

MicroMixer

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Introduction

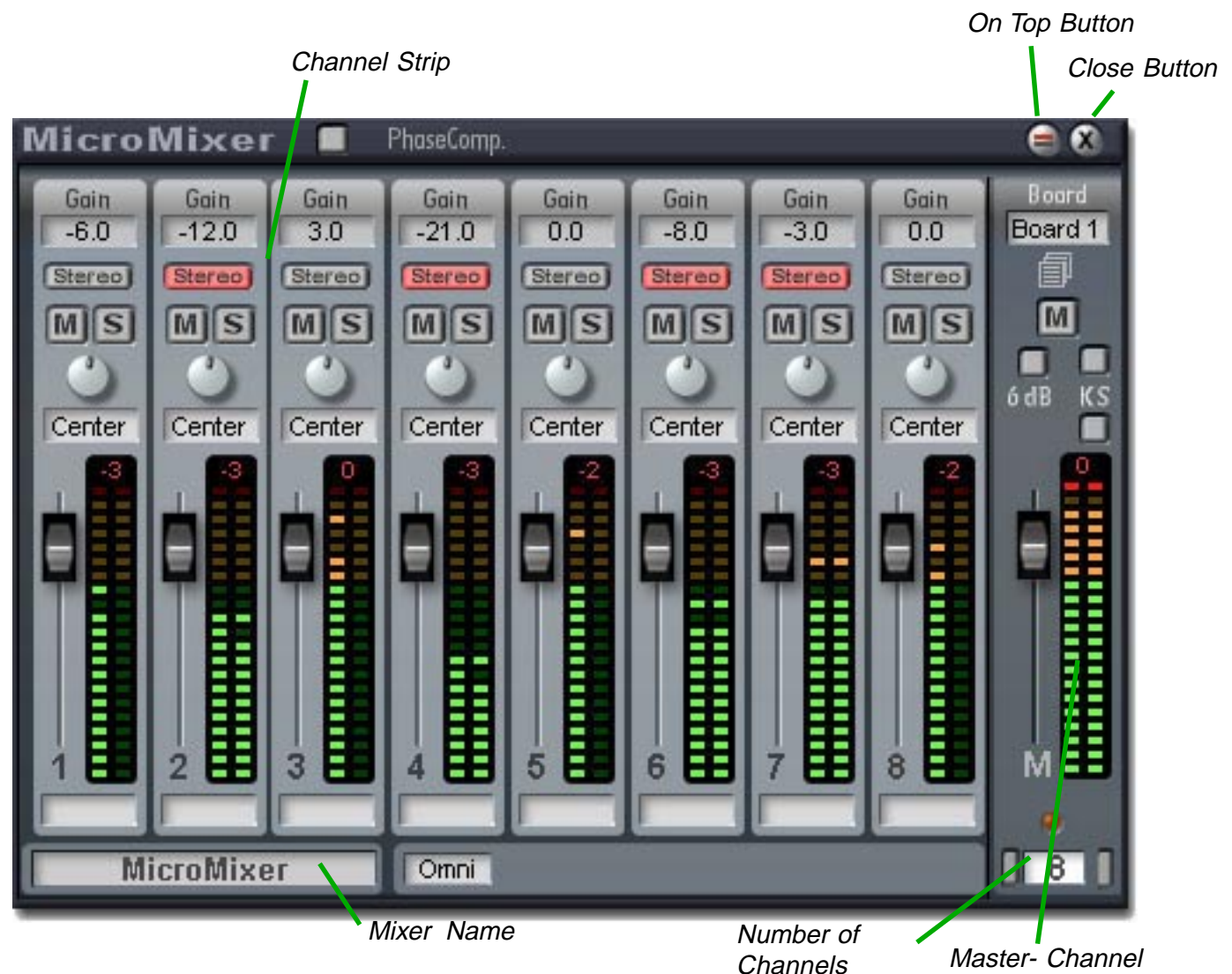
Use the MicroMixer to mix all the signals from the audio hardware I/Os down to two channels.

To load the MicroMixer, select it in the modules menu. You can load several mixers into a project, and you can give each its own name.

Interface

The MicroMixer consists of up to 16 input channels. Each channel strip can be configured either as a mono channel or as a stereo pair. You can change the number of channels at any time as needed (minimum 2, maximum 16).

Mixer Name: You can type in any name you like here. The name of the mixer module in the Routing Window likewise changes.



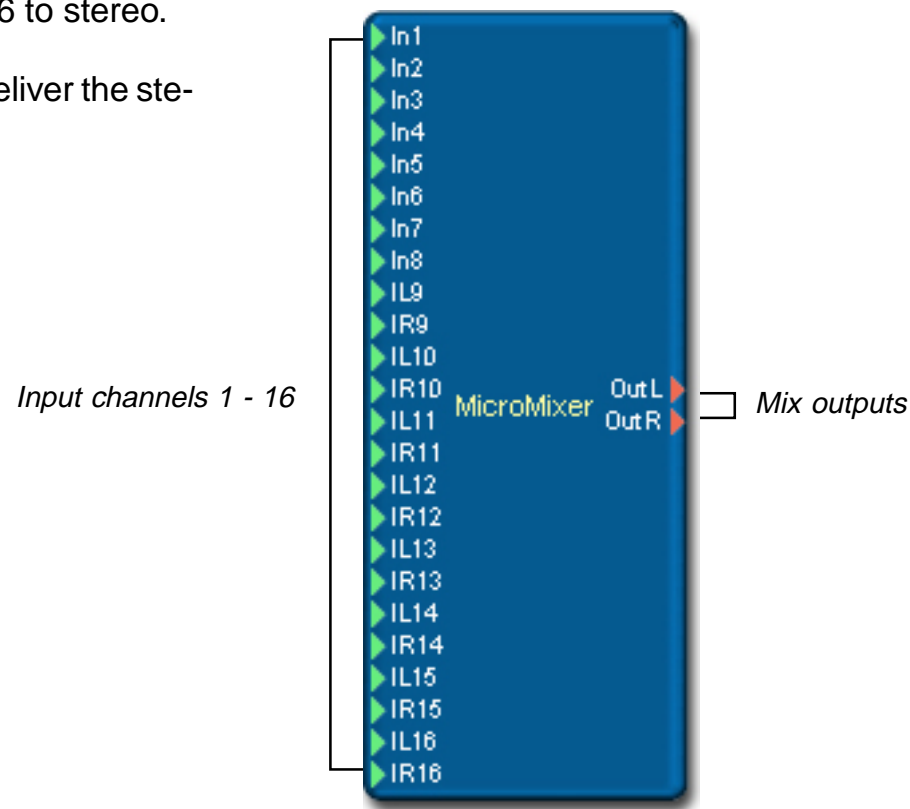
On Top: When enabled this function prevents other windows from being drawn over the mixer panel - the mixer therefore remains „on top“ of any other windows. When not enabled, other windows can obscure the mixer.

Close: The Close button removes the mixer panel from the display. To open it again, double click on the mixer module representation in the Routing Window or on the minimized mixer graphic in the Device bar.

Connections

Inputs: The number of inputs showing depends on the number of channels used and their mono or stereo status. In the example illustrated here all 16 channels are enabled. The first 8 channels are set to mono, and channels 9-16 to stereo.

Outputs: OutL and OutR deliver the stereo mix.



Controls

General

Level Meter

The level meters operate as peak meters whereby they display the maximum signal levels (as opposed to averaged levels). A *peak hold* function displays the signal peaks in the display for a brief period of time. A *margin* display lies beneath each meter. This indicates the highest peak level reached so far. A margin reset function clears (resets) all margin displays.

Each 'LED' is associated with a specific signal level and lights up when that level is reached or exceeded.

Master Level Meter

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

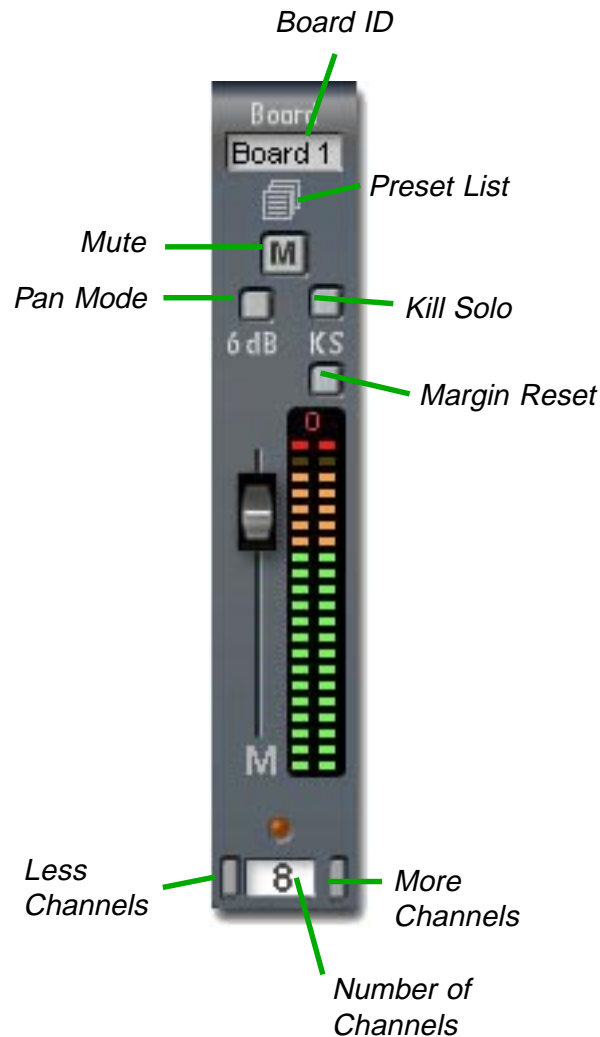
It is normal for the *Signal LED* to remain lit when an analog source is connected to the respective input. This is because most analog devices have a signal-to-noise ratio of less than 96dB.

Global Functions

Board ID: If you have multiple DSP boards in your system and have connected several external I/Os to the mixer, you can select which board to assign to the mixer. When used appropriately this feature can relieve the DSP system dramatically. For example, if you connect multiple hardware inputs such as an ADAT source module to the mixer inputs, and these inputs are located on a different board than the one used to process the mixer channels, you can change the board ID to ensure that the board with the ADAT inputs is the one used to process the mixer channels. This saves significant STDM connections between boards when you are using a lot of channels. You might also want to select a particular board to distribute the DSP load for performance reasons. Experiment a little with this setting to see how it affects your system.

Mute: Use Mute to switch the mixer output off without moving the volume fader.

Preset List: Opens or closes the Prest list.



Pan Mode: Switches between „Cross-fade pan“ (3 dB mode) and „Linear pan“ (6 dB mode). This setting applies globally to all mixer channels.

Kill Solo: When you have several channels in solo you can use this button to quickly take them all out of solo mode at the same time.

Margin Reset: Click on this button to reset all Margin displays to zero.

Number of Channels: Use this scrolling text field to adjust the number of channels to support (up to 16). To adjust the number, click on the field and, while holding down the mouse button, move the mouse up or down. Or you can click on the increment and decrement buttons located on each side of the text field to raise or lower the value.

Phase Compensation

The switchable phase compensation feature permits phase-aligned operation of all mixer input channels. It makes no difference whether the input signal comes from an internal device (synthesizer, sampler etc.) or via an I/O module. Thus, external signals can also be handled in the mixer in a phase-accurate manner, as long as they arrive phase-aligned at the hardware inputs.

Phase compensation of all inputs is not always necessary. Activation of this feature imposes an additional demand upon DSP computing capacity and should therefore be done only when it is truly useful.

Compensation balances delays on the order of a few samples. These delays are significant only under certain conditions. For example, uncorrelated signals such as a piano and a separately-recorded voice can be shifted by a handful of samples relative to one another with no audible effect. These differences are too small to be perceived as timing shifts.

When, on the other hand, a piano has been recorded simultaneously via multi-

ple microphones, the spatial image will be correctly reproduced only if all of these highly-correlated signals are processed without delays relative to one another. Thus, the use of phase compensation is advisable when mixing recordings of a single sound source or image made with multiple microphones. The less correlated the signals are, the less critical is the maintenance of proper phase alignment. A delay of a few samples in one signal corresponds to a distance difference of a few centimeters. Thus, the effects of phase shifts in this range are greatest with close miking.

Note that precise phase alignment is often achievable without explicitly activating phase compensation, since channels are inherently phase-aligned with one another within specific groups in each mixer. In the DynamicMixer they are: 1-4, 5-8, 9-12, 13-16. In the MicroMixer, all channels are inherently phase-aligned. Thus, explicit phase compensation is necessary with this mixer only when it is desired that signals from different sources arrive phase-aligned at the mixer inputs.

The extent to which the difference between compensated and uncompensated signals is audible depends upon the signals themselves, and especially upon the degree of correlation between them. You can easily assess the extent of the effect directly by mixing a multitrack recording with the STM2448/4896 (without using any effects) and switching on phase compensation. Each channel includes a switchable delay which can be varied between 0 and 200 samples. A delay in one channel of 2-4 samples corresponds to the sort of delays which may be encountered in a real situation if compensation is not used. Check whether this delay seems to in any way alter the perceived spatial image. If not, crank up the delay further. The delay is now beyond that which might realistically be encountered, but makes the effect more noticeable.

Problems with mono compatibility, such as a noticeable loss of highs in the mono mix as compared with the stereo mix, can also occur. The Mono button in the Master section can be used to check this.

Master Channel

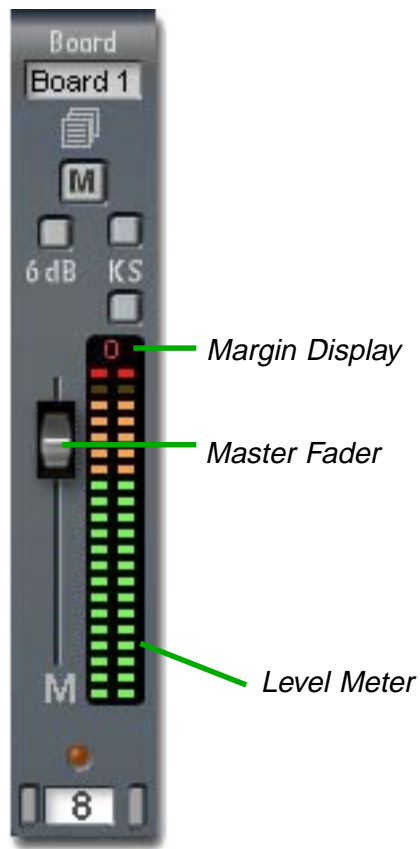
The signals from all active channels are combined in the Master channel.

Margin Display: This indicates the highest signal level measured since the last margin reset.

Master Fader: Controls the volume level of the overall mix. At the maximum setting the level is boosted by about +12 dB.

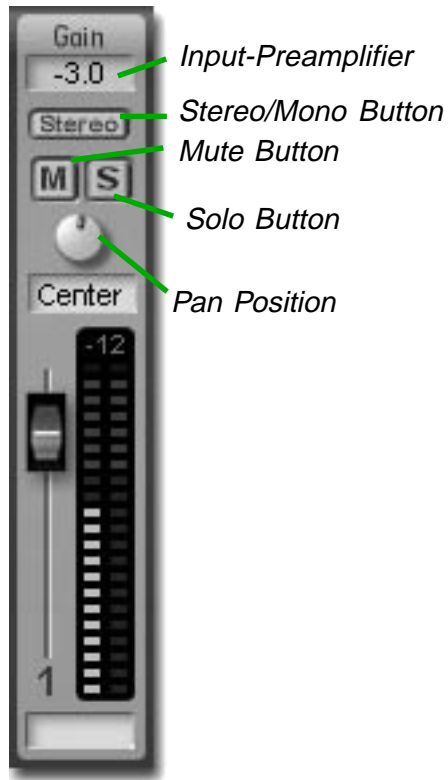
Double-click on the Master fader to reset it to 0 dB.

Level Meter: Indicates the current volume level of the overall mix output.



Channel Strip

The mixer's 16 channel strips are identical. A channel strip appears only for those channels you have enabled.



Gain: Adjusts the level of the input signal for this channel. The level meter displays the current level, and responds immediately to changes. The adjustable range is from -186 dB to +24 dB.

Stereo/Mono: You can configure any channel as either a mono or a stereo channel. Switching a channel from one mode to the other has an effect on the connections. For example, if you enable channel 1 as a mono channel, the input for this channel is labeled **In1**. One of the channels is hidden, and internally linked. The left level meter then serves as the display for the mono channel's signal level. If you switch channel 1 to stereo mode, then both inputs appear labeled as **IL1** and **IR1**.

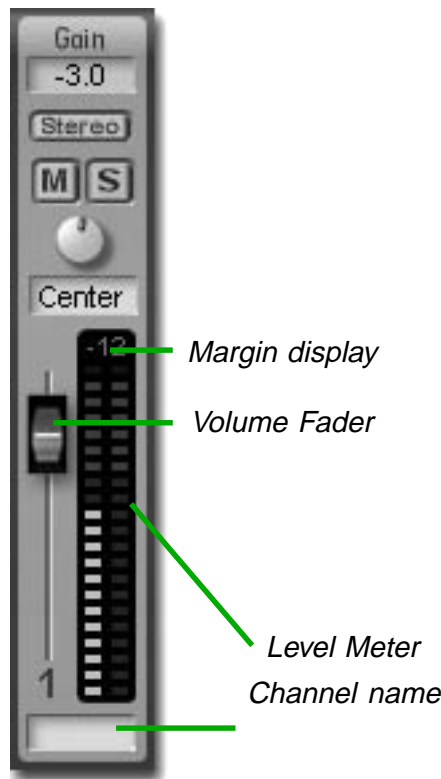
Mute: Removes the signal from the Master channel so that it is no longer heard in the mix.

Solo: Mutes all the other channels so that the channel with Solo enabled is the only one heard in the mix.

You can have more than one channel in solo mode at a time. If several channels are enabled for solo simultaneously you can switch all solos off with the *Kill Solo* button in the Master channel.

Pan position: This control determines the proportion of the signal sent to the left and right master buses. This controls the aural position of the signal in the stereo field. In the hard left position (Left), the signal is delivered only to the left master bus. In the center position the signal is sent equally to the left and right buses, but attenuated by 3 dB (or 6 dB in 6 dB mode). In the hard right position (Right) the signal goes only to the right bus. In a stereo channel the left channel is fixed to the left input and the right channel to the right - no crossfading takes place.

When a channel is in stereo mode, the pan control acts as a balance control. In the center position, the input signal is passed through unattenuated and independent of the channel strip's selected pan mode. If the control is turned gradually from center to full left, the right channel signal will be gradually faded down until it is no longer audible, while the level of the left channel signal remains unchanged.



Margin display: This indicates the highest signal level measured since the last margin reset.

The Margin Reset (master channel) sets the margin display for all channels to zero.

Volume Fader: Controls the level of this channel in the mix. At its maximum setting the signal is boosted by about +12 dB.

Double-click on the volume fader to reset it to 0 dB.

Level Meter: Displays the current level of the signal after the Gain control.

Clip LED: This red LED lights up to warn of clipping when the signal level reaches -0.005 dB. It indicates that the mixer input has been overloaded and you should reduce the input signal level.

Channel name: Any name you choose for the channel. To enter a name, click on the field to enable it for editing, type in the name, and confirm by pressing <Enter>.

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