SCOPE /SDK

Version 4.0

Chapter 3: *User Interface*

Contents

User Interface

In this chapter we are going to learn all the details of the User interface. We will have a close look on the windows and the dialogs as well as on the navigation and settings throughout SCOPE.

In order to get an overview we divided this chapter in different sections:

- *Menu bar*
- *Project Window*
- *File Browser*
- *Tool Bar*
- *Project Explorer*

These five windows are the main tools in the SCOPE environment.
SCOPE provides a lot of possiblities to work indepedent or to develop own projects. Therefore the user is responsible for himself in order to benefit from the nearly boundless possibilities the SCOPE fusion platform offers.
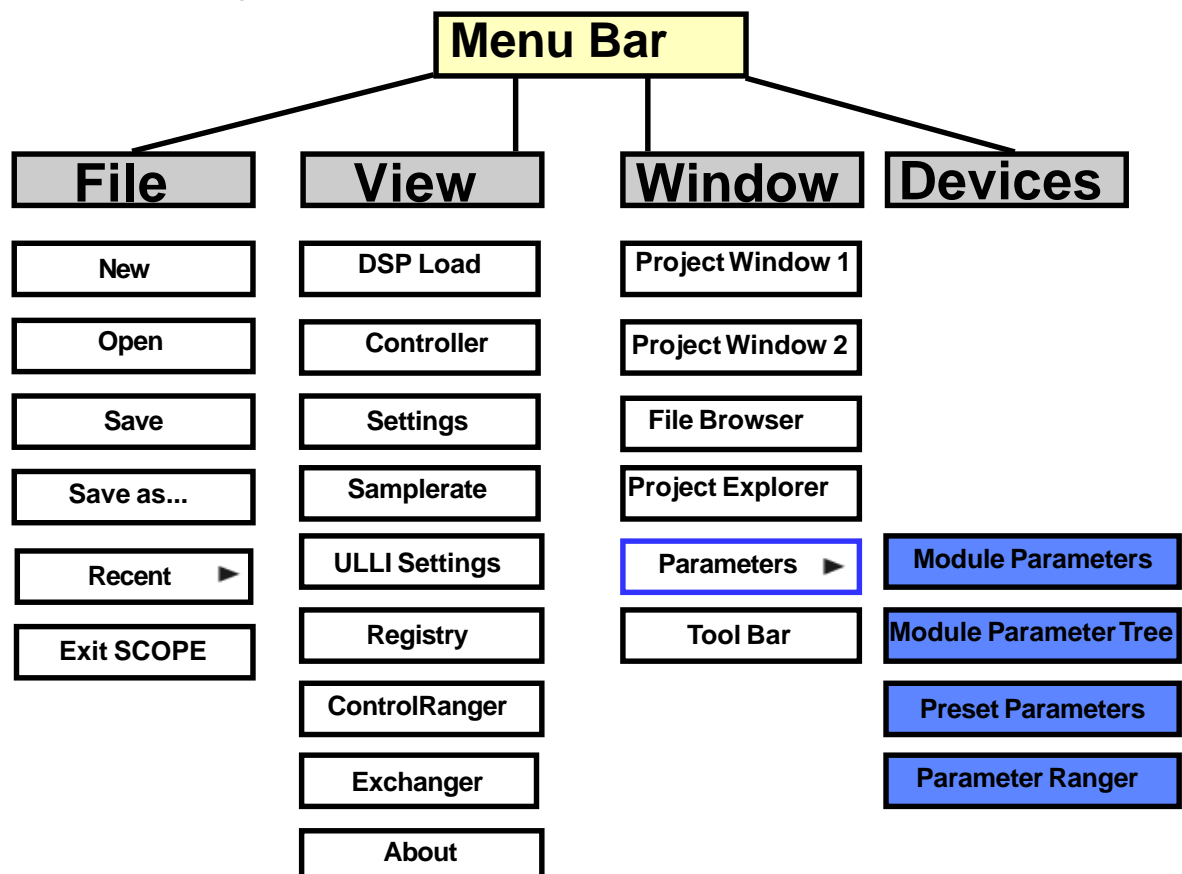
Menu bar

The *menu bar* contains four important items:

On the other end of the *menu bar*, next to the '*Minimize*' and the '*Close*' buttons we can see a Cream Ware symbol.

You can reposition the *menu bar* by pressing the left mouse button on the CreamWare symbol and moving the mouse to the desired screen half (upper or lower). The *menu bar* will reposition itself appropriately.

File

The first menu on the *menu bar* is the *File* menu.

You can open the pull-down menu by clicking on the name. This menu contains the options you need to manage our projects. You can create a new project by clicking on the 'New' dialog box.

To open a project again use the 'Open' dialog box.
The next two items are relevant if you want to save your project or segments of your project. Therefore you could use an index in the name of the project and enlarge it for every session.
SCOPE does not use any 'Undo' functionality. So we advise you to save often and to use different names for important milestones within your project.

In order to open the recent used projects we can click on the 'Recent' dialog box and choose the project we want to work on.

The last dialog box 'Exit Scope' shuts down the SCOPE /SDK.

View

The *View* menu gives you access to the Controllers and the Settings of the SCOPE environment.
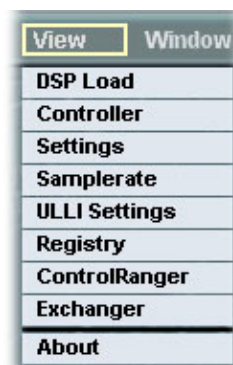
DSP Load: Opens or closes the DSP utilization display which monitors current DSP usage.

Controller: Opens or closes the *Controller Settings* dialog where you can adjust the MIDI controller assignments.

Settings: Opens or closes the *SCOPE Settings* dialog in which you can set various program options.

Samplerate: Opens or closes the *Sample Rate Settings* dialog used to adjust the Sample Rate and Word Clock settings.

ULLI Settings: Calls the dialog used to select the *Ultra Low Latency Interface* driver settings.

Registry: Opens a list of optional modules and all keys.

Control Ranger: States the properties of the selected control (values margin etc.).

Exchanger: Replaces a module with another one while maintaining the connections.

About: Opens or closes the dialog providing information on the program version.

DSP Load

Selecting DSP Load from the *View* Menu calls the DSP meter module. This module identifies the installed boards (Pulsar, Pulsar SRB, SCOPE, etc) as well as the total number of DSPs available. The bar display indicates the current extent of DSP utilization. The lower part of the window shows the usage of each DSP.

total number of available DSPs
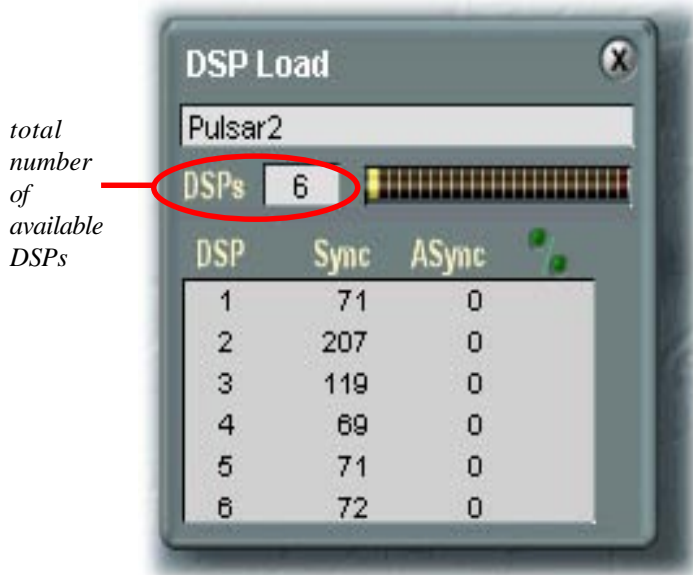
MIDI Controller Assignment

You can open the *MIDI Ctrl Assignment* dialog by clicking with the right mouse button on the control element (fader, knob etc.) you want to control.
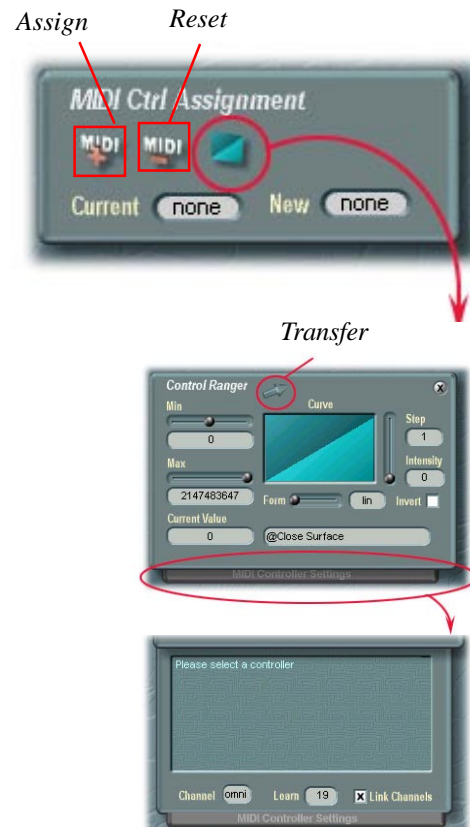
Current: Shows the current controller assignment.

New: The MIDI controller number is displayed here when controller data are sent.

Assign: Uses the 'New'-value to assign a controller number to the onscreen control element.

Reset: Cancels the controller assignment.

Ctrl List: Calls the *Controller Settings* dialog in which additional options are available.

Control Ranger

This dialog is called either by choosing *Control Ranger* or *Controller* from the *View* menu, or by clicking on the *Ctrl List* button in the *MIDI Ctrl Assignment* dialog. To edit a control you have to select it and change the settings in the Control Ranger window. You can adjust the minimum and the maximum value with the two faders on the left side or type the favored value directly in the text fields.

In order to divide the range of the selected control into different sections, type in the amount of steps the controler should make. (1: continously adjustable, 2: one step, 3-max.: the control moves in the defined steps).

The curve characteristic(linear, logarithmic, exponential, logarithmic bipolar, exponential bipolar) depends on the input and output values of the selected control.

The name of the current value is always visible as well as the name of the control to which the controller is assigned to.

In order to get the other options available you have to click on the drawer at the bottom of the window to open it.

Channel: Displays and adjusts the MIDI channel used for controllers.   **L e a r n :** Displays the controller number of any controller data received by the device on the controller MIDI channel.

Link Channels: Can be enabled or disabled by clicking on the small box. Used to link channels.

SCOPE Settings

Call this dialog by choosing *Settings* from the *View* menu. Here you can set various program defaults, such as the Default and Background projects, and the various directories in which specific filetypes are located.

Dual Screen: Clicking on the monitor icon switches dual monitor support on or off. The Screen field below determines the way the software modules are distributed between the two monitors.

If **Dual Screen** mode is enabled, you can also move the **SCOPE** surface to a second monitor.
You can also adjust the size and position of the Scope work area.To arrange the screen contents drag the right lower corner of the work surface representation with the mouse. You can also move the Scope surface directly with the mouse. Double click on the surface to return it to maximum size.Changes become effective only after you close the dialog.

Standard Cursor: This option selects the standard mouse cursor of the operating system in place of SCOPE's custom cursor. You should only enable this if experiencing graphic anomalies that bother you, such as a flickering of the SCOPE mouse cursor.

Show windows while move: If this fuction is enabled the windows become transparent while being dragged. This lets you see what you're about to cover up. It can also be a quick way to see what's currently hidden behind an object.

Fade windows/Create new icon on minimize/ High quality icon:
These dialogs do not have a meaning in SCOPE SDK, but for the sake of compatibility we decided to leave them in SCOPE.

Grid Horizontal/Grid Vertikal: If you enabled the Grid (*Tool Bar*)and you want to change the adjustments of the pattern then you can type in new values.

Project as OS Standard: Clicking on this button sets background project to the current project. This is the project that establishes drivers and routings for the operating system when the Scope program itself is not running. This overwrites the original file, so you should protect it (rename it, or move a copy to another location) before using this option.

Project as Default: Use this option when you want the current project to be used as the basic default project. This is the project that is loaded when you choose **New** from the *File* menu.

File Directories

The fields in this drawer specify the default paths for the various file types; Projects, Devices, Modules, Presets and Akai Files. Dialogs for handling these files will open automatically to the appropriate directory as shown here. Change the path by overwriting the existing text.
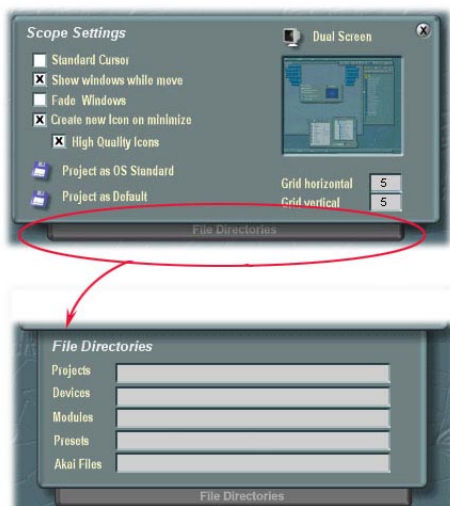
Sample Rate Settings

This dialog appears when you select the corresponding entry in the *View* menu. If more than one compatible board is installed, the **Sync Source** part of the dialog will change to accommodate the available inputs provided by additional hardware.

System: Displays the current system sampling frequency.
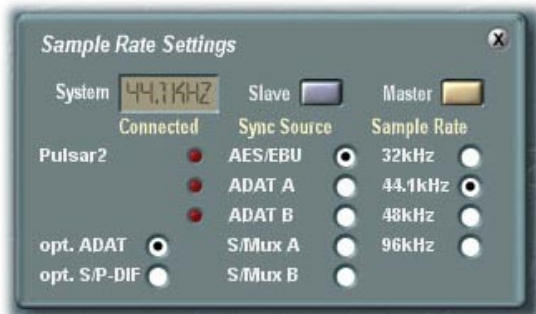**Slave:** When Slave is enabled, Scope derives its word clock from the digital input selected under Sync Source.
Master: When Master is enabled, Scope uses its own word clock at the sampling frequency adjusted under Sample Rate.

Sync Source: When Scope is in Slave mode, it derives its word clock from the signal at the digital input selected here. The list of available inputs will change to reflect the installed hardware.
If an S/MUX signal is connected to one of the ADAT ports in slave mode, you must inform the software by enabling the appropriate S/MUX button.

Sample Rate (32/44.1/48/96 kHz): Adjusts the sampling frequency when Scope is functioning as word clock master.

Connected: This LED indicates whether or not a valid signal is available at the corresponding input to which Scope can be synchronized as a word clock slave.

opt ADAT/ opt S/P -DIF: If you have a Pulsar card installed. ot a Pulsar II or SCOPE card with an I/O option with S/P -Dif and ADAT (e.g. Clame, Plus, Zlink)you may choose to use the optical connectors as ADAT receivers (inputs) and transmitters (outputs) and to use S/P-Dif only at the electrical connectors (Digital In/Out).

Alternatively you may choose to use the optical connectors as S/P-Dif receivers and transmitters. In that case the ADAT A is not in use anymore, the S/P-Dif signal output is simultaneously sent to the optical and the electrical transmitter while the electrical receiver is not in use. 'Sync to S/P-Dif ' now listens to the optical output.

When using a Zlink I/O option, things are a little bit different. The electrical S/P-Dif is always in use. When switching to 'optical S/P-Dif', the transmitting device switches to S/P-Dif. The receiver is able to detect the signal type which is feeded to the optical inputs and sends the signals to the appropriate I/O module. Because you have two different s/P-Dif inputs (electrical and optical) you can choose to which of them you to sync ('Sync to S/P-Dif' or 'Sync to opt. S/P-Dif).

ULLI Settings

Use this dialog to adjust the size of the ASIO driver buffers (reserved memory areas) and the resulting delay (latency). The delay depends on this setting, and the actual sample rate as represented in the table. Smaller latency values require greater host computer performance. Find the best compromise for your system by experimentation.

> **!** *If you change the ULLI settings you can choose whether you want the settings to be adjusted directly or if the settings should be adjusted after a restart.*

Registry

Call this dialog using the entry of the same name in the *View* menu. This display-only dialog indicates all the auxiliary modules for which a key has been registered by the system.
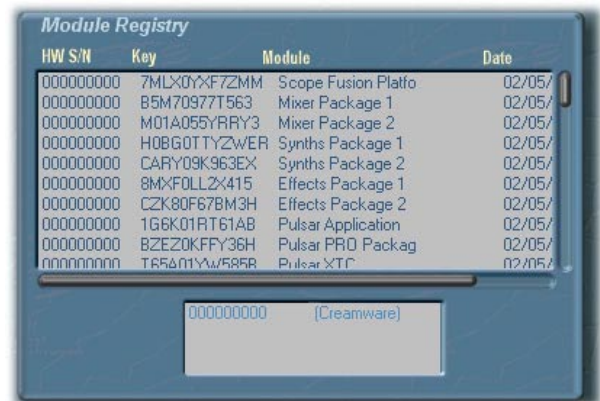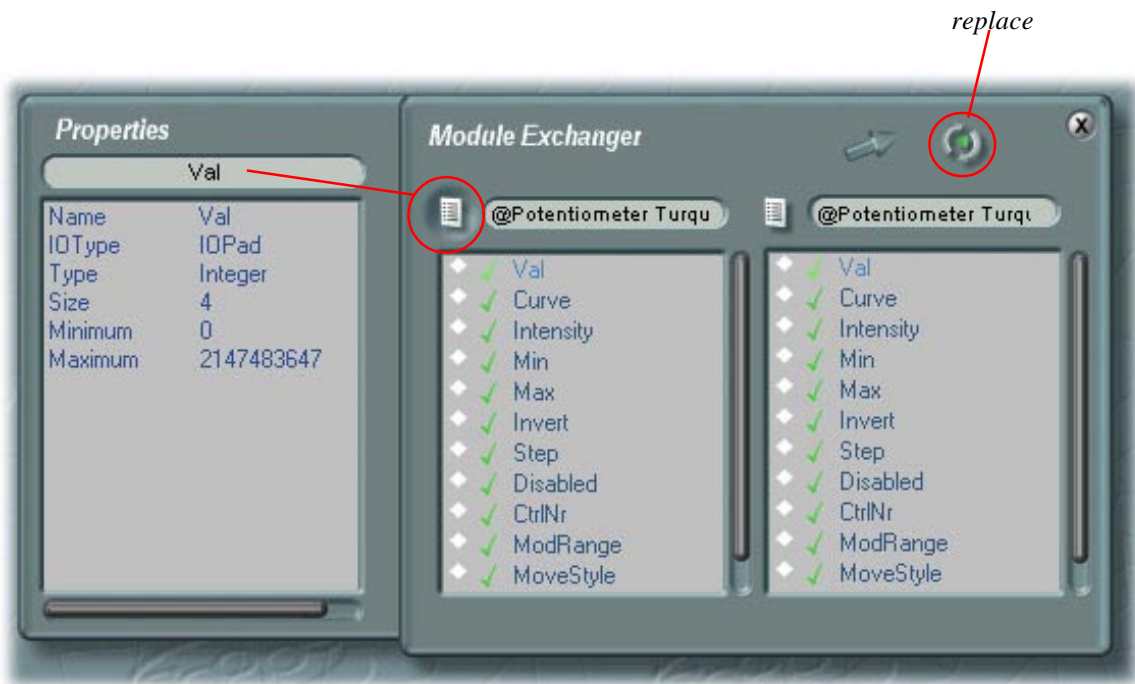
replace

Module Exchanger

Sometimes when working on a design you will decide that another module, a different filter module for example, would better serve a purpose. With the Module Exchanger you can replace the module with another one while maintaining all the connections.

The dialog opens automatically when you drag and drop one module onto another in the Project window while pressing the <Alt> key. For example a potentiometer should be exchanged in favor of a fader. All the connections that could be assigned are indicated with a green check mark.

Connections that could not be assigned are indicated in red.
If you don't want to assign all the connections double click on a *Pad* name and it will not be connected and appear in red lettering on both sides of the list. To re-connect, doubleclick on an entry again. When you are satisfied, click on the **Exchange** icon.

About:
Opens or closes the dialog providing information on the program version.

Window

The Window menu provides a quick access to the main surfaces in the SCOPE environment.

Project Window 1/ Project Window 2:
Opens or closes the *Project Windows.*
File Browser:
Opens or closes the *File Browser.*
Project Explorer: Opens or closes the *Project Explorer.*

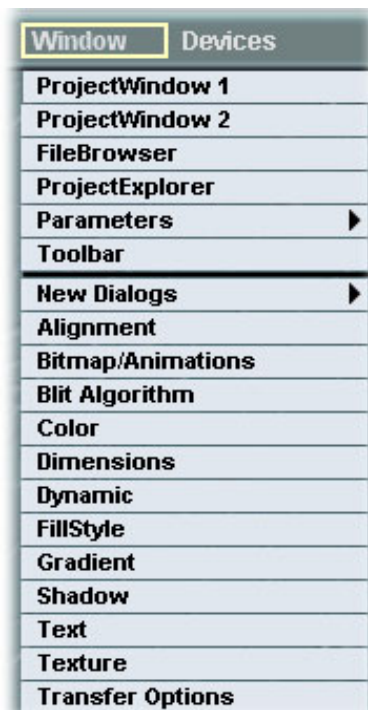## Parameters

Module Parameters: This dialog shows a list of parameters of the selected module. It represents the module name, the paramter name and the parameter settings and attributes.

Module	Name	P	RP	RS	RP	RR	SP	SS	SP	SR	Default Value
PresetList	cwLastRestoredPreset		X				X				
PresetList	SizeY		X	X			X	X			
PresetList	SizeX		X	X			X	X			
PresetList	PosY		X	X			X	X			
PresetList	PosX		X	X			X	X			
PresetList	PresetFile2		X				X				
PresetList	PresetFile1		X				X				
ParentTopChanger	Top		X	X			X	X			
Compressor M.	PosY		X	X			X	X			
Compressor M.	PosX		X	X			X	X			
SDL200	Out	X									
Not	Side Chain Mode	X	X		X	X	X		X	X	
Compressor M.	Katrin		X	X			X	X			0
SurfaceInterface	Open PList		X	X			X	X			0
SignalSwitch	Bypass	X	X			X	X			X	
If	LA Mode	X	X		X	X	X		X	X	
SDL200	LA	X	X		X	X	X		X	X	
Compressor AL2	Gain	X	X		X	X	X		X	X	
Compressor AL2	Ratio	X	X		X	X	X		X	X	
Compressor AL2	Thres	X	X		X	X	X		X	X	
Compressor AL2	Rel	X	X		X	X	X		X	X	
SDL200	Out	X	X		X	X	X		X	X	

Compressor M

Module Parameter Tree: In this dialog you can generate parameters and put them in your favorite order. To generate a parameter you can drag and drop a *Pad* from the *Pad List* in the Parameter Tree.

Parameter Ranger: With the Parameter Ranger you can adjust the default value setting of the parameter.


Tool Bar: Opens and closes the *Tool Bar.* The options you have in the tool bar are also available through the Window menu. A detailed description of these tools will be given in the *Tool Bar* chapter.

Preset Parameters: List of parameters of the selected module which can be restored in a preset.

Devices

Provides minimized thumbnail views of the loaded devices and modules. This allows you to open a device or module even when the *Project Window* is closed.
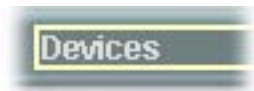
Clicking with the left mouse button on a thumbnail opens the respective control surface, or puts it on top if it is open but covered by other surfaces. Clicking with the right mouse button closes the surface. If you hold the CTRL key while opening a device, all other device surfaces will be closed.

Doubleclicking with the left mouse button right beneath the device icon opens or closes the device's Preset list respectively.
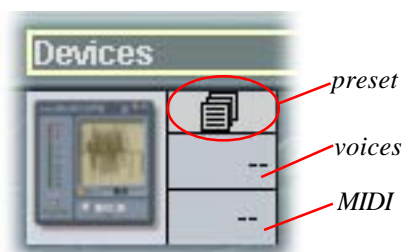
If the device is a synthesizer, the current polyphony setting is displayed below the thumbnail. This setting can likewise be altered by entering a new value.

The current MIDI channel is indicated to the right of the Preset list symbol. To assign the MIDI channel, click on the current value and type in a new one from the computer keyboard. Then press **Enter** to confirm the change. You can change the order of the device icons of the devices menu by simply dragging the icons to the desired position.

Project Window

```
                    ┌─────────────────────────────┐
                    │      Project Window         │
                    └─────────────────────────────┘
          ┌───────────────────┬───────────────────┐
  ┌───────────────┐   ┌───────────────┐   ┌───────────────┐
  │  Work modes   │   │  Command Bar  │   │     Views     │
  └───────────────┘   └───────────────┘   └───────────────┘
    ┌─────────┐         ┌─────────┐         ┌─────────┐
    │   Use   │         │   Cut   │         │ Circuit │
    ├─────────┤         ├─────────┤         ├─────────┤
    │  Move   │         │  Copy   │         │ Surface │
    ├─────────┤         ├─────────┤         └─────────┘
    │  Edit   │         │  Paste  │
    └─────────┘         ├─────────┤
                        │ Delete  │
                        ├─────────┤
                        │Duplicate│
                        ├─────────┤
                        │  Group  │
                        ├─────────┤
                        │ Ungroup │
                        ├─────────┤
                        │  Fold   │
                        ├─────────┤
                        │ Unfold  │
                        ├─────────┤
                        │Move into│
                        ├─────────┤
                        │Move out │
                        └─────────┘
```
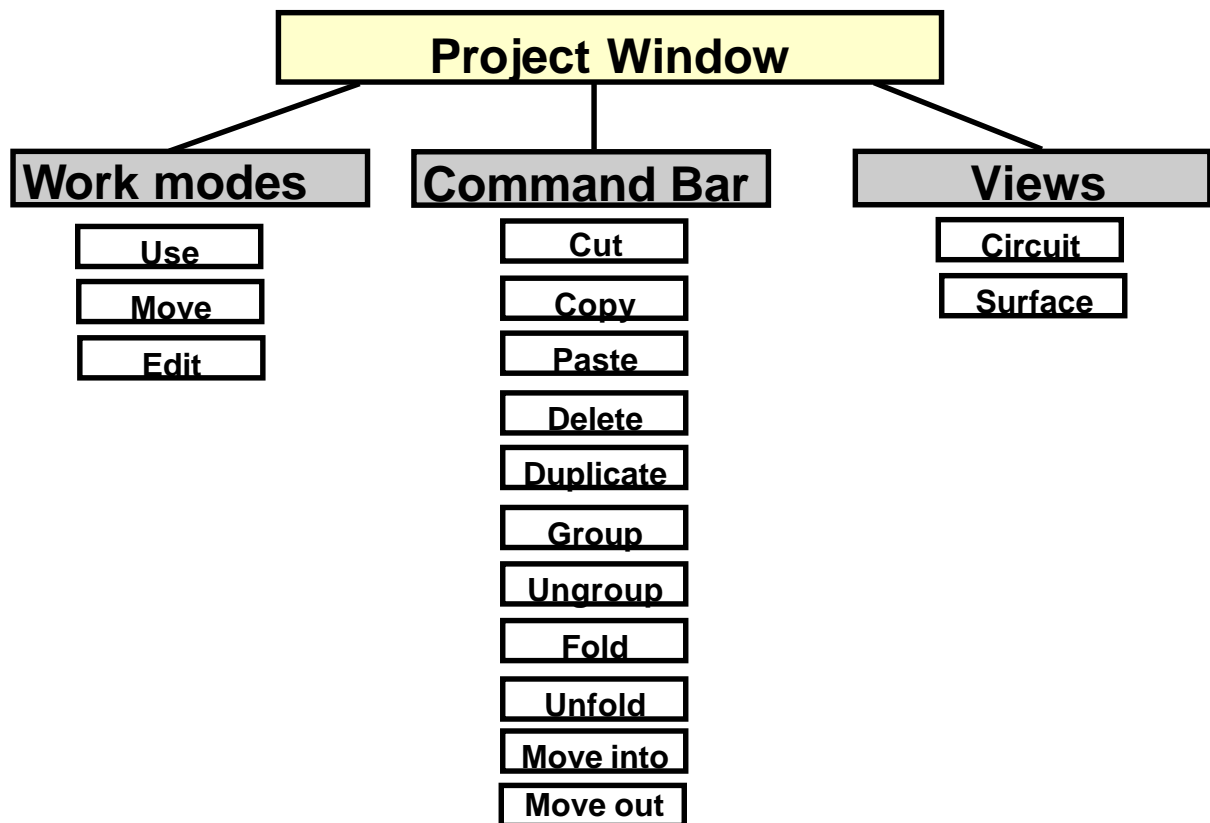
This is the primary SCOPE construction area. The components of a project – the individual devices and modules – appear in this window when a project is loaded. Connections can be added and removed here, and creation and modification of modules and devices – on both the circuit and graphical levels – is also carried out primarily via this window. The name of the current project file appears in the top edge of the *Project Window* frame.

If we have a look at the *Project Window* we can distinguish between five sections. The **Work modes** are situated on top of the Window, as well as the **command bar** and the **Views**. Our **actual work space** where we arrange our circuits takes the largest part of the window.

On the bottom of the window stands the **location line**.

In this chapter we will have a look on these different sections of the *Project Window.*

Work modes

The work modes – one of the three is always in effect - determine the behavior of objects. You'll need to know how to use these buttons and modes as soon as you begin working in the *Project Window.*

! *Note that each one has an associated keyboard shortcut.*

Use Mode (Ctrl-U)

The default «use» mode. Modules and devices can be added and deleted via the *Project Window*, and connections between them can be modified, but they cannot be repositioned within the window. Faders, buttons and other graphical controls can be operated using the mouse, but graphical elements (controls, displays, labels etc.) cannot be repositioned on the surfaces they are attached to the *Project Window*, if not attached to a surface. It is not possible to go inside a device or module.

Move Mode (Ctrl-M)

Modules and devices can be added and deleted via the *Project Window*, and connections between them can be modified. Permits repositioning of modules and "unattached" graphical elements within the *Project Window* (but not, therefore, the operation of graphical controls), as well as entering a device or module by double clicking on it for leaving it and by double clicking on the background to view and modify its internal structure. Device surfaces can still be operated normally, but *Move* mode also permits the repositioning of graphical elements on a device surface, when working inside a device.

Edit Mode (Ctrl-E)

Permits direct manipulation of the individual graphical components from which screen objects are built. Most *Use/Move* mode operations are not possible in this mode.

| Cut | Copy | Paste | Delete | Duplicate | ■ | Group | Ungroup | Fold | Unfold | Move into | Move out |

Command bar

The *command bar* contains the tools you need to arrange your circuit. With the first functions (**Cut, Copy, Paste, Delete**) you can proceed in the same way as with those functions you know from working with you PC. For example if you dragged in the wrong module from the *File Browser* you can just press the Delete button and the module disappears. For this working process you can also press the 'Delete' key on your keyboard.

If you want to clone a module you can select it and click on the **Duplicate** button on the *command bar*. The mouse pointer will change into the 'drop' arrow and you can position the module anywhere in the *Project Window*.

Within the next functions always two buttons belong together. In order to group a certain number of modules you have to select them by shift clicking one after the other or drawing a rectangle around them. Now you only have temporary groups; that means that they will disintegrate as soon as you click on another module. So you have to click on the **Group** button to create a new group. You can still move the modules separately but they will stay in a group until you loose the group by clicking the **Ungroup** button. If you now have a look at the *Project Explorer* (for detailed discription of the Project Explorer see page 34) you will see, that the grouped modules are displayed together in a new module called 'Group'.

With the **Fold** and the **Unfold** button you can fold an undefined amount of modules together to one module by selecting the modules (shift clicking one after another or drawing a rectangle) and pressing the **Fold** button. You will see that the modules pool together to one module which automatically has the important *Pads* on its surface. This module is a totally new module and is therefore named 'folded' in the *Project Explorer*. To make the folded modules visible you have to click on the '+' sign in front of the module name. In order to undo the Folding just elect the **Unfold** button.

> **!** *In order to step inside this folded module you can double click on the module and you will step one layer deeper. To step out, double click on the background of the* Project Window.

If you want to put another module in an existing group you can select it and put it via the **Move into** button in the group. You can also put one module into another by clicking the **Move into** button.
In this way you only stick the module to the other one instead of folding them together and creating a new module. This process can also be done via the *Project Explorer*. You have to select the module you want to move and drag it to the other one with the left mouse button pressed. With the **Move out** button you can undo the connection and bring the module out again.

Views

Surface elements and circuit elements are distinguished by their ViewID.

In the upper right corner of the *Project Window* we can see the two views: **The Circuit view** and the **Surface view**.
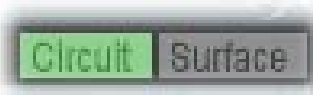
We can toggle between the views by pressing the buttons or using the shortcuts F7 (*Circuit* view) and F8 (*Surface* view).

In *Circuit* view the circuit is displayed. This is where you add nodes and make connections from one module to another to route Audio, MIDI and control streams.

In *Surface* view you design the user interface for the devices. There is a decoupling of circuits and surfaces so that you can really concentrate on designing the interface without having to handle all the circuit nodes in the same window, too.

Location line

The **location line** at the bottom of the *Project Window* indicates which hierarchy of the project is displayed.

Actual work space in the Project Window

When the program starts, the *Project Window* opens containing some basic modules which are loaded by default (you can change the default project in the 'SCOPE settings' ;see chapter *File management*). These modules represent the physical as well as the software inputs and outputs. Input modules are located on the left side and serve as a data source whereas output modules are located on the right and serve as data destinations.

To explain this a little bit further have a look at the following example. When you want to route a signal from your hard disk recording program into a SCOPE mixer, you would first select one of the SCOPE virtual outputs in your recording software .
Back in the SCOPE environment, the recording application's output signal is represented as a logical input, since the signal is being led **into** the SCOPE *Project Window* **from** the recording application. We use the terms **source** to represent logical inputs and **dest** (for 'destination') to represent logical outputs. External signals always arrive into the SCOPE environment via source modules, and leave via dest modules.

Project Settings

A short description of the software I/Os loaded by default:

Wave source/dest: These modules correspond to the audio driver (MME, 16 bit) that appears in your audio software as inputs and/or outputs. These modules can be loaded up to 16 times, for a total of 32 audio channels in each direction. (For 24-bit resolution, these modules must be replaced by the 24-bit versions).

Sequencer Midi source/dest 1: These modules represent the MIDI interface into a MIDI program, such as a sequencer. Note that you must access the source module **in your MIDI program** by selecting the Pulsar 2 **output** (Pulsar 2 Midi Out) while you access the dest module form your MIDI program by selecting the Pulsar MIDI **inputs** (Pulsar 2 Midi In). The number added to the name designation, such as '1', indicates that this is the first of several possible MIDI interfaces. Additional interfaces are implemented by loading modules repeatedly.

Asio source/dest: These modules implement the ASIO driver that Steinberg's Cubase VST uses. You can adjust the number of channels from 2 to 32 by doubleclicking on the module to open the control surface.

Depending on your installed Creamware Audio cards or the equipped I/O options or expansions you will find modules beginning with the name of your audio card (e.g. SCOPE, Pulsar II,...) followed by the type of I/O (e.g. analog, S/P-Dif, MIDI, ADAT, Z- Link,..).

Loading modules and devices

All Modules and Devices are loaded into a SCOPE project by dragging them with the left mouse button from the *File Browser* into the *Project Window.*

You can also load a module or device by dragging it from the *Devices* menu at the top of the *Project Window* and dropping it into the window.

Most of the modules and devices can be loaded repeatedly. Exceptions to this are, for example, modules representing the physical IOs, and certain special devices.

Deleting modules and devices

To delete a module from the *Project Window*, first select it with a mouse click. Then hit the <Del> key on your keyboard to remove it and all its connections from the project. You can also click on the Delete button in the *command bar* to remove the module or select „Remove module" in the *context menu.* Rightclick on the module to open the *context menu* (See page 18 for a detailed information on the *context menu*). If you want to delete more then one module you can select themby drawing a rectangle around the modules with the left mousebutton pressed.

Signal flow and module connections

A signal flow is established in the Project Window by connecting modules together by using SCOPE's virtual cables. An output from one module can be connected to a compatible input on one **or more** other modules. The virtual wires can be distinguished by their colors:

The blue wire symbolizes a synchronous connection whereas the green wire represents an a s y n c h r o n o u s connection.

The red wire is a symbol for a MIDI connection.

In order to visualize the different steps of a connection the Scope cursor takes different shapes.

The different looks of the curser in SCOPE

Before continuing with the description of the Project Window we should have a look at the different cursors which appear in the Project Window. To establish a connection first click on the output, and then on the desired input (although the reverse sequence is possible). The connection is then represented by a cable that appears between the modules:

While the mouse cursor is over a connection, its shape can take one of the following forms:

normal:

Set connection by clicking:

One side has been connected:

Connection not possible:

Connection is separated:

When you place the mouse over a connection the first time, the symbol changes from standard to a patch cord plug . When you click, the symbol changes back to (or possibly the 'Connection not possible' symbol, if the connection is occupied).

If you now move the mouse pointer, the cursor changes to (to signify you are holding the other end of the cable in your hand). When the pointer is placed over another compatible connection, the cursor changes again to a plug symbol .

Now, when you click, the connection will be established, the cable will appear, and the mouse cursor will resume its standard form.

> **!** *If you want to establish connections between the other inputs and outputs of the same modules and devices you can use the key 'N' on your keyboard. This might come in handy when connecting stereo devices or even larger ones. You have to note that this function only works on one side of a module, that means that you can not press 'N' in order to connect other Pads which are positioned on an other side of the module or device.*

Deleting Connections

To delete a connection, simply select the cable by clicking on it, and then strike the <Del> (or <Delete>) key on your computer keyboard. If you want, you can also click again on both ends of the connection, which also deletes it. In this case, when the mouse is over the first connection point, it changes to a plug symbol, , and over the second, to a scissors symbol .

Control elements

Modules and devices implement control surfaces whereby individual parameters can be adjusted.

A control surface can be opened by:

- using the **Surfaces** command from the context menu which appears when you right click on a module or device representation in the Project Window. (More detailed information about the *context menu* in the next chapter)

- clicking on the device icon in the **Devices** menu

Although the controls and switches used by the device surfaces may look diffe-rent, their operation is consistent and falls into general categories.
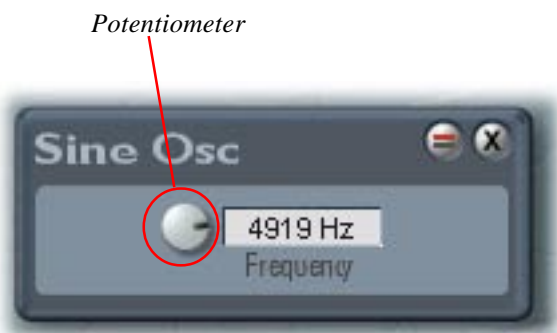
Potentiometer

Rotary Contols (potentiometers) can be adjusted using the mouse. Click on the control with the left mouse button, and move the mouse cursor around the control in a circular fashion. The control will follow. In order to make very fine adjustments, increase the radius of the circle (move the mouse further away fromthe center of the control). This increases the resolution. Most potentiometers will return to a neutral position when you doubleclick on them with the left mouse button.

On/Off button
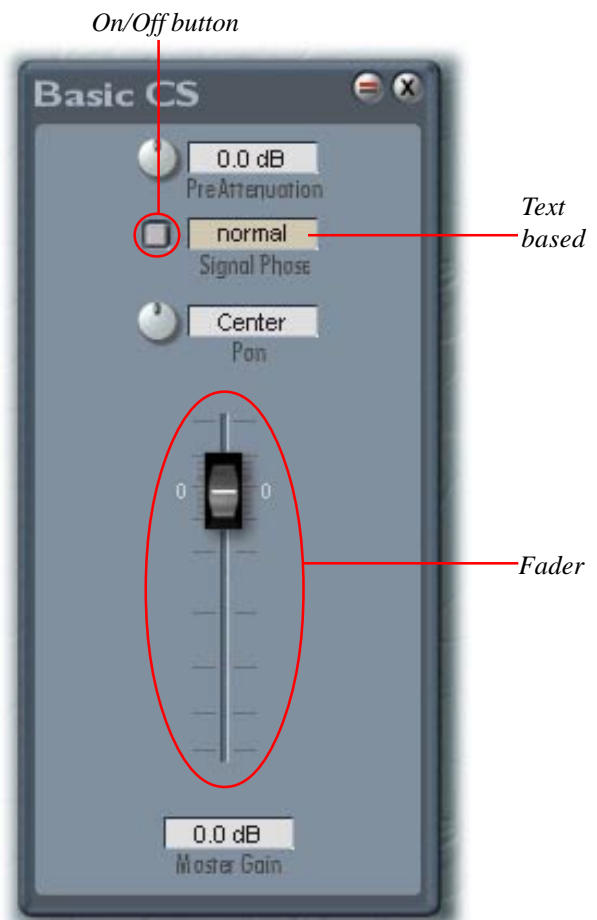
Text based

Fader

Faders are also adjusted with the left mouse button. With a fader, vertical motion adjusts the position. As with the potentiometers, moving the mouse pointer off and away from the fader will increase the resolution of the adjustment.

Text based faders can also be adjusted by using the mouse. Click on the text field and move the mouse up or down.

On/ Off Buttons respond to a mouse click to change their state. Some buttons have more than two different states. Often the state is indicated by a certain color.

Rocker switches respond to a held mouse button or a click.

If a controller has an accompanying **value field**, then you have the option of entering a value directly into the field. Simply click in the field - the existing value will be highlighted and a text edit symbol appears. Enter the value using the computer's keyboard and confirm it by pressing the <Enter> key or clicking anywhere on the surface outside the number field.
Several controls can be manipulated with the computer keyboard. For a list of these assignments, see the Appendix.
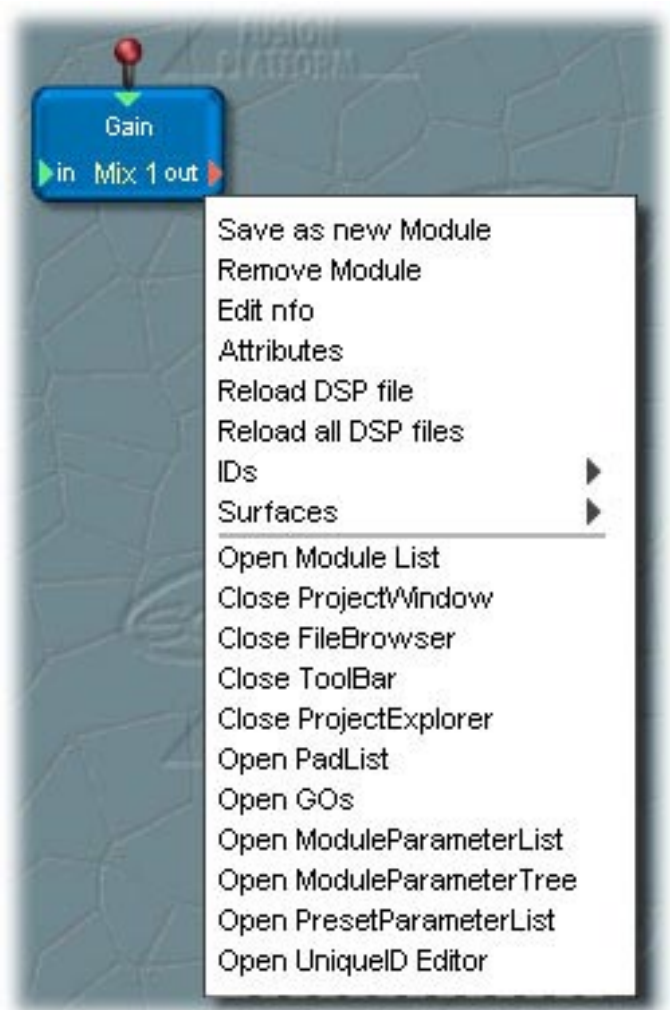
Context menu of modules

From every module in the Project Window you have access to a **context menu** which contains nearly always the same dialog boxes. It can be opened by right clicking on the module name. The context menu is, like many other context menus, splitted in two sections as you can see on the screen shot. The first section refers to the module itself whereas the other section is part of all context menus in this window.

Save as new module: Gives the option to save the module in a new file.

Remove module: Another option to delete a module is to click on this text field.

Edit nfo: This dialog box opens an editor where you can write new nfo files for modules. These will appear in the tool tips and in Help Window if you hold the mouse cursor over the module. For more information about nfo-files have a look at the „Edit nfo" tutorial.

Attributes: This dialog opens a window which contains all the attributes of a module. You can change the attributes by selecting a value and press F2 on your keyboard. After typing in the desired new value press Enter.

Module Attributes

Name	Mix 1
Class	PepAtom
File	D:/CW/LastSCOPE/Dsp/BasicModuleLib/SignalAdders/Mix/MIX1.DSP
SingleLoad	no
Voices	-1
VoiceOffset	<not set>
BoardID	<not set>
DSPId	<not set>
OnSameDSP	<not set>
Hint	yes
DSPPlacemen	(0,1)
SlotID	<not set>

Mix 1
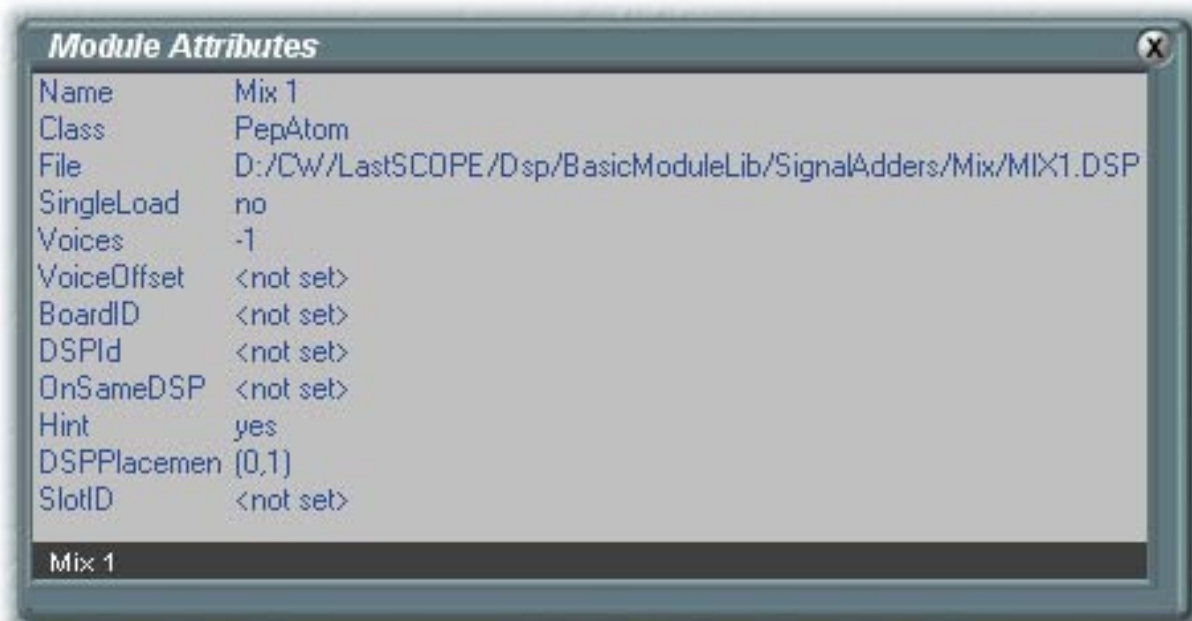
Name:
Shows the name of the selected module which cannot be changed in this window.

Class:
There are two different classes of modules DSP modules and Script modules. DSP modules display as 'PepAtom', Script modules take the name of the Script class.

File:
This attribute indicates the path of loaded DSP modules. If a DSP module is not loaded, nothing is displayed here.
In case the selected module is a Script module, the name of the module without the file extension is indicated.

SingleLoad:
The polyphonic branch of a synthesizer ,subject to the adjusted polyphony (Voices), loads several times on the DSP Hardware. In certain cases it is reasonable to load parts of the polyphonic branch only one time (i.e. LFOs).
To enable or diable Single Load select it and press F2 on your keyboard. Type in yes to enable or no to disable it. Press Enter to confirm your change.

If SingleLoad for the LFO is enabled ,this module exists once only independent from the number of voices. All the same it is connected to all voices.
If SingleLoad is disabled and set to 'No', the module would load several times and cause different beats for every voice.

Voices:
Here you can adjust the polyphony of a syntheziser. '<not set>' or '-1' signify, that the module adopts the properties of the Parent. If you set Voices to '0', the DSP module gets deactivated and leaves the DSP.The other adjustments provide, that the DSP module loads several times, corresponding to the appointed Voices.

Board ID:
If the BoardID is set to '<not set>' it takes over the adjustments of its Parent. If you want the module to be present on a specific board you can set the BoardID to '0' in order to put the module on your first board. For the other boards type in the corresponding number like '1' for the second board, '2' for the third board etc.

DSP ID:
Here you can choose the DSP on which you want your module to be present.

On same DSP:
If this attribute is enabled '<set>', the module and its children are situated on the same DSP. You cannot choose the DSP on which the module and its children will be placed.

Hint:
This attribute is similar to the funktion of On same DSP. You should use Hint for Devices. The algorythm tries to hold them togehter, either on a DSP or on a board.

DSP Placement:
Here you can see where the selected module is loaded.

Reload DSP file:
If you changed the code of a DSP File you do not have to save and restart SCOPE because you can use this dialog to reload the selected DSP file without leaving the project.

Reload all DSP files: If you changed more than one DSP file you can use this dialog to reload all DSP files. This is easier and faster than saving and restarting the project.

IDs-> Write child ID log

-> Write unique ID log

-> Read unique IDs from log

->Set ID compare module

Surfaces: Used to open or close the surface of the module.

The second section of all context menus in this window provides a quick access to the main tools and windows of SCOPE (*Project Window, File Browser, Tool Bar, Project Explorer, Pad List*, GOs, Module Parameter List, Module Parameter Tree, Preset Parameter List, Unique ID Editor)

Context menu of a Pad

In the first part of a *Pad's context menu* which is also accessible by right clicking we can find the options **Export Pad, Delete exported Pad, Store Pad** and **Edit nfo.**
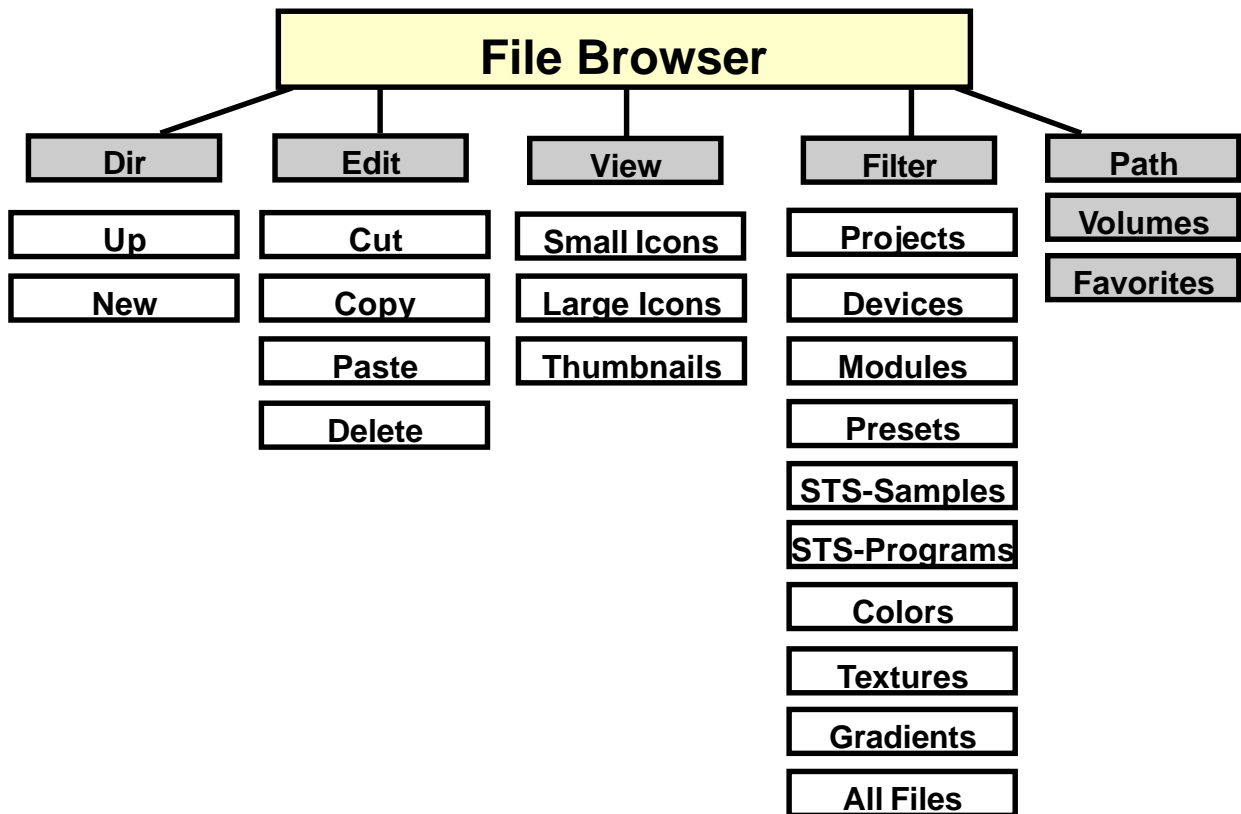
Store/ Connect/Export Pad:
If you want to connect a *Pad* to a module at a different level you first have to 'store' it and then connect it to the other *Pad.* Use the **Store** button to store a *Pad*, and the **Connect** button to connect it. The **Connect** key will be enabled only when a *Pad* has been stored. Each *Pad* can thus be connected to another *Pad* anywhere within a project (assuming they are compatible).

To use a *Pad* at the next higher level in the tree, select it and click on the **Export** button. A grey arrow appears, and a copy of the *Pad* is created in the module's parent module. The exported *Pad* is directly connected to the original one.

Delete exported Pad: Sets exported Pads back to their old adjustment.

The second part in the context menu of a *Pad* is the same like the in the *context menu* of a module, it gives quick access to the most important tools and windows in SCOPE.

File Browser

- **Dir**
  - Up
  - New
- **Edit**
  - Cut
  - Copy
  - Paste
  - Delete
- **View**
  - Small Icons
  - Large Icons
  - Thumbnails
- **Filter**
  - Projects
  - Devices
  - Modules
  - Presets
  - STS-Samples
  - STS-Programs
  - Colors
  - Textures
  - Gradients
  - All Files
- **Path**
  - Volumes
  - Favorites

Modules and Devices in the File Browser

Modules are represented in the *File Browser* by the symbol , whereas

devices are represented by .

Although not shown in the *File Browser*, modules are designated with the *.mdl filename extension, while devices have a *.dev extension. Devices are usually more complex than modules. Examples of typical devices are synthesizers, samplers, and mixers. However, modules, too, can have control surfaces, and be arbitrarily complex. Modular Synth patches, for example, are modules. The essential difference between modules and devices lies in the fact that modules are saved as components of the project, while devices are saved as references. Therefore a project contains all its modules, plus references to devices which are loaded from their respective directories when the project loads. This difference would be negligible to you except for the following implications:

- Since projects are stored using the current version of a module, it may be necessary when updating to a new version of SCOPE to replace individual modules stored within a project by their updated versions. You will be notified in the README file of a new SCOPE version if this is necessary.

- When a project loads, it looks for the path for the devices to load, and if they are not present, the project cannot be loaded completely. This means that if you exchange a project with another user who uses a different directory structure, some of the devices may not be found. In this case the software will ask you for a path specification to the device location. If the device does not exist in the user's environment, then the project cannot be loaded completely.

- Changes made to devices (e.g. device updates or Preset changes) will affect all projects that use the device.

> ! *As you have seen, the distinction between Modules and Devices has some relevance for you as a user.*
> *However, in order to increase the readability of the manual we sometimes interchange the terms which, if not clear from the context, **should be considered to be equal.***

The *File Browser* is used for:

- loading devices and modules into your project

- loading samples and sample programs into an optional sample player

- loading projects (as an alternative to the **Open** option in the *File menu*)

- administrating and organizing your files (copy, cut, delete, rename etc.)

up navigation

path

drives

folders

modules

add/ remove favorites

favorites
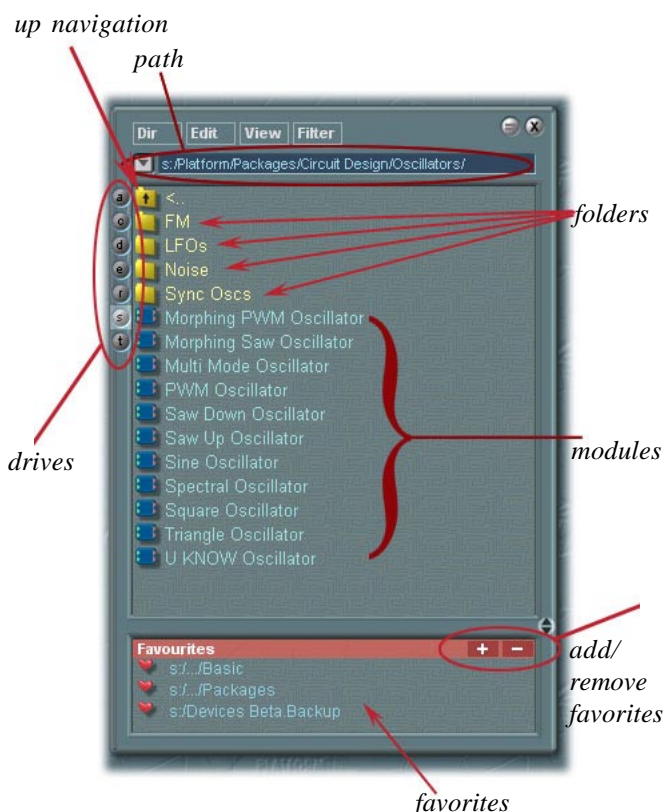
The File List

This *File Browser* sorts the files alphabetically, and shows those file and file types enabled for viewing (see: *Filter* menu). Select a file by clicking on its name. To rename a file, click once again on a selected file to enable edit mode.

Use Drag 'n' Drop with the left mouse button to load a device (mixer inserts, sample files) into the *Project Window.*

Navigation

When SCOPE starts, the *File Browser's* path is set to the Circuit design directory. All drives, directories, and files are identified by a symbol, and listed as a text entry (drives and directories in yellow, files in blue).

To change to another directory you can click once on its symbol, or double click on the text entry. By clicking on the symbol or by selecting **Up** from the **Directory** menu you will arrive at the next higher level of the directory structure.

At the highest level the drive designations will appear instead of directory names.

If you want to create a new directory you can select **New** in the *Directory (Dir)* menu. The directory is named **New Folder** by default but it can be renamed at any time.

Clicking on the current path text, or on the small arrow symbol, opens a drop-down list from which you can select a drive.

For quick navigation to frequently used directories you can create a *Favorites* list.

This list is located at the bottom of the *File Browser.* Add a new entry by selecting the **Favorites** menu entry. The buttons „**+**" and „**-**" are used to add or remove a directory from the list.

File Operations

The *File Browser's* menu includes, among other things, instructions for common operations such as cut, copy, paste, delete. Those commands are accessible by clicking on the *Edit* menu.

As an alternative to using the menu system, several common key combinations have been implemented, including the <Ctrl> +C/V/X (for copy/paste/cut) and the <Delete> key. A complete list of keyboard alternatives is found in the reference section.

File View

In the *View* menu you can select large or small icons for the list format, or you can choose to display minimized versions of the module surfaces (thumbnails).
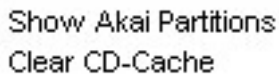
You can use file filtering, found in the *Filter* menu, to limit the file types displayed to those pertinent to the situation at hand.

This increases clarity and ease of file selection. For instance, you can limit a listing to show only Sample files when working with a sample player.

If you cannot locate a particular file, or a directory or CD-ROM seems to be empty, perhaps filtering is set to display only a single file type.

Context menu

Clicking with the right mouse button in background of the *File Browser* calls up a small *context menu*:

```
Show Akai Partitions
Clear CD-Cache
```

Show AKAI Partitions: With AKAIformat CDs, a partition letter is shown in addition to the file name. This option is useful when different AKAI partitions contain files of the same name and must be differentiated.
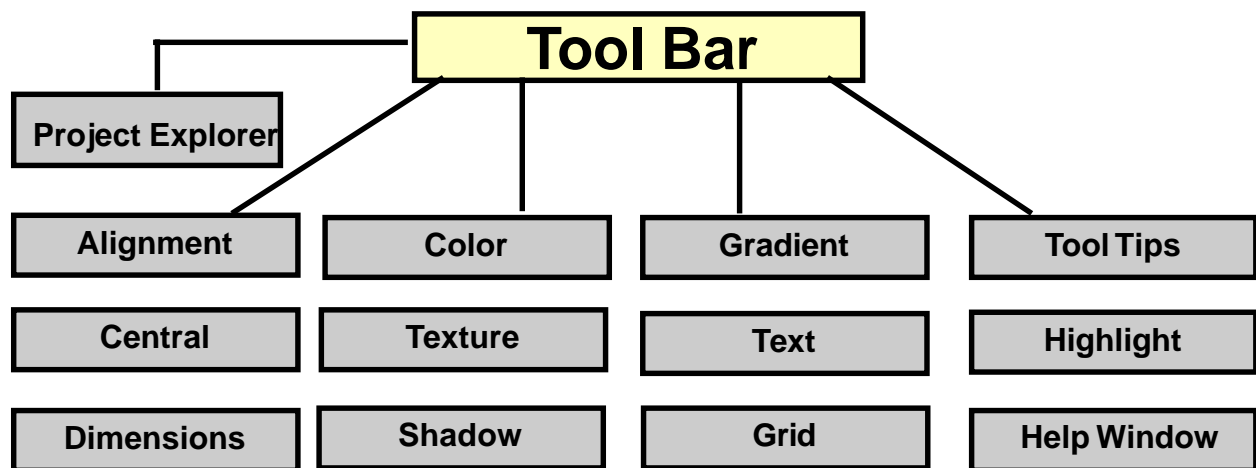
Clear CD Cache: If two CDs have the same serial number, the CD contents is not refreshed when one CD replaces the other in a drive. This option clears the cache, thus forcing a manual directory refresh.

By right clicking on a symbol or a text entry almost the same context menu calls up again. There is just one diference:

```
Rename
Show Akai Partitions
Clear CD-Cache
```

Rename: Change the name of the of the selected file or directory.

Tool Bar

```
                              ┌─────────────────┐
                              │    Tool Bar     │
                              └─────────────────┘
   ┌──────────────┐
   │ Project Explorer │
   └──────────────┘

┌────────────┐  ┌────────────┐  ┌────────────┐  ┌────────────┐
│ Alignment  │  │   Color    │  │  Gradient  │  │ Tool Tips  │
└────────────┘  └────────────┘  └────────────┘  └────────────┘
┌────────────┐  ┌────────────┐  ┌────────────┐  ┌────────────┐
│  Central   │  │  Texture   │  │    Text    │  │ Highlight  │
└────────────┘  └────────────┘  └────────────┘  └────────────┘
┌────────────┐  ┌────────────┐  ┌────────────┐  ┌────────────┐
│ Dimensions │  │   Shadow   │  │    Grid    │  │Help Window │
└────────────┘  └────────────┘  └────────────┘  └────────────┘
```

When working on the surface design of your project you should keep the *Toolbar* open. The *Tool Bar* gives you quick access to all the GO editors.

GOs (Graphical Object) are simple graphical objects like text, a bitmap, an animation etc. A *GO tree* is a composition of multiple GOs - like most of the surface elements. A button for example consists at least of a Background, a ButtonOn bitmap and a ButtonOff bitmap. A GO can be changed with the different tools from the *Tool Bar*.

Open the *Tool Bar* from the *Window* menu or by pressing F12 on your keyboard.

Project Explorer: Opens and closes the *Project Explorer* dialog - a central repository for the project's overall design and routing information.

Alignment: Opens and closes the Alignment dialog where you can adjust an object's position relative to its parent.

Central: Contains two sections, Preview and Attributes to adjust the appearance of GOs or modules.

Dimensions: Opens and closes the Dimensions dialog in which the position and size of GOs and modules can be adjusted.

Color: Opens and closes the *Color Selector* in which you select the colors for dynamic bitmaps, text and gradient nodes.

Texture: Opens and closes the Texture dialog in which you select textures for bitmaps.

Shadow: Opens and closes the Shadow dialog where you assign shadows to a objects.

Gradient: Opens and closes the Gradient used to process color gradients for dynamic bitmaps and text.
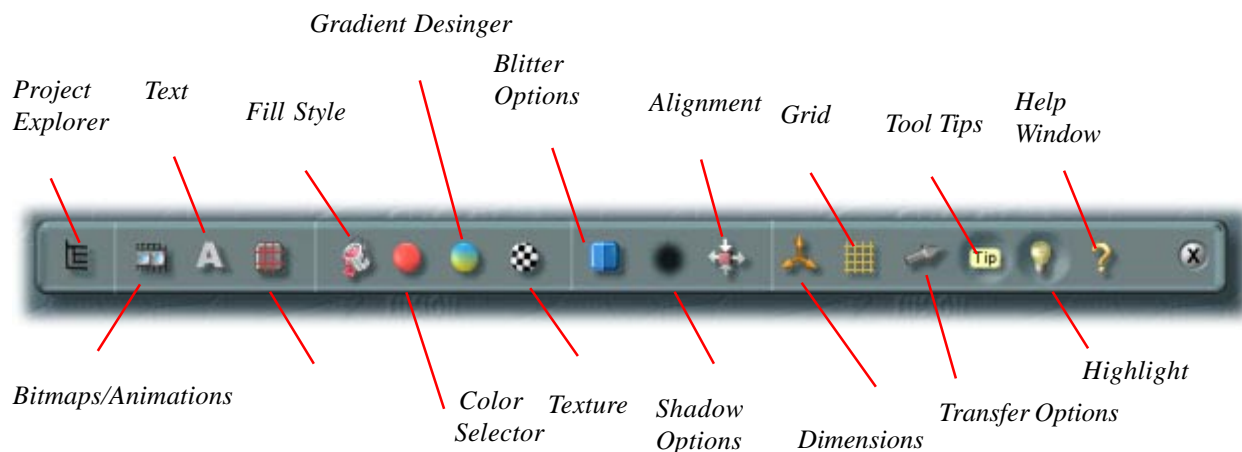
Text: Opens and closes the text editor for adding or modifying plain text.

Grid: Enables or disables the Grid.

**Tool Tips:** Enables and disables the Tool Tips feature.

Highlight: Enable this so selected modules will be visibly highlighted.

Help Window: Opens and closes the *Help Window* where information on the selected module or *Pad* is displayed.

Gradient Desinger

Blitter Options

Project Explorer   Text   Fill Style   Alignment   Grid   Tool Tips   Help Window

Bitmaps/Animations   Color Selector   Texture   Shadow Options   Dimensions   Transfer Options   Highlight

The Tool Bar dialogs

The tools, which will be described in this chapter, have a common *task line*. Each window, except the dimensions and the text tool, has a small box to enable or disable the tool.

enable/disable

transfer

copy

paste
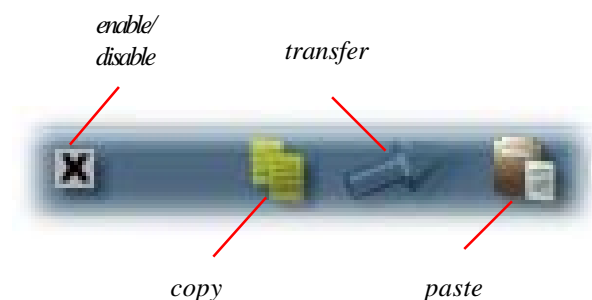
If you want to transfer the adjustments you made to another GO you have different possibilities: First you have to copy the settings by clicking on the copy icon in the *task line*. Then you can transfer these settings to another GO by

activating the transfer option. To transfer the settings only one time, click on the arrow next to the copy icon; the arrow will turn red. Now you can select the GO to which you want to transfer the settings.

If you want to transfer the settings to

more then one GO you can click on the arrow a second time and three yellow arrows will appear. Now you can transfer the

settings to a series of GOs.

If it is difficult to transfer adjustments to a specific GO because it is tricky to select it you can use the Paste function (last icon on the *task line*) instead of the transfer arrows. Then you can select the GO first and paste the settings when you are sure that you selected the right GO. Instead of selecting the GO by clicking on it in the *Project Window* you can also reach the GO through the GO list (right-click on the module to get in the *context menu*: *Open GOs*) and select it there.

Alignment

With the functions in this dialog you are able to specify the alignment of the different GOs. You can type in values in the text fields that determine how shifted the GO should be.

Left Offset: Distance of the middle point of the object to the left edge of the parent.

Right Offset: Distance of the middle point of the object to the right edge of the parent.

Top Offset: Distance of the middle point of the object to the top edge of the parent.

Bottom Offset: Distance of the middle point of the object to the bottom edge of the parent.

Align to Left: Enable this option to align the object to the left edge of the parent at the distance defined in the Left Offset field.

Align to Right: Enable this option to align the object to the left edge of the parent at the distance defined in the Right Offset field.

Align to Left and to Right: Aligning to both the right and the left edges of an object by clicking both icons consecutively would appear to be a paradox. But in SCOPE you have dynamic objects - dynamic bitmaps and graphical text. With these objects it is possible to align not the center point, but their edges of the respective edges of the parent. The object will then contract or expand when its parent is resized.

Align to Middle: Aligns the object horizontally in the center of the parent. The L/R offsets have no effect with this option.

Align to Top: Enable this option to align the object to the top edge of the parent at the distance defined in Top Offset.

Align to Bottom: Enable this option to align the object to the top edge of the parent at the distance defined in Bottom Offset .

Align to Top and to Bottom: Similar to the 'Align to Left and Right'. However, again it is not the center, but the edges of a dynamic object that are aligned to the top and bottom edges of the parent.

Align to Center: Aligns the object vertically in the center of the parent. The Top/Bottom offsets have no effect with this option.

Central
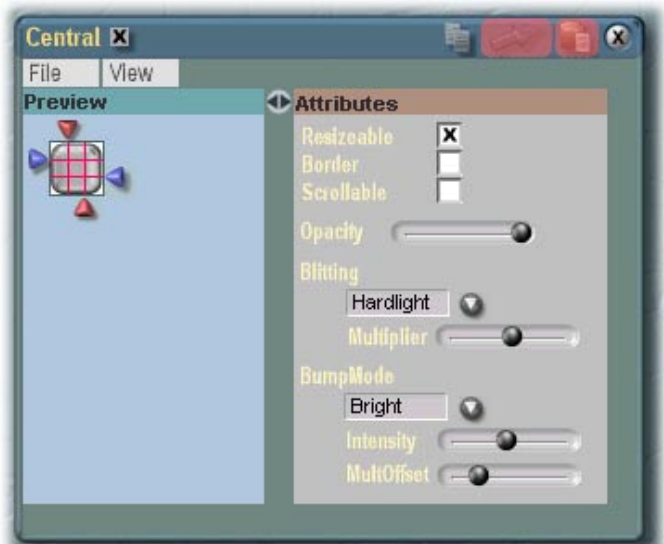
This dialog has a lot of different functions. It is the 'central' tool when working with GOs. You can load and save files by clicking on the *File* button. To adjust the view, click on the *View* button and determine between bitmap and bump.

The rest of the window is divided into two sections: *Preview* and *Attributes*.

The *Preview* shows the selected module as a dynamic bitmap.

Dynamic bitmaps are a special kind of bitmap that can be resized at run-time. This is important when designing a surface, and you do not know yet what size it will be. The supplied default surfaces were all created as dynamic bitmaps. SCOPE uses the following technique to convert a normal bitmap into a dynamic bitmap:

The bitmap is divided into nine tiles with two horizontal and two vertical 'splitter lines'. If a dynamic bitmap is horizontally adjusted in *Edit* mode beyond its original size, the upper, and lower middle tiles, and the central tile, are drawn repeatedly next to each other as required. The corners are shifted accordingly.
Vertical sizing is achieved in a similar way - by drawing the left and right middle tiles, and the central tile, repeatedly. Both dimensions can be adjusted at the same time. Also, if the object has a shadow, it is resized, too.
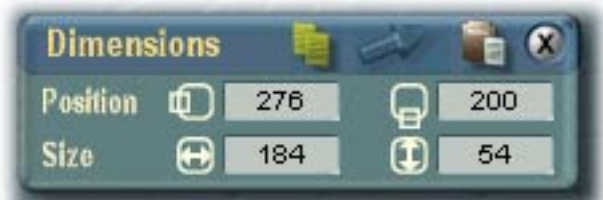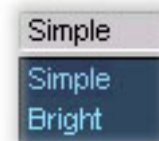
Color

If you want to change the color of a GO you need the Color window.

The *Color window* shows the current color of the selected panel. In order to change the color you have to scroll around the color circle with the pressed left mouse button, dragging the point with the mouse.

To get the nuances of the selected color you can move around in the color box and click on the right nuance. You can also click on the text fields of Red, Green and Blue to change the color. Those text fields are text based faders. Click on the and drag the mouse, with the press left mouse button up or down.

To change the opacity proceed like before, the text field is a text based fader, too.

Texture

In order to use a texture you have to open the Texture window and enable it by clicking on the small box next to the title. The texture of the SCOPE envirnment gets visible in the box in the window and on the selected GO. To rotate

the texture click on the knob in the circle keep it pressed and drag it around. T o enable the zoom just click on the text field with the left mouse button pressed and drag it up.

Shadow

In this dialog you can adjust the settings of the shadow of the selected GO. With the Feather fader you determine wether the shadow is chiseled or blurred.

All text fields which display the current value can also be used as text based fader.

Offset X describes the horizontal orientation and Offset Y describes the vertikal orientation of the shadow.
With the last fader you can adjust the opacity of the shadow.
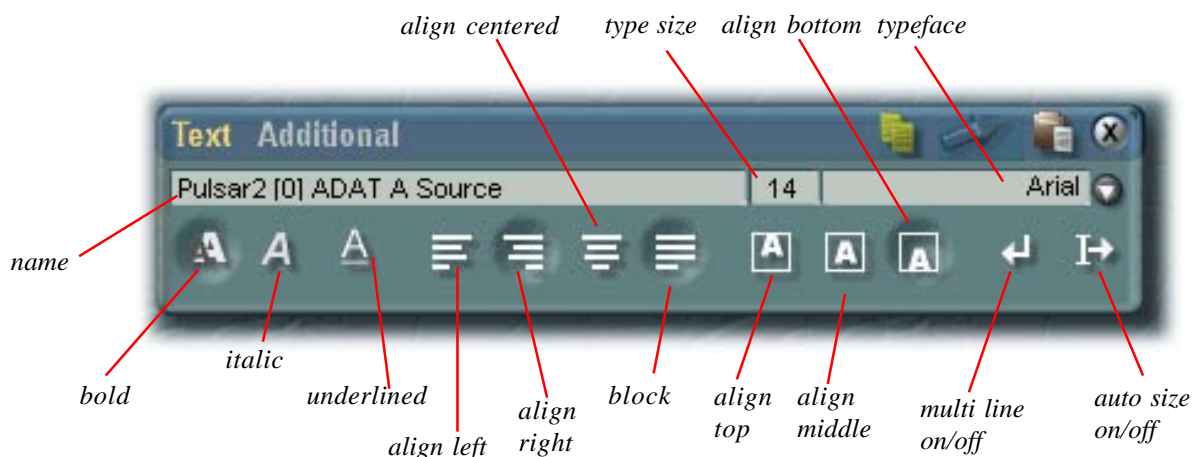
Gradient

The Gradient unifies the Texture and the Color tool. To activate the Gradient you have to click on the small box next to the title. The selected Go wil get a black and white gradient. There are three different types and two orders of gradients. You can change the color with the color selector as already described. In the texture box the gradient type is visible. Another function you can activate is loops. The text field is again a text based fader; so click on it, keep the mouse button pressed and drag the mouse up. The amount of loops will raise until twenty.

Text

With this tool you can change the texts, for example, if you want to rename a module.

SCOPE uses two kinds of text - Standard Text and Graphical Text. These differ as follows:

Standard Text: This refers to normal, Windows text. This is used for text that can change at run time, such as in a control's text field. All controls and modules that use standard text default to the Arial font, since at the time of writing it is installed on all PCs running

align centered   type size   align bottom   typeface

name

bold   italic   underlined   align left   align right   block   align top   align middle   multi line on/off   auto size on/off

Windows. If the font is not available, another will be substituted. Standard text is not anti-aliased, so it is not really appropriate for static text used for labels or design elements.

Graphical Text: Always use this text when its appearance is important, such as in controller names on synth surfaces or other labels that will not change at run time. Graphical text uses the same fonts as standard text, but it is anti-aliased (the edges are smoothed) and rendered immediately into a bitmap. The font used to render the graphical text does not have to be installed on the computer on which you want to use the object. However, the link between the font and the bitmap is preserved so the text can be modified at any time by adjusting parameters such as rotation and scaling. After each change, a new bitmap is produced.

If you produced some graphical text using, for example, the Avalon font, and then removed the font from your system, the graphical text would still be displayed in the Avalon font. If you then try to modify the graphical text in SCOPE, you will not be able to, since the Avalon font is no longer available. In this case, the next available font is substituted.

Options (for standard text only)

The options for standard text are found right under the line where the name of the selected module, the type size and the typeface is displayed.
 In order to change the size click on the size value, keep the mouse button pressed and drag up and down. To change the typeface click on the small arrow next to the typeface name. A drop

down menu opens and you can choose a new typeface. The three 'A' icons are symbols for **Bold**, *Italic* and **Underlined**.

Align Left: The text is aligned to the left side of the text block.

Align Right: The text is aligned to the right side of the block.

Align Centered: The text is centered in the block.

Block: The text is justified (each line adjusted to fill the block).

Align Top: The text is aligned to the upper edge of the block.

**Align Middle:** The text appears in the middle of the block.

Align Bottom: The text is aligned to the bottom edge of the block.

Multi Line: Enable this option to enter more than one line of text. If the text block is smaller than the text, the text is clipped (only partly visible).

Auto Size: The text will be automatically sized to fit a block. A line break can be forced by including the tilde (~) character.

Additional:
Transform (graphical text only)

Modifications to graphical text beyond font selection and size can be made by changing from *Text* mode to *Additional* mode. Therefore you have to click on *Additional* next to the *Text* title in the window.

horizontal scale *tracking*

vertical scale *rotation*
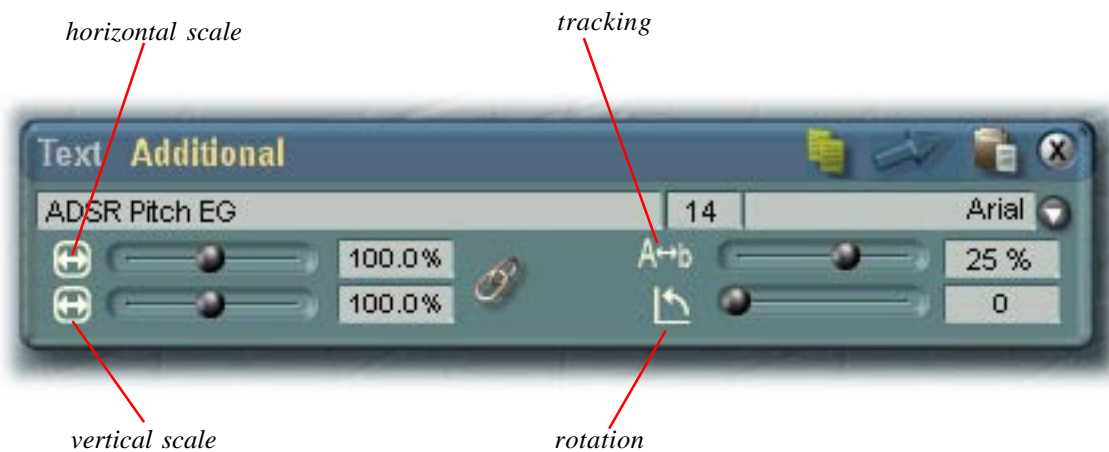
Horizontal Scale: This adjusts the aspect ratio of the text on the horizontal axis (stretching, compressing).

Vertical Scale: This adjusts the aspect ratio as above, but on the vertical axis.

Rotation: Text can be rotated between 0° and 360°.

Tracking: Increases or decreases the amount of space between letters, adjusting the length of the text without changing the aspect ratio of the letters.

Tool Tips: Several of the buttons and controllers in SCOPE will display tool tips, small, concise reference boxes, if the mouse is held over the object temporarily. Tool tips are displayed only if they are activated via the icon on the *Tool Bar.* They imply helpful information of the different *Pads* on a module. They will either display the Long name of a *Pad* or its value. The tool tips also provide information about the icons on the *Tool Bar* and the controllers on a surface.
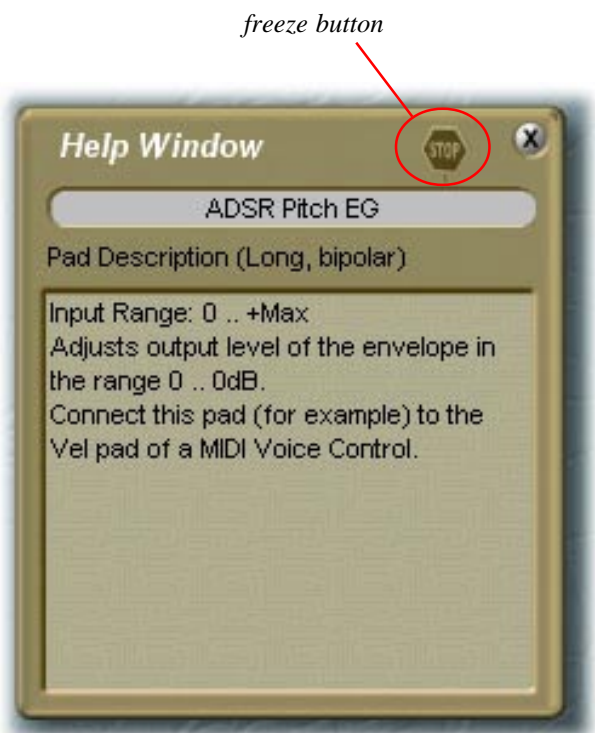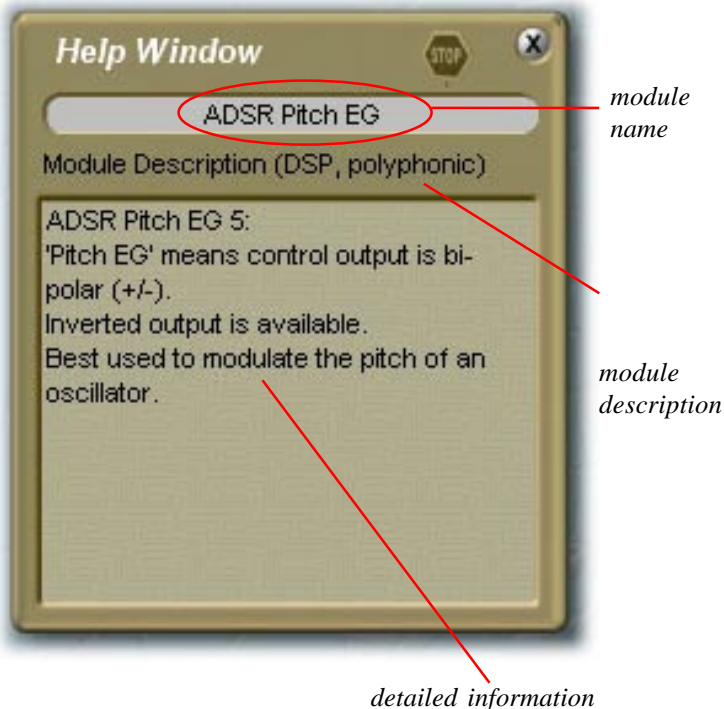
HIghlight: To enable or disable this option click on on the light bulb icon on the Tool Bar. If you select a module in the Project Window it will become highlighted in the Project Window and in the module tree in the Project Explorer.

Help Window: This option can also be accessed via the *Tool Bar*, just click on the question mark (or press F1 on your keyboard).The new window that pops up will offer information about a module or a *Pad* if you hold the mouse cursor over it. Furthermore it displays the name of the module in the first text field. In the line below you can see if the selected object is a module or a *Pad.*

Module Description: If the selected object is a module you get information about the location where the process is running (DSP or PC) and whether it loads one time (monophonic) or several times (polyphonic).
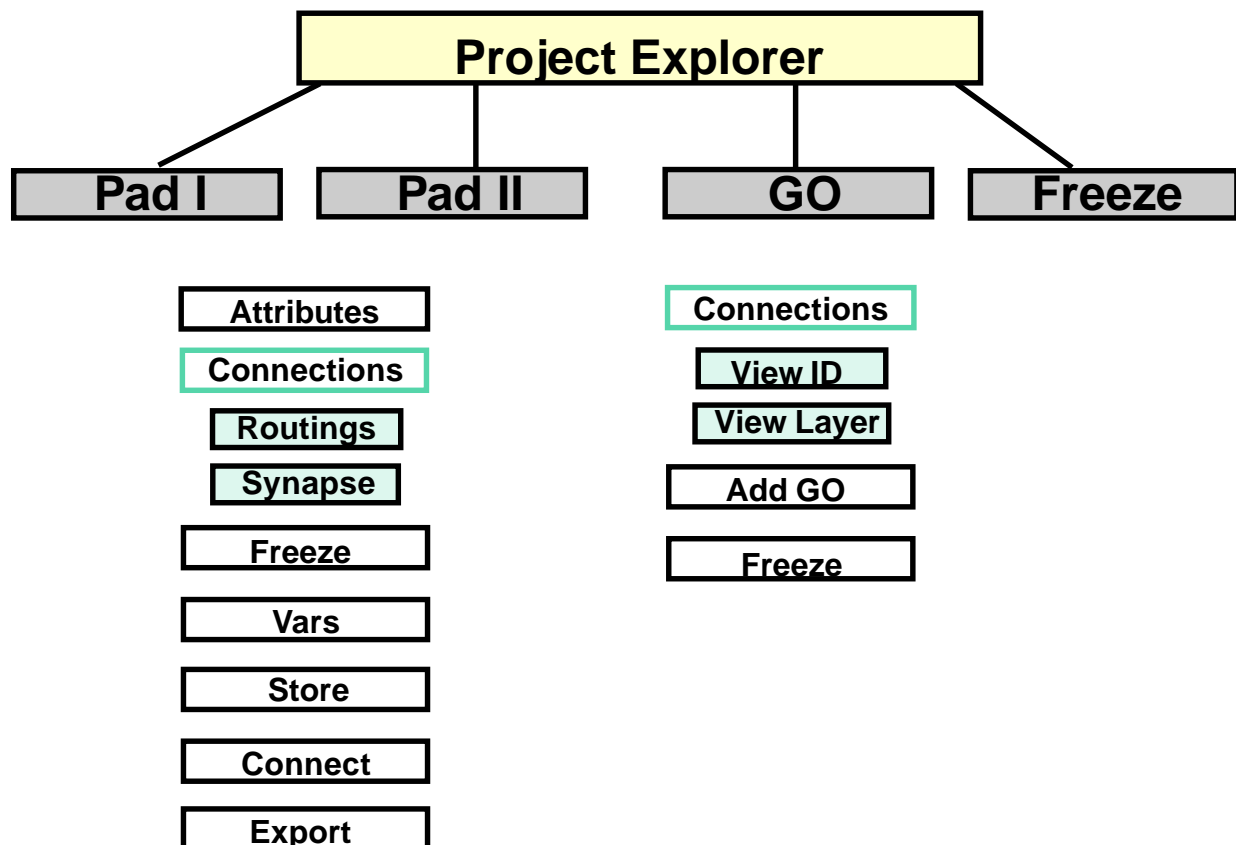
Help Window

ADSR Pitch EG

Pad Description (Long, bipolar)

Input Range: 0 .. +Max
Adjusts output level of the envelope in the range 0 .. 0dB.
Connect this pad (for example) to the Vel pad of a MIDI Voice Control.

Help Window

ADSR Pitch EG

module name

Module Description (DSP, polyphonic)

ADSR Pitch EG 5:
'Pitch EG' means control output is bi-polar (+/-).
Inverted output is available.
Best used to modulate the pitch of an oscillator.

module description

detailed information

Sometimes it can be useful to freeze the settings that are currently displayed in the *Help Window*. Therefore you can click on the stop sign in the right upper corner of the *Help Window.*

Pad Description: If the selected object is a *Pad* you will get information about the typ of the *Pad* and whether it is bipolar or unipolar.

The main information is displayed in the area underneath those descriptions. Here you get a detailed explanation of the module and for which construction it is best applicable.

If a *Pad* has a range it will be displayed in the *Help Window* as well as a proposition to which *Pads* it can be connected.

```
                    ┌─────────────────────────────┐
                    │      Project Explorer       │
                    └─────────────────────────────┘
         ┌──────────────┬──────────────┬──────────────┐
   ┌──────────┐  ┌──────────┐    ┌──────────┐  ┌──────────┐
   │  Pad I   │  │  Pad II  │    │    GO    │  │  Freeze  │
   └──────────┘  └──────────┘    └──────────┘  └──────────┘

              ┌──────────────┐      ┌──────────────┐
              │  Attributes  │      │ Connections  │
              ├──────────────┤      ├──────────────┤
              │ Connections  │      │   View ID    │
              ├──────────────┤      ├──────────────┤
              │   Routings   │      │  View Layer  │
              ├──────────────┤      ├──────────────┤
              │   Synapse    │      │   Add GO     │
              ├──────────────┤      ├──────────────┤
              │   Freeze     │      │   Freeze     │
              ├──────────────┤      └──────────────┘
              │    Vars      │
              ├──────────────┤
              │   Store      │
              ├──────────────┤
              │   Connect    │
              ├──────────────┤
              │   Export     │
              └──────────────┘
```

The Project Explorer

This tool is the central resource for the examination and modification of module circuits, devices and surfaces.

It's deceptively simple-looking when first opened. However, it contains many drawers which display exhaustively complete information about the structure of a device – its internal hierarchy, the modules it contains, their connections and so on. As a rule, these displays are interactive – you can modify virtually any aspect of a device or circuit via one or another section of this tool.

The following paragraphs describe the *Project Explorer* dialog and the various context menus available.

The current Project includes all modules and their connections. In this view, however, no connections are displayed - only the modules themselves.

If a module contains other modules, it is marked with a '+' symbol:

By clicking on the '+' symbol, or double clicking on a module's name, the child modules are made visible below it in a new branch. Within a branch you may be able to open additional branches - as many as required. If a module is

protected (   ) you can not open it to view the children.

Context menu of a module

You can call up a *context menu* for a module by right clicking on the module's name. Select the desired action with the left mouse button. Some of the dialogs are the same as the dialogs in the *context menu* of a module in the *Project Window.* Keyboard shortcuts are available and listed later.

```
Copy
Cut
Delete
Rename
_____
Save as ...
Load                    ▶
Edit                    ▶
Edit nfo
Attributes
Save as reference ...
PackDevice              ▶
Tools                   ▶
```

```
PackDevice      ▶    Optimize (xtc-compatible)
                     Protect
                     Delete old circuit GOs
```

From the **Pack devices** dialog you can optimise a module to make it xtc compatible. Here you have also the possibility to protect a certain module.Like the other protected modules it will be displayed with a lock in front of the name in the *Project Explorer*.

Cut, Copy, Delete, Rename, Save as, Load: These are the regular options to edit files.

Edit: Gives you access to the scripts (e.g. Pep/Display/Object) if you want to edit a module.

Edit nfo: This dialog box opens an editor where you can write new nfo files for modules. These will appear in the tool tips and in Help Window if you hold the mouse cursor over the module. For more information have a look at the „Edit nfo" tutorial.

Attributes: This dialog opens a window which contains all the attributes of a module. You can change the attributes by selecting the desired value and press F2 on your keyboard. For a detailed Attributes discription have a look at page 18.

Save as reference: Stores a reference to a module. Now, when the project is saved, the module itself is not - only it's name and where it was located is saved with the project. Referenced modules are indicated with a diskette symbol.

```
Project Explorer                        ⊗
Pad I   Pad II   GO    Freeze
⊟ NewProject
   ▪ WordClockPipe
   🔒 Pulsar2 [0] MIDI A Source
   🔒 Pulsar2 [0] MIDI A Dest
   🔒 Sequencer Midi Source 1
   🔒 Sequencer Midi Dest 1
   🔒 Pulsar2 [0] Analog Source
   🔒 Pulsar2 [0] Analog Dest
   🔒 Pulsar2 [0] SP-DIF Source
   🔒 Pulsar2 [0] SP-DIF Dest
   🔒 Wave Source 1
   🔒 Wave Dest 1
   🔒 ASIO Source
   🔒 ASIO Dest
⊟ HP 4pole Retro
   ▪ Long2LongSyncAtom
   ⊟ Panel
      ▪ Text "Panel"
      ▪ Back Frame
      ▪ ParentTopChanger
      ⊞ CloseGroup
      ⊞ Controls Group
      ⊞ Controls Group
      ⊞ Controls Group
      ⊞ Controls Group
   ▪ SurfaceInterface
@Close Surface
```

Tools ▶ Create circuit representation
Swap ViewID Circuit -> Surface
Swap ViewID Surface -> Circuit
Check Performance
Delete all unrouted Pads
SoftProtector

The last dialog box in this menu is the **Tools** dialog. Like the Pack devices dialog it is useful for the last adjustments of a module or a device. For example if you want to fix up your project and you have a lot of unconnected and unnecessary *Pads* you can select *Delete all unrouted Pads*. Your project now demands less disk space and less memory consumption and you have shorter loading times.

If you click on one of the two *Pads* buttons (*Pad I, Pad II*) you will find a new window wil open and give an overview of the Pads belonging to the currently selected module. From here you can use the buttons on top of the window to modify the values and appearances of the individual *Pads*.

A *Pad* could be considered as a connection point of the module. It can be connected to other *Pads*. Variables cannot be connected to other variables or *Pads*. They can only be edited in the **Variable list**. You can transform each variable to a *Pad* (from the *context menu* of a variable) or transform a *Pad* to a variable by deleting it from the *Pad List*. A *Pad* demands more resources than a variable.

Pad I

variable name *variable value* *vars*

Paos I   ✕
Attributes	Connections	Freeze	Vars
Store	Connect	Export
1.	Val	1082196483
2.	Curve	0
3.	Intensity	100
4.	Min	0
5.	Max	127
6.	Invert	0
7.	Step	0
8.	Disabled	0
9.	CtrlNr	-1
10.	ModRange	1000
11.	BroadCast	0
12.	Str	64
13.	Format	%1.f
14.	MinControl	0
15.	MaxControl	2147483647
16.	strMin	
17.	strMax	
18.	strMid	
19.	Offset	0
20.	Divisor	1

TField Threshold

name of the module

Var Attributes   ✕
Name	In
IOType	InPad
Type	Integer
Size	4
Minimum	-2147483648
Maximum	2147483647
Synchron	yes

In

By clicking on the *Attributes* button a new window opens and indicates the Attributes from *Vars* which have *Pads*.

Connections   ✕
| Routings | Synapse |

🟦 Input Detector **In**
🟩 Mix 1 **out**

out
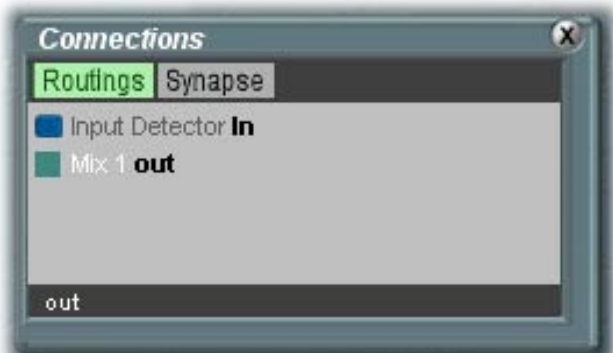
The *Connections* key gives you access to the *Routings* drawer which shows all direct routings between the *Pads* as well as the hierachies. The other function in this window is the *Synapse* button which gives you a list of all connected *Pads* without considering any hierarchies.

The next button in the *Pad I* window is the *Freeze* button. As the name pretends, you can 'freeze' the module tree which is displayed at this moment so that this can not be changed. Of course you have access to the other windows if you want to alter *Pads*, have a look at the connections etc. The *Vars* function does not open a new window but notifies the *Vars* in the *Pad* window. The actual values of all *Vars* ors *Pads* are still refreshed.

When you select a new module, the first *Pad* in the *Pad List* is also selected. If you then want to connect a *Pad* to a module at a different level you must first 'store' it and then connect it to the other pad. Use the ***Store*** button to store a Pad, and the **Connect** button to connect it. The **Connect** key will be enabled only when a *Pad* has been stored. Each *Pad* can thus be connected to another *Pad* anywhere within a project (assuming they are compatible).

To use a *Pad* at the next higher level in the tree, select it and click on the **Export** button. A grey arrow appears, and a copy of the pad is created in the module's parent module. The exported *Pad* is directly connected to the original one.

By clicking again on the **Export** button, the copy is removed from the parent module.

Often it makes sense to change the graphical representation of the *Pad's* type (In, Out or I/O). This would be the case, for example, if you export an *In Pad* which is connected to an *Out Pad*. You can change the appearance of a *Pad* using the keyboard keys **<I>**, **<O>** and **<P>**, or by selecting **Type** from the *context menu* (right clicking on the *Pad* name in the *Pad List*).

Context menu of a Pad
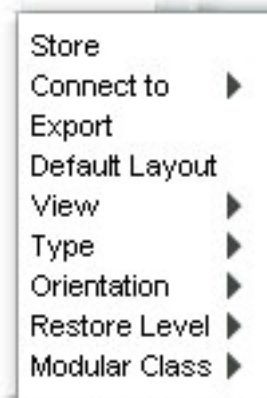
This *context menu* has some more options to arrange the settings of *Pads*.

With the first command in the *context menu* we can 'Store' the *Pad* settings. Scope will then memorize that we want to connect this *Pad*. If we click on 'Connect to' it will automatically suggest the possible connections.
We can use the 'Export' dialog box if we want to transfer a *Pad* into another layer. To reset the settings we can use the option 'Default : Layout'. With the next commands we can change the *Pads* the way that they suit to our needs.

We have three options to change the view of the *Pad* names. Normally the *Pads* in the *Pad List* are written in short names. In order to get the full name of a *Pad* we can change this setting by clicking on **Long Names**.

Clicking again on this dialog box will set this option back to **Short Names**.
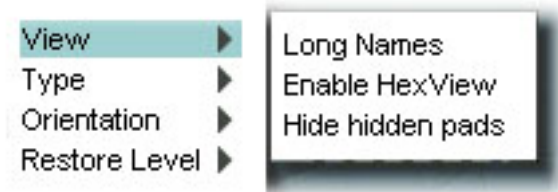
Sometimes it is useful to get another representation of the values. Therefore you have the option to change enable or disable the **Hex View** (hexadecimal).
If a *Pad* is hidden on a module it is still visible in the *Pad List.* In order to change this you can activate **Hide hidden Pads**, then all hidden *Pads* on the module will also be hidden in the *Pad List*.

If you have to change the type (I/O Pad, input Pad or output Pad) of a Pad, we can also do this through the *context menu.*

While changing the type in the dialog box,the actual *Pads* on the module change their appearance.

Sometimes it is useful to change the orientation of a *Pad* to keep track of the circuit.Therefore the *Pads* can be positioned on every side of the module or become hidden if they are not needed.

To change the orientation you have to open the menu from the 'Orientation' dialog box in the *context menu* and choose the *Pad* position you need.

The **Restore Level** gives the possibilities to decide, whether a *Pad* should be restored in Preset or not. For devices it is helpful to enable don't restore after loading.
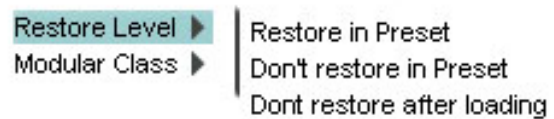
The arrangements that are described here for the Pad I window are exactly the same for Pad II window.

Graphical Objects

The next button on the Project Explorer is the **GO** key. If you click on it a new window comes up.The sequence of GOs in the tree, and whether they are parents or children, determine the way in which they are drawn.

1. Children are drawn over their parents.
2. GOs at the same level are drawn in the order in which they appear in the list.

Context menu in the GO window

Rightclicking on the name of a GO opens a context menu. The first commands

```
Cut
Copy
Delete
Rename
Export as Bitmap ...
Export as ScreenShot ...
```

(Cut, Copy, Delete, Rename) should be familiar to you. Sometimes it can be useful to export a GO as a bitmap or as a screenshot. Then you can use these two dialog boxes; they will bring you in the 'Save' mode where you can easiliy save a GO.

Attributes

view ID *z-order value* *information field*
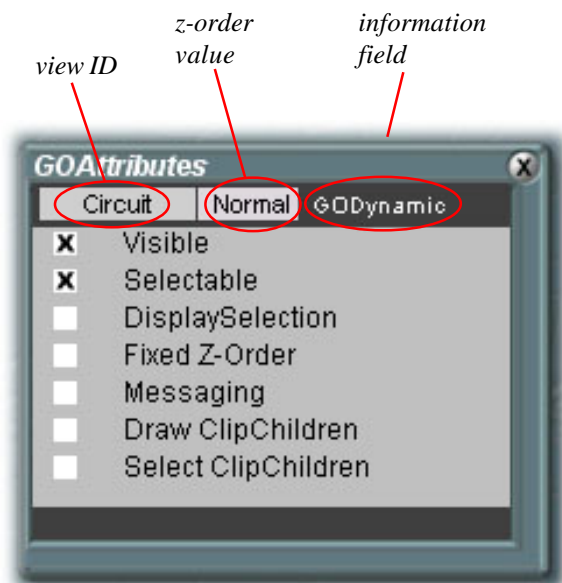
In the **Attributes** drawer you can adjust properties to further control the way in which objects are drawn.

Visible: Controls the ViewID and therefore the visibility of the selected GO/GOTree depending on the view context.

Selectable, if enabled, means that the object can be selected by the user with the mouse. In Edit mode it will be selectable regardless of this setting.

Fixed Z-Order: This flag forces all GOs into a fixed hierarchy. The top level hierarchy is determined by the hierarchy of the Project Explorer followed by the hierarchy determined in the GOTree. The GOTree is a composition of simple GOs as shown in the GO Window. Generally speaking this flag affects GOs that are located on the same level in the GOTree as well as GoTrees on the same level in the Project Explorer.

Messaging must be set in order for the object to respond to user input (mouse clicks on the object, etc).

Draw ClipChildren: For performance issues the 'Draw ClipChildren' flag should be always set (with exception for the 'close group'). This flag effects groups of surface elements (a number of sliders and their names, etc.) and forces the group to only draw/redraw GOs that are inside the group's borders. Everything outside the group is clipped. If this flag is not set the group looks for its elements on the whole surface to (re)draw them. This could be time consuming. If you use your own graphical objects you should give the object the appropriate dimensions when creating them. That way a group that holds these elements will automatically be adjusted to the right size. Otherwise it might be necessary to resize the group manually in Edit mode. In former versions we advised to calculate the shadows into the GOs. Because we have improved the algorithm and integrated shadows this can cause problems with the 'Draw ClipChildren' attribute. It is no longer preferable to do

so. The overhead for dynamic shadows has been greatly reduced and we recommend using them.

Select ClipChildren: Maybe you decide to not set the 'Draw ClipChildren' flag because you have some GOs that you have positioned outside the group and you want them to be displayed. In such cases you might want to use the 'Select ClipChildren'. This flag prevents these elements from being selected, and thus the group does not need to check inputs from them.

On top of the window there are two text-based fader and an information field.

ViewID:
Lets you adjust the ViewID of the selected module. Elements with their ViewID set to 'Surface' are only visible in '*surface view*', ViewID 'Circuit' is only visible in '*circuit view*' and 'None' is not visible at all.

Z-Order value: (works in conjunction with the 'On Top' flag)
To design sophisticated interfaces for your devices Scope allows you to place different GOTrees on top of each other. This order is the so-called Z-Depth or Z-Order. With this value you may adjust the Z-position of the element. A GOTree with a higher value is positioned on top of these with lower values.

Information Field: Tells you which GO-type is currently selected.
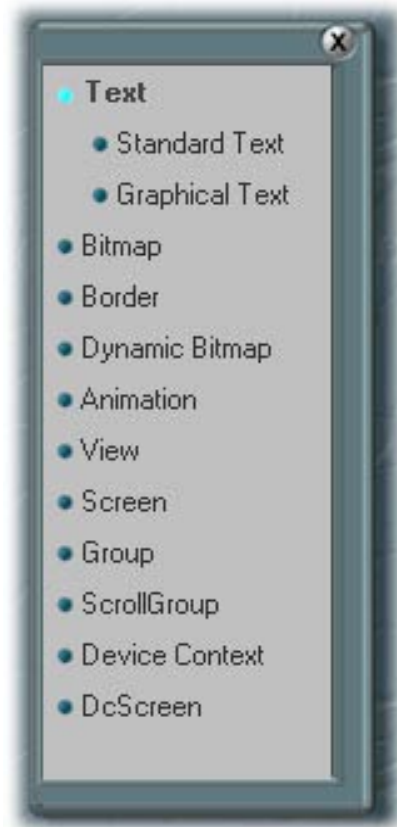
Add GO

You can drag and drop GOs from the *Add GO* drawer into the GO tree or into other objects.
When you drag and drop a GO to an object in the GO tree it normally becomes a child to that object. If you press the shift key just before dropping, however, it will become a sibling to the object. You can, for example, add additional text (standard or graphical text) or another bitmap to a graphical object. More information on GO types can be found in the Surface Design section.

In the Add Go window, as well as in the *Project Explorer* itself, you have also the possibility to 'freeze' the illustration you have in order to vary something without changing the adjustment in the window.

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A