

# MixerTools

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Version 3.0

# General

It is easy to fully integrate external devices such as DAT recorders, CD players, reverb units, compressors, EQs, and so on, into the SCOPE Fusion Platform.

You can establish standard hardware connections for your equipment, and then save the modules with unique names that clearly identify the devices connected through them.

For example, if you need to include a DAT recorder in your current project, you can simply drag the DAT Recorder module into the routing window. The module configures the connections automatically, just as they were previously configured, and immediately makes the DAT I/Os available in the project.

These special symbolic External Device modules substitute for your hardware devices in the routing window, visibly integrating your studio devices into the SCOPE Fusion Platform.

For mastering effects another extended module is provided - the External Master Effect module. This module lets you include an external analog effects device, with wet/dry mix, in your project. It also provides a simple way to reconcile AD/DA conversion times.

The last two External Device modules are the ControlRoom and AuxRack modules. The ControlRoom module has 6 stereo inputs and 6 stereo outputs you can route any way you like. The AuxRack lets you load multiple stereo insert effects into a single location to help organize the routing window view.

# Application

## Getting Started

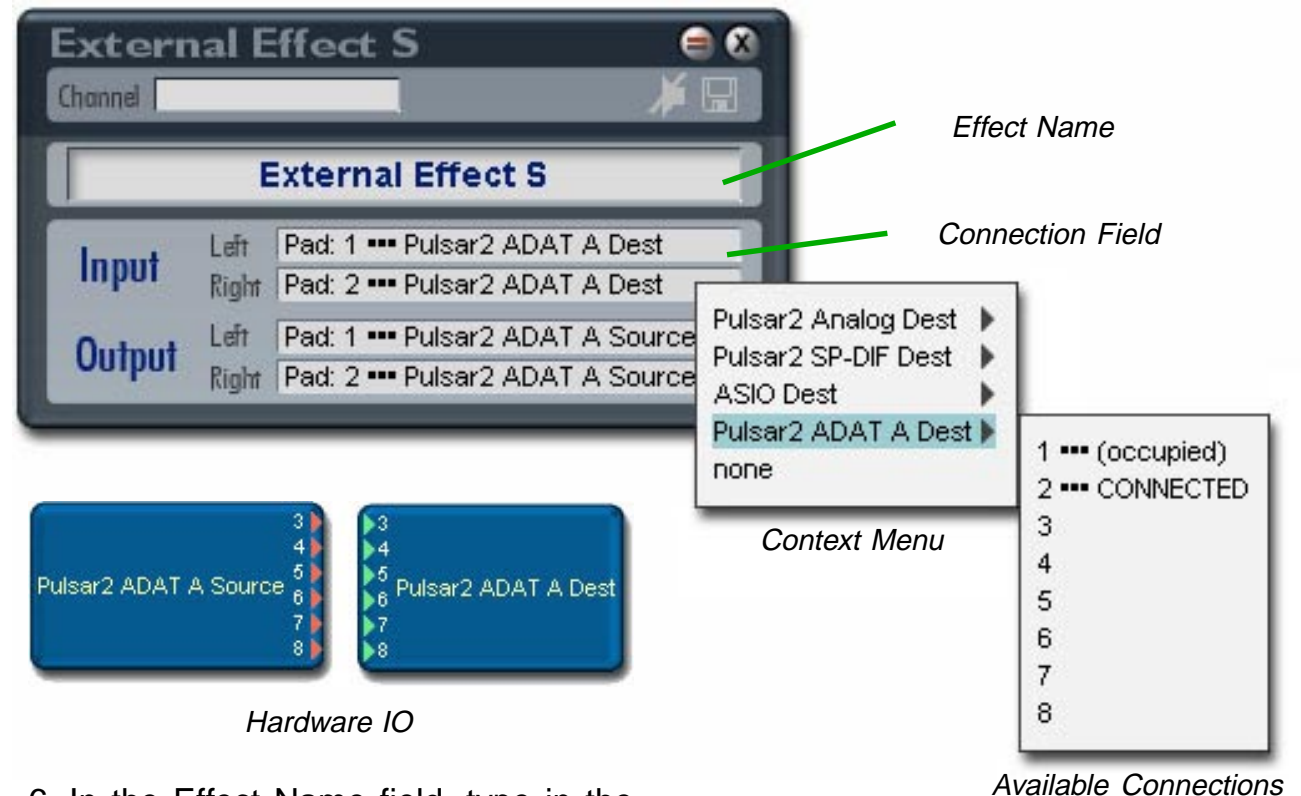
1. Drag the required hardware I/O modules into the routing window. Only if they are loaded into the project will they be available in the context menus.

2. Drag the External Effect module into the routing window.

3. Right click on one of the connection fields in the External Effect module. A menu containing all possible I/Os appears. A secondary menu shows the connections available for the currently selected module. Connections that are not available are marked “(occupied)”.

4. Select a connection from the list and left click to confirm it. The connection appears in the connection field, and the connections on the hardware I/O module used by the effect are automatically hidden.

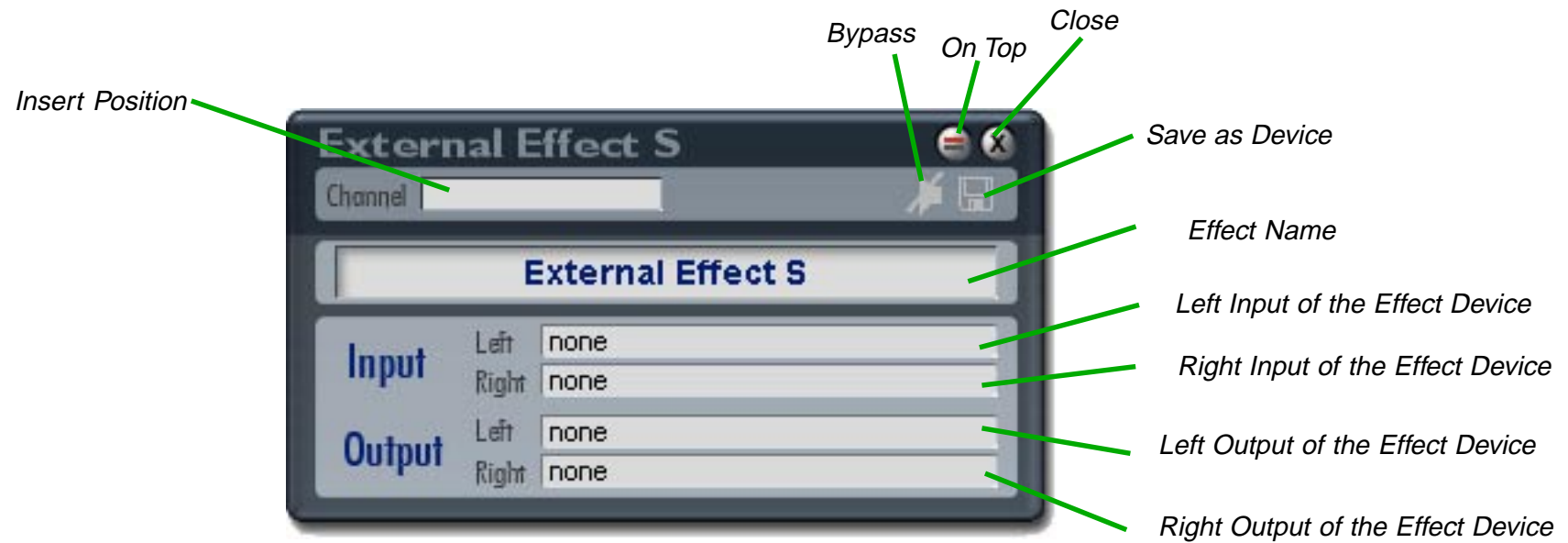
5. Repeat steps 1 to 4 to configure the other connections.



6. In the Effect Name field, type in the name of the configured effect (for example, „Reverb“). This is the name that appears on the module in the routing window.

7. Save the module as a Device so you can reference it in future projects.

## Interface



## Source Module

Use a Source module to virtualize, for example, the output of an attached keyboard or the signal from the output of a microphone preamp.



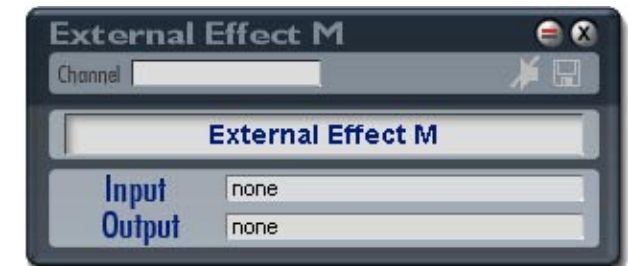
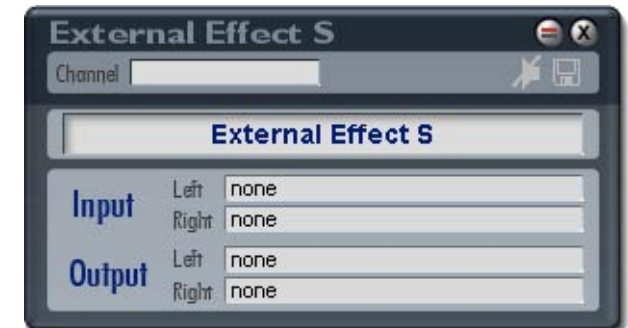
## Destination Module

Use a Dest module to virtualize, for example, the inputs of a DAT recorder or your monitoring equipment.



## Effect Module

Use an Effect Module to virtualize an external device, such as a reverb or compressor.

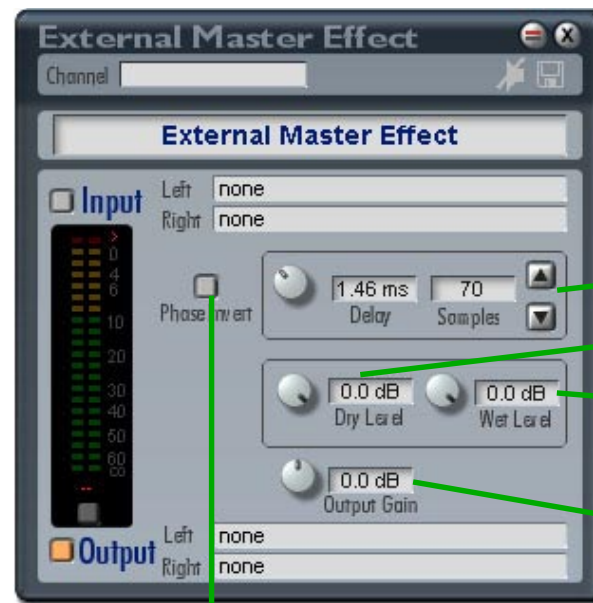


## Master Effect Module

When using external effects it is often necessary to mix the wet and dry signals in the SCOPE Fusion Platform. When you overlay the dry (original) and wet (effect) signals, adjustments must be made to ensure they remain in phase with each other, or phase cancellations will result. This reconciliation *must* be sample-accurate.

To ensure a sample accurate wet/dry mix:

1. Connect the External Master Effect to the inputs and outputs of the external device.
2. Send a test tone to the effect inputs (InL/InR). This could also be an ordinary music signal.
3. Connect the outputs to your monitoring system.
4. Set wet, dry, and output levels to 0dB.
5. Invert the phase of the original signal (enable Phase Invert).



*Input Signal Inversion*

*Dry Signal Delay*

*Dry Signals Level*

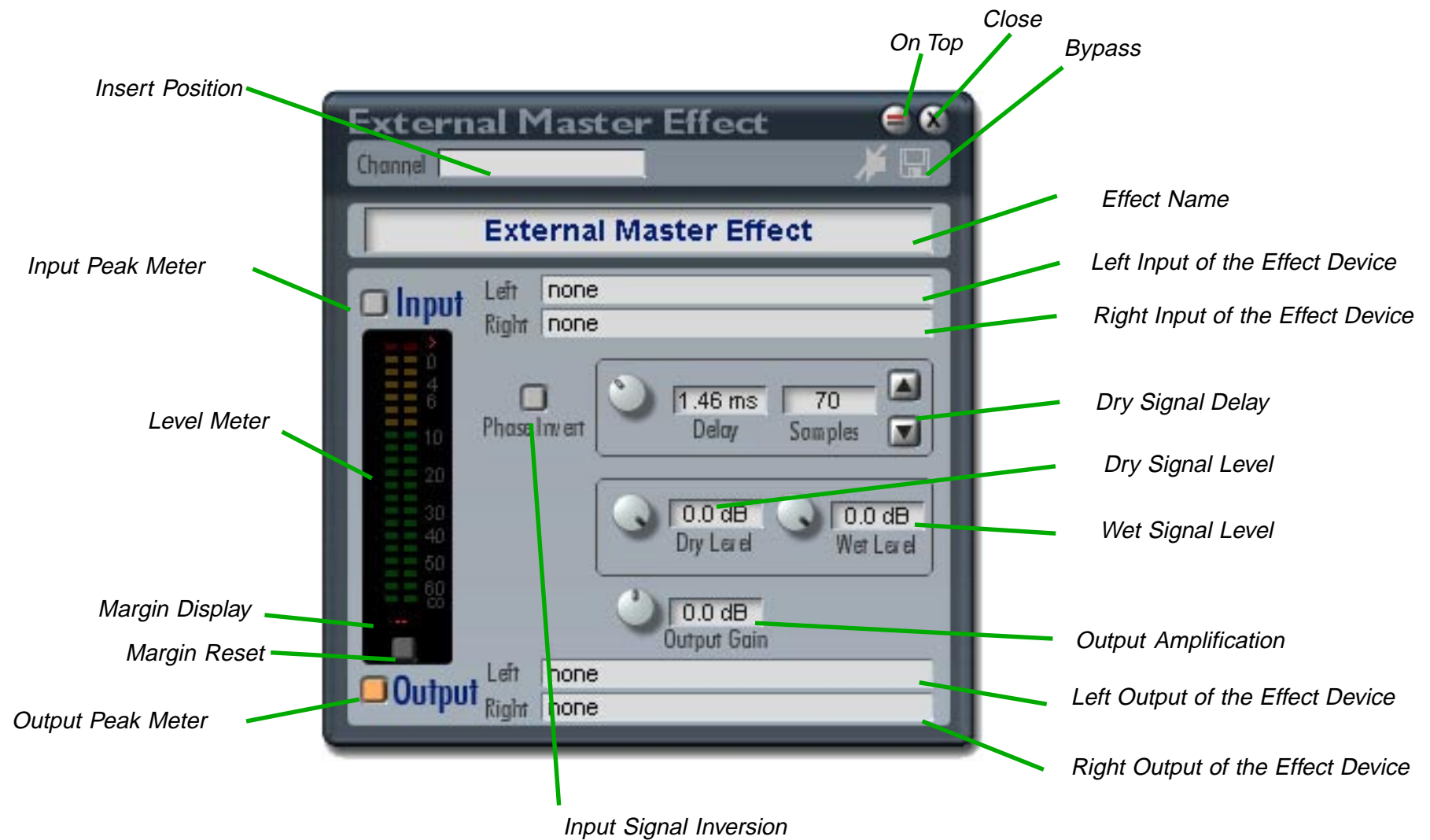
*Wet Signal Level*

*Output Amplification*

6. Adjust the Delay control from 0 to 200 samples. At some point, the maximum cancellation occurs. This is the delay value to set to compensate for AD/DA conversion. For better control, switch the effect to Bypass.

7. Switch the phase inversion off.

Now the wet/dry mix sounds as it should, and the external effect can be included in the project. Note that some digital AD/DA converters have varying delay times depending on the sample rate and the initial start-up conditions. You should always check the delay settings for external master effects after starting a project.





## AuxRack

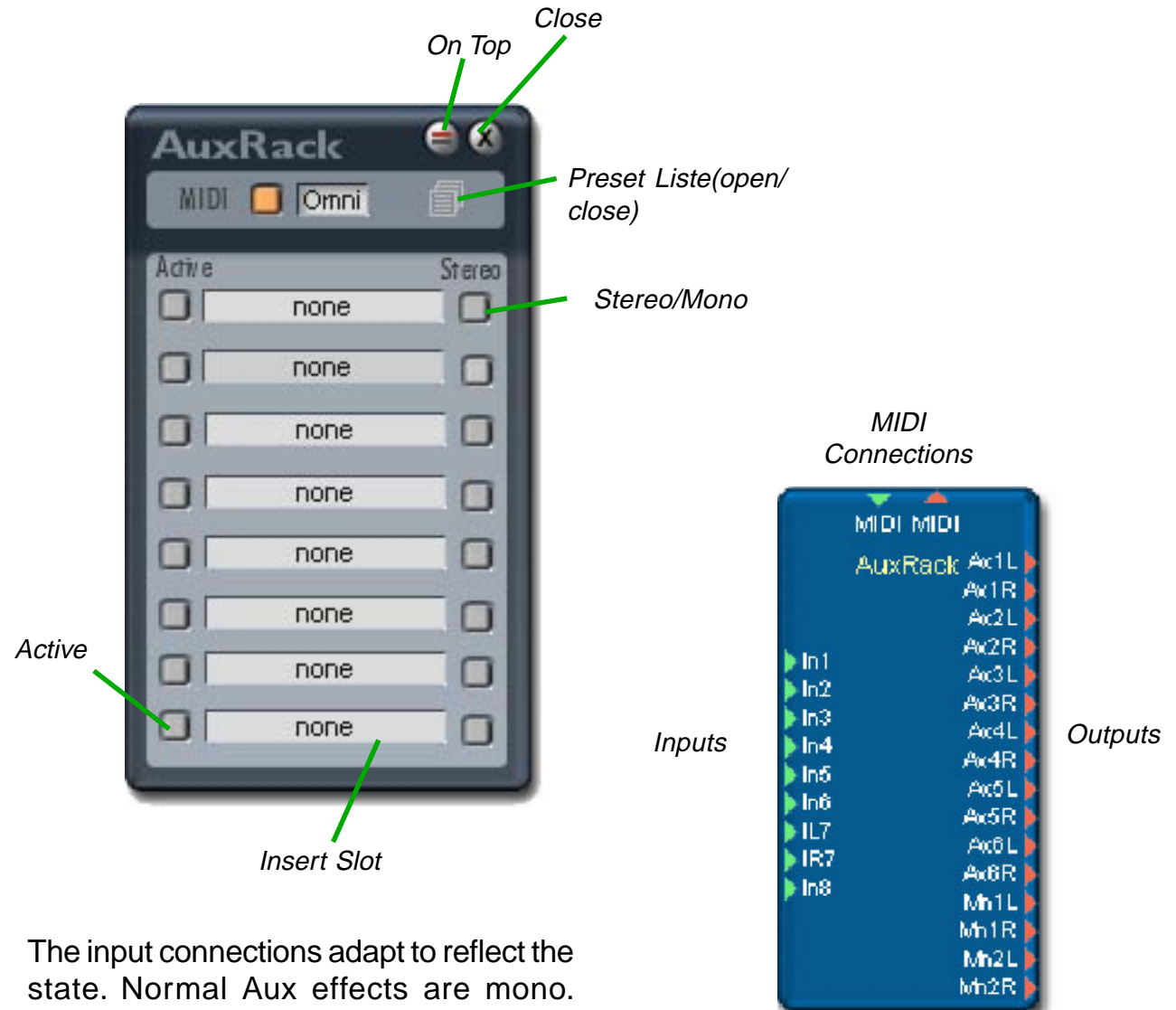
The AuxRack gives you a way to organize and simplify the view in the routing window. Drag stereo effects into the 8 aux slots in the usual way. The AuxRack does not use any additional DSP resources.

The effects in the AuxRack are routed in parallel - that is, the effect in slot 1 gets its input from In1 (or IL1/IR1). The effect's output signal appears at Ax1L/Ax1R.

**Active:** When you drag an effect to a slot, it is automatically enabled (the Active button shines orange). Click again on this button to remove the effect from the DSPs. This sets the slot to bypass mode and lets the signal pass through while the effect remains loaded.

**Insert Slot:** You can select a stereo effect and load it into a slot by calling the context menu with a right mouse click on the slot.

**Stereo/Mono:** This button selects whether the loaded effect is to be addressed as a mono or stereo effect.



The input connections adapt to reflect the state. Normal Aux effects are mono. However, true stereo effects require both inputs.



## ControlRoom

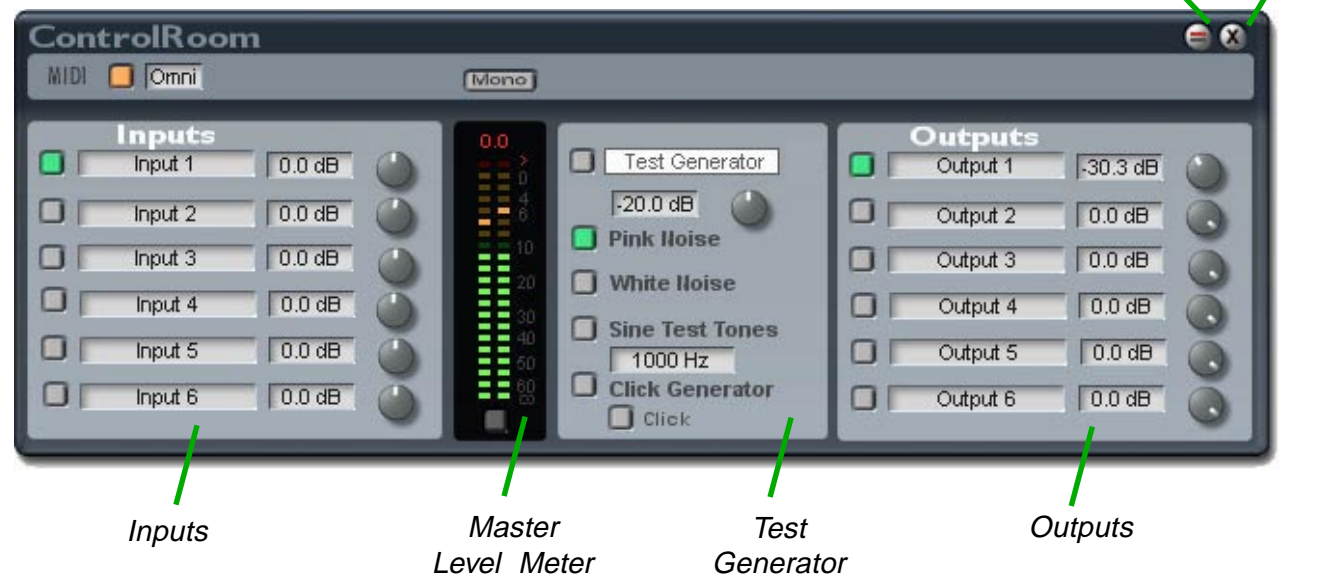
The ControlRoom module is a utility to provide convenient switching among 6 stereo inputs and 6 stereo outputs.

Only one input and one output can be active at a time.

A test tone generator, with its own separate outputs, can also be included in the signal path.

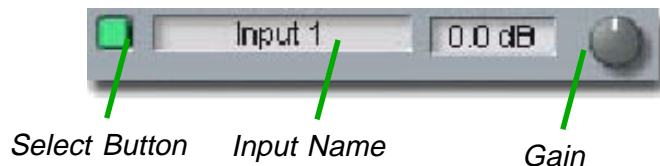
### Inputs

Connect any signal sources you want to monitor to one or more of the stereo inputs.



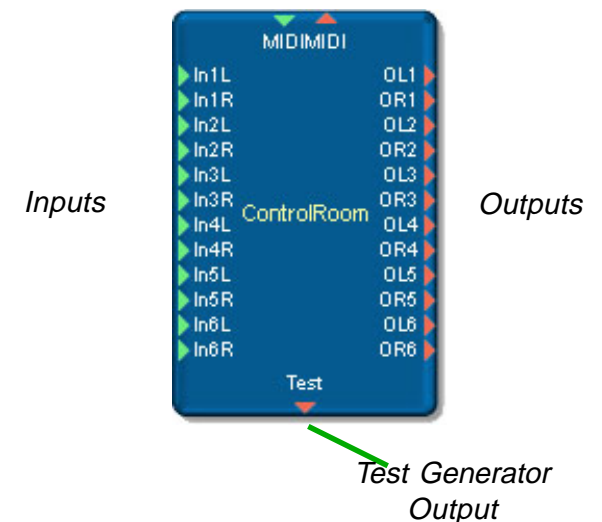
**Name:** Type in a name to identify the signal source here.

**Input Gain:** You can attenuate or amplify the signal at each input. The associated text field shows the amplification level in dB, and you can enter values with the keyboard. Maximum boost is +24dB.



**Input Select Button:** Click to select this input as the one to route to the current output.

### MIDI Connections



**Outputs:** You can select any of the six stereo outputs as the one to deliver the selected input signal.

**Output Select Button:** Click to select this output as the one to receive the currently selected input signal.

**Name:** Type in a name to identify the signal destination here.

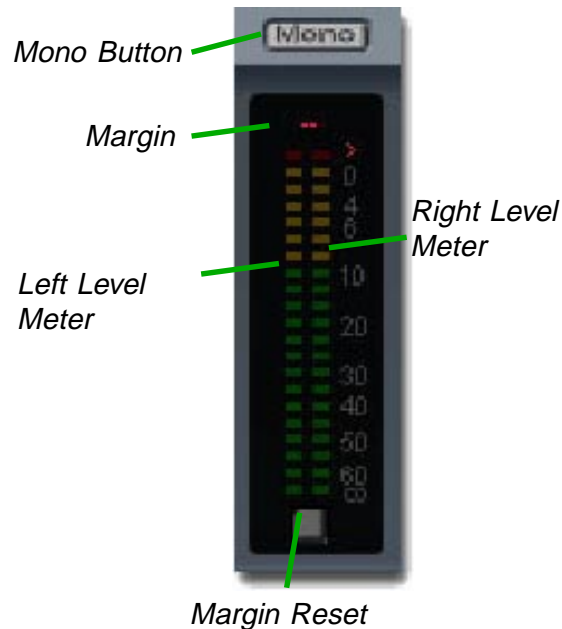
**Output Gain:** You can attenuate or amplify the signal at each output. The associated text field shows the amplification level in dB, and you can enter values with the keyboard. Maximum boost is +24dB.

### Master Level Meter

This meter displays the routed signal at its currently adjusted level.

**Mono:** This button puts the meter in mono-compatibility mode.

**Margin:** The margin display shows the highest level reached so far in the left or right channels. This value, expressed in dB, remains unchanged until a higher level is measured, or until the margin is reset.



**Level Meter:** Displays the current signal level.

**Red LED:** The red LED indicates a level of -0.01dB. Strictly speaking this is not an *over* condition, but it does indicate a very high signal level. To be safe you should not allow analog input signals to exceed -3.0dB.

With digital signals, such as those from a wave player, you can let the red LED flash more frequently. This does not indicate overs, just a high signal level. If the digital input signal has been compressed and normalized this LED will light up quite often.

1. Yellow LED: -0.5dB

2. Yellow LED: -3.0dB

3. Yellow LED: -4.0dB

4. Yellow LED: -6.0dB

5. Yellow LED: -8.0dB

6. Yellow LED: -9.0dB

Green LEDs (1-14): -10.0dB, -12.0dB, -18.0dB, -20.0dB, -24.0dB, -28.0dB, -30.0dB, -36.0dB, -40.0dB, -45.0dB, -50.0dB, -55.0dB, -60.0dB

*Signal LED* -96.0dB

It is normal for the *Signal LED* to remain lit when an analog source is connected to the respective input. This is because most analog devices have a signal-to-noise ratio of less than 96dB.

**Margin Reset:** Clears the value in the margin display.

## Test Generator

The Test Generator produces pink noise, white noise, a sine wave, or impulse clicks. The selected signal is always available at the Test Generator outputs.

**On/Off:** Switches the test generator on or off.

**Monitor:** Lets you temporarily monitor the test signal.

**Gain:** Adjusts the level of the output signal (maximum 0dB).

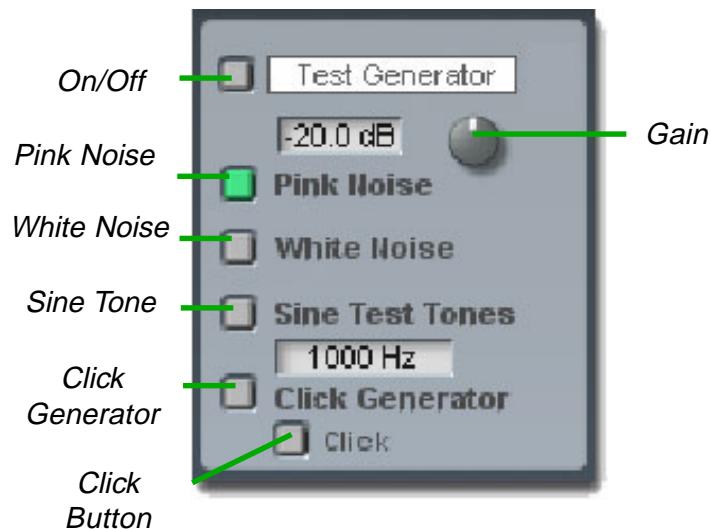
**Pink Noise:** Selects pink noise as the output.

**White Noise:** Selects white noise as the output.

**Sine Test Tone:** Outputs a sine wave, adjustable from 20Hz to 20kHz.

**Click Generator:** Transmits single impulse samples at the level as adjusted by the Gain control whenever the Click button is pressed.

**Click Button:** Sends a click (impulse) if Click Generator is selected.



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