

# STM 48 S



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# Introduction

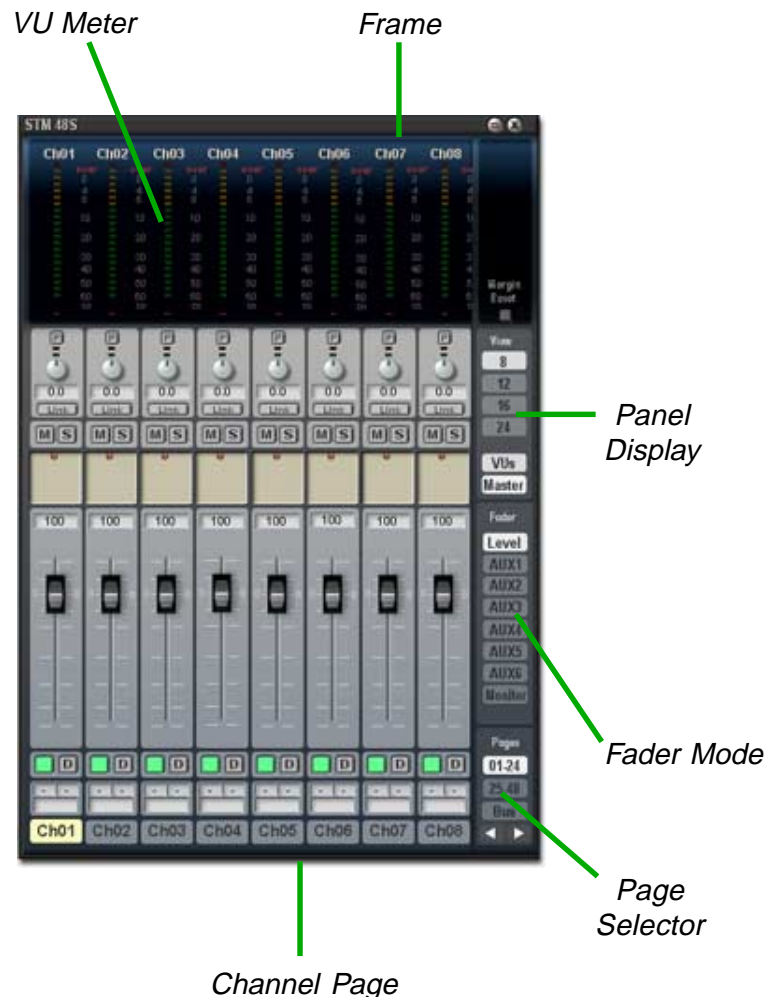
The STM 48S is a 48 channel surround mixer with 6 mono auxiliary channels and a stereo aux channel that can serve as a monitor channel. Each channel can be routed to any or all of 9 surround buses.

Odd/even channels can be linked together to create stereo pairs. In a stereo pair, the insert in the odd-numbered channel becomes a stereo insert and serves both channels.

The mixer provides inputs for two external stereo sources and a talkback microphone.

A versatile solo function is provided to check individual signals.

Two independent graphic panels - the Master panel and the Channel Panel - contain the mixer controls and components.



Channel Panel



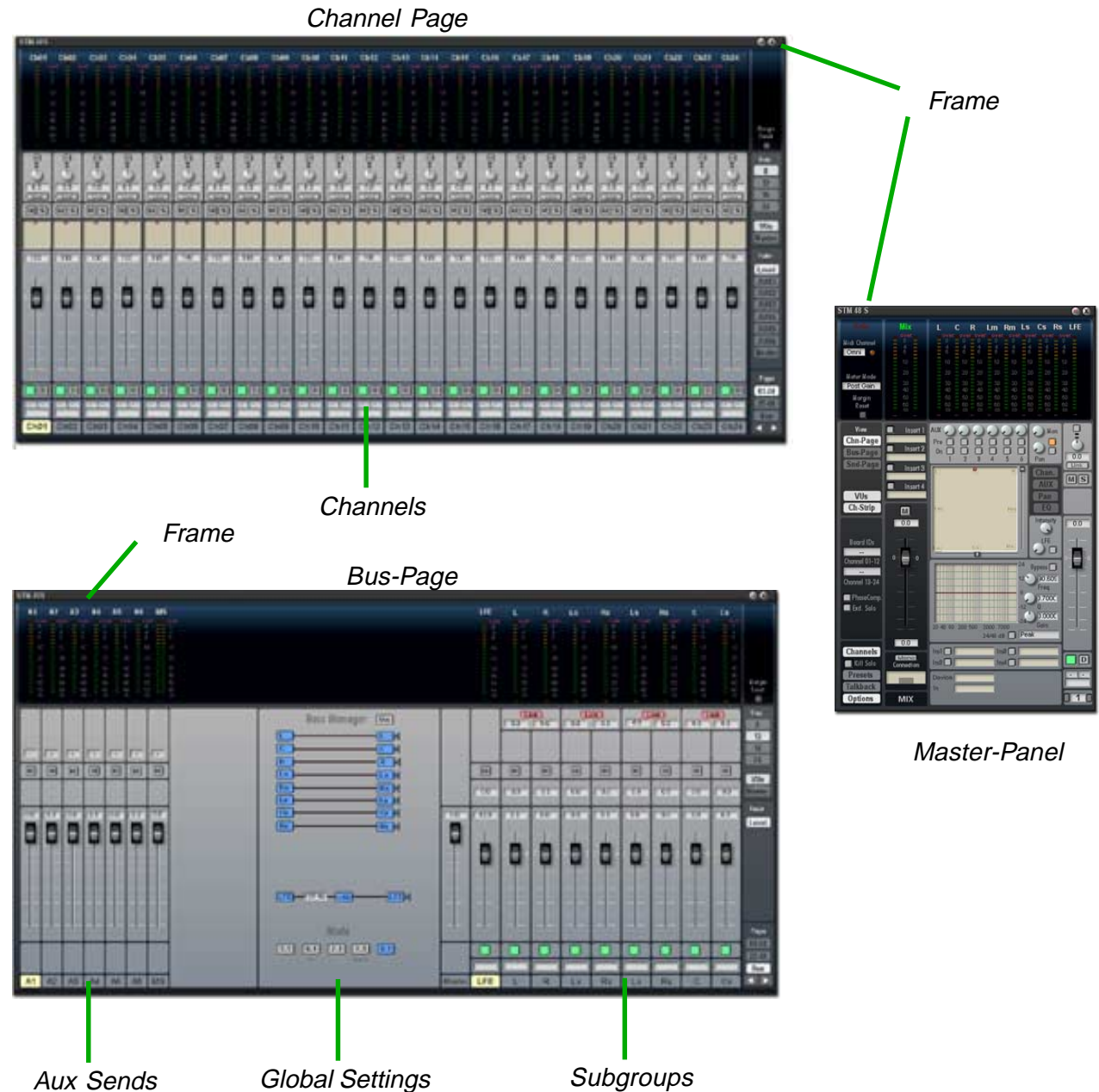
Master Panel

## Interface

You can adapt the mixer's work surface to different screen resolutions with the mouse.

The smallest configuration displays 8 channels at a time while the largest shows 24 channels, or all the channels of the bus page. The size of the smaller Master Panel is not adjustable.

To move either of the panels, "grab" the outer frame with the mouse and drag it to the desired location.



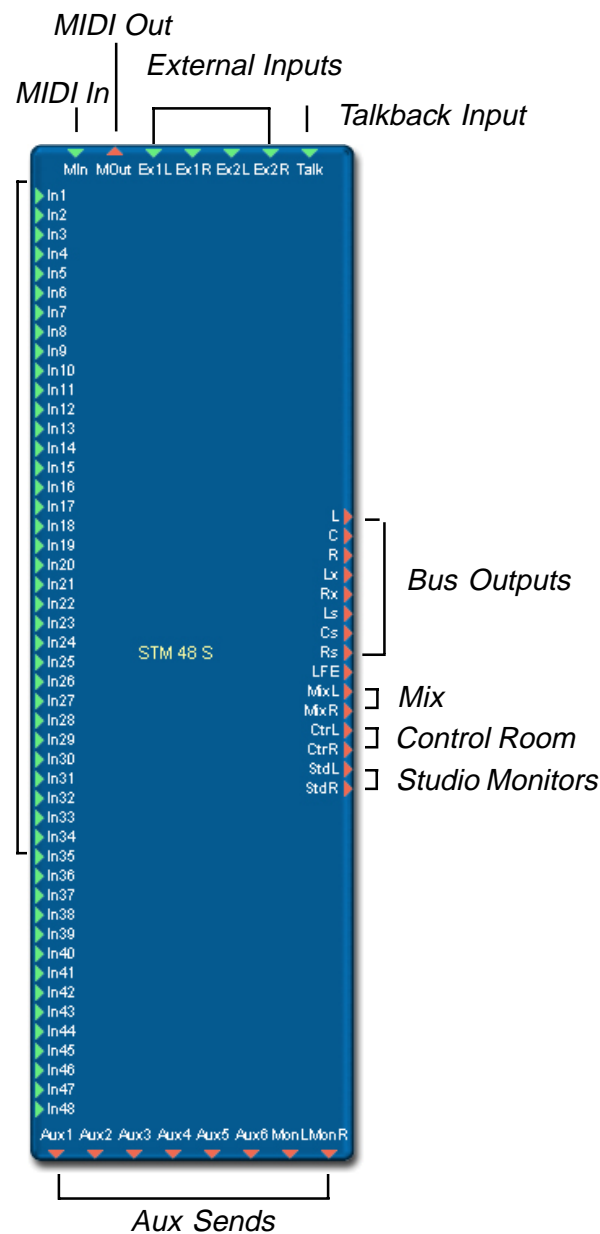
# Connections

To provide the greatest amount of flexibility the mixer offers a large number of inputs and outputs.

The connections in detail:

## Inputs

- MIDI In: *MIDI* input (green)
- Mono channels: *In1* to *In48* *Channel Inputs*
- External Inputs: *Ex1L/R* and *Ex2L/R*
- Talkback Input: *Talk*



## Outputs

- MIDI Out: *MIDI* output (red)
- Mix: *MixL*, *MixR*
- Control Room: *Ctrl*, *CtrlR*
- Studio Monitors: *StdL*, *StdR*
- Left Output: *L*
- Center Output: *C*
- Right Output: *R*
- Lc or Lm Output: *Lx*
- Rc or Rm Output: *Rx*
- Left Surround: *Ls*
- Center Surround: *Cs*
- Right Surround: *Rs*
- Aux Sends: *Aux1* to *Aux6* plus *MonL*, *MonR*



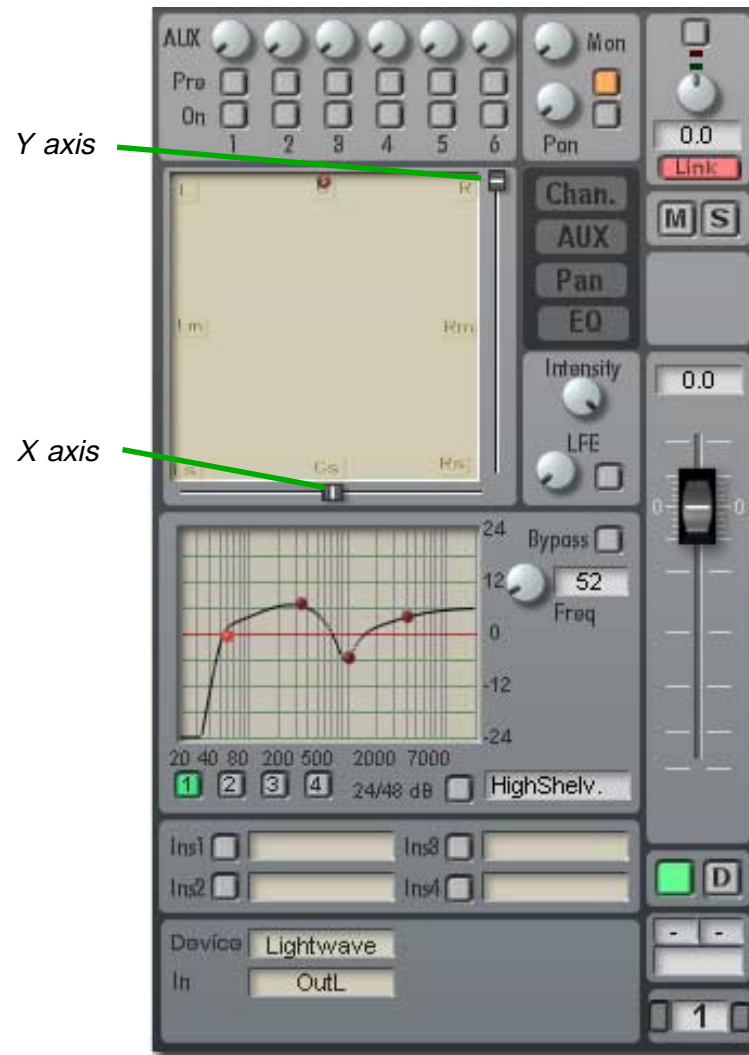
## MIDI

You can control all important mixer functions via MIDI. Assign the controllers in the usual way.

In the channel strip control panel (in the Master Panel) MIDI controller numbers are not assigned to the visible onscreen faders or controls directly. MIDI assignments apply only to the *currently selected* channel controls.

Controls for a channel's dynamic EQ or group (Fader Group, Mute Group, Record Bus) are not MIDI-assignable. All other controls can be assigned to MIDI controllers.

You can assign controls either directly on the Channel page or to the current channel on the Master Panel.



Channel strip control panel

# Controls

## General

### VU Meter

The level meters operate as peak meters whereby they display the maximum signal levels (as opposed to averaged levels). A *peak hold* function holds the signal peaks in the display temporarily. A *margin* display lies beneath each meter. This indicates the highest peak level reached. A margin reset function clears (resets) all margin displays.

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

**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 don't 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 flash more 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.

These pages display all input channels.

## Channel Panel

On the right side of the Channel Panel you'll find a sub-panel containing a number of switches to select various options.

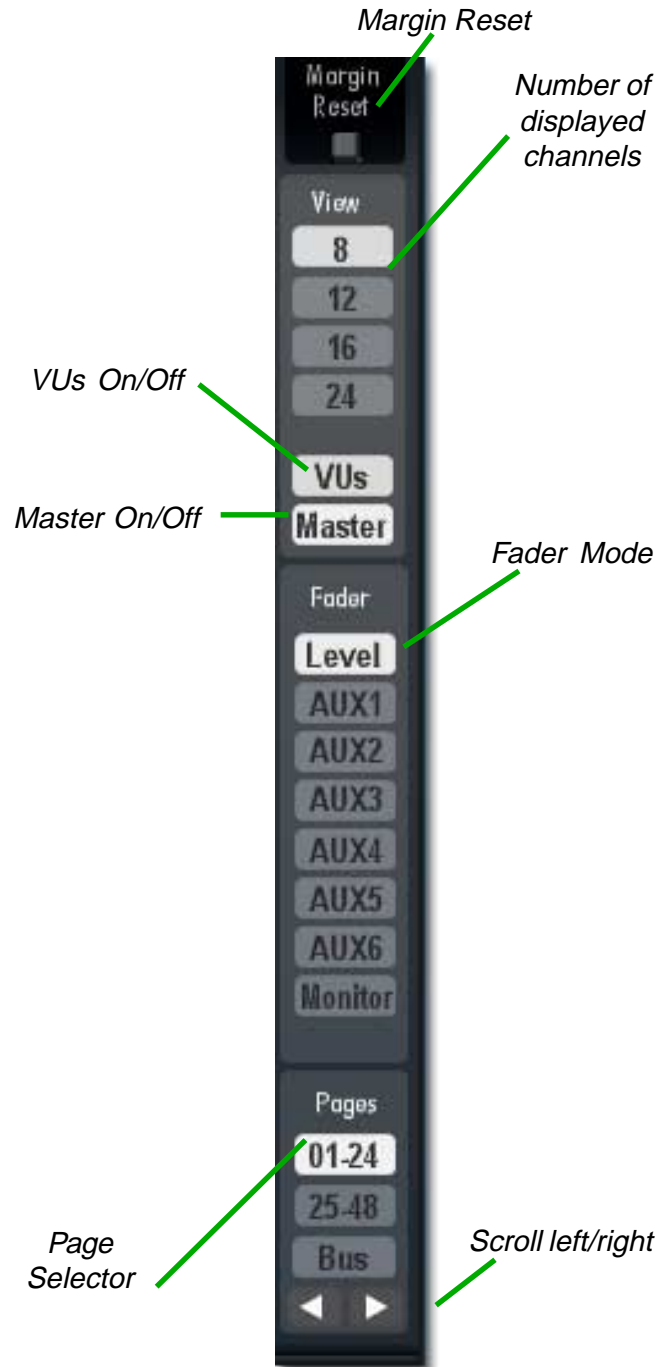
**On Top:** When enabled, this function prevents other windows from being drawn over the mixer panel - the mixer therefore remains "on top" of any other windows. When not enabled, other windows can obscure the mixer.

**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 Live Bar.

**View:** Controls the size of the panel. You can choose to display 8, 12, 16, or 24 channels simultaneously.

**VUs:** Includes the VU Meters in or removes them from the display. The Margin display always remains visible.

**Master:** Opens/closes the master panel.



Channel Page 1-24

**Fader Mode:** The channel faders can assume different functions. Their default function is to control the signal level of the respective channel in the mix. If you select Monitor instead, for example, the fader is bound to the Monitor aux send level control. This lets you quickly check the proportion of a signal in the specified channel.

**Page Selector:** The Channel Panel shows either the input channels, or the bus channels. The Page Selector switches between the two views (pages).



## Page 1-24, Page 25-48

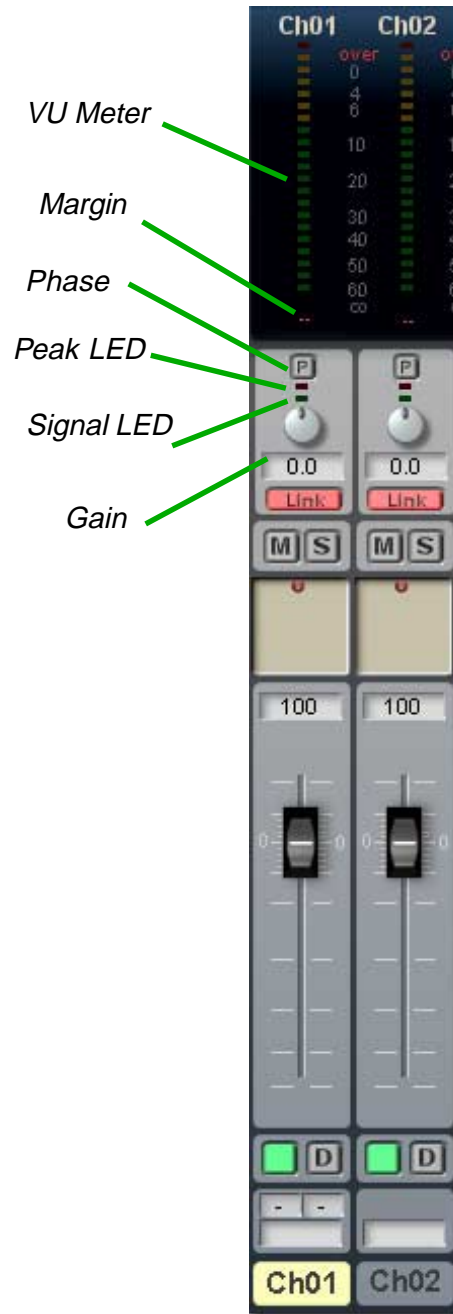
These pages display all input channels.

### Channel Strip

**VU Meters:** If the meters are enabled for display (see *VUs*, above) they indicate the channel's signal level(s). If the channel is set to Mono, only the left meter is used.

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

**P.:** These buttons invert (shift the phase by 180 degrees) their respective input signals when pressed. For example, if you mic a snare drum from above (left) and below (right), pressing the right Inv button will invert the phase of the lower microphone. In Mono channels only the left button has an effect.



**Peak LED:** The peak LED (red) 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, don't 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.

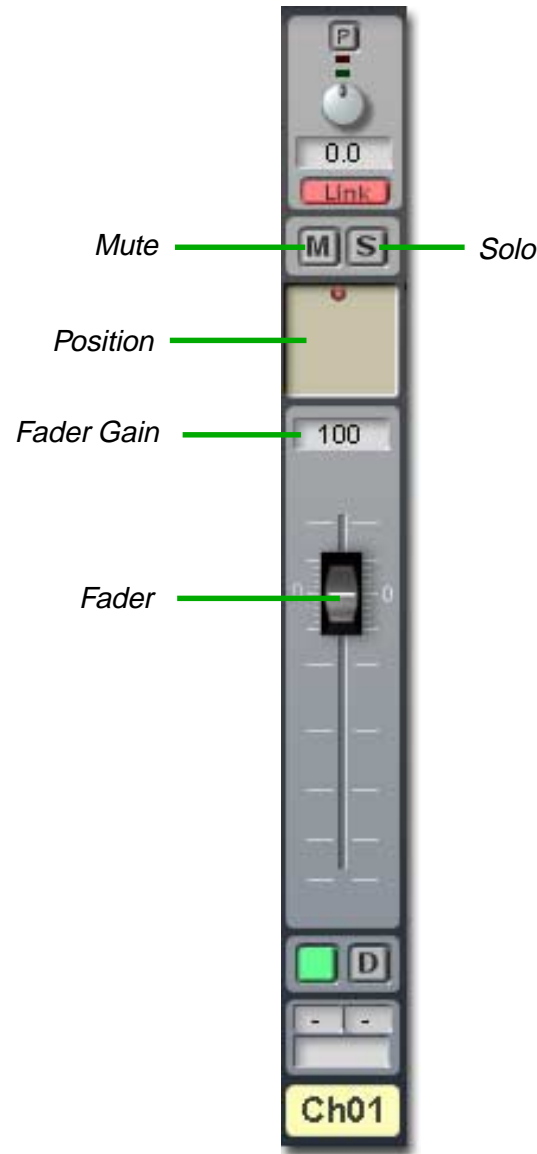
**Signal LED:** The signal LED (green) indicates a signal level greater than -96dB.

**Gain:** Sets the pre-amplification level of the input signal. This level affects the channel's entire signal path. The associated text field indicates the amplification level in dB, and allows you to type in a numerical value. The maximum boost is +24dB.

**Link:** You can link adjacent channels to create stereo pairs. In a stereo pair, the controls for both channels (except phase inversion, routing, and position) operate together. The left channel inserts switch to stereo and serve both channels. The left channel is also the reference channel for fader groups. Position and active buses are adjusted independently for each channel. Both channels switch directly for recording over the LFE bus.

**Mute:** The Mute button (**M**) removes the signal from the mix or restores it. If this channel belongs to a group, the other channels in this group are also muted or unmuted. When enabled, the signal passes only to the monitor path, and then only if **Pre** is enabled.

**Solo:** This button puts the channel in solo mode. The monitors (Studio and Ctrl Room) automatically play the solo signal.



**Position:** Indicates the current position of the channel output in the surround field. You can also adjust the position here, but more precise control is possible on the channel strip control panel (recommended).

**Fader:** The fader controls a channel's output level. The text field above the fader indicates the current signal amplification. You can also enter values into this field directly. The range is from no signal (inf.) to about 12dB of amplification. The text field displays values from 0 to 127 (MIDI) where a value of 100 corresponds to 0dB.

**Mix:** This button (green) is located on the left beneath the fader. Click this button to add or remove the signal from the surround buses, but not from the aux bus.

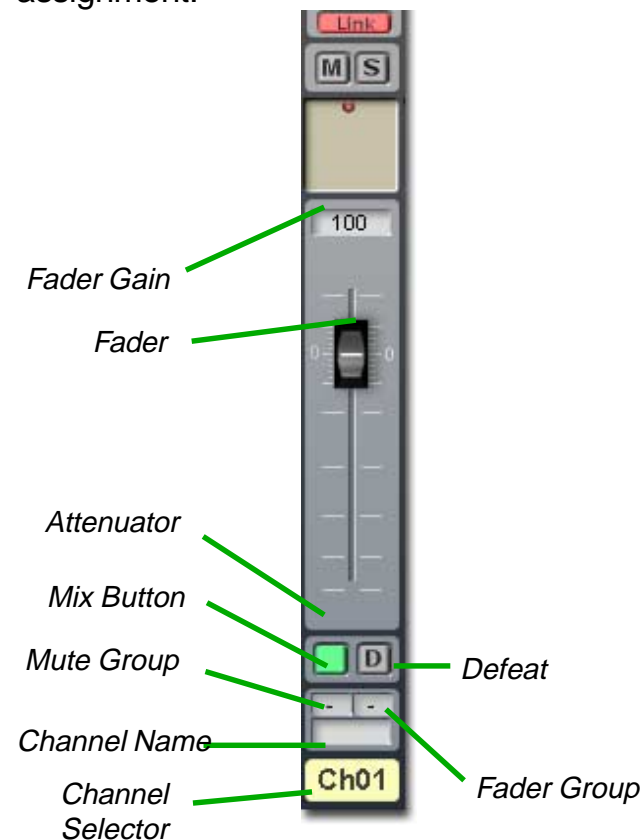
**Solo Defeat:** The solo defeat button (**D**) protects the signal from being removed from the mix when another channel is in solo. When enabled, the channel ignores solo activity of other channels and remains in the mix.

**Mute Group:** You can assign a channel to a group to link the mute buttons of all channels in that group. Use the Mute Group textfader to select a group number for that channel. When more than one channel is assigned to the same group, the mute buttons of all channels in the group operate together whenever one of them is pressed. You can choose from among 8 groups.

**Fader Group:** A fader group is similar to a mute group, but in this case the groups link the master faders instead of the mute buttons. When you move the master fader of a channel assigned to a group, the faders of any other channels in that group will move also. Channels in a fader group maintain their *relative* levels. You can assign a channel to one of 4 fader groups. To resume independent operation for a channel, remove it from any group assignment.

**Channel Name:** Here you can enter any name you choose to identify the channel (for example, "Bass").

**Channel Selector:** Clicking this button changes the selected channel. The newly selected channel is automatically updated in the Master Panel.



## Bus Page (Channel Panel)

The Bus Page contains the Aux Sends and the bus master channels.

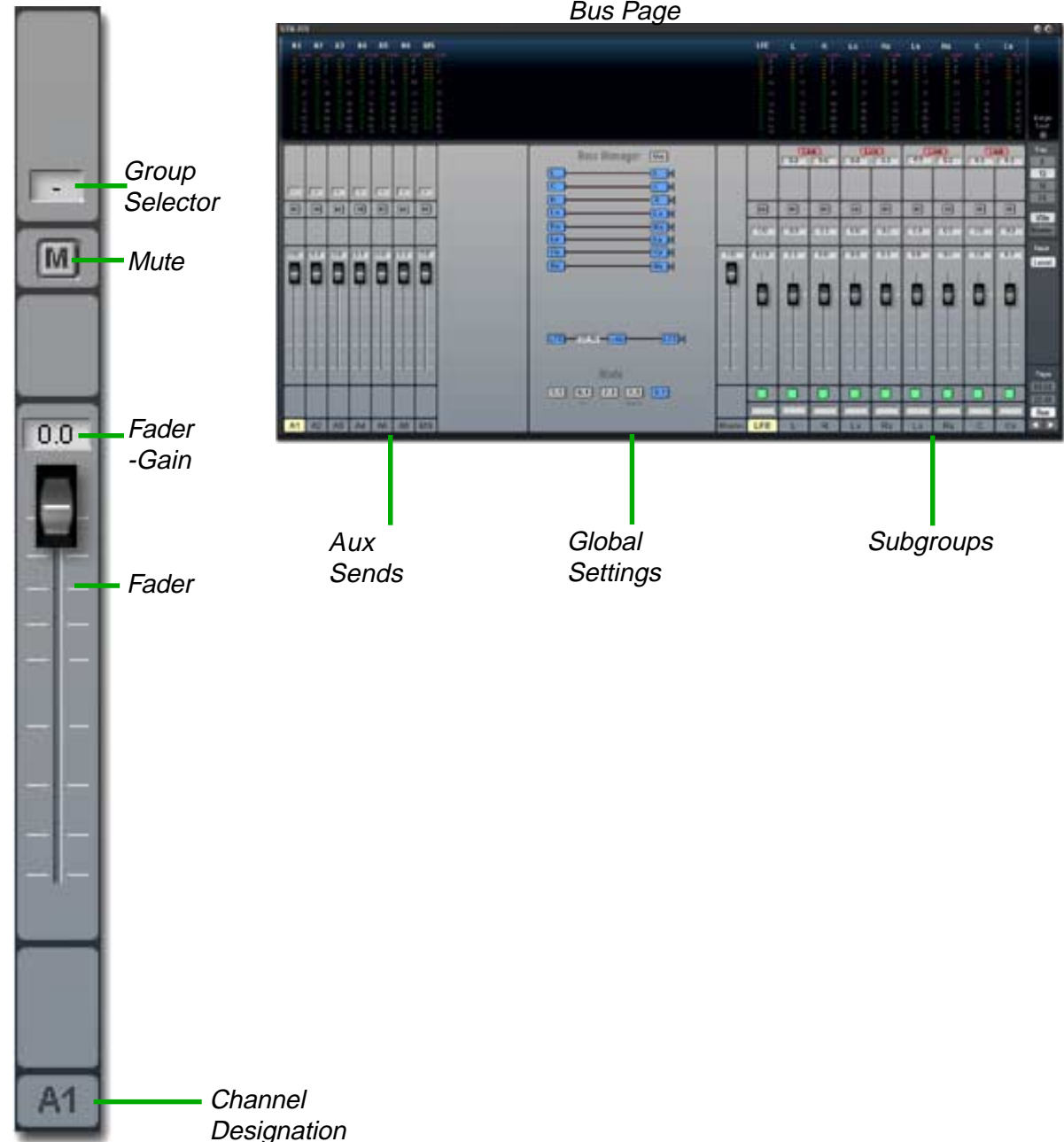
### Aux Sends

The Aux Sends control the level of the combined aux signals for the respective aux channels.

**Group Selector:** Use this scrolling text field to assign the aux send to one of four possible groups. When two or more channels are assigned to the same group, their faders move together, and they switch in and out of mute simultaneously.

**Mute:** The Mute button (**M**) blocks the aux send signal or restores it. If this send belongs to a group, the other sends in this group are also muted or restored.

**Fader:** The fader controls the aux send's output level. The associated text field above indicates the relative output level. You can also type a value into the text field to set the level. The range extends from Inf. (no signal) to 0dB.



## Global Settings

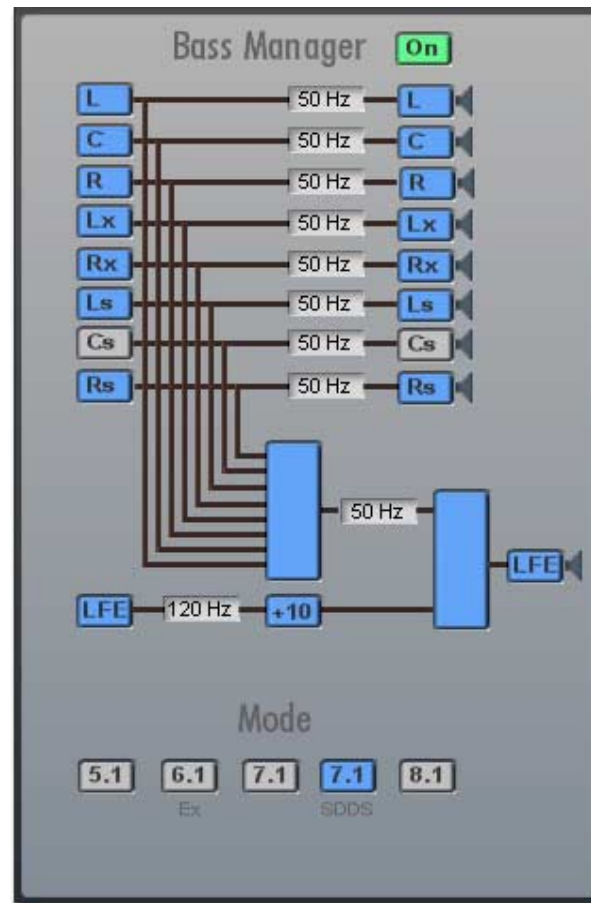
**Bass Manager:** Most home surround installations do not use full range positional speakers. Instead they use a scheme where deep bass is produced by a subwoofer. The Bass Manager provides professional surround mixing for these environments.

The Bass Manager filters the signal below 50 Hz from the positional speakers. Instead, the low frequencies are combined and sent to the LFE channel. The subwoofer normally connected to the LFE channel then takes over the job of delivering the deep bass.

If you do not need the Bass Manager, turn it off by clicking the **On** button. Turning it off reduces the amount of DSP the mixer uses.

The cutoff frequencies are all linked, and apply to all positional speakers. The LFE is independently adjustable.

**Mode:** You can select from among 5 different surround modes. When you switch modes, all channels are re-configured for the new mode. Previous switch settings are ignored.



**5.1:** This is probably the most common surround format (in particular with DVDs). The 5.1 configuration is 3 speakers in front, two in back, and the LFE channel (a subwoofer).



**6.1:** Identical to 5.1, but with the addition of a rear center channel.





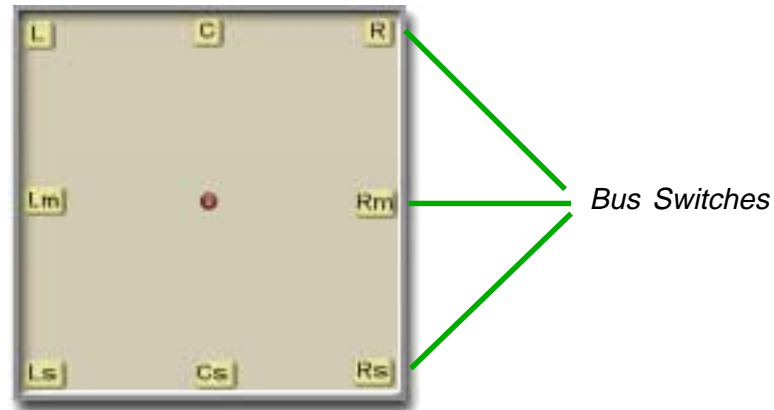
**7.1:** Also based on the 5.1 format, but in this case two side speakers are added to support the surround effect.



**7.1 SDDS:** In this format, the front area includes two additional speakers, Lc and Rc. Otherwise it is similar to the 5.1 format.



**8.1:** This format is well-suited for theater or other sound installations where 8 speakers can be positioned symmetrically within the space.



**Bus Switches:** Initially the bus switches are set according to the selected surround mode. However, you can also switch individual buses off by clicking the appropriate bus button. When you do so the other buttons come into the foreground.

You can enable any bus that is appropriate for the selected mode. For example, in the 5.1 surround mode the L, C, Ls and Rs buses are available.

## Surround Master

This page contains the faders for the surround buses and a master fader for the overall level. All left and right bus pairs, as well as the center buses can be linked. Linked pairs can use common stereo insert effects.

Surround master signals are sent out individually and also to a stereo bus. Attenuators are available to adjust the volume in the stereo field.

**Master:** This fader controls the overall level of the other master faders.

**LFE:** Master fader for the LFE bus (range: up to +24dB).

**L:** Master fader for the left channel bus (range: up to +0dB).

**C:** Master fader for the center channel bus (range: up to +0dB).

**R:** Master fader for the right channel bus (range: up to +0dB).



**Lx:** Master fader for the Lm/Lc bus (range: up to +0dB).

**Rx:** Master fader for the Rm/Rc bus (range: up to +0dB).

**Ls:** Master fader for the Ls bus (range: up to +0dB).

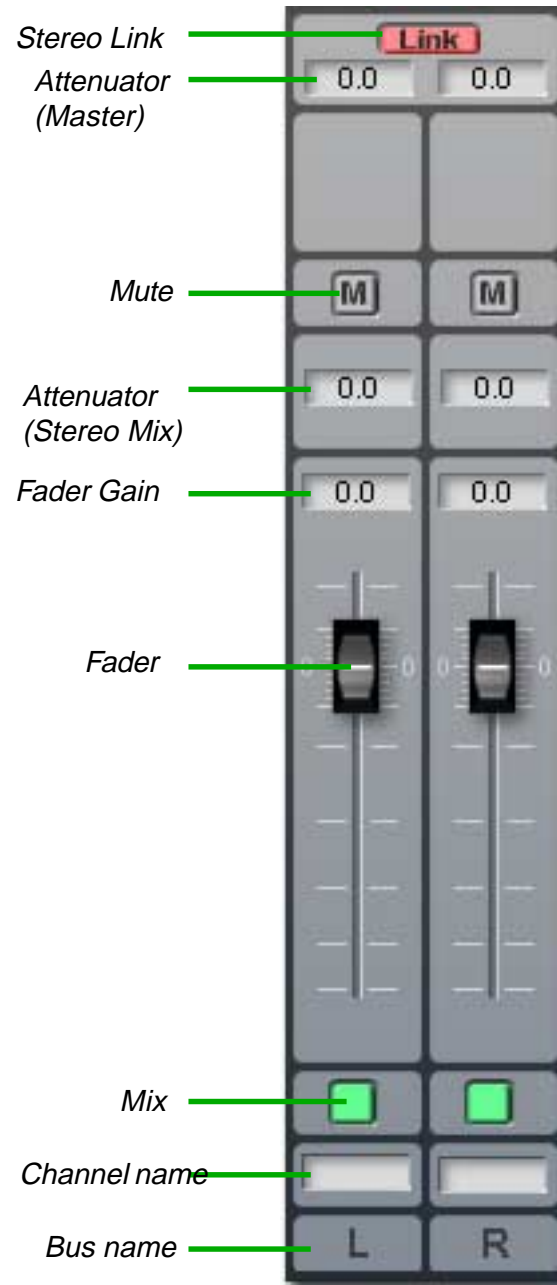
**Rs:** Master fader for the Rs bus (range: up to +0dB).

**C:** Master fader for the center channel bus (range: up to +0dB).

**Cs:** Master fader for the Cs bus (range: up to +0dB).

**Link:** Links the L/R, Lx/Rx, Ls/Rs, C/Cs fader pairs so that the faders, attenuators and mix buttons operate together for both channels. Inserts are unloaded, and the left insert switches automatically to stereo.

**Attenuator (Master):** Adjusts the level of the bus output before the fader. The LFE bus does not have an attenuator.



**Mute:** The mute button (**M**) removes or restores the bus signal.

**Fader:** The fader controls the level of the bus signal. The associated text field above indicates the output level. You can also type a value into the text field to set the level. The amplification range extends from **inf.** (no signal at all) to +12dB.

**Mix:** The Mix button switches the bus signal in or out of the stereo mix.

**Channel Name:** You can type in any identifying name you like here.

**Bus name:** The designated bus name.

## Master Panel

All the mixer's global settings are located in the Master section.

## General Settings

### Meter Mode

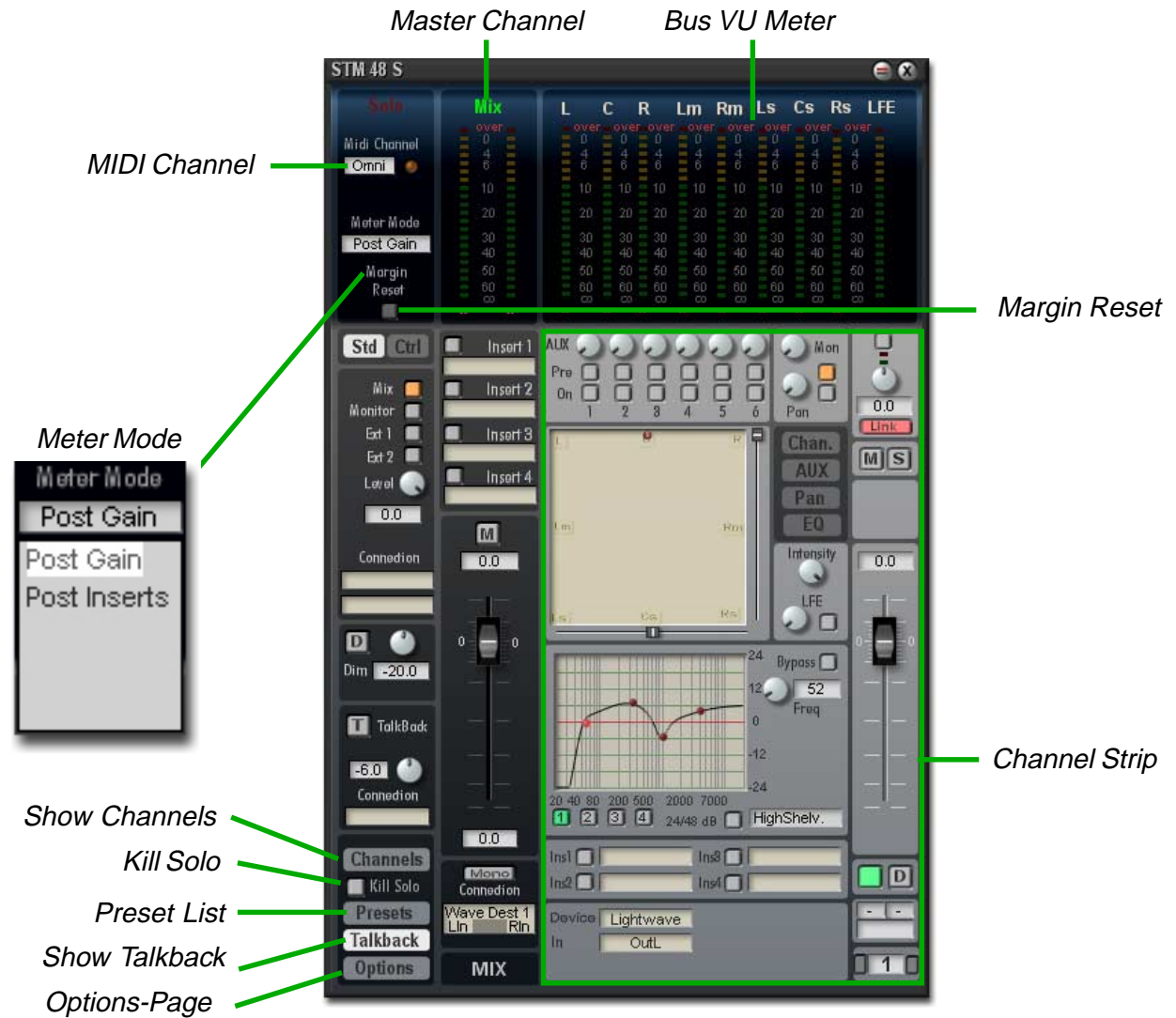
The channel meters can measure the signal level at any of five different locations in the signal path: 1) after the input amplification (*post gain*), 2) after the effects (*post effects*).

When the mode setting changes, the meters display the new signal level immediately. When a channel is put in solo, you can also hear the level difference the meter shows.

**Margin Reset:** Sets all the mixer's margin displays to null.

**Show Channels:** Opens or closes the Channel Panel.

**Channels:** Opens/closes the channel page.



**Kill Solo:** Switches any solo-enabled channels out of solo mode.

**Presets:** Opens/closes the mixer's global presets dialog.

**Options/Talkback:** Selects whether the Options page or the Talkback page is displayed in the area above.

## Option Page

The Master Panel provides four different pages for viewing the various mixer channels. These pages are available only when the channel strip (Ch.-Strip) view is active. All the functions of the Channel Panel are available through these pages.

### View

**Channel page:** Shows the channel strip for the currently selected input channel.

**Bus page:** Shows the channel strip of the currently selected subgroup.

**Send page:** Shows the currently selected Aux send channel.

**Return page:** Shows the currently selected Aux return channel.

**VU:** Includes or excludes the Channel panel's VU meters.

**Ch.-Strip:** Opens or closes the channelstrip display.

## Board IDs

If you have more than one DSP board installed in your system, and you are using numerous external I/Os with the mixer, you can assign particular channels to specific boards. Correctly configured, this can relieve the DSP system greatly.

You can assign the first 24 channels and the entire Master section to one board, and the next 24 channels (25-48) either to the same board, or TO another.

Example: If your external hardware is connected to several mixer channels (e.g. through an ADAT source module) you can ensure that the channels are processed by the same board that contains the I/O port. If a lot of channels are in use this saves STDM connections. Distributing the DSP processing to a specific or additional boards can also improve the DSP performance. Experiment with these settings a little.



Option Page

Talkback Page



## 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 enabled only when it is truly necessary.

Compensation evens out short 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 real 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 multiple 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 micing.

Audition the overall surround mix, and also the stereo and mono mixes, to listen for audible phase cancellations. If you hear them, enable phase compensation.

## Solo Mode

Directly above the meter mode indicator is the solo mode indicator. If solo is enabled for one or more channels, this indicator will be lit.

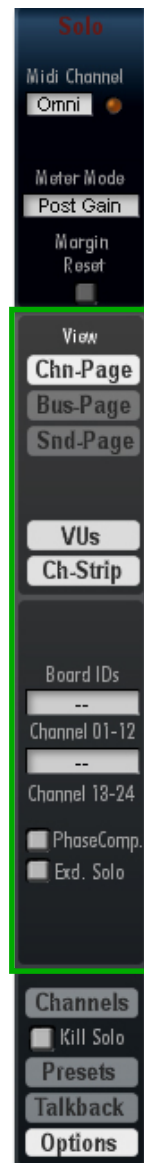
Two solo modes are available: normal and exclusive. The solo signal is routed automatically to Ctrl or Studio according to the mode.

**Normal:** Normal mode allows you to enable solo on several channels simultaneously. The master bus is used as the solo bus. If you switch on solo defeat (for aux return channels) you can also hear the aux effects when you solo a channel or channels.

**Exclusive:** In this mode, only one channel can be in solo at a time. The master bus is not used in this mode, so its signal is unaffected when you place a channel in solo.

The currently adjusted meter mode determines which part of the signal to use.

For aux returns and subgroups the meter mode has no effect. With the buses, the output channels are always switched to solo.



## Talkback Page

### Monitor Selector

You can monitor the studio and/or playback through one of two possible stereo output pairs - Studio or Ctrl. Each stereo output has its own volume level and monitor signal. All settings are restored automatically when the solo function switches the signal from solo back to the mix.

**Mix:** When selected, Mix sends the master mix signal to the studio or control room speakers.

**Monitor:** Allows you to check the monitor mix in the studio or control room speakers.

**Ext 1, Ext 2:** If you have connected external audio devices, such as a CD player, to the Ext1L/R or Ext2L/R inputs you can listen to them by selecting the respective input pair with these buttons.

### Dim

With the Dim button you can temporarily reduce the volume level of the studio or control room speakers by a pre-determined amount (in dB) without adjusting the master level.

### Talkback

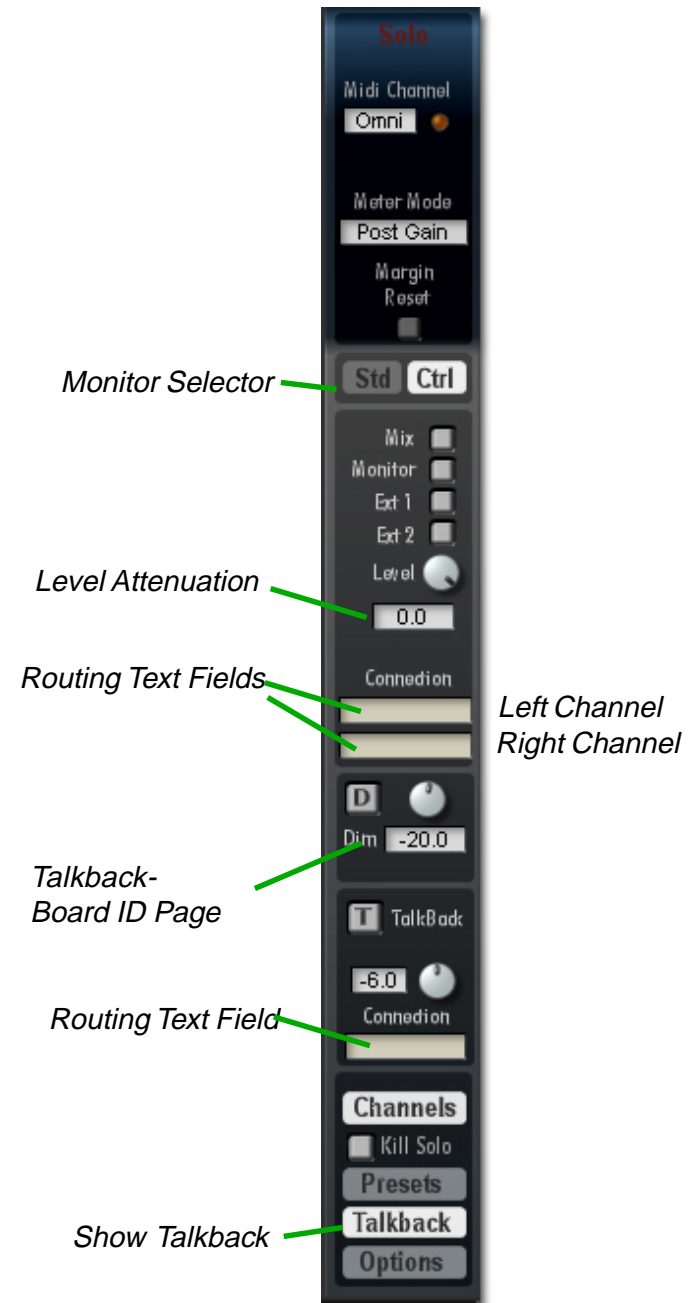
The Talkback feature lets the engineer or producer in the control room communicate with the performers on the studio floor.

To use talkback, first connect a pre-amplified microphone to one of the hardware inputs. Then, in the Project window, connect this input to the Talk input on the mixer module (or create the connection in the Connection field in the context menu).

When talkback is engaged, anything you say in the talkback mic is sent over the Monitor outs. When you press the talkback button, the Dim button is also engaged. The actual talkback level depends therefore on both the Dim and the Talkback level settings.

Because talkback is sent over the monitor bus you can, for example, use it when overdubbing to cue a singer or other performer.

**Routing Text Fields:** Click to open a menu containing a list of possible devices to connect to. Double-clicking an existing connection deletes it (disconnects the device).



## Master Channel

All the signals of the overall mix are combined in the Bus Master.

**VU Meters:** The VU Meters indicate the overall level of the mix. Use the fader to reduce the level if it is too high.

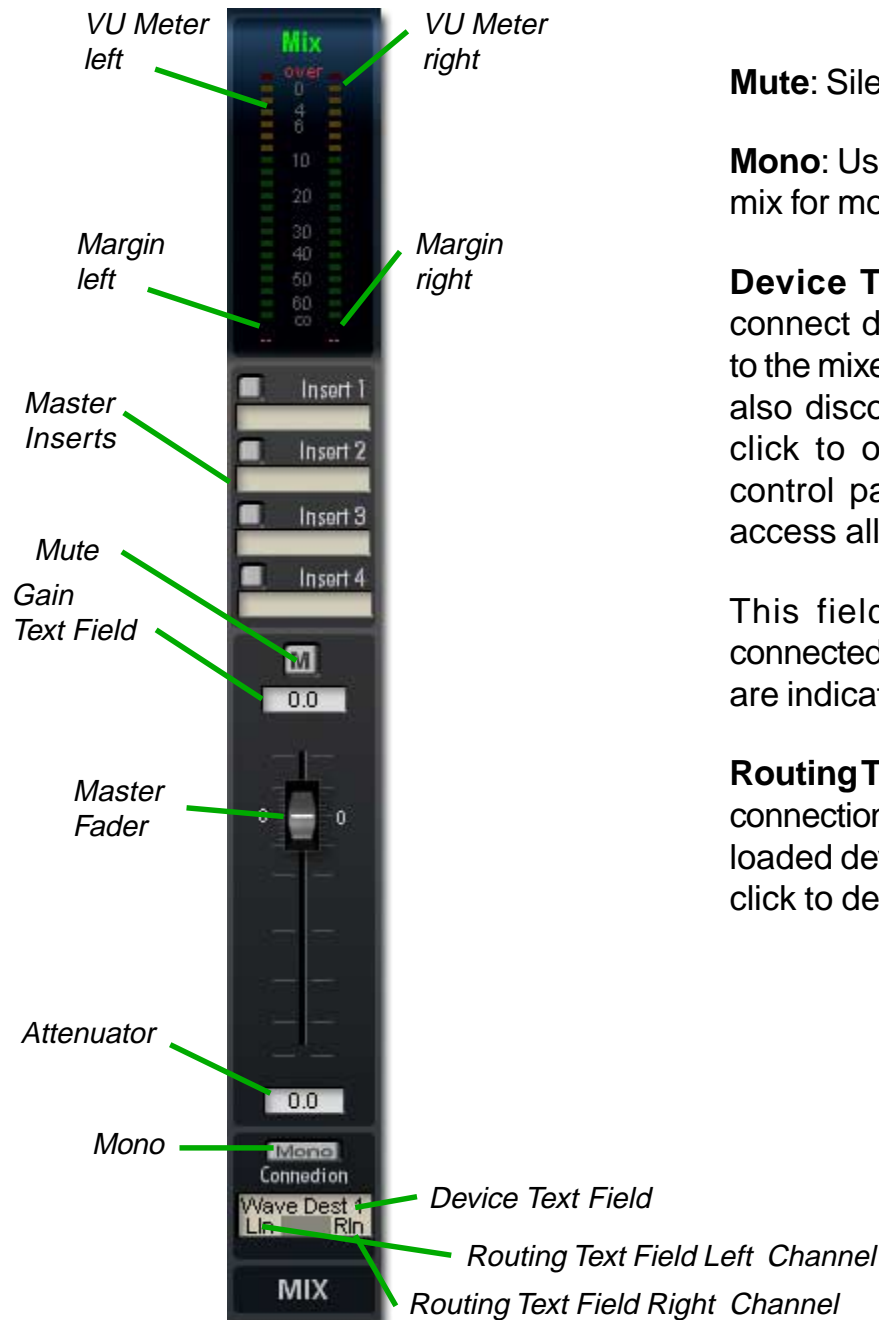
**Margin:** The margin displays show the highest level reached so far in the left and right channels. This value, expressed in dB, remains unchanged until a higher level is measured, or until the margin is reset.

**Master Inserts:** For final signal processing, four inserts are available ahead of the master fader.

**Master Fader:** Controls the overall volume level of the mix. The maximum amplification is +12dB (dependent also on the Attenuation setting).

**VUs:** Click this button to show or hide the Master channel's VU meters.

**Attenuator:** The Attenuator adjusts the control range of the Fader. The advantage is that, although the overall maximum level output has been reduced, the fader still operates over its full track.



**Mute:** Silences the Master channel.

**Mono:** Use the Mono button to check the mix for mono compatibility.

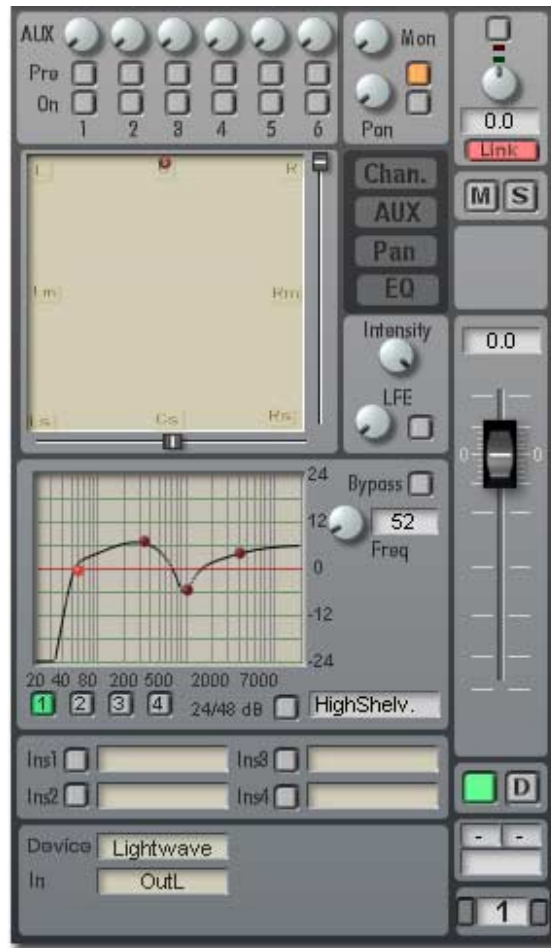
**Device Text Field:** Use this field to connect devices loaded into the project to the mixer's master mix outputs. You can also disconnect a device here. Double-click to open the connected device's control panel. Use the field's menu to access all other functions.

This field displays the name of the connected device. The actual connections are indicated in the Routing text field.

**Routing Text Field:** Not only displays the connections, but also lets you connect any loaded device through its menu. Double-click to delete a connection.

## Channel Page

The channel page is the main control panel for each of the 48 channels. All available controls for a single channel are available here. The panel always controls the currently selected channel.



## Channel Presets

**Chan:** Opens/closes the Preset List for this channel. This preset stores all the channel settings for this channel.



**Pan:** Opens or closes the Preset list for Pan presets. All pan settings are saved in these presets.

**Aux:** Opens/closes the Aux preset list. This preset stores all aux channel settings.

**EQ:** Opens/closes the EQ preset list. All EQ settings are stored in this preset.

## Aux and Monitor

**Aux:** The rotary controls adjust the proportion of the channel signal passed to the respective aux bus. Directly beneath the rotary controls are the Pre/Post buttons. (**Pre**). Use these to select whether to tap the signal before or after the fader. The lower buttons (**On**) let you switch each of the 6 mono aux channels on or off independently.



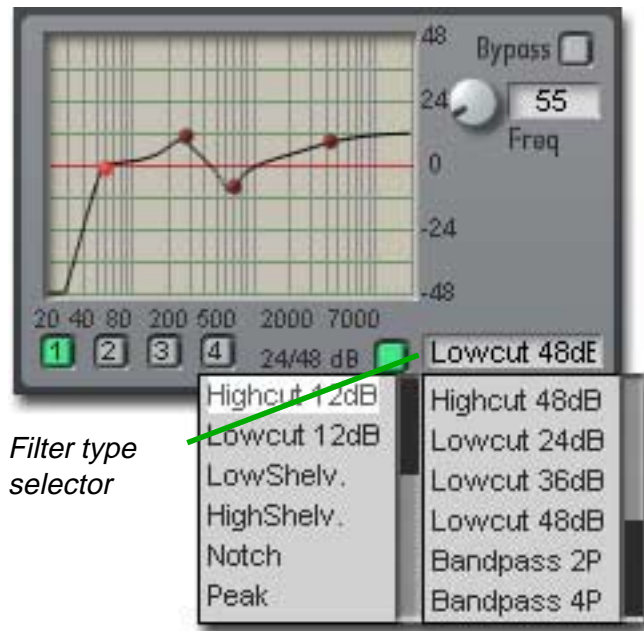
**Monitor:** The controls for the monitor channel lie to the right of the aux controls. The upper rotary control (**Mon**) adjusts the proportion of the channel's signal to be sent to the monitor bus, which is implemented as a stereo bus. You can control the position of the signal in the stereo image with the **Pan** control. The upper button is the Pre/Post switch. Pre takes the signal from just after the input gain control. When set to Post, monitor behaves like a stereo aux switched to Post. Beneath the Pre/Post button is the **On** button to switch the monitor path on or off for this channel.





## EQ

Each channel includes a four-band equalizer. Each band can be independently switched on or off.



Only if a filter band is switched on does it consume any DSP power.

For each band you can specify which type of filter to implement. The graphic area on the left shows a typical filter curve.

To add a band to the EQ, double-click in the graphic area. To remove an existing band, double-click on its node marker. You can also use the four buttons under the graphic display to enable a filter band or select it for editing.

Normally you will use a combination of filter types; for example, lowcut or low shelving for the low frequencies, a peak filter for middle frequencies, and highcut or high shelving filters above about 5kHz.

**Bypass:** Removes the EQ completely from the signal path.

**Freq:** Sets either the cutoff frequency or the center frequency of the selected band.

**Q:** This parameter (Quality) is available only for notch and bell filters. It controls the slope of the bell or notch curve. The range is from 0.7 to 20.

**Gain:** This controls the amount of cut or boost of the selected filter band. The range is from -12dB to +12dB. This parameter is available only for the bell and shelving filters.

To select a filter type, click the text field beneath the Gain control and drag the mouse up or down to scroll through the choices.

**Highcut 12dB:** Filters the frequencies above the cutoff frequency at a fixed slope of 12dB/octave.

**Lowcut 12dB:** Filters the frequencies below the cutoff frequency at a fixed slope of 12dB/octave slope.

The highcut and lowcut filters are also available with steeper slopes (24dB, 36dB, 48dB).

**low shelving:** Cuts or boosts the frequencies below the cutoff frequency (+/-12dB).

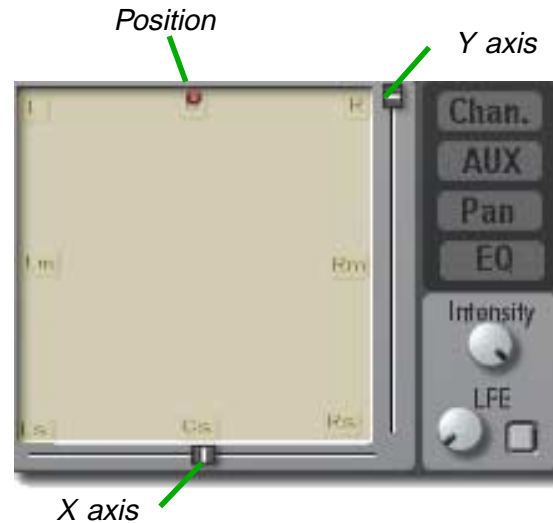
**high shelving:** Cuts or boosts the frequencies above the cutoff frequency (+/-12dB).

**Notch:** Filters (cuts) the frequencies at or near the center frequency.

**Peak:** Fully parametric peak filter.

**Bandpass:** A bandpass filter is so named because it passes a small band of frequencies and rejects others, both higher and lower. The range and amount of rejection depends on the basic slope and the quality factor (Q).

**24/48dB:** Switches between the two display ranges: a +/-24dB window or a +/-48dB window.



## Surround Pan

Each channel provides a Surround Pan control. Depending on the selected mode, different bus buttons are visible in the display. Use these buttons to select which buses to enable for the respective channel. Of course, only buses appropriate for the selected surround mode will be available.

To adjust the position, click the red ball in the pad area and drag it while pressing the mouse button. You can also use the faders to adjust the position along the X or Y axis. Faders are also required to control the Surround Pan through MIDI.

**Intensity:** Influences the strength of the pan effect. In the full left position (minimum) all enabled buses receive the signal independent of the position of the red ball. At full right (maximum) the transitions from speaker to speaker will sound very obvious and abrupt. Experiment with this control to find an appropriate setting.

**LFE control:** Controls the channel's LFE component independent of the surround pan position.

**LFE switch:** Enables or disables the LFE bus for the respective channel.

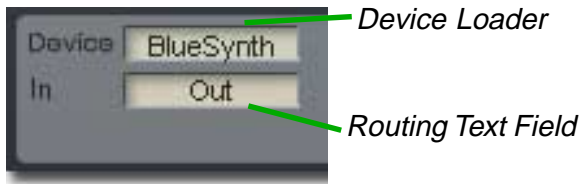
## Inserts



Four Insert slots are available for each channel. A slot is empty when its text field is blank. To load an effect into a slot, use drag and drop to pull the effect from the file browser into the slot. The effect is then loaded, and its name appears in the slot. To enable the effect, click on the insert on/off button (Ins1-Ins4) next to the slot.

If a slot is switched on, but no effect is loaded, the signal flow is interrupted (blocked). There will be no output from that channel to the master bus.

## Input and Output



These text fields manage the input and output routing for the selected channel. A channel consumes DSP power only when something is connected to it.

**Device Loader:** With this text field you can load a new device to connect to the channel, or connect a device already loaded into the project. You can also use it to delete a device and its connections. Double-clicking on the field opens the device's control panel. Other functions are available in the context menu.

The name of the device appears in the text field, and its connections in the associated routing text fields.

When the device is loaded the channel automatically switches to mono or stereo as required, and any loaded inserts are removed. If a device has more than two outputs, only the first two will be connected.



**Routing Text Fields:** These fields indicate the connections, and through their context menus are also used to connect any devices loaded into the Routing Window. Double-clicking on a field deletes a connection.

## Navigation

The channel strip duplicated in the channel panel is identical to the channel strips in the channel pages, except it also has *previous* and *next* navigation buttons on each side of the channel number at the bottom. Use these to select the previous or next adjacent channel.

You can also jump to any channel by using the channel number scrolling textfield. Click on the channel number and drag the mouse up or down to register the desired channel. Or, click on the channel number and then use the computer's <Page Up> and <Page Down> keys to cycle through the channels.

## Aux Send Page

This page shows the channel path of the selected Aux send (here Send1). In addition to providing all the parameters available on the Channel page, you can also establish connections with the Routing text fields on this page.

**Device Text Field:** Use this field to connect devices in the Routing Window to the outputs of the aux send bus. You can also disconnect devices here. Double-click on the text field to open the connected device's control panel. Access other functions through the context menu.

The name of the device connected to this channel appears in the text field. The actual connections are indicated in the Routing text fields.

**Routing Text Field:** This field indicates the connections, and through its context menu is also used to connect any device loaded into the Routing Window. Double-clicking on a field deletes a connection.



*Routing Text Field*

*Device Text Field*

*Navigation*

The aux send channels control the level of the respective summed aux signals.

**Group Selector:** Use this scrolling text field to assign the aux send to one of four possible groups. When two or more channels are assigned to the same group, their faders are coupled, and they switch in and out of mute mode simultaneously.

**Mute:** The Mute button (**M**) removes the aux send signal or restores it. If this channel belongs to a group, the other channels in this group are also muted or unmuted.

**Fader:** The fader controls the level of the overall aux send signal. The associated text field indicates the output level. You can also type a value into the text field to set the level. The amplification range extends from inf. (no signal) to 0dB.

## Navigation

The channel strip duplicated in the channel panel is identical to the channel strips in the channel pages, except it also has *previous* and *next* navigation buttons on each side of the channel number at the bottom right. Use these to select the previous or next adjacent channel.

You can also jump to any channel by using the channel number scrolling textfield. Click on the channel number and drag the mouse up or down to register the desired channel. Or, click on the channel number and then use the computer's <Page Up> and <Page Down> keys to cycle through the channels.





## Bus Page (Master Panel)

This page shows the selected bus channel path (here LFE). In addition to the controls available on the channel page, this page provides the bus inerts and the ability to establish connections through the Routing text field.

This page also provides an overview of the bus routings for all individual channels. You can also change the channel bus assignments here.

### Global Settings

**Bass Manager:** Enables the Bass Manager and allows you to adjust the two cut-off frequencies (Surround and LFE).

**Mode:** Buttons to select the desired surround mode.

### Bus Channel Strip

**Attenuator:** Adjusts the level of the input signal before it passes through the bus channel path. Use this control to prevent overloading of the channel, and to set its basic level. The LFE bus does not have an attenuator.



**Link:** Bus pairs L/R, Lx/Rx, Ls/Rs, and C/Cs can be linked together. This couples the mute, fader, attenuator and ,ix controls. In linked buses, insert effects are loaded into the left bus only. The two inserts automatically switch to stereo and apply to both buses.

**Mute:** The Mute button (**M**) blocks the aux send signal or restores it. If this send belongs to a group, the other sends in this group are also muted or restored.

**Fader:** The fader controls the level of the bus signal. The associated text field above indicates the output level. You can also type a value into the text field to set the level. The amplification range extends from inf. (no signal at all) to +12dB.

**Mix:** The Mix button switches the bus signal in or out of the stereo mix.

**Channel Name:** You can type in any identifying name you like here (for example, "Bus 1").

**Channel Designation:** The designated name of the buses.

**Inserts:** Two Insert slots are available for each channel. A slot is empty when its text field is blank. To load an effect into a slot, use drag and drop to pull the effect from the file browser into the slot. The effect is then loaded, and its name appears in the slot. To enable the effect, click the insert on/off button next to the slot.

If a slot is switched on, but no effect is loaded, the signal flow is interrupted (blocked). There will be no output from that channel to the master bus.

**Device Text Field:** Use this field to connect devices loaded into the project to the bus outputs. You can also disconnect devices here. Double-click on the text field to open the connected device's control panel. Access other functions through the context menu.

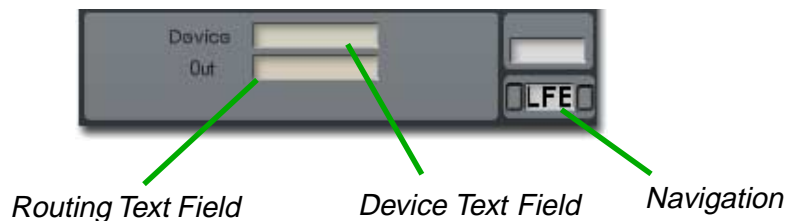
The name of the device connected to this channel appears in the text field. The actual connections are indicated in the Routing text fields.

**Routing Text Field:** This field indicates the connections, and through its context menu is also used to connect any device loaded into the project. Double-clicking on a field deletes a connection.

## Navigation

The channel strip duplicated in the channel panel is identical to the channel strips in the channel pages, except it also has *previous* and *next* navigation buttons on each side of the channel number at the bottom. Use these to select the previous or next adjacent channel.

You can also jump to any channel by using the channel number scrolling textfield. Click on the channel number and drag the mouse up or down to register the desired channel. Or, click on the channel number and then use the computer's <Page Up> and <Page Down> keys to cycle through the channels.

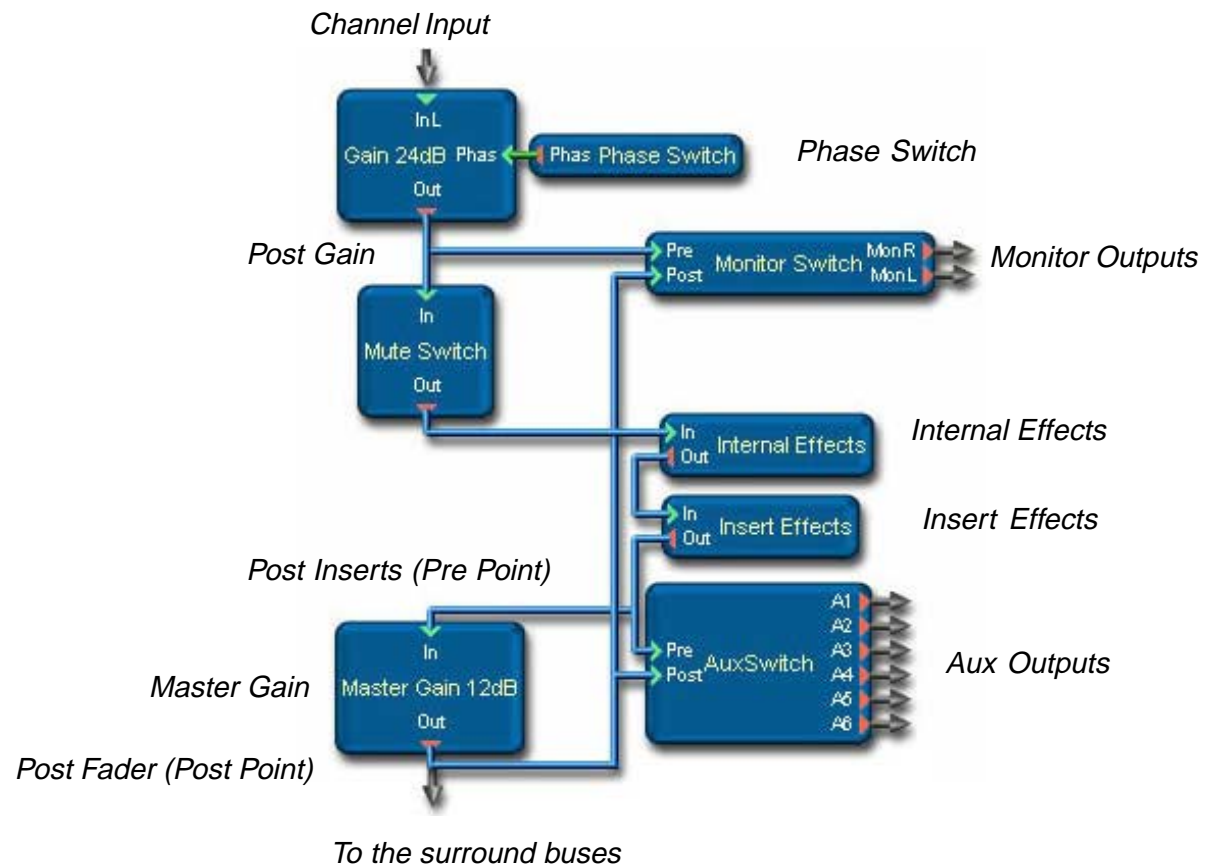


## Signal Flow

To better understand how your mixer works it is helpful to visualize the signal flow. The illustration at right shows the signal path for a single mono channel.

**Input Amplifier:** The channel input corresponds directly with the input connection on the mixer module. The signal arrives at the input amplifier where it is pre-amplified (Gain 24dB) and the phase is inverted (Phase switch) if desired. If the Monitor is set to Pre, the signal branches at the input amplifier's output creating a second, independent audio stream. If monitor is switched to Post, the signal branches from the post point instead (Post Master Gain).

**Mute Switch:** The next module in the signal path is the mute switch. When the mute switch is on, the signal is effectively blocked at this point.



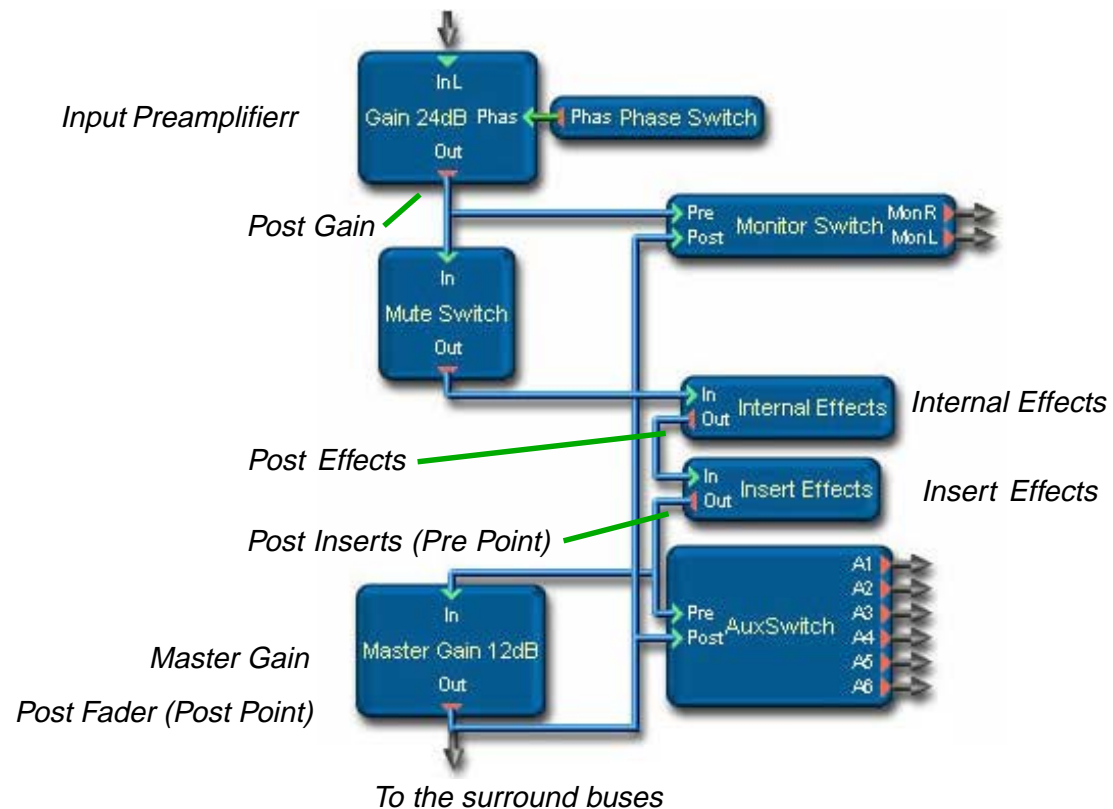
**Internal Effects:** Downstream from the Mute switch lie the internal effects (EQ, Delay, Compressor). Each of the three effects can be bypassed (Bypass switch) so that the signal remains unaffected. The compressor can be connected before or after the EQ. The delay, however, is always upstream from the compressor. If the sidechain is disabled, it serves as a look-ahead delay.

**Inserts:** The insert slots lie downstream from the internal effects. If a slot is enabled, but no effect is loaded into it, the signal is blocked as if Mute were switched on.

After passing through four insert slots, the signal branches again. The main signal goes to the Master Gain module, and the other branches across the Pre switch to the Pre point.

**Aux Switches:** The Aux switches determine which aux channels will receive a proportion of the channel signal.

**Pre Point:** The upstream point from which the aux signals branch (Pre on).



## Meter Mode

The VU meters can tap the signal from one of two points in the signal path:

**Post Gain:** After the input amplifier.

**Post Inserts:** After the insert effects.

## Headroom

All buses operate with 24dB of headroom. This means that you can process up to 15 phase-aligned signals peaking at 0dB without risk of internal overs. Since this never happens with real-world music signals you can use all channels without encountering any distortion.

If, however, you feel this is not sufficient, you can set all attenuators to, for example, -12dB and use the channel fader above 0dB. This gives you another 12dB of headroom - or 36dB - should you need it.

Internally, SFP operates at a 186dB dynamic range (32 bit) so that even 36dB of headroom is not audible, as 150dB of internal range is still available.



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