D-1. DA Session Palette and Popup Menu

The Session popup menu, shown on the right in Figure D-1, contains the following additional items:

- **Import EDIF** appears in the menu whenever any of its submenu items are available. If no submenu items are available, this menu item is not visible. **Import EDIF > Netlist** requires both *$MGC_HOME/bin/enread* and *$MGC_HOME/bin/sg* to be available. **Import EDIF > Schematic** requires the *$MGC_HOME/pkgs/esi_da* package.

- **Generate Schematic** is visible only when both *$MGC_HOME/bin/enread* and *$MGC_HOME/bin/sg* are available in the $MGC_HOME tree.

- **Open LogicLib** appears in the popup menu only if the *syn_blocks_da* package is installed. Clicking on this icon displays a dialog box for you to specify a macro function.

If the *$MGC_HOME/bin/enread* application or the *$MGC_HOME/pkgs/esi_da* package is available, **Import EDIF** also appears in the Session **File** pulldown menu, and has the same submenu as in the popup menu.

Schematic Editor

In the Schematic Editor, there are no changes to the palettes or the popup menus. There are three additional pulldown menus, as shown in the menu bar in Figure D-2.

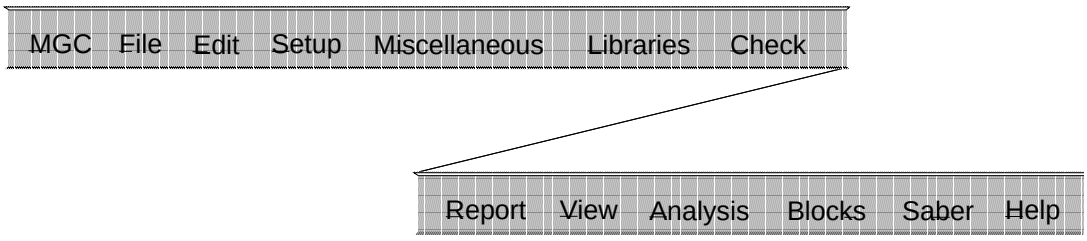


Figure D-2. Schematic Editor Menu Bar

The **File > Export** menu item appears when any of the following applications are available: *$MGC_HOME/bin/miflist*, *$MGC_HOME/bin/vhdlnet*, or *$MGC_HOME/bin/enwrite*. The **File** menu and **File > Export** submenu are shown in Figure D-3.

The **File > Save Sheet** and **Save Sheet As** menu items call versions of their respective functions that have been specialized for the Component Status tool.

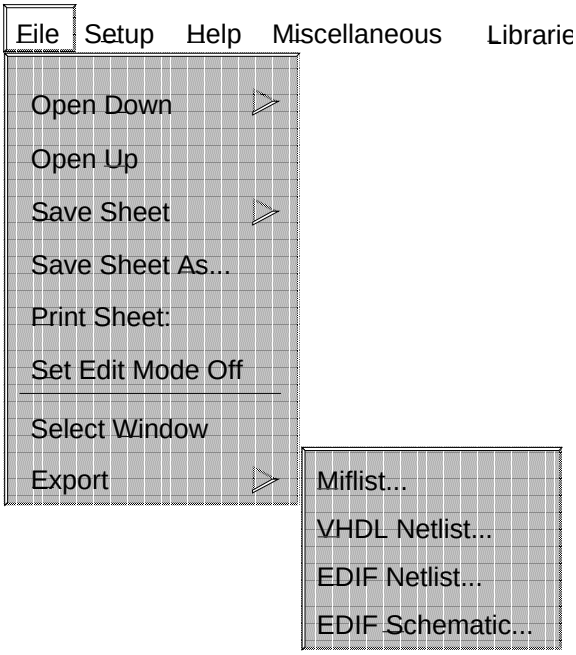


Figure D-3. Schematic Editor File Menu

Edit > Add Sheet Border > ANSI STD creates either a standard or a cover sheet border and title block on your schematic sheet. The standard sheet title block includes the design number, name of the designer, and schematic page number. The cover sheet title block has additional information such as revision status and manufacturing data. You can choose from size A (horizontal or vertical) through size F. These borders and title blocks satisfy ANSI standard requirements.

Currently, the Open Sheet Options dialog box only supports MGC STD borders and title blocks for new schematic sheets. When you want to create an ANSI border and title block on a new sheet, choose **No Border** in the Open Sheet Options dialog box, then choose the **Edit > Add Sheet Border > ANSI STD** menu item after the new sheet is displayed.

The **Analysis** menu lets you run electrical rule checking and use that output to open a sheet to view a particular instance.

The **Blocks** pulldown menu appears only if the *syn_blocks_da* package is installed. The menu items are used with AutoLogic BLOCKS.

The **Saber** pulldown menu is provided for use by Analogy Inc. with their Saber technology. This menu appears only if the shell environment variable $ANALOGY_SABER is set to "available" before invoking Design Architect.

Symbol Editor

There are no changes to the palette or popup menu items in the Symbol Editor when *cs_da* is installed. In the **File** pulldown menu, the **Save Symbol** and **Save Symbol As** items call versions of their respective functions that have been specialized for the Component Status tool.

Appendix E
Pin List File Format

A pin list file is used to provide ***symbol information*** to the $generate_symbol() function. The pin list file can be created using the $create_pin_list() function and an existing schematic sheet or created manually with an ASCII text editor.

The following text describes the constructs used in a pin list file and provide sample pin lists.

Caution

Mentor Graphics reserves the right to alter pin list format at any time for performance and/or functionality improvements. If you choose to use pin list files as an external interface to Design Architect, be prepared to update your files when these changes occur. To minimize maintenance costs for your external interface, use one of Mentor Graphics procedural interfaces (CDP, DDP, or DFI) rather than pin list files.

Pin List File Construct Dictionary

The pin list is composed of the following six types of constructs:

pins	**source_view_path**
body_props	**source_view_type**
shape	**source_view_ver**

The source_view* constructs have no meaning for this software release and should not be used when creating pin list files with and ASCII editor. If you generate a pin list file with the $create_pin_list() function, the source_view* constructs are included in the pin list and may be used in a future software release.

In addition to the constructs listed above, comments can be included in the pin list with a double slash (//) indicating the beginning of the comment. A comment can occur at any position on a line. Any text or punctuation following the double slash is ignored.

The following conventions are used in syntax lines for the construct descriptions that follow:

- Bold type is used for literal strings and punctuation. These items are entered exactly as they appear on the syntax line.
- Curly braces ({}) surround parameters or sets of parameters that may be repeated. If the curly braces are bold, they must be included in the construct.
- Square brackets ([]) surround optional parameters.
- Double quotes ("") surround non-literal strings. These strings are provided by the creator of the pin list and must be enclosed in double quotes. Note that some construct parameters accept a restricted set of strings and do not require quotes around those strings.

pins

Syntax

pins {
"pinname"**,** [**label** "label"**,**] direction**, width** w**, side** s**,**
position_on_side p**,** bubble, edgesense **;**
}

Parameters

- "pinname"

  A string that specifies the pin name. Refer to "Property Concepts" in the *Design Architect User's Manual* for information on characters that can be used in the pin name.

- **label** "label"

  An optional string that is placed inside the body of the symbol next to the pin. The literal string **label** must precede the "label" string. Any character may be used in the label.

- direction

  A string that indicates the data flow direction for the pin. Possible values are:

  input: Specifies an input pin, the pintype property is set to "in".

  output: Specifies an output pin, the pintype property is set to "out".

  bidir: Specifies a bidirectional pin, the pintype property is set to "ixo".

  The value of this parameter does not need to be enclosed in double quotes.

- **width** w

  A integer that indicates the signal width of the pin. The literal string **width** must precede the width number. Any integer may be used to indicate width.

  Figure E-1 shows where the width is placed on the resulting symbol.

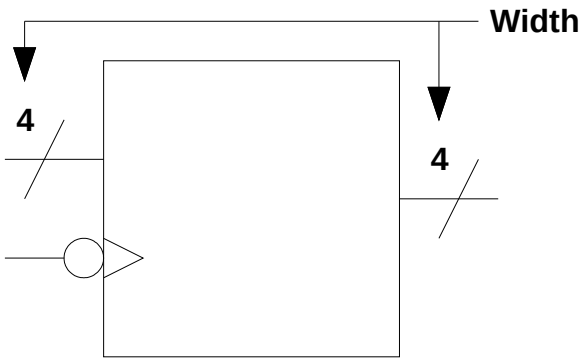


Figure E-1. Placement of Width

- **side** s

  An integer that indicates where to place the pin on the symbol. Each side of the symbol is numbered in a clockwise direction, beginning with 0 at the top of the symbol shape. An integer that corresponds to a symbol side is valid. If you specify -1, the $generate_symbol() function chooses a symbol side for the pin based on the pin direction. The literal string **side** must precede the integer.

  Figure E-2 shows example side numbers for two symbols.

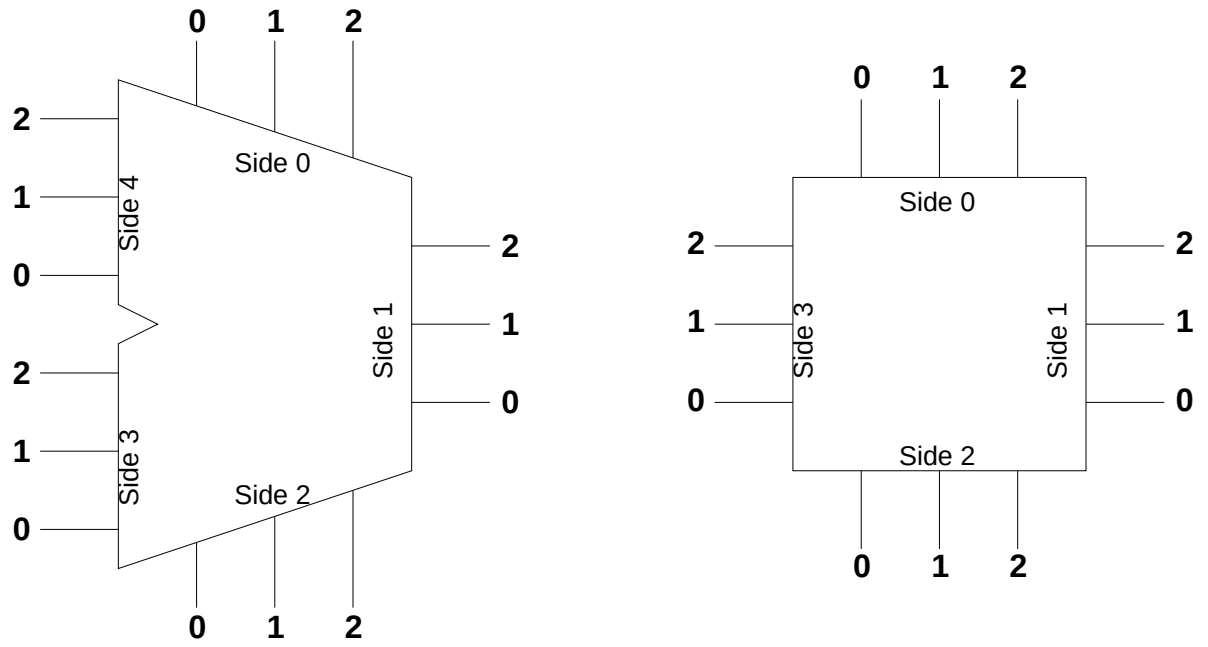


Figure E-2. Symbol Side and Pin Position Numbering

- **position_on_side** p

  An integer that indicates the position of the pin on the specified side. The first pin position is 0. Position numbers increase left-to-right for horizontal sides and botttom-to-top for vertical sides. If you specify -1, the $generate_symbol() function places the pin at the next available position on the specified side. Also, if the pin list file contains a mixture of "-1" (next available) and explicit (positive integer) pin position parameters, the lines containing the explicit pin positions must be placed before lines containing "-1" to avoid creation of a symbol with overlapping pins. The literal string **position_on_side** must precede the integer.

  Figure E-2 shows example pin positions for two symbols.

- bubble

  A string that indicates whether a bubble should be placed on a pin. Possible values are: **bubble** and **no_bubble**.

  The value of this parameter does not need to be enclosed in double quotes.

- edgesense

  A string that indicates whether or not a pin is a an edge sensitive input. Possible values are:

  edgesense: Place an edge sensitive indicator on the pin.

  no_edgesense: Do not place an edge sensitive indicator on the pin.

  The value of this parameter does not need to be enclosed in double quotes.

Description

A required construct. Each pin on the symbol must have a set of pin parameters specified. Each set of pin parameters is separated with a semicolon and placed inside the curly braces following the **pins** keyword.

body_props

Syntax

body_props {
name "propname"**,** [**text** "text"**,**] type**, value** "value"**, region** r **;**
}

Parameters

- **name** "propname"

  A string that specifies the property name. Refer to "Property Concepts" in the *Design Architect User's Manual* for information on characters that may be used in the property name. The literal string **name** must precede the "propname" string.

- **text** "text"

  An optional string that is placed on the symbol as a comment graphic to help clarify the display of the property value. The literal string **text** must precede the "text" string. Any set of characters can be used in the label.

  A common use of the text parameter is to place the name of the property and an equal sign in front of the property value to identify the property name. For example, if the text parameter is set to "Power=" the property value is displayed as "Power=<value>"; if the text parameter is not used the property value is displayed as "<value>".

  Refer to the description of the region parameter for information on placement of property information.

- type

  A string that indicates the data type of the property value. Possible values are: **string**, **number**, **expression**, **triplet**, or **tripletcase**. Design Architect does not have a mechanism for creating or modifying tripletcase property values. Tripletcase property values must be modified in the pin list file.

  The value of this parameter does not need to be enclosed in double quotes.

- **value** "value"

  The value of the property. Refer to "Property Concepts" in the *Design Architect User's Manual* for information on characters that may be used in the property value. Regardless of the data type specified, the value must be enclosed in double quotes. The literal string **value** must precede the "value" parameter.

  The value of the property, optionally prefixed with the text parameter, is displayed outside the symbol body. Refer to the description of the region parameter for information on placement of property information.

- **region** r

  An integer that indicates where to place the property value in relation to the symbol body. Each side of the symbol is numbered in a clockwise direction, beginning with 0 at the top of the symbol shape. An integer between 0 and 7 is valid. The literal string **region** must precede the integer.

  Figure E-3 shows each region in relation to a symbol body, the location of the first property added to the symbol in each region, and the direction in which properties are added for each region.

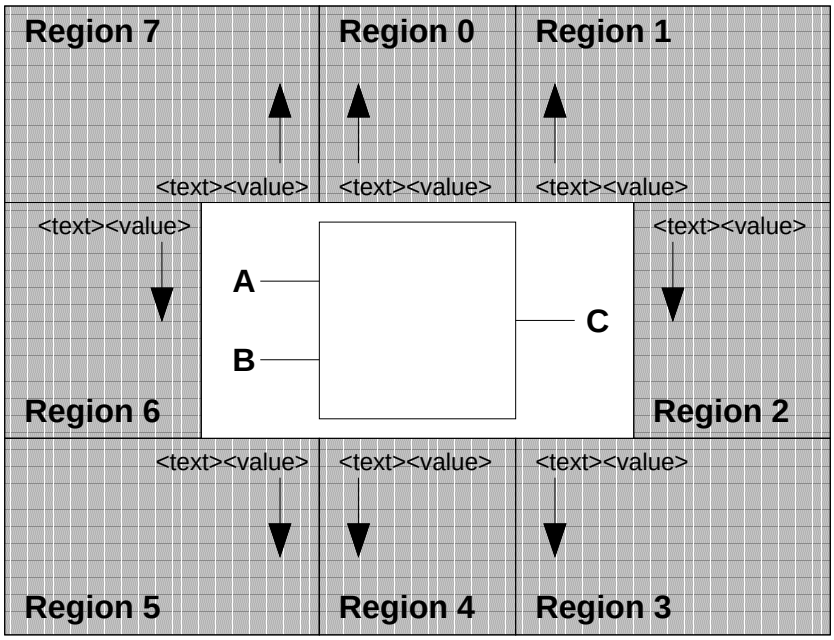


Figure E-3. Body Property Regions

Description

An optional construct that specifies body properties placed on the symbol body. Each property added to the symbol must have a set of body_props parameters. Each set of parameters is separated with a semicolon and placed inside the curly braces following the **body_props** keyword.

shape

Syntax

shape shape**,** shape_params**;**

Parameters

- **shape**

  A string that specifies the shape to generate. Possible values are: **and**, **or**, **xor**, **box**, **buf**, **andor**, **orand**, **adder**, or **trap**.

  The value of this parameter does not need to be enclosed in double quotes.

- **shape_params**

  One or more integers, separated by commas, that specify the characteristics of the shape. The number of integers this parameter requires is based on the type of shape selected. The following list shows the information necessary for each possible shape:

Shape	shape_params Required Value(s)
and	max_body_pins
or	max_body_pins
xor	max_body_pins
box	min_width, min_height
buf	min_height
andor	num_input_gates
orand	num_input_gates
adder	min_width, min_input_height, min_output_height
trap	min_width, min_input_height, min_output_height

  Width and height measurements are specified in pin grid spaces.

Description

A optional construct that allows specification of the symbol shape. The default shape is "box" with shape parameters of "2, 2".

source_view_path

Syntax

source_view_path "pathname" **;**

Parameters

- "pathname"

  A string that specifies the pathname to the schematic sheet from which the pin list was created.

Description

An optional construct that specifies the pathname to the schematic sheet that the pin list was created from. Do not use this construct when creating a pin list with an ASCII editor.

If source_view* constructs are present in the pin list file, the constructs must appear in this order: source_view_type, source_view_path, and source_view_ver. If the constructs are not in this order the $generate_symbol() function returns a syntax error.

source_view_type

Syntax

source_view_type "type" **;**

Parameters

- "type"

  A string that specifies the type of Mentor Graphics source view used to create the pin list. At this time, the only type of source view that can be used to create a pin list is "mgc_schematic".

  For information on data types and type registries, refer to the *Registrar User's and Reference Manual*.

Description

An optional construct that specifies the Mentor Graphics data type of the schematic sheet that the pin list was created from. Do not use this construct when creating a pin list with an ASCII editor.

If source_view* constructs are present in the pin list file, the constructs must appear in this order: source_view_type, source_view_path, and source_view_ver. If the constructs are not in this order the $generate_symbol() function returns a syntax error.

source_view_ver

Syntax

source_view_ver version_number **;**

Parameters

- version_number

  An integer that indicates the version of the schematic sheet used to create the pin list.

Description

An optional construct that specifies the version number of the schematic sheet used to create the pin list. Do not use this construct when creating a pin list with an ASCII editor.

If source_view* constructs are present in the pin list file, the constructs must appear in this order: source_view_type, source_view_path, and source_view_ver. If the constructs are not in this order the $generate_symbol() function returns a syntax error.

Sample Pin Lists

The following example pin list creates the symbol shown in Figure E-4. Note the placement of the width information on the symbol.

```
// Mentor Graphics pin list file for symbol generation.
// Created:  05/16/94 by Fred Jones

pins {          // Pin information
   "DIN(7:0)",  input, width 8, side 3, position_on_side 1,
     no_bubble, no_edgesense;
   "DOUT(7:0)", output, width 8, side 1, position_on_side 0,
     no_bubble, no_edgesense;
   "CLK",        label "C", input, width 1, side 3,
     position_on_side 0, no_bubble, edgesense;

body_props {   // Property information
   name "W", text "W=", number, value "8", region 1;
   name "W", text "W=", number, value "8", region 1;
   name "INST", string, value "I$0", region 3;
}

shape buf, 4;  // Shape information
```

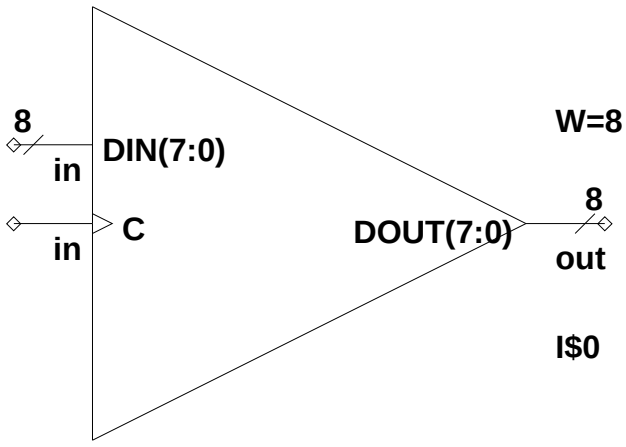


Figure E-4. Sample Buffer

The following example pin list creates the symbol shown in Figure E-5. Note that pins explicitly positioned on a side occur first in the pin list to avoid creation of overlapping pins.

```
pins {
   "CP", input, width 1, side 3, position_on_side 0,
     no_bubble, edgesense;
   "MR", input, width 1, side 3, position_on_side 1,
     no_bubble, no_edgesense;
   "DS", input, width 1, side 3, position_on_side 2,
     no_bubble, no_edgesense;
   "PL", input, width 1, side 3, position_on_side 3,
     no_bubble, no_edgesense;
   "P4", input, width 1, side 3, position_on_side -1,
     no_bubble, no_edgesense;
   "P3", input, width 1, side 3, position_on_side -1,
     no_bubble, no_edgesense;
   "P2", input, width 1, side 3, position_on_side -1,
     no_bubble, no_edgesense;
   "P1", input, width 1, side 3, position_on_side -1,
     no_bubble, no_edgesense;
   "P0", input, width 1, side 3, position_on_side -1,
     no_bubble, no_edgesense;
   "Q4", output, width 1, side 1, position_on_side -1,
     no_bubble, no_edgesense;
   "Q3", output, width 1, side 1, position_on_side -1,
     no_bubble, no_edgesense;
   "Q2", output, width 1, side 1, position_on_side -1,
     no_bubble, no_edgesense;
   "Q1", output, width 1, side 1, position_on_side -1,
     no_bubble, no_edgesense;
   "Q0", output, width 1, side 1, position_on_side -1,
     no_bubble, no_edgesense;
}
body_props {
   name "comp", string, value "7496 Shift Register", region 7;
}
shape box, 2, 2;
```

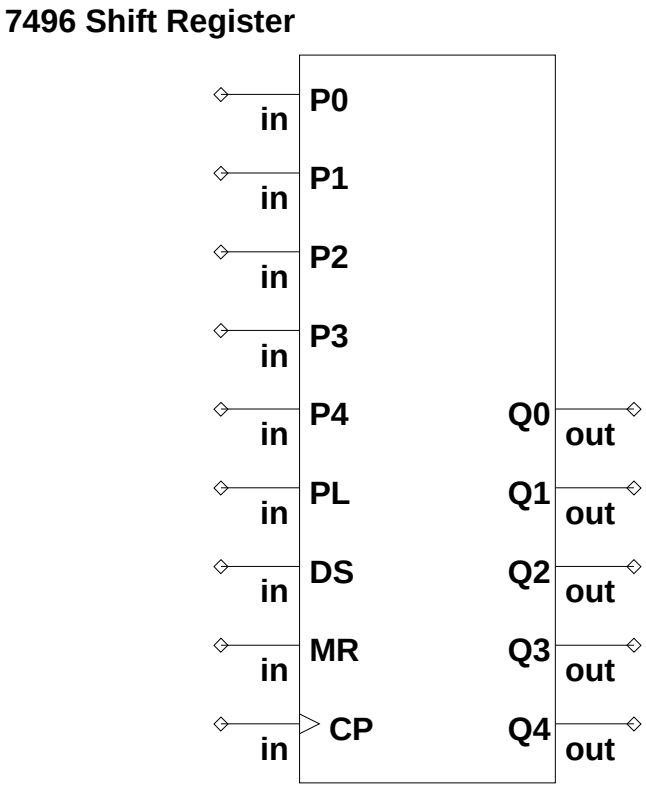


Figure E-5. 7496 Shift Register

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