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# **E-6 Digital Control Surface**

## **TECHNICAL GUIDE**

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 *Wheatstone Corporation*

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# General Information



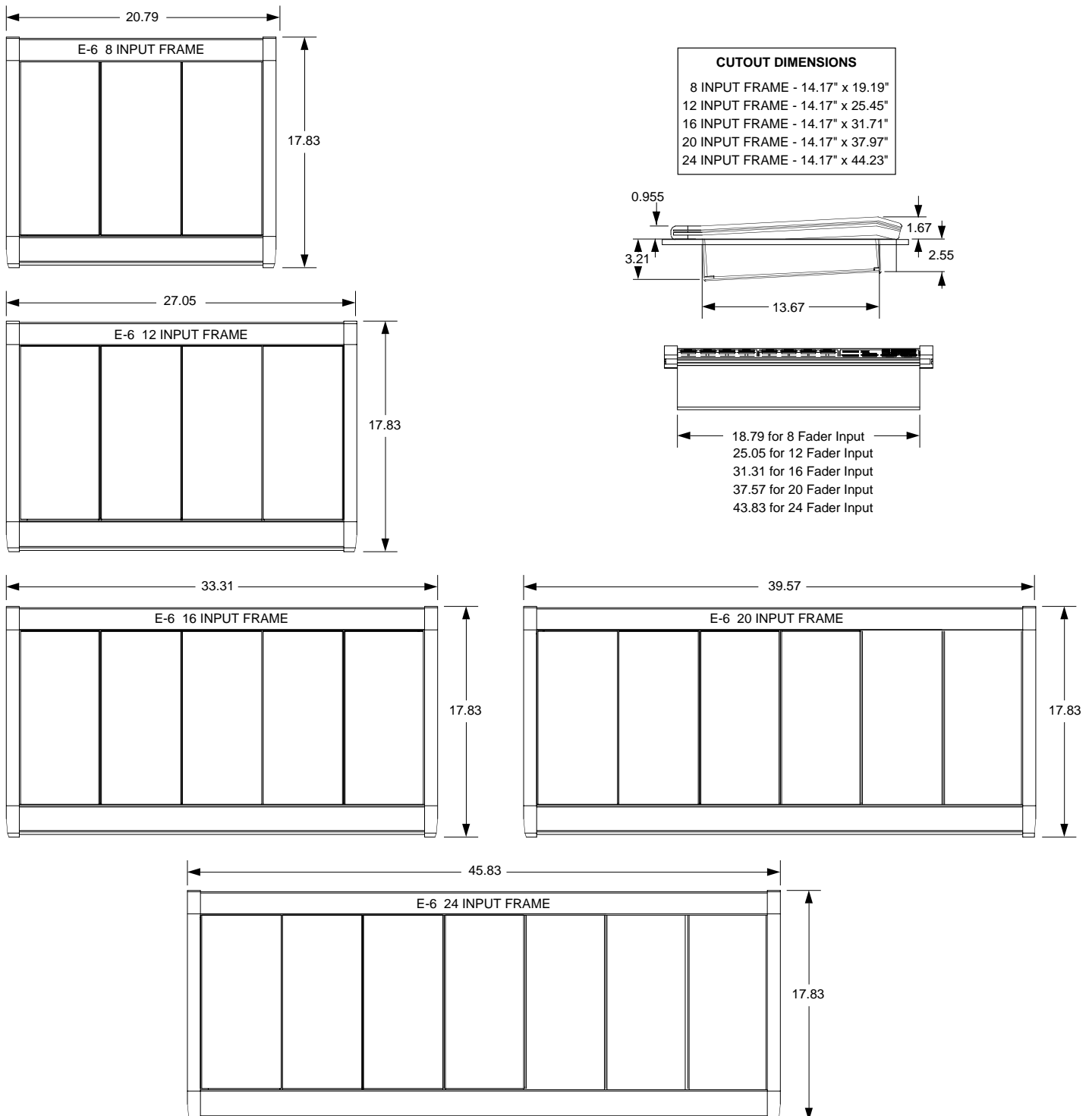
## Introduction

Designed to integrate flawlessly with the E-series Satellite digital audio network router, the E-6 control surfaces allow you to easily create large- or small- platform-based systems that are exceptionally user-friendly and flexible. The E-6 control surface has major market features: event recall, both bus-minus and mix-minus, and four aux mixes—all with dedicated talk-back systems. The E-6 also has four monitor outputs, and standard EQ, dynamics, panning, and mic processing on all channels (simultaneously). It supports multiple arrays of programmable input channel and master panel switches for customized functions like phone, intercom, salvos, or machine commands. The E-6 drives a user-supplied VGA monitor display, via the Embedded E-6 Graphic User Interface (GUI), providing hi-res REALTIME graphic displays, production tools, and set up screens (security protected by multilevel pass codes). An RJ-45 Audio Transport MIXER connector on the rear of the control surface serves as the link between the surface and the network system.

## Control Surface Placement

The E-6 digital audio control surface is designed for simple drop-in installation in a counter top. Cutout dimensions (in inches) are shown in the drawings below for 5 available frame sizes.

Do not connect the E-6 control surface to its power supply (and do not connect the power supply to the AC power line) until instructed to do so.



## Getting Started

The E-6 control surface comes with the E-6 Embedded Graphical User Interface (GUI) program, intended to be straightforward in use, controlling and displaying graphics, production tools, and set up screens. All controls of the GUI's main screen are in fixed positions, except that the FUNCTION DISPLAY area contents change according to selected function.



Connect the user-supplied VGA monitor LCD or other display to the DB-15 “MONITOR” connector on the control surface’s rear panel, power up the surface, and the GUI will appear on the monitor display.

The surface’s Master Panel has a built-in touch pad to control the mouse pointer on the VGA screen for system software navigation. A serial or PS-2 mouse may be used in tandem with the touch pad.

We will also refer throughout this manual to the XPoint program. This program, which runs on a user-supplied PC running Windows XP, complements the embedded surface GUI program, providing additional programming and control functionality. Read more about XPoint in the Wheatstone Evolution Series Digital Audio Network System Technical Manual.

## Log-In

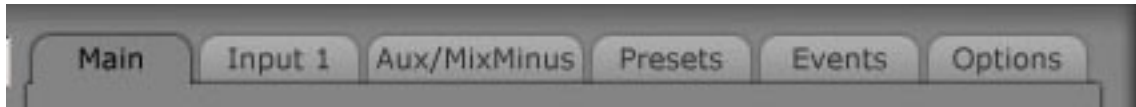
When the surface boots, it enters the log in level that was last accessed. Look in the lower left corner of the VGA screen to see the current ACCESS AUTHORIZATION level. Pressing the PASSCODE switch on the Master panel opens the PASSCODE ACCESS window. Select a user level - *Intern, Operator, Production, or Engineering*- with the mouse or touchpad, then enter a numeric pass code and press the OK button. All default passcodes are "111". Please see the *Master Panel - Control Modes* section of this manual for detailed information regarding passcodes.

## Tabbed Navigation

The E-6 features a "tabbed" navigation architecture to easily access features with a minimum number of mouse clicks. There are a few subtleties you need to be familiar with to efficiently get around the tabbed software screens. This section introduces you to the tabs; detailed function information is included in the *Input* and *Master* panel sections.

The E-6 VGA monitor is vertically divided into two halves with a METERING PANE on the left side and a FUNCTION PANE on the right side. The Main Menu Tab buttons are located across the top of the function display area. You may access any of the Main menu Tabs by simply clicking on them. To access Input functions, press an Input SET button and the Function Pane will jump to settings for that input fader strip.

Notice the "Button Bar" at the bottom of the Input screen. You can access the powerful DSP and programmable features here.



**Main Tab** - displays Timer/Clock, Current Event, Switched Meter, and the External Sources for monitors.

**Input Tab** - displays interactive Source & Programmable button windows, Mode, Pan, and Aux Send settings for the selected channel. Note you must press an Input fader's SET button to show the settings for that channel, or click on a CHANNEL STATUS button in the lower left side of the VGA to access any fader.

**Input Button Bar** -click on *Source, EQ, Dynamics, VDip, Load, and Save* to access these features, described Later.



**Aux/MixMinus Tab** - displays controls for the four Aux Master outputs and the Mix-Minus Outputs.

**Presets Tab** - the E-6 includes the ability to save, copy, and paste individual EQ, dynamics, and even whole channel strip settings. Settings for each category are stored as Presets. The Preset Pane allows you to manage and apply presets to Sources and faders.

**Events Tab** - the E-6 can store a “snapshot” of the entire control surface in a file called an EVENT. The Event Pane is divided into two sections. The Event Recall section lets you recall previously saved Events. The Event Editor is a manager for creating, editing, and deleting Events. Optional permissions let you limit access to Event Recall and Event Editor functions.

**Options Tab** - a wide variety of programmable options are found here to customize the E-6 for your application.

**Note: Each Tab is described in detail in subsequent manual sections.**

## Surface Software Version

In the event that you need to consult the factory about the E-6 control surface, you may need to have the surface software version number available. Click the Wheatstone logo on the top of the start-up screen to display the “INFORMATION” form, which shows technical information about the surface’s software version and connection status to its companion rack MT link, Ethernet link, and automation interface.





# Input Panel (IPE-6)

## Controls and Functions

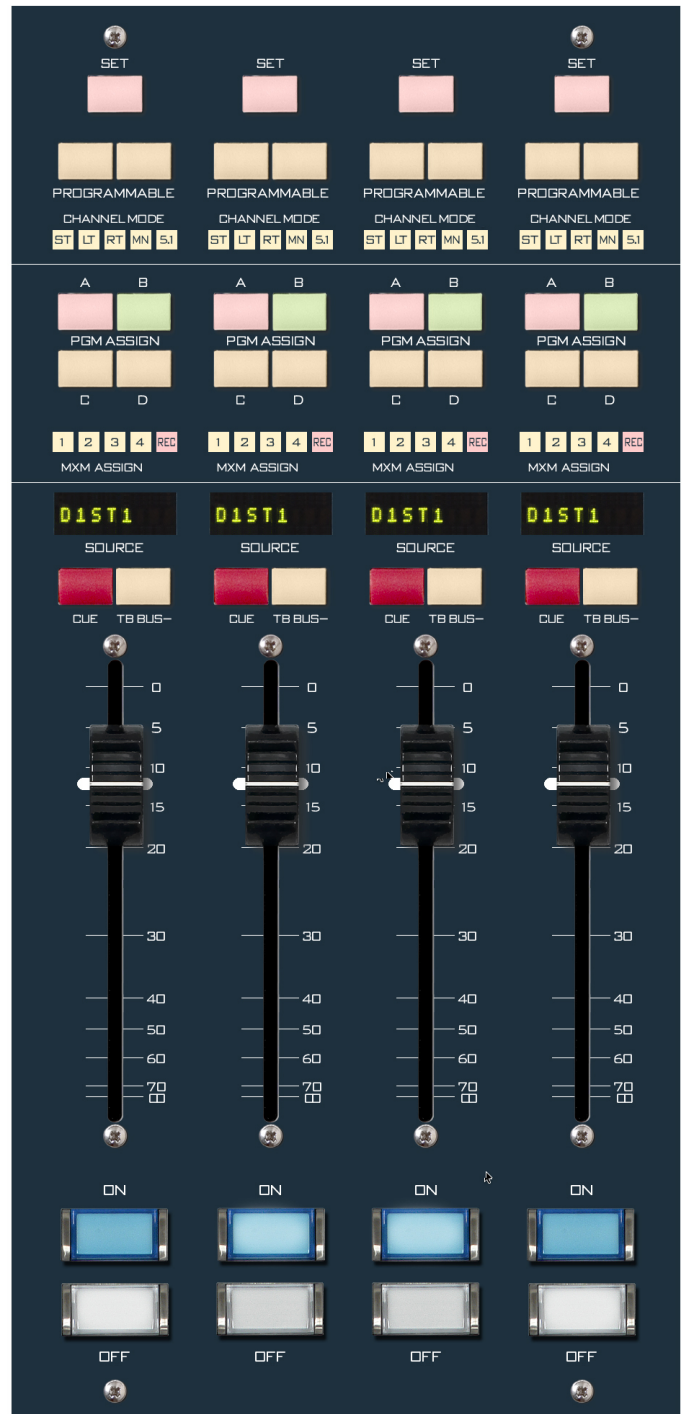
Each input panel of the E-6 digital audio control surface has four identical strips representing four input channels. You control how each channel is set up by pressing physical switches on the surface and configuring software settings through the *Input Tab*.

The SET button located at the top of each fader strip provides access to the *Input Tab* located on the VGA monitor. The *Input Tab* is the center of control for the E-6 surface. Here you find easy access to most of the fader strip's parameters. Various hardware LED indicators on the fader strip let the operator know when a particular function is active. All physical switches on a fader strip may be used at any time without having to press the SET switch.

### SET Button

This switch is at the heart of the operational control of the surface. SET allows the operator to access various controls and functions, such as Source selection, MXM Assign, AUX Bus configuration, EQ/Dynamics, Panning, etc. When you press the SET button, the *Input Tab* display changes to show you the current settings for this fader strip. Once a SET button has been pressed, the button lights up, and operator interaction will apply to **that input channel** until a different input SET button is pressed, or until a timeout of about 20 seconds has occurred. Timeout is optional and may be defeated in the *Options Tab*.

Certain functions are accessed by using hardware switches and knobs located on the MONITOR panel. These shared controls are accessed by first pressing the SET switch on the desired fader strip. For example, Mix Minus bus assignments are switched using the shared MXM ASSIGN switches.



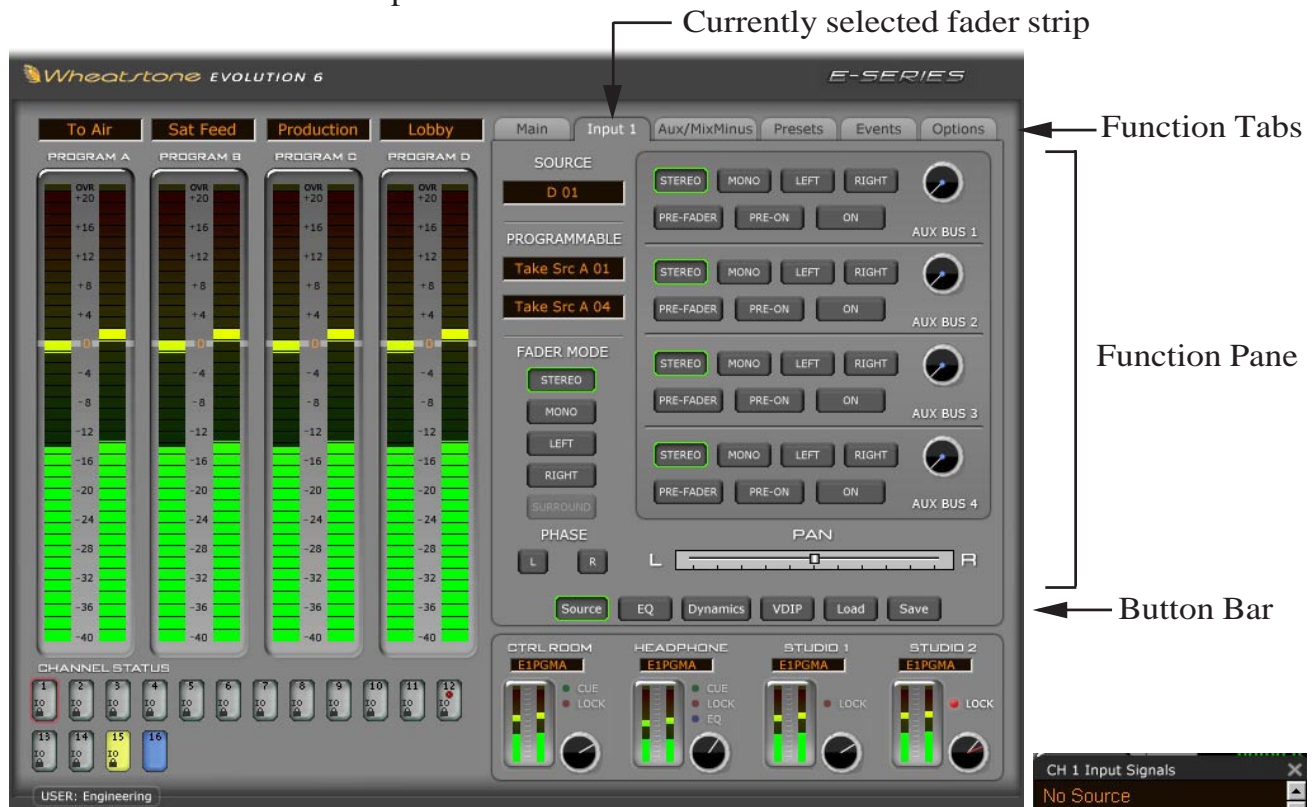
## Input Tab Display

When you press an Input fader's SET button the Tab display switches to the *Input* Tab for that channel. You can click on various buttons to configure the channel for your application. Note that the Source and Programmable Button windows are interactive. The INPUT SOURCE knob on the Master Panel (see Chapter 3) serves double duty and acts as a parameter modifier when in the EQ or Dynamics screens.

**NOTE:**  
When SET is pressed, the FUNCTION PANE displays the last feature selected from the Input Tab's "Button Bar" — Source - EQ- -Dynamics - VDIP - Load - Save

A Button Bar located near the bottom of the *Input* Tab provides for navigation between the SOURCE, EQ, DYNAMICS, VDIP, and Preset LOAD-SAVE screens.

A typical *Input* Tab SOURCE screen is shown below, followed by descriptions for each of the functions. Other screens from the *Input* Tab are discussed at the end of Chapter 3.



## Source Window

Click in the SOURCE window to open the signal tree. Highlight a source name in the tree and double-click to select it.

You may use the Visibility feature in XPoint to limit the signal list the user "sees" when selecting sources. This feature is especially useful in large systems with lots of sources.

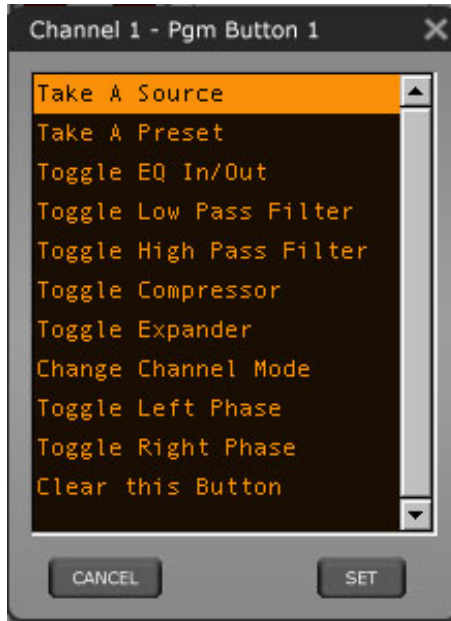
Visibility for input sources can also be set from the surface. This procedure is outlined in Chapter 3.





## Programmable Button Windows

Each fader strip has two programmable buttons. There are two programmable button “windows” within the *Input* Tab associated with each input channel. To program a button, click in the desired button window or press and hold the button until the Channel X - Pgm Button Y screen pops up. Select the desired function from the list by clicking on it, then click the SET button on the pop-up window to confirm.



If your choice was “Take A Source” then the Source list pops up when you click the SET button to allow you to choose the desired source.



## Fader Mode Controls and Indicators

There are five available channel modes: Stereo, Mono, Left only, Right only, and Surround (5.1). Click on the desired mode and its virtual switch will light. The channel's CHANNEL MODE indicators on the fader strip will change to reflect the new mode.

**STEREO** – selects stereo mode; Left in feeds fader L, right in feeds fader R. If a mono source is selected, it will feed both L and R. A 5.1 source will be down-mixed to stereo.

**MONO** – selects mono mode. If a stereo source is selected it is summed to mono and reduced by 6dB. A 5.1 source will be down-mixed to mono.

**LEFT** (left only) – passes only the left channel of a stereo source to both L and R.

**RIGHT** (right only) – passes only the right channel of a stereo source to both L and R.

**SURROUND** (5.1) – sets the input fader to be a surround channel. Only input fader channels configured in hardware as 5.1 channels may be put in this mode. Use this mode when selecting 5.1 surround sources.

### Pan

L/R - slider moves the signal left to right.



### Phase

A pair of switches, one for left and one for right, located on the left-bottom of the “INPUT” screen, are provided to allow for the reversal of absolute phase of the signal path.



### Aux Sends

Use these controls to send the fader to any or all Aux Send outputs. Mode controls tap off the source signal in any combination of pre- and post-fader, pre- and post-channel ON switch. There are dedicated Aux Send ON and audio MODE controls for each of the four Aux sends. You may use the hardware Aux Send knobs (see the Master Panel) or the virtual Aux Bus knobs on this screen to set the signal level feeding the Aux Bus. All settings are saved with Events.

## Other Physical Switches and LEDs

### Program Assign

Output switches assign the selected source signal to any combination of the surface's four stereo Program outputs—A, B, C, and D. The button will be lit when the source is assigned to its respective bus. To remove a source from the bus, press the button again; the light will go off to indicate that the source is no longer assigned to that bus.

### MXM Assign LEDs

Each channel can be assigned to any combination of the four MIX-MINUS buses. The MXM ASSIGN 1-4 LED group gives the operator a quick indication of what mix-minus buses the source is assigned to. The last indicator, labeled REC, is reserved for future use.



Channels are assigned to these MXMs in the following manner: press the channel SET button on the input fader section and then press the desired MIX-MINUS ASSIGN button, located on the MNE-6 panel. Note that you are normally assigning the channel, and not the source, to the MXM bus. But see the section on MIX MINUS options later in the manual (MXM ASSIGN, page 3-7).

### LED Readout

An 8-character display shows the name of the audio source selected to the fader.

### CUE Switch

The CUE switch assigns the selected source to the CUE bus, letting the control surface operator monitor the channel's pre-fader signal.

### TB BUS- Switch

The TB BUS- switch routes the TB BUS audio, typically the operator's microphone, to the BUS MINUS output for that channel, allowing the operator to talkback to the talent hearing that BUS MINUS signal.

### Bus-Minus Outputs

Each fader has a dedicated Bus-Minus mix that includes all active faders except for itself. These auto generated monaural mix-minus signals may be routed to feed telephone hybrids or other devices as required. Bus-Minus mix outputs for each surface fader appear as Sources in the Surface signal area of XPoint, typically located above source signal ID1001. A typical Bus-Minus output signal name is *E1BM01* but the exact name depends on the fader and surface ID number.



## Fader

Channel output level is set by a 100mm, professional, conductive plastic linear fader.

NOTE that input channels configured for 5.1 sources have fader knobs engraved with “5.1”.

## Channel ON Switch

The channel ON switch turns the channel signal ON and fires any channel ON (START) logic mapped with VDip to the fader’s source signal. The switch LED lights to indicate the channel is ON.

## Channel OFF Switch

The channel OFF switch turns the channel signal OFF and fires any channel OFF (STOP) logic mapped with VDip to the fader’s source signal. The switch LED lights to indicate the channel is OFF.

## Channel Status Buttons Display



A row of numbered buttons along the bottom of the main VGA screen shows the status of each channel. When a channel is OFF with the fader down its corresponding button appears gray. If the fader is brought up with the channel remaining OFF the button turns yellow. If the channel is ON and the fader is down, or if the channel is ON with the fader up but not assigned to any of the four PGM buses, the button color becomes green. If the channel is ON, and the fader is up, and the channel is assigned to one of the four PGM buses, the button color becomes blue.

The CHANNEL STATUS button will also indicate a “logic lock” situation, which happens when a signal is assigned to multiple channels, either on the same surface or on different surfaces. As long as all of the affected channels are OFF there is no indication. But as soon as one of those channels is turned ON, the indicator, which consists of a padlock icon, will appear on the CHANNEL STATUS button of the rest of the affected channels. The purpose of the indicator is to tell the operator that the signal on that channel is in use elsewhere, and that logic control for the signal is owned by some other channel in the system. Operators should be made aware that logic associated with a signal will not act as expected when the logic lock indicator is ON.

A RED dot indicates that processing is active on that channel.





# Master Panel (MNE-6)

## Controls and Functions

The E-6 digital audio control surface is equipped with one MASTER panel. This panel contains numerous controls, including INPUT SOURCE select, PAN, CUE, and AUX SEND controls, MXM ASSIGN buttons, HDPN MODE buttons, TIMER CONTROL buttons, 14 PROGRAMMABLE buttons, and four MONITOR sections with buttons to select MIX MINUS, AUX SEND and PROGRAM sources, plus two additional EXT (programmable) sources, as well as level controls. Add to that separate TB buttons for each MXM, each AUX SEND, and both STUDIO monitors, a group of 9 switches to deal with various operational modes, and a mouse pad with two buttons to aid in navigating the VGA screen.

### PAN Control



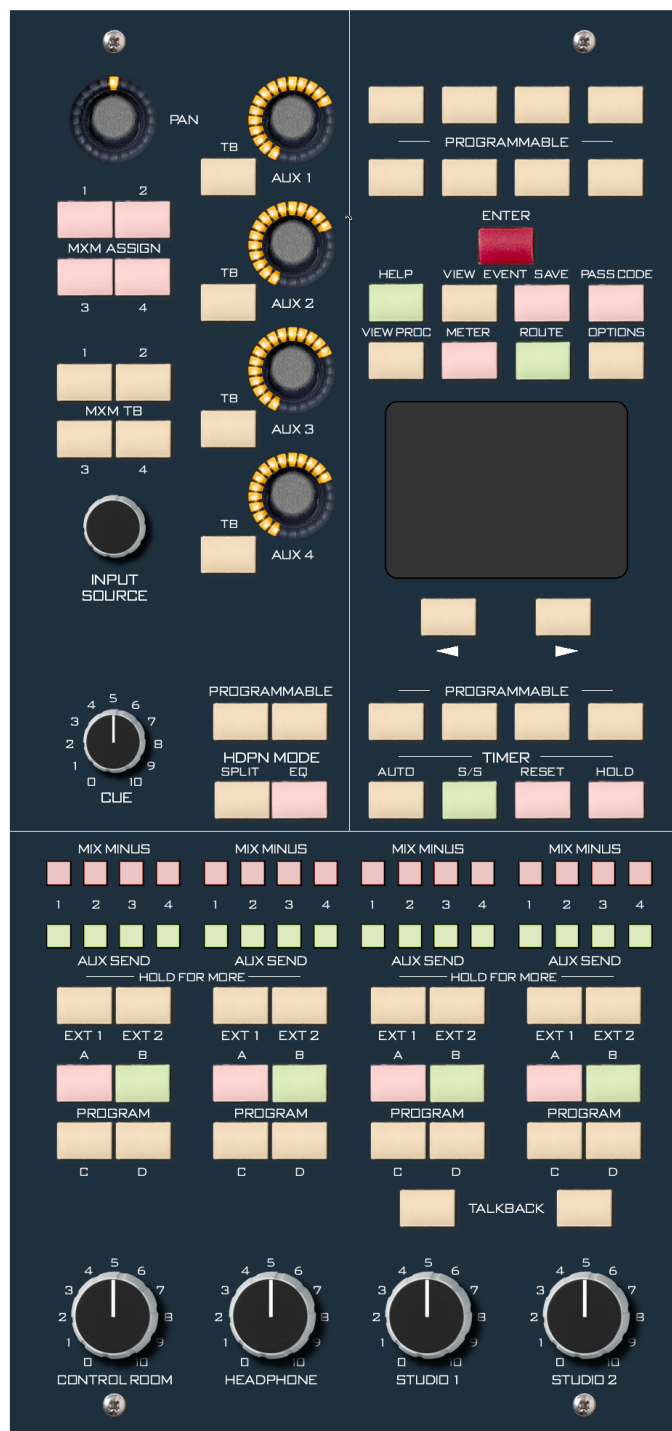
The PAN knob acts as a panpot in MONO, LEFT only, and RIGHT only modes, and as a balance control in STEREO mode. This feature is activated for a given channel

by pressing the channel's SET button. To easily set the PAN to center, you can press the control twice in rapid succession, like double-clicking a mouse button. You may also adjust PAN by clicking and dragging the PAN position indicator on the Input Tab.

### INPUT SOURCE Knob

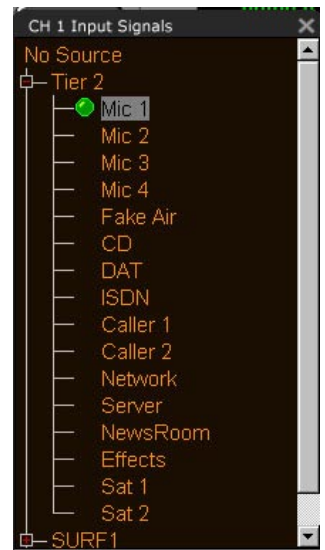


The INPUT SOURCE knob serves two primary functions: As a Source signal selector for fader strips or as a DSP parameter value controller when the Input EQ or Dynamics screens are selected.





When the SET button is pressed on the desired fader strip AND the Input Tab is positioned on the main SOURCE screen, the INPUT SOURCE knob can be used to select the desired source. By turning this knob, the available inputs are displayed in the 8-character SOURCE display for selected channel. When the desired input source is scrolled into the SOURCE window, pressing the ENTER button will cause that source to be switched to the input of the channel. If you fail to press ENTER, the display will revert to its original setting after a timeout of approximately 4 seconds, and the original source remains in effect. Note you can also simply click in the SOURCE window on the Input Tab and select the desired Source from the signal list.



Source Visibility - use the Source Visibility Option setting to limit the sources the user “sees” in the signal tree. This feature is helpful, especially in large systems with lots of signals.

- When the panel’s OPTIONS button is pressed the VGA Options screen pops-up (shown below). Select “Source Visibility” from the AVAILABLE OPTIONS scroll down list to display the Source Visibilities form (below).



With this form the user can set the channel’s source visibilities. Scroll up and down the source list and highlight the desired source signal(s) and click the *APPLY* button to save the visibility options. If you have made changes and then decided you don’t want to put the changes into effect, click *RESET*. This will cancel any changes you made since entering the screen or since clicking *APPLY*, whichever happened most recently.

In addition to the eight character name of a signal, signals may also have a second identifier, an eight character location, which is typically set up in the XPoint program. Using the *SHOW LOCATIONS* button on the Source Visibility Options screen you can determine if the location identifier will show up in the Source list on the monitor when setting visibility. Click the *SHOW LOCATIONS* button to toggle between *YES* (show locations) and *NO* (don’t show locations).

There are also “*QUICK VISIBILITY*” selection buttons. Clicking the *ALL* button will set all source signals to be visible. Clicking the *NONE* button will set all source signals to be hidden.

You can change the channel you are affecting visibility on by selecting the desired channel in the channel drop down box.

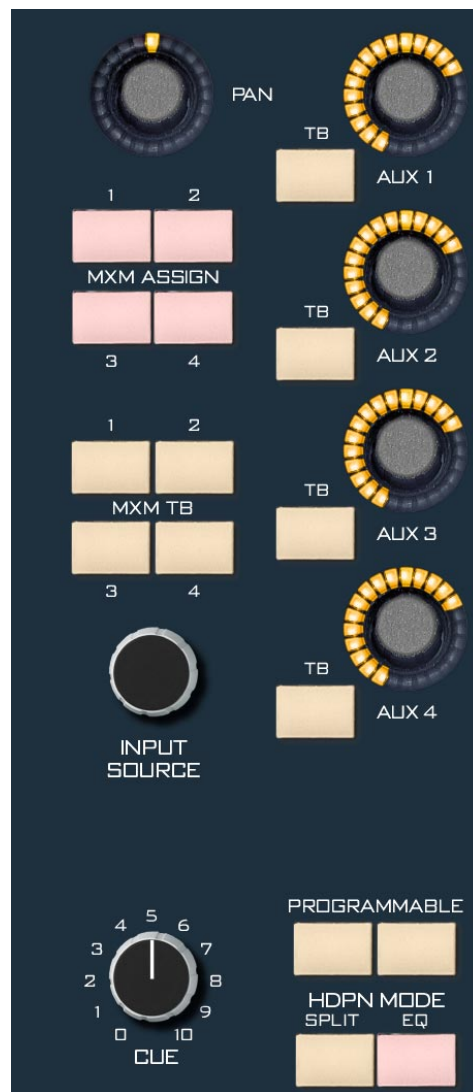
You can also make and use visibility SUBSETS. To apply a preset to the current channel, select the preset from the SUBSETS drop down box, then press *LOAD*. After a preset is loaded, you can make changes to it by altering the visibility as described above, then press *SAVE TO*.

Creating new presets is covered later in the manual (see page 3-17).

## AUX Buses

The control surface has four AUX busses, which can be used to create record feeds, extra mix-minus buses, etc.

Input AUX Send control is accessed using the Aux Send section of the main Input Tab screen. Press SET on the desired input channel and the Input Tab automatically opens to the last screen in use. Press SOURCE on the button bar near the bottom if you don't see the AUX Bus section right away. Each AUX bus feed has Mode, Pre-fader Pre-On switches, and On/Off controls. A virtual Aux Send knob indicates relative level. Use the physical Aux Send knobs on the panel or the mouse on the screen to adjust levels. All adjustments can be saved to a Channel, a Source, an Event, or a Preset (see more on saving later).



## Multi-Function Aux Knobs

When a fader strip is selected with SET, the panel knobs set the Aux Send level to the Aux bus. When no SET buttons are pressed, these knobs act as Aux Bus Master level controls.



Pressing the *Aux/MixMinus* Tab switches the FUNCTION PANE to the *AUX and MIX-MINUS MASTERS* screen with four AUX master level controls and ON buttons. If no channel SET buttons are pressed, the physical AUX Send Knobs adjust the Master Aux Send output levels.

### TB (Talkback)

To interrupt an AUX bus signal with the surface’s predefined TB signal, press the TB switch for the desired AUX 1 - AUX 4 send. This allows the control surface operator to communicate with the Talent or location receiving that AUX send.

Note that the Talkback source, typically a host mic, must first be cross connected to the surface’s TB input using either XPoint software or the E-6’s built in Route function. The TB signal may be any Source signal in the router including MXM or Aux busses. The E-6’s TB input signal is a factory defined surface Destination signal (greater than ID1001) with a name similar to E1TBk. The actual signal ID number and signal name depend on how many surfaces you have.



## MXM ASSIGN Switches



These physical buttons are used to route input fader strips to MIX-MINUS busses. Press the SET button on any channel. If that channel is assigned to feed an MXM bus, the corresponding MXM ASSIGN switch and LED indicator on the fader strip will be lit (but this operation can be modified - see the INVERT LEDS button on

the Aux/MixMinus Tab, as described below). Pressing an MXM ASSIGN switch will toggle that channel's signal into or out of the corresponding MXM bus.

## MXM Master Controls

Click the *Aux/MixMinus* Tab on the GUI screen to bring up the MIX-MINUS MASTERS controls. Each MXM Master has a PRE-FADER and PRE-ON switch as well as a virtual level knob. Two global option buttons for LED inversion and Source follow control round out the section.

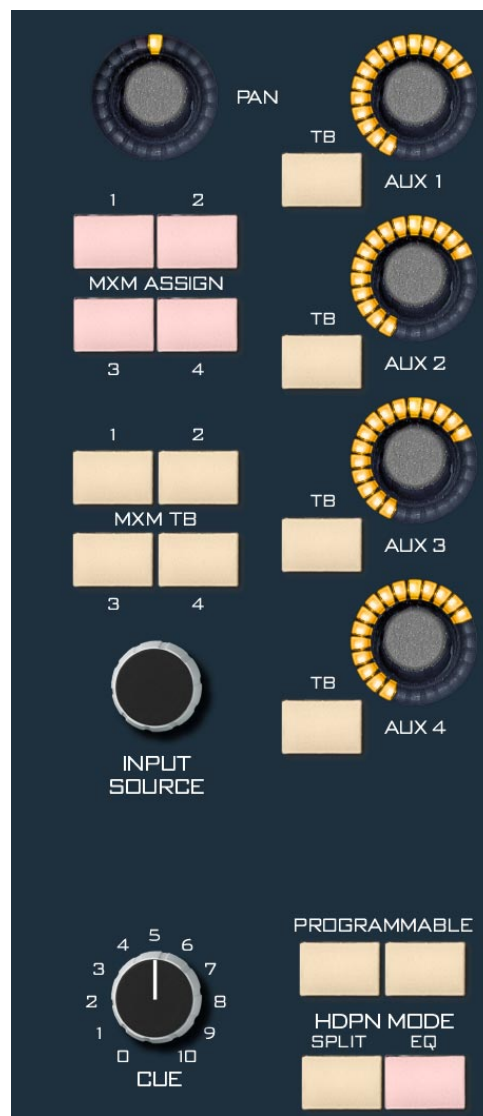
**PRE-FADER** - Normally any signal feeding a mix-minus does so with a post-fader signal. Selecting the PreFader button for a given Mix-Minus bus globally configures the MXM bus to tap off the input strip audio before the fader.

**PRE-ON** - Normally any signal feeding a mix-minus does so with a post-ON switch signal. Selecting the PRE-ON button for a given Mix-Mi-

minus bus globally configures the MXM bus to tap off the input strip audio *before* the channel ON switch.

**INVERT LEDs** -This setting is used to flip the logic applied to the MXM assign LEDs on the fader strips. Set it to NO if you want the MXM assign LEDs on the fader strip to light up when the audio is feeding the bus. In this case you will have an MXM LED for every source that is *feeding* the MXM bus, and the MXM LED would be OFF on the strip that is not on the bus. This is how normal bus assign switches, like PGM A, PGM B, etc., work.

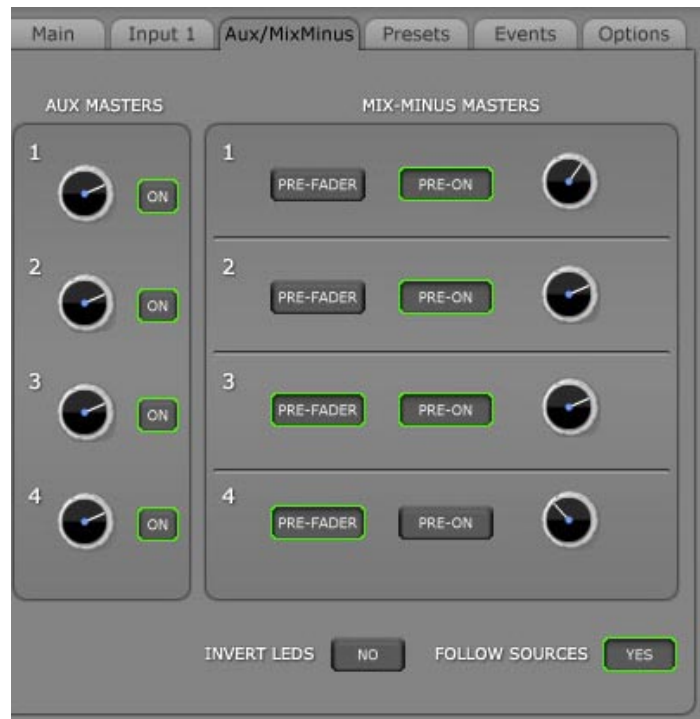
Choose YES, to flip that behavior. In this case all faders will normally feed the





bus without lighting up the switches, and the fader that is NOT on the MXM bus will have its MXM LED lit. This inverted assign mode lets you quickly see which MXM bus the fader is subtracted from and may require fewer MXM assign switch presses to set up the mix-minus. When you first choose YES you will have to check that all MXM assign LEDs are OFF to normalize the setup, then simply press the desired MXM assign switch to remove the signal from an MXM bus. The MXM assign LED on the fader strip will light to indicate the signal is removed.

While it is much easier to visually determine the MXM bus assignment status using inverted LED mode, radio stations tend to operate in the NO mode and TV stations in the YES mode. Set this as required for your facility. Give Inverted Mode a try; it may actually be easier to use.



**FOLLOW SOURCES** - This setting is used to activate the MXM follow attribute for source signals. When set to NO, the MXM assignments made at the fader strip “stick” with that strip no matter which source is selected. Choosing YES causes the MXM bus assign settings to “stick” to the Source signal selected for that channel. If the Source is moved to a different fader on this surface, or recalled at a later time, the MXM assign settings will automatically follow.

There is one caveat that needs to be considered when deciding whether to set FOLLOW SOURCE to YES or NO. In the NO mode, when you take an Event, the MXM settings for each channel will be set to the same state they were in when the Event was saved. However, in the YES mode, the MXM settings for each source will be set to the last state they were set to, which may or may not be the same as they were in when the Event was saved. What this essentially translates to is that MXM settings are not saved with the Event when FOLLOW SOURCE is operated in YES mode.



## MXM Talkback



To interrupt a mix-minus output with the surface's predefined talkback signal, press any of the four MXM TB momentary switches. Note that the Talkback source, typically a host mic, must first be cross connected to the surface's TB input using either XPoint software or the E-6's built in Route function. The TB signal may be any Source signal in the router including the MXM or Aux busses. The E-6's TB input signal is a factory defined surface Destination signal with a name similar to E1TBack. The actual name depends on how many surfaces you have. There is only one TB bus input on the E-6. You can use Programmable buttons to momentarily route other sources to the MXM outputs.

## CUE Knob



The CUE master level control is located in the center section of the MNE-6 panel. The CUE signal is pre-fader, and is normally used to check signals. When a channel is CUEd, its pre-fader signal will appear in the external cue speaker, and the switched meter screen on the VGA, if visible, will show the level of the pre-fader signal.

The CUE level control determines the overall loudness of the cue signal.

The external cue speaker has the potential for feedback and should be muted whenever the control room speakers are. Use VDip to add the CUE MUTE attribute to any microphone signals located in the control room.



## Monitor Speaker Controls

The Monitor section, at the bottom of the MNE-6 panel has the controls for four monitor outputs: CONTROL ROOM, STUDIO 1, STUDIO 2, and HEADPHONE. The VGA always displays the monitor level, muting, and options status.

Each monitor has a LEVEL control and a bank of source select buttons for PROGRAM, MIX-MINUS, and AUX SEND, as well as two programmable EXT buttons. There are also TB buttons in the two STUDIO sections. Each monitor output has options for Muting, Locking the output level, and interrupting the output with Cue audio. The headphone output may also be fed with split CUE and an optional processed signal (see the description of the Headphone Mode Switches later in this chapter).



## Speaker Muting

To MUTE a monitor output you first need to configure the virtual dipswitches (VDip settings) for each microphone source signal. VDip is easily accessed by pressing the mic input fader strip's SET button. The VGA automatically switches to the *Input* Tab for that channel. Then choose VDip from the Button Bar near the bottom of the *Input* Tab. Check the Mute boxes as required to mute the CR or Studio outputs when the mic is turned ON. An Options Text File setting determines whether the Mute occurs when the fader is simply turned on or if the fader must be ON, up, and routed to the PGM bus (see Appendix 2 for more information about the Options Text File).

## Speaker Level Controls

Each monitor output level control uses an optical encoder with no detent or end point. Use the CTRL ROOM, HEADPHONE, or STUDIO level meters on the VGA monitor to correlate the overall loudness to the relative encoder position.

NOTE: If a monitor output is muted and you turn the level control all the way up, then remove the condition that has the monitor muted, the sound in the monitor speakers (or headphones) will suddenly be VERY LOUD!

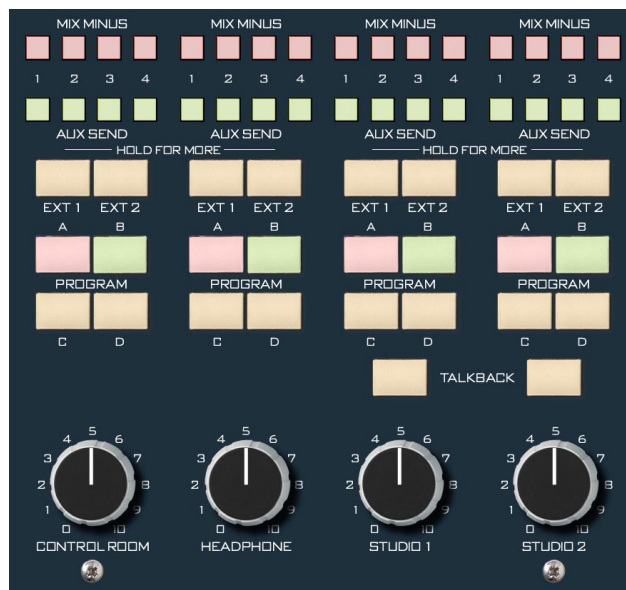
## Source Select Switches

Each monitor output section has its own bank of source select switches which select the audio signal sent to the speakers or headphones. Each bank includes dedicated switches for selecting PROGRAM A, B, C, or D, two programmable sources (EXT1 and EXT2) Aux Sends 1-4, and Mix Minus outputs 1-4. Simply press the desired switch to listen to that output bus or external source signal.

## Programming External Source Switches

External switches may be programmed to select any Source signal on the router. Press the external button and hold it for few seconds, the list of the available external inputs will pop-up in the monitor display. Choose the desired external input from this list by using the surface’s mouse pad or up and down buttons. You can also initiate the source programming for the external inputs by clicking the EXT source window on the VGA monitor.

While there are separate EXT 1 and EXT 2 buttons for each of the four monitors, the buttons really only represent two stored signal choices. All four EXT 1 switches are mapped to one source, and the four EXT 2 buttons are mapped to a second source.



## Control Room Section

The control room section of the monitor has a dedicated meter and level knob. The board operator’s microphone is normally programmed using VDip to MUTE the control room output and prevent the occurrence of feedback. When MUTE is active, the word MUTE appears in the center of the monitor’s meter display.

The CR level may also be locked to a user defined volume level. See the E-6 Monitor Options section below.

## Headphone Section

The built in HP amp output signal appears at the headphone jack, mounted on the right-hand front of the control surface’s lower mainframe pan. The jack is provided as a place to plug in user-supplied **stereo** headphones having an impedance of **60 Ohms or higher**. A DB-9 connector on the rear of the surface provides a stereo line level input to the HP amp. See Chapter 4 of this manual for pinout information. To get audio into the HP amp, wire any router analog output to the HP amp input. Use XPoint to cross connect the surface’s HP mix source signal (e.g. E1HP) to the analog destination wired to the surface.

## Headphone Mode Switches

**Split Cue** - Activating the SPLIT switch allows a summed (L+R) version of the regular program to be sent to the right side of the headphone output, while CUE audio is sent to the left side.

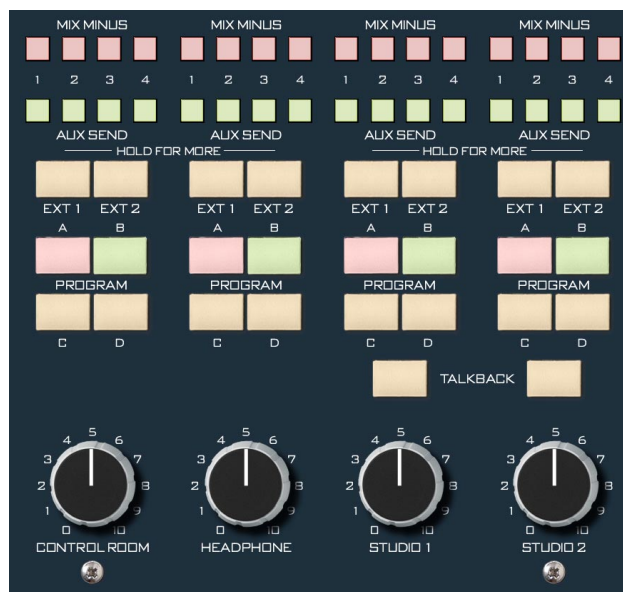
**EQ** - Activating the EQ switch routes the headphone source signal through a pre-defined processing loop. To apply processing to the HP mix you first must use the EQ and Dynamics controls on a Mic input channel to achieve the desired settings. Then click the Save button at the bottom of the *Input* Tab. This brings up the Preset Save window. Under SAVE TO click the HDPN button. This activates the SAVE button at the bottom of the Preset Save window; click this SAVE button to finish the procedure. Now, when the HDPN MODE EQ button is lit, the DJ will hear the processed “sound” of the selected PGM or External mix in the



headphones. This is useful for monitoring the board output with processing without the delay problems associated with HD air signals.

### Studio Section

There are two Studio output sections each with dedicated source select banks, metering, and level knob. Microphones located in the studios are normally programmed using VDiP to MUTE the associated Studio output to prevent the occurrence of feedback. When MUTE is active, the word MUTE appears in the center of the monitor's meter display. Each Studio level control may be locked to a user defined volume level (see the E-6 Monitor Options section below).



### Talkback to Studio

Each Studio output has a dedicated TB button which lets the operator interrupt the normal feed to the studio speakers with a pre-determined TB signal. Note that the Talkback source, typically the board operator's mic, must first be cross connected to the surface's TB input using either XPoint software or the E-6's built in Route function. The TB signal may be any Source signal in the router, including MXM or Aux busses. The E-6's TB input signal is a factory defined surface Destination signal with a name similar to E1TBk. The actual name depends on how many surfaces you have. There is only one TB bus input on the E-6. You can use Programmable Buttons to momentarily route other sources to the Studio outputs.

### E-6 Monitor Options

The Headphone, Control Room, and Studio outputs are normally subject to the control surface's muting and cue interrupt circuits. Use the *Options* Tab > Monitor Config screen to modify speaker behavior.

**Cue Defeat** - Click on the *Options* Tab, choose Monitor Config from the AVAILABLE OPTIONS scroll down list, and set the Cue Defeat option for Headphone, Control Room, and the Studios. If you program a Cue Defeat option to be ON, that means that cue will not interrupt that monitor output.

**Level Lock** - You can lock any of the surface's monitor level control pots. Use the slider to set a level and switch the Level Lock to be ON. Press the APPLY button at the bottom to confirm. The corresponding LOCK LED will be lit in the monitor speaker section of the VGA.





## Events

The E-6 includes a snapshot save and recall feature that saves all of the surface's switch, level, and DSP settings to a unique Event file. These saved Events may be recalled as required at any time. User access privileges may be configured to limit access to Event Save, Recall, or both. Click on the *Events* Tab or press either EVENT button (VIEW or SAVE) on the Monitor Panel to open the *Events* Tab.

The *Events* Tab is split into two sections - *Event Recall* and *Event Editor*. EVENT RECALL located in the top section of the tab, allows users to select and recall a previously saved Event. Highlight the Event name in the list window, then press ARM, then press TAKE. Note that the board will completely reset to the previously saved state. In order to accommodate Event switching while OnAir, any faders which are ON when the Event is recalled will NOT be affected.

The EVENT EDITOR acts as an Event file manager. This is where you create, save, rename, and delete Events. It is pretty easy to use. To create a new "snapshot", simply click NEW and enter an Event name using the pop-up virtual keyboard. Highlight an existing Event name and click SAVE TO to overwrite the Event with the current surface configuration, RENAME to retitle it, or DELETE to permanently remove it.

***Deleted Events may NOT be restored.***



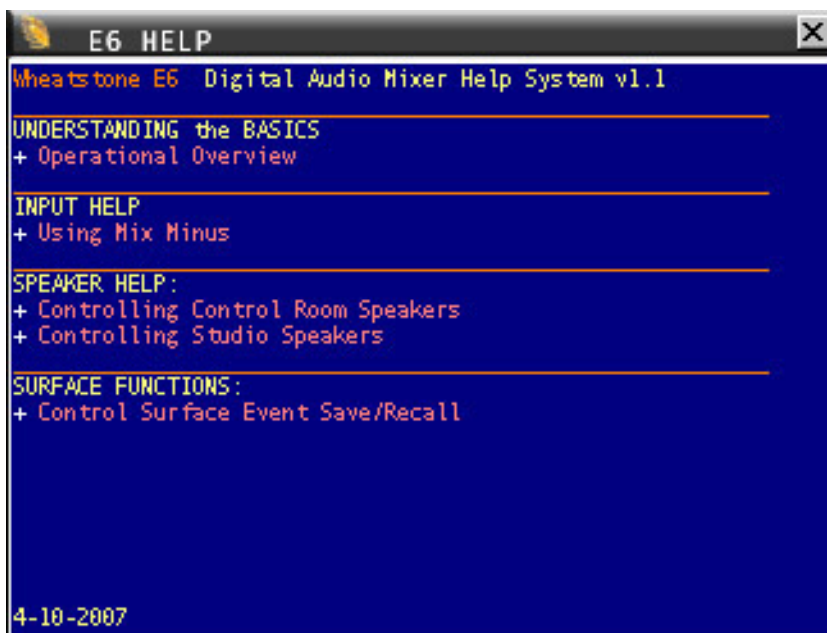


## Enter Button

As mentioned in the earlier description of the INPUT SOURCE knob, the ENTER button is used to complete the selection of a source for an input channel.

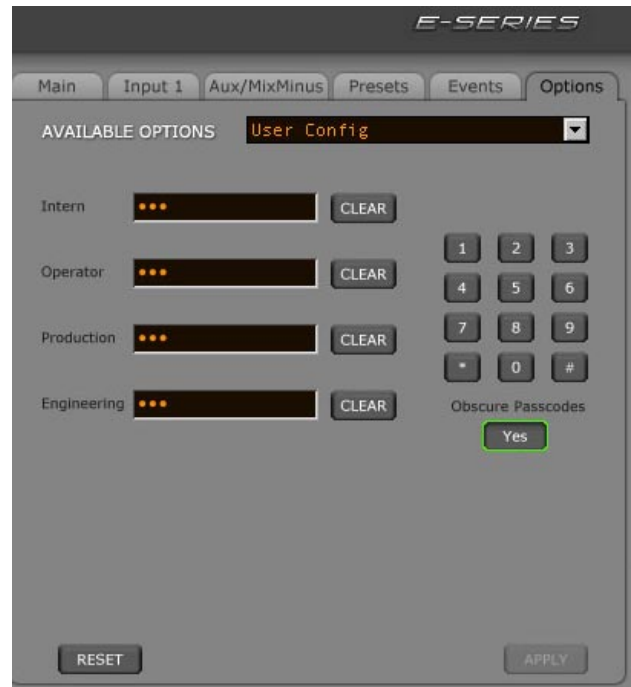
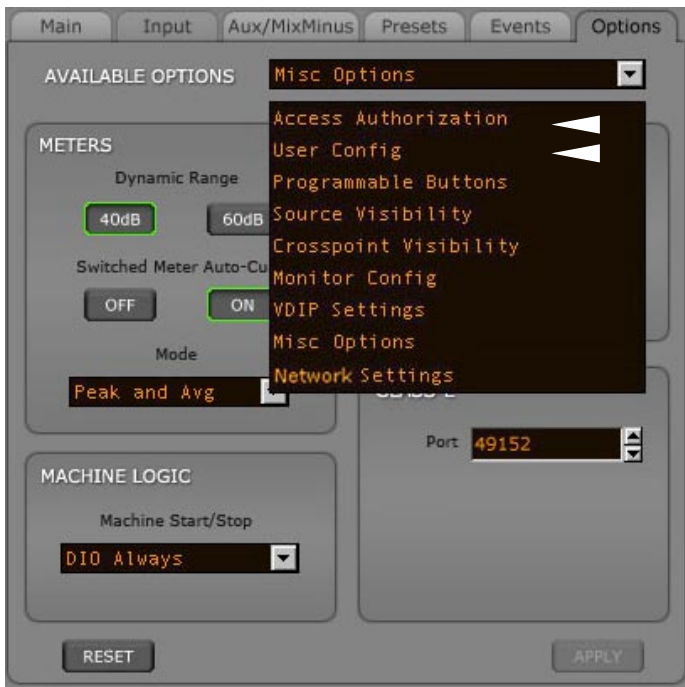
## Help Button

Pressing the HELP button opens a HELP menu on screen for when Talent needs help with settings such as a mix-minus, or with surface operation in general.



## Control Modes - User Permissions

The E-6 control surface is operated in one of four modes: Intern, Operator, Production, and Engineering. Engineering mode, by default, allows the user to perform all surface functions. To set passcodes, press the *Options* Tab and choose User Config from the AVAILABLE OPTIONS scroll down list.



All four end user modes can have their permission levels modified by any user with permission to do so. This is done by pressing the GUI *Options* tab and choosing Access Authorization from the AVAILABLE OPTIONS scroll down list to bring up the Access Authorization dialog box. Personnel with the designated authority to set the permission levels should spend some time with this dialog box and experiment to see what levels of authority can be granted or denied.



To log in to a given mode, press the surface’s PASS CODE button or press the button on the lower left corner of the VGA screen that displays the current ACCESS AUTHORIZATION level.

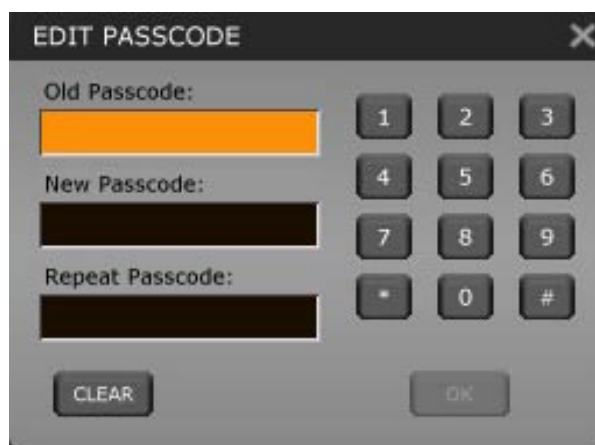


ACCESS AUTHORIZATION



This brings up the PASSCODE ACCESS dialog box. Use the mouse pad to select the desired mode, then enter the password for that mode. The default password for all four end user modes is “111”, and can be changed for each mode by any user who knows the password for that mode. This can be done by clicking the EDIT button on the PASSCODE ACCESS form to bring up the EDIT PASSCODE box, where you enter the old (current) passcode and then enter the new passcode twice and click OK to effect the change.

**Password Defaults:**  
“111” for all users.



Once a given control mode is selected for a surface, that setting will persist through a power cycle or surface reset.

## View/Proc Button

Pressing the VIEW/PROC button switches the display to the Presets Tab. The *Presets* Tab acts as a file manager for parameter presets. “Presets” on the E-6 are simply snapshots of parameters that may be saved, recalled, and applied to individual fader strips or source signals. You can Save and Load individual EQ, Dynamics, or Processor (EQ+Dyn) Types directly to faders and Sources from the *Inputs* Tab. The ALL Type lets you copy the entire channel strip and paste the settings to any other channel strip using Preset Load on the *Inputs* Tab. Access to this feature can be limited within a control mode and thus, effectively, password protected.

## Presets Tab Functions

**TYPE** - this drop down category list lets you select the preset type: Mode, Pan, Aux Sends, EQ, Dynamics, Processor, or All.

**SELECTED PRESET** - this drop down list lets you select one of the presets in the chosen **TYPE** to edit or delete.

**COPY FROM CH** - use with **NEW** to select which fader channel you wish to copy from.

**NEW** - creates a new Preset in the chosen category. Parameters copied from the **COPY FROM CH** channel. The virtual keyboard opens to name the new Preset.

**RENAME** - opens the virtual keyboard to rename the **SELECTED PRESET**.

**PRESETS List** - this window displays a list of Presets in the current **TYPE**.

**CHANNEL ASSOCIATIONS List** - displays which faders are mapped to Presets of the selected **TYPE**.

**SOURCE ASSOCIATIONS List** - displays which Sources are mapped to Presets of the selected **TYPE**.

**DELETE** - You may use the **DELETE** buttons under each association list to remove the Preset or Channel / Source associations. *Deleted Presets may NOT be restored.*

### Copy a Preset From Channel

Choose the channel with the presets you want to copy from the **COPY FROM CH** drop down list, then click on the **NEW** button to display the virtual keyboard. Type a name for the new preset and click **SAVE**.

### Load a Preset

Press the *Input* tab and click the **LOAD** button on the bottom of the Input screen to display the **PRESETLOAD** screen. Choose the **PRESET TYPE**, highlight the desired preset, and press **LOAD**.



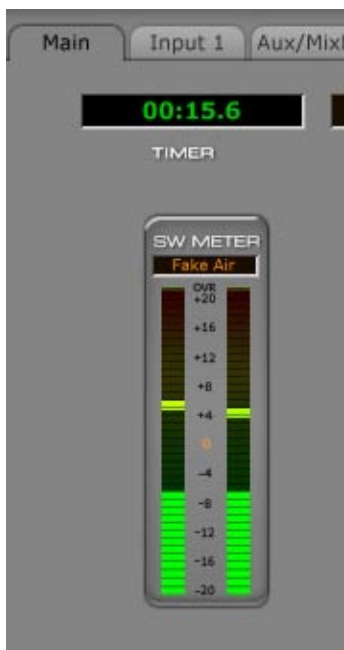
## Save

The user can save all adjustments with the SAVE button. Pressing the SAVE button will bring up the “SAVE TO” form that allows all changes to be saved to a channel, a source, an event, or a preset.



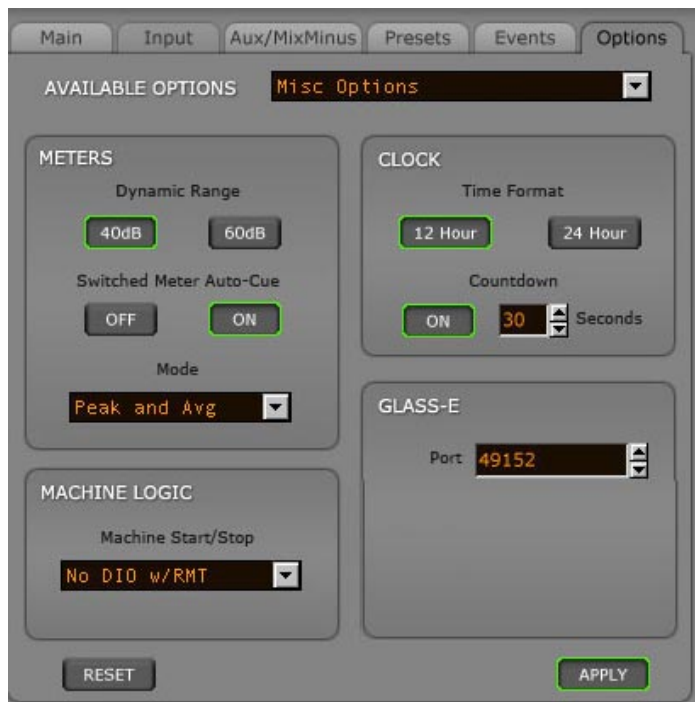
## Switched Meters

The control surface includes a switched meter on the Main Tab. The switched meter displays the signal level of a user selected source - any source on the router- or the CUE signal level when an input fader’s CUE switch is activated (but see below to disable this Auto-Cue function). Pressing the METER button will switch the screen to the *Main* Tab if it is not there already.



The switched meter display shows the signal source name at the top. Click on this name to bring up the source selection window and change the signal as desired.

A METERS setting on the *Option Tab* allows you to turn off Auto-Cue to this meter.





## Route

The password protected ROUTE button has two functions:

- When a SET button on an input strip is pressed, it displays all input signals for this channel (as shown on the right below), allowing the operator to select a new source.
- When no SET button is pressed, it opens a screen showing a full Matrix List of input sources and locations for quick source selection on a fader, or for making other connections within the system. Subject to Permissions file settings.



E-6 Mixer Outputs

E-6 Mixer Inputs

The XPoint matrix is analogous to an electronic patch bay. Audio sources (router inputs) are located along the X axis at the top, audio destinations (router outputs) are vertically stacked along the Y axis on the left side. Simply click at the intersection of the desired Source and Destination signals to “patch” them. All surface mixes (eg. PGM busses, MixMinus, Aux sends, etc.) appear as Sources, usually beginning at signal ID1001. All surface inputs (faders, talk back, monitor source selects, etc.) appear as destinations, also beginning at signal ID1001. Surface signals may be routed just like any user i/o.

## Timer Section

The control surface timer is provided with an AUTO-RESTART function so that programmed (via the GUI) input modules can automatically reset the timer display (located on the upper-left side of the main E-6 GUI screen) to zero and start a new count, allowing the announcer to easily track his own pace. The AUTO button on the Monitor Panel must be lit to enable this function.



The S/S (start/stop) button halts the timer, holds the last count, and then restarts and accumulates the count when depressed again—perfect for compiling tapes of desired duration.

RESET has a dual-mode capability:

- if you depress it while the timer is counting, the display will instantly reset to zero and start a fresh count;
- if the timer is already stopped, depressing this button will reset the timer to zero, where it will hold until start is pressed.

The HOLD button allows you to hold the display for a longer viewing duration, while still allowing the counter to continue in the background. Releasing the button will then display the current count.

## Time of Day Clock

The main Embedded E-6 GUI screen includes the digital and analog displays of a time of day clock in 12 or 24 hour format. 12/24 operation is set by making the desired choice on the *Options* Tab - Misc Options.

To set the time on this clock, run the Wheatstone utility program, WSTimeSet.exe, on a network computer. The program allows you to set the clocks on multiple control surfaces by specifying the IP addresses of the control surfaces in a list. A single command then updates all specified clocks. Program options allow auto updating at midnight or at the top of the hour. See Appendix 1 for details. The time of day is read from the PC's time of day clock so the PC must be kept synchronized to a network time server, GPS clock, master clock system, etc.



## Programmable Buttons

Also known as “Spare buttons,” these fourteen (14) switches and indicating LEDs are designed to perform user-programmable functions. Some functions, such as firing Salvos, making temporary connections, or interfacing with the logic input and output ports on system Logic I/O cards, must be configured through the Windows™ XPoint application. See the E-Series Network System manual for details.

Some of the spare button programming can be done via the E-6 GUI. Press the *Options* tab and choose Programmable Buttons from the AVAILABLE OPTIONS scroll down list to display the Programmable Buttons form. You will see a separate line on the form for each of the 14 buttons; each line has a drop down mode selector, a *FLASH* button, and an *EDIT* button.

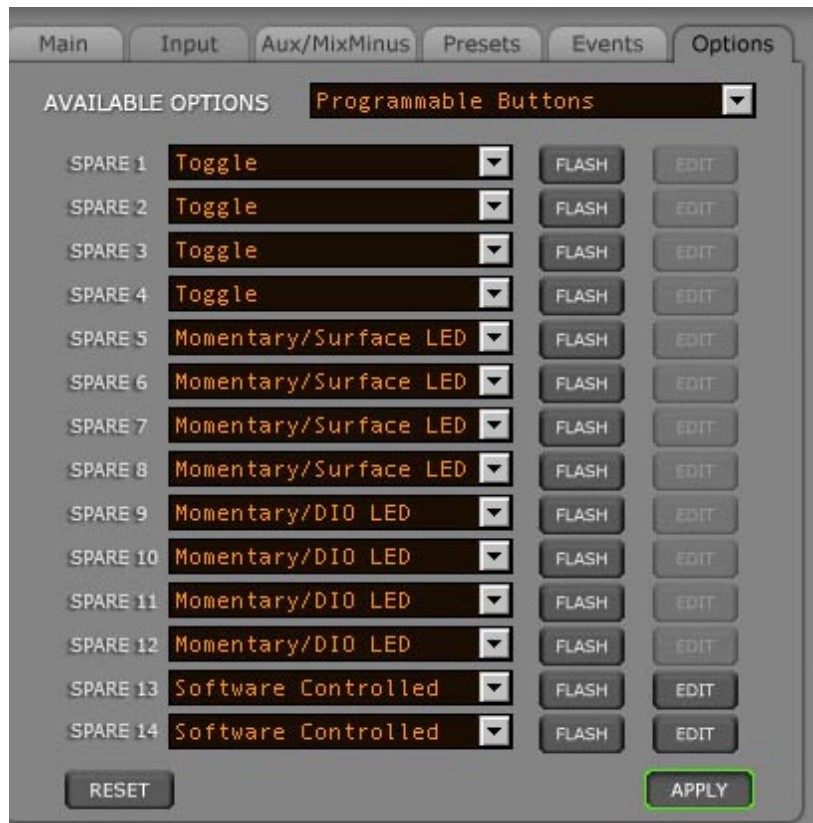
- Mode selection - the spare buttons can be operated in various modes:

- None - in this mode button presses are ignored - the button LED is controlled by DIO, which simply means that the LED can be turned on and off by a logic signal in the E-Series Network System - this control would be configured in XPoint

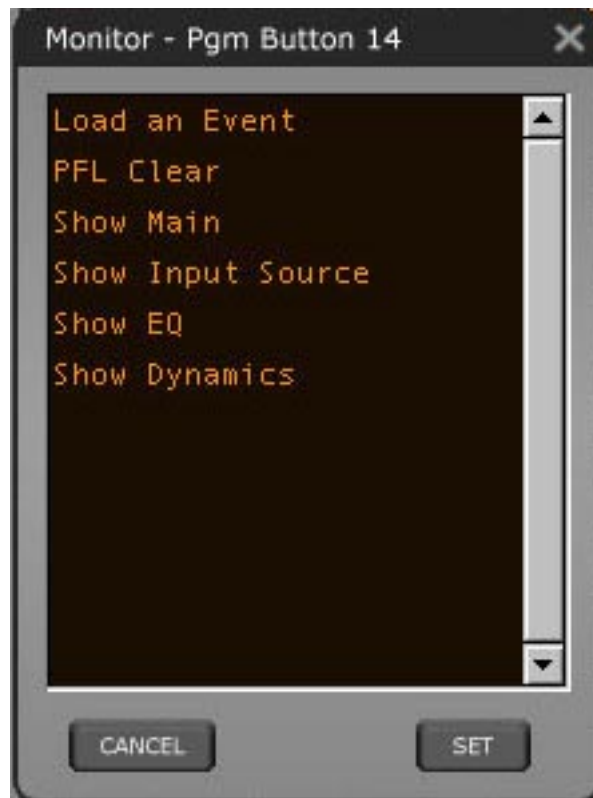
- Toggle - in this mode the button acts like a toggle; one press turns it on and another press turns it off - the button’s LED state is controlled by the surface, with the LED lit when the button is on and unlit when the button is off - the actual function performed by the button is configured in XPoint

- Momentary / Surface LED - in this mode the button has a momentary action; it is on while pressed and off when released - the button’s LED

is controlled by the surface, with the LED on while the button is pressed and off when it is not being pressed - the actual function performed by the button is configured in XPoint



- **Momentary / DIO LED** - in this mode the button has a momentary action, with its function configured in XPoint - the button LED is controlled by a system DIO which is also configured in XPoint
- **Software Controlled** - in this mode the button's function is set up by the E-6 GUI using the EDIT button, as described below - the LED is controlled by the surface and is on while the button is pressed and off when released
- **FLASH** - press this button to make a particular spare button flash - this helps you see which button you are programming
- **EDIT** - this button is only active when the spare button mode is "Software Controlled" - in all other modes it is grayed out - when active, this button brings up the Monitor - Pgm Button Y form.



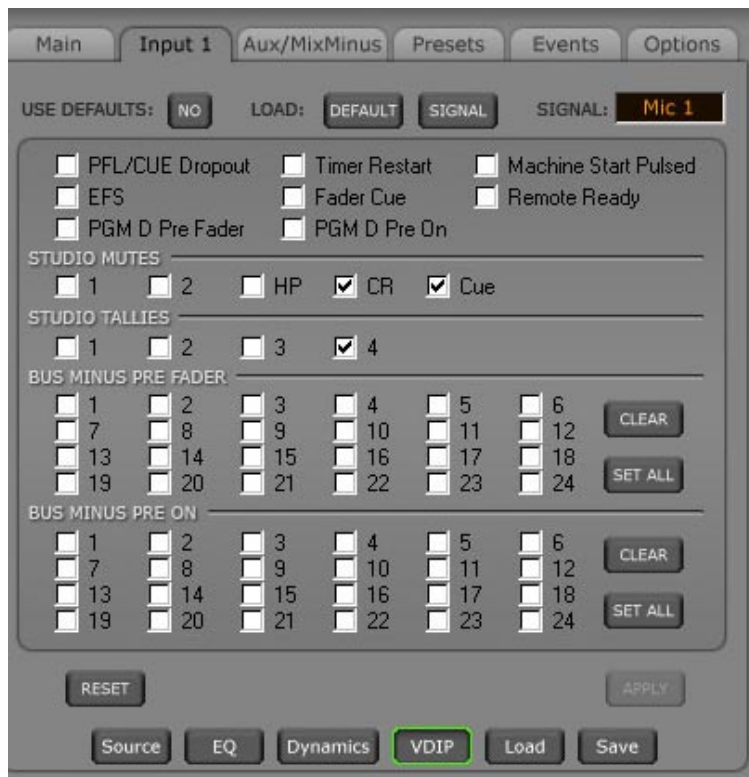


## VDIP Settings

Many surface functions, such as Mute, Tally, and Machine Start Pulsed, are programmed from the VDIP Screen. VDip settings are attributes of the Source signal and will follow the signal onto different faders of the same console or even other surfaces, depending on how it is programmed. You may configure VDip from the E-6 directly or by using the VDip dialog box in XPoint software. It is convenient to configure VDip right on the E-6, but you may have to use XPoint if you have other surface models.

To configure VDip on the E-6, first make sure that the source you need to program with VDip is assigned to an input fader. Press the fader's SET button and the *Input* Tab will open to the last screen used. Select VDip from the Button Bar at the bottom. Make sure USE DEFAULTS is NO if you want this signal to work differently than the default settings, and then simply check the functions for this signal. If USE DEFAULTS is set to YES, that signal will use the default settings. Once you have the settings you want, click APPLY.

To load other signals you want to change the settings of, press another fader's SET button or click the SIGNAL button and choose which signal to load from the Signal List.





Click **DEFAULT** to change settings you want to be the same for ALL signals. The default settings form then shows the default values used for any signal unless specifically overridden. If you have made changes and then decided you don't want to put the changes into effect, click **RESET**. This will cancel any changes you made since entering the screen or since clicking **APPLY**, whichever happened most recently.

**PFL/CUE Dropout**—When a channel's CUE button is pressed it will assign the channel's signal to the CUE bus. When "PFL/CUE Dropout" is checked it causes the channel's CUE function to be de-activated whenever the channel ON switch is pressed.

**EFS**—This function causes the channel to be OFF when the fader is fully down or ON when the fader is brought up from the fully down position. The ON and OFF switches can still control the channel.

**Fader Cue**—Assigns the signal to the Cue bus when the fader is moved all the way down. The CUE button can still be used to change the CUE status.

**PGM D Pre Fader**—When checked, causes the signal, when assigned to the surface's PGM D output, to be tapped before the fader.

**PGM D Pre On**—When checked, causes the signal, when assigned to the surface's PGM D output, to be tapped before the channel ON switch.

**Timer Restart**—The surface's digital timer can be programmed to automatically reset to zero and begin counting up when the channel's ON button is pressed. To enable this function the **AUTO** button in the timer section of the Monitor Panel has to be activated.

**Machine Start Pulsed**—This setting allows you to correct for differing source machine ON/OFF control signals to the input channel. The input channel will work with most standard source machines. Occasionally, the source machine, because of the way it is designed, will send overly long control closures to the channel's remote ON and OFF ports - closures so long that they will hang up the module's ON/OFF logic. When this kind of problem manifests itself, setting to "Machine Start Pulsed" will convert the closures to pulses before they get to the channel ON/OFF switch logic.

**Remote Ready**—The channel's OFF switch normally has its LED indicator controlled by the switch itself. This is the factory default setting. When "Remote Ready" is checked, the channel's OFF switch LED can be controlled by an external source machine. This requires additional configuration in XPoint to fully implement the feature.

**STUDIO MUTES**—Input channels can be programmed to mute the various monitors when the channel is ON. There are five **STUDIO MUTES** checkboxes, one for each monitor section plus one for CUE. The checked boxes show which speakers are muted.

**STUDIO TALLIES**—Turning the channel ON can activate a remote tally indicator. There are four tally control lines. The checked boxes show which tallies are activated. This requires additional configuration in XPoint to fully implement the feature.

**BUS MINUS PRE FADER**—Sets the input signal sent to the Bus Minus system to be pre-fader. If this box is unchecked it is post-fader. **SET ALL** will put checks in all the checkboxes in this area, and **CLEAR** will remove checks from all the checkboxes in this area.

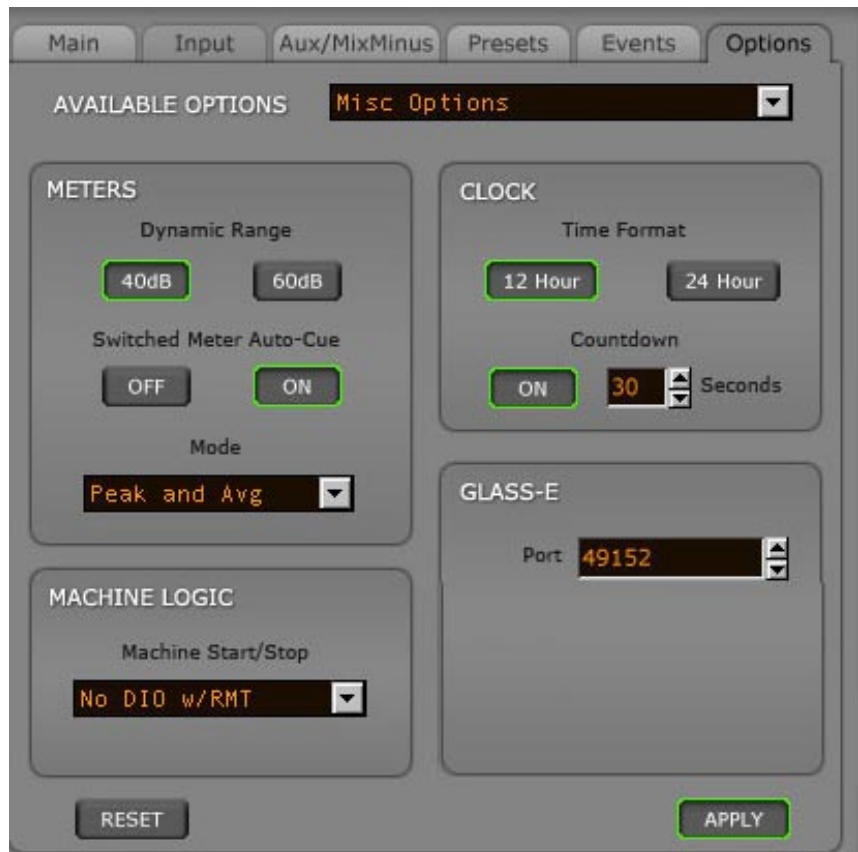
**BUS MINUS PRE ON**—Determines if the input signal sent to the Bus Minus system follows the channel ON switch. If this box is checked the signal is sent regardless of the channel ON status. **SET ALL** will put checks in all the checkboxes in this area, and **CLEAR** will remove checks from all the checkboxes in this area.

## Machine Logic

The surface's start/stop logic options can be selected via the E-6 GUI. Press the *Options* tab and choose Misc Options from the AVAILABLE OPTIONS scroll down list to display MACHINE LOGIC choices.

The purpose of this option is to allow the privileged operator to determine the conditions under which START and STOP signals (referred to herein collectively as DIO signals) are sent in response to a command to turn a channel ON or OFF. Channel ON and OFF commands can come from three different sources:

- Surface - a channel can be turned ON or OFF by a surface action, such as pressing the ON or OFF switch, or moving a fader if EFS has been enabled
- Remote (RMT) - a channel can be turned ON or OFF by sending it a command from a system Logic I/O card via the RemOn and RemOff functions, configurable from within XPoint



- Automation Control Interface (ACI) - various automation systems are capable of sending ACI signals to the system via Ethernet to turn channels ON and OFF (and perform other functions as well).

There are four possible start/stop options:

**DIO Always**—START and STOP (DIO) signals are always sent in response to channel ON and OFF commands, regardless of the source.

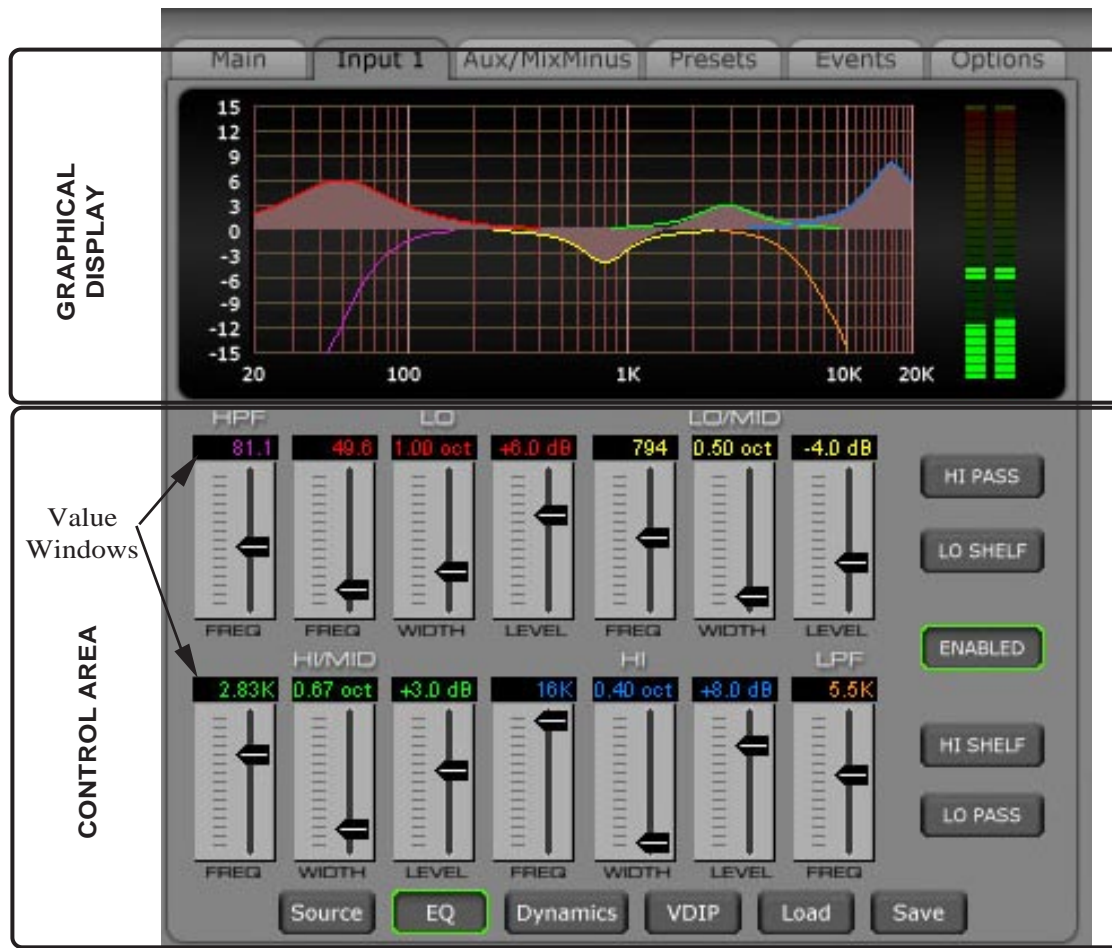
**No DIO w/ACI**—DIO signals are blocked if the channel ON and OFF commands are from an automation system (ACI).

**No DIO w/RMT**—DIO signals are blocked if the channel ON and OFF commands are initiated from a system Logic I/O card.

**No DIO w/ACI or RMT**—DIO signals are blocked if the source of channel ON and OFF commands is either automation or Logic I/O.

Note that DIO signals are always issued if the corresponding channel ON or OFF command is initiated by a surface control.

## EQ Controls



Press a fader’s SET button and the *Input* Tab opens. Click the EQ button on the Button Bar at the bottom of the Input screen to display the EQ screen.

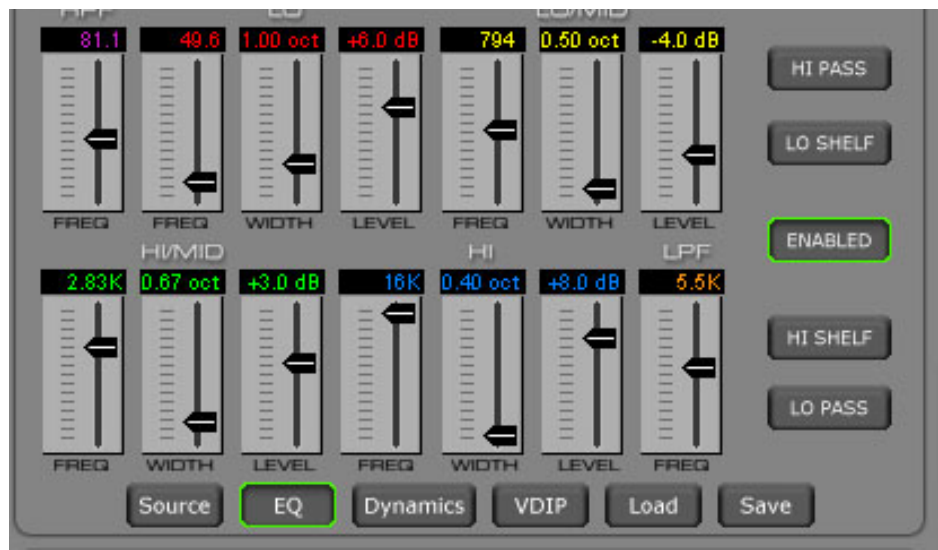
To change parameters in the Control Area, click on the *Value Window* for the parameter you wish to change. Then use the INPUT SOURCE knob on the Master Panel to turn the value up or down as desired. You can also click on the parameter’s slider and move it up or down.

In the upper part of the screen are the graphical EQ display and VU meters. The standard audio frequency of 20Hz – 20kHz is ranged in logarithmic form across this graph with gradations at salient frequencies. The vertical axis scale range is -15dB - +15dB, with gradations every 3dB.

The level meter is a dual-indicating peak-over-average, with peaks riding as a lone “dot” over a solid bar-graphed average. An “Over” indication is at the top of the input level bargraph.

The EQ system consists of a four-band parametric EQ with low band and high band PEAK/SHELF switching, plus variable frequency high and low pass filters. As any of the controls are adjusted, a real time graphic display shows the resulting frequency response curves.

Reasonably conventional parametric sections are employed, with +/- 14dB lift and cut capability, centre-frequency sweepable over the range of 16.1Hz to 20.2kHz, and a filter sharpness (Width) sweepable between 0.2 and 3.0 octaves. The LOW and HIGH bands also have a shelving function. The entire EQ is switchable in or out (ENABLED switch).



## Filter

**HPF (High-Pass Filter)** - This is a 24dB/octave variable high-pass filter with Butterworth characteristics, tunable between 16.1Hz and 500Hz, and with a separate in/out switch (HI PASS button). The relatively high order of filter is necessary to allow definite and decisive removal of unwanted low-frequency artifacts (air-conditioning rumble, line hum, traffic, or footstep impacts) with minimal effect on the required program.

**LPF (Low-Pass Filter)** - This is a 24dB/octave variable low-pass filter with Butterworth characteristics, tunable between 1KHz and 20.2KHz, and with a separate in/out switch (LO PASS button). This filter is used to remove unwanted high frequency artifacts (noise, squeaks, etc.) with minimal effect on the required program.

## Low and High Shelving

The high and low “shelving” EQ sections are designed to correct for real or subjective lack in low or high frequency energy in the program material.

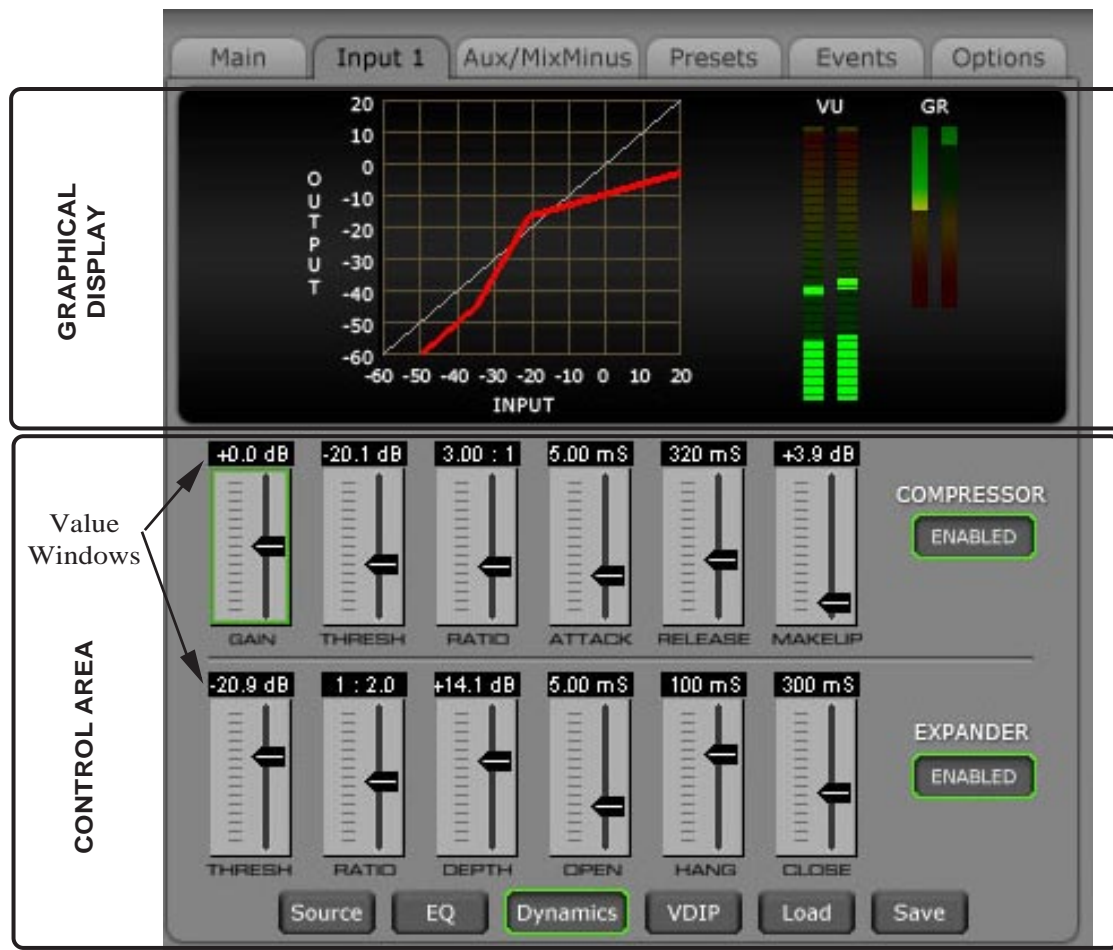
The low shelver (activated by the LO SHELF button) at the lower end of its range, will enable specific kick-drum or bass guitar elements of a source to be balanced with respect to the rest of the source; at higher frequency settings it acts progressively more as a conventional “bass” control.

Similarly, at lower frequency settings the high shelver (activated by the HI SHELF button) acts as a conventional “treble” control; as the frequency is raised the effect is confined to progressively higher frequencies, allowing “sizzle” or “sparkle” to be (re)introduced without adding the harshness that a corresponding rise in high-mid frequencies would introduce.

At mid-point frequency settings the shelvers reasonably emulate the classic “Baxandall” style tone control, noted for its ease in rapid correction of tonal imbalance.



## Dynamics Processing Controls



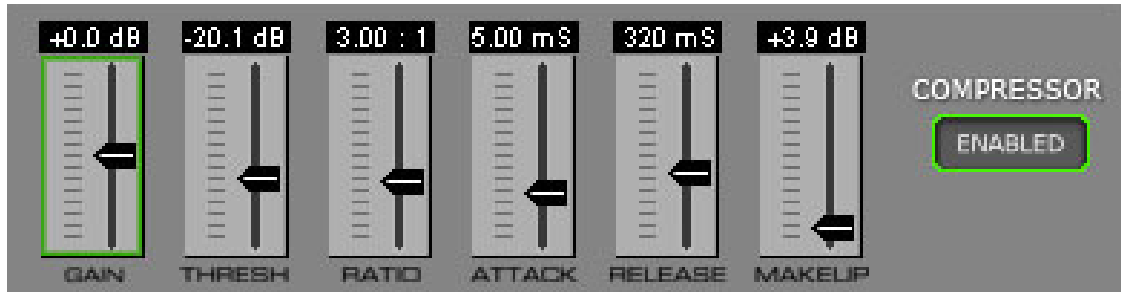
Press a fader’s SET button and the *Inputs* Tab opens. Click the Dynamics button on the Button Bar at the bottom of the Input screen to display the Dynamics control section.

To change parameters in the Control Area, click on the *value window* for the parameter you wish to change. Then use the INPUT SOURCE knob on the Master Panel to turn the value up or down as desired. You can also click on the parameter’s slider and move it up or down.

In the upper part of the screen are the graphical dynamics display that shows an input/output transfer function plot, and VU and GR meters.

The level meter is a dual-indicating peak-over-average, with peaks riding as a lone “dot” over a solid bar-graphed average. An “Over” indication is at the top of the input level bargraph.

## Compressor Settings



The compressor algorithm used in the E-6 is designed to:

- prevent really ghastly noises from being achieved too easily;
- allow smooth, inaudible, and unobtrusive level control on uneven sources;
- be able to act as a peak limiter for inadvertent overload control;
- enable deep effects if required.

The E-6 compressor section is a compound of many diverse dynamics elements.

The level detector is a pseudo-RMS averaging type with its own symmetrical-in-time attack-and-release characteristic adjustable between 0.1mS and 330mS (“Attack” control). At the slower end of its range, by itself it achieves a nouveau-classic “dbx” style syllabic-rate level control. As the time-constant is shortened, it becomes progressively shorter in relation to the lower audio frequencies themselves; the effect is to turn the detector into more of a peak-level detector, necessary for limiting or wilder effects. A secondary effect at intermediate to fast attack-times is that low frequencies are peak sensed while high frequencies are average sensed, resulting in an effective high-frequency bias (up to as much as 6dB differential) which helps to mitigate the detrimental limiting effect of the resulting audio seeming “bottom heavy” that is normal to most compressors.

While the overall gain-reduction scheme is “feed-forward,” the heart of the detector stage itself is a feedback limiter; this allows for this carefully-contrived loosely-damped servo-loop to permit far more interesting dynamic effects than the analytically perfect but deathly boring deterministic classic feed-forward detection schemes typically afford.

The compressor is “soft-knee,” meaning the compression ratio increases slowly with increasing applied level, greatly easing the sonic transition into full compression; it helps avoid the “snatching” and “pumping” at threshold that many “hard-knee” dynamics units exhibit.

A full range of controls is available to affect the compressor’s behavior:

**COMPRESSOR** — A switch that allows the compressor to be enabled and disabled.

**GAIN** — controls the input gain of the signal on this fader. For Mic input the range is from 20dB to 80dB; for Line level input the range is from -18dB to +12dB.

**THRESH** (-40.0dB - +10.0dB) — Threshold, the level above which gain reduction is applied.

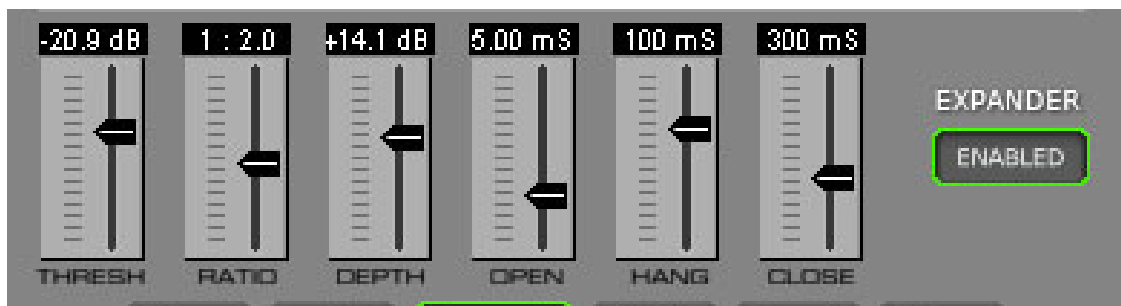
**RATIO** (1.00:1 - 20.0:1) — The proportion by which a signal exceeding the threshold is reduced in level. “3:1” means that a change in signal level above the threshold by 15dB will be reduced to only a 5dB change in level.

**ATTACK** (0.10mS - 330.0mS) — How quickly the compressor responds to a signal exceeding the threshold.

**RELEASE** (50.0mS - 3.000 S) — The speed with which the compressor recovers as the exciting input signal reduces or disappears.

**MAKEUP** (0.0dB - 36.0 dB) — When fairly deep compression is invoked (large gain reduction) it can be necessary to increase the compressor’s output level back up to nominal system signal level; up to 20dB of output gain is available to allow this.

## Expander Settings



An expander is a useful tool for reducing unwanted background noises. These could be variously air-conditioning rumble or noise, background conversation, phone-line noises, recording hiss, etc. It is also useful for reducing the inevitable general increase in background noise of some recorded material when subject to heavy compression. A common usage in live sound is to effectively turn a microphone off when not being talked/sung into, so as to reduce corruption of a mix or reduce the chances of feedback with an unwanted open microphone.

The expander is slightly counter-intuitive when first encountered, in that unlike nearly any other processing element it is active - i.e. working, attenuating away the input signal - when the input signal is at its quietest, at or below the threshold. If the expander is on, there will be gain reduction when no signal is present. The gain-reduction reduces as the threshold is approached, and there is none above the threshold.

The controls are:

**EXPANDER** — A switch that allows the expander to be enabled and disabled.

**THRESH** (-60.0dB - 0.0dB) — The level below which the automatic attenuation starts to take effect.

**RATIO** (1:1.0 - 1:5.0) — The proportion of how many dB the input signal is attenuated for every dB it drops below the threshold. 1:3 indicates 18dB loss for 6dB drop in input signal level.

**DEPTH (0.0dB - 40.0dB)** — The maximum amount the expander is permitted to reduce the input signal level.

**OPEN (1.00mS - 100.0mS)** — The time-constant of the rate at which the expander un-attenuates, or opens; sometimes called “attack”.

**HANG (0.00mS - 1.000S)** — An adjustable period of time the expander remains open without attenuating, before starting to close. Handy to keep the expander open during, say, speech inter-syllables or other short pauses, without having to resort to excessively long...

**CLOSE (50.0mS - 3.000S)** — ... close times, being the rate at which the expander attenuates away the input signal once below the threshold.

A graphical input/output plot at the top of the Dynamics screen shows the combined effects of the compressor and expander on the signal.

Almost always, the trick is to set the threshold of the expander - below which it starts to attenuate away the input signal - high enough to capture the noise, but not too high as to snatch at the lower levels of the desired parts of the program material. That can sound really irritating.

Sometimes the gain reduction is required to be subtle so as not to draw attention to the fact that the expander is in operation; under these conditions shallow expansion ratios, such as 1:1.5 or 1:2 are preferred, as are restricted depth - 6dB, or 10dB, is plenty and makes a substantial subjective improvement to the noise.

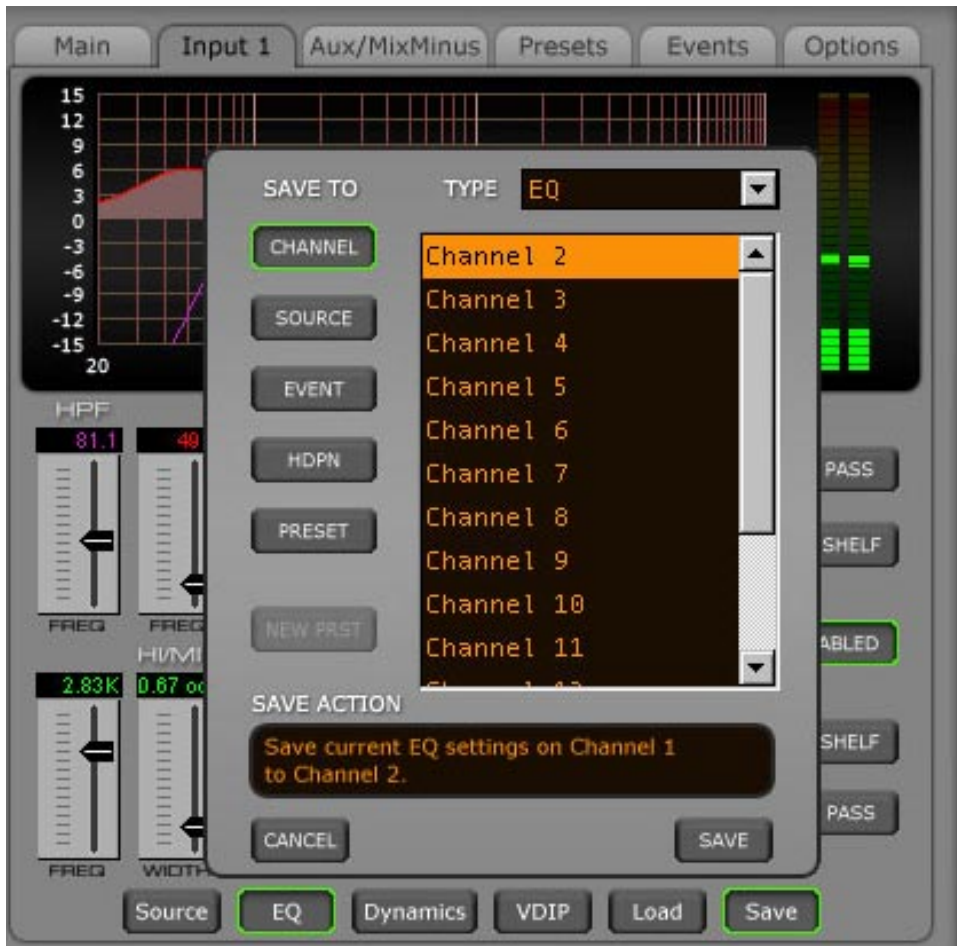
These, too, are the kind of settings used for another application of an expander: effectively shortening an excessively long room reverberation time, or an instrument's ring-out that is overly persistent. In these cases the threshold is set somewhat higher, well up into the desired audio levels - in this way the attenuation becomes part of the overall sound, but the gentle ratio prevents a sense of anything “odd” happening. Again, relatively shallow depths of 12dB or so are plenty to achieve the desired effect.

More aggressive expansion, or “gating”, is accomplished with steep ratios (1:3, 1:5) and with shorter open and close times than for “unobtrusive”. It is still best not to go overboard with depth - even just 14dB, 20dB tops, is enough to make a signal “disappear” in the context of a mix; the whole gating sound, especially surprisingly its opening, is less obvious with shallower depth. Sometimes the “Surprise!” element is required, though, for effect.



## Save Option

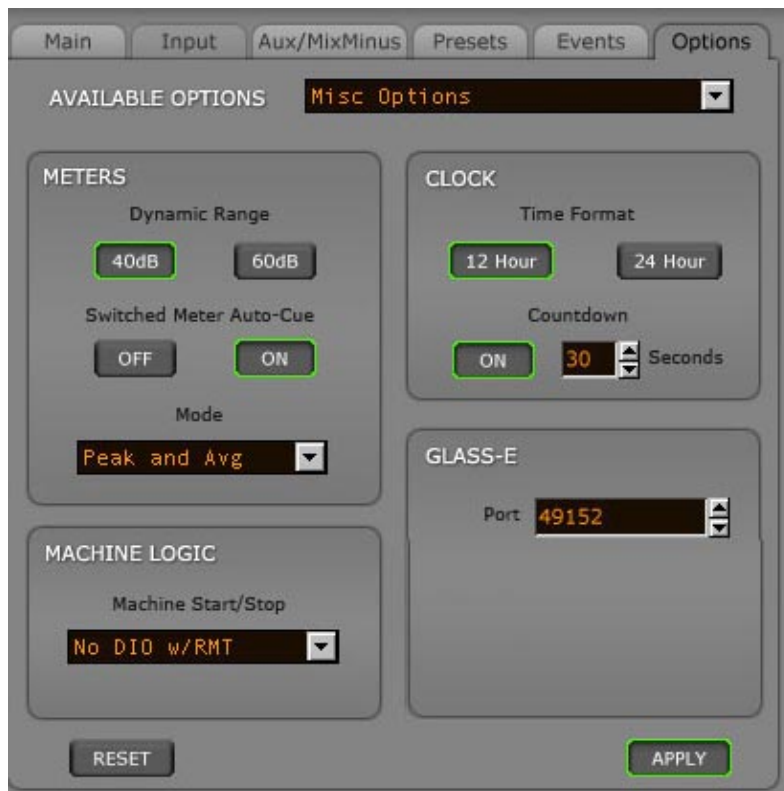
The user can save all adjustments for the compressor, expander, and equalizer with the SAVE button. Pressing the SAVE button will bring up the “SAVE TO” form that allows all changes to be saved to a channel, a source, an event, the headphones, or a preset.



## Optional Glass E Interface

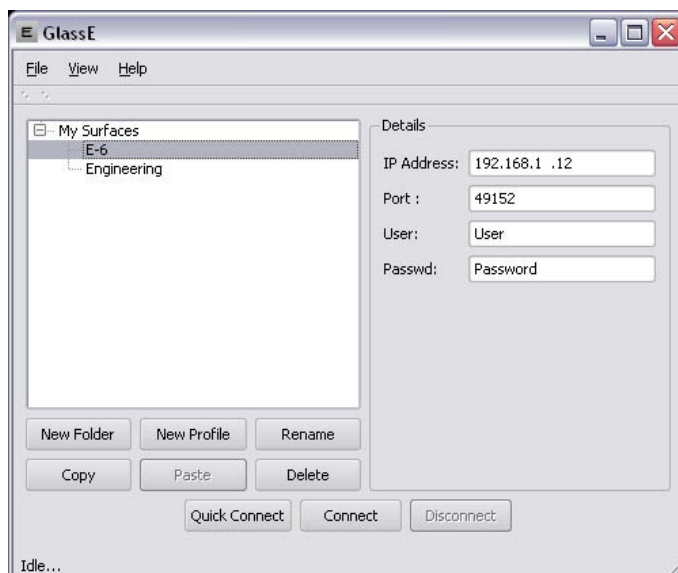
Wheatstone offers the optional PC-based software, called “Wheatstone Glass E Virtual Control Surface,” that controls the E-6 surface from a remote PC. The Windows XP-based PC software accesses remotely through a LAN/WAN. It brings studio control surfaces anywhere in the world under remote control of an internet-connected PC. Glass E is a graphical replication of the control surface to which it is assigned. All surface functions and features are accessed by the Glass E. The surface presets, system X-Y access, system programming, and configuration are password protected.

Before you can run the GLASS E software to control a particular surface, that surface needs to be set up to allow the Glass E interface to function. In the E-6 GUI press the *Options* Tab and choose Misc Options from the AVAILABLE OPTIONS scroll down list to display the screen that has the Glass E interface options.



Enter a Port number (the default is 49152), a Username, and a Password (see the example screen above), then click APPLY. The surface is now ready to host a link to the Glass E software.

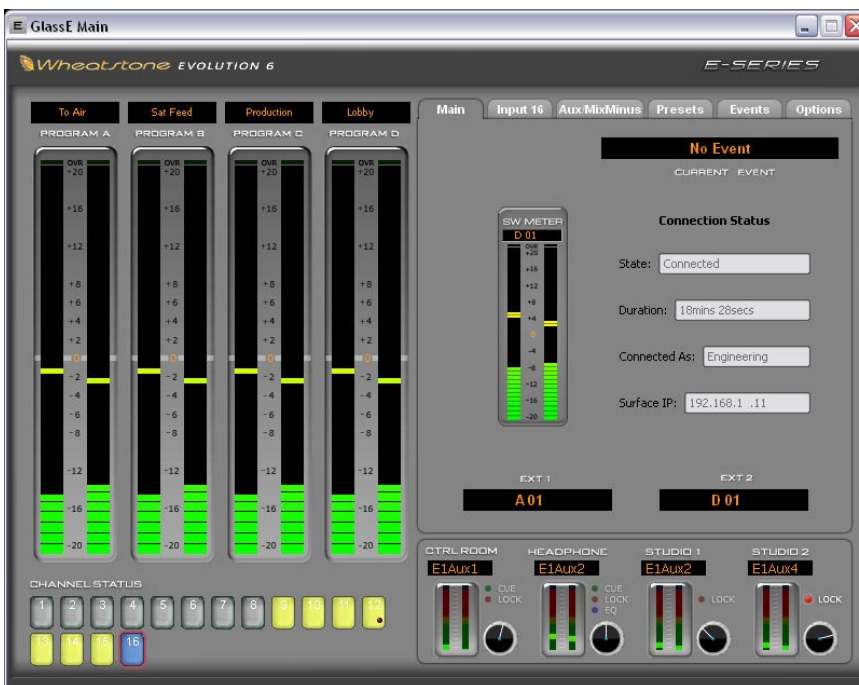
On the PC that’s running the Glass E software, start the software. You should see the following screen:



Enter the surface's IP address and the Port, User name, and Password you previously set up at the E-6, and you should then see the following two screens on the PC running Glass E:

The first screen is a duplicate of the E-6 GUI as it appears on the surface's VGA screen. All controls and functions of the GUI that have been described in chapters 2 and 3 of this manual work the same on this Glass E screen.

The second screen is a replication of the actual surface panels, and is operated in much the same fashion as the actual physical controls in the surface.





Meter Labels  
Click label windows to rename

Program meters

Channel Select / Status  
Buttons

Access Authorization

Wheatstone EVOLUTION 6 E-SERIES

TO AIR TO NETWORK Production Lobby

PROGRAM A PROGRAM B PROGRAM C PROGRAM D

OVR +20 +16 +12 +8 +6 +4 +2 0 -2 -4 -6 -8 -12 -16 -20

00:15.6 Morning Show

TIMER CURRENT EVENT

SW METER Fake Air

OVR +20 +16 +12 +8 +6 +4 +2 0 -2 -4 -6 -8 -12 -16 -20

11 12 1 2 3 4 5 6 7 8 9 10

09:59:45 AM

EXT 1 EXT 2

Fake Air Network

CTRL ROOM HEADPHONE STUDIO 1 STUDIO 2

E6PGMA E6PGMA Fake Air Network

MUTE CUE LOCK LOCK EQ LOCK LOCK

CHANNEL STATUS

1 2 3 4 5 6 7 8 9 10 11 12

13 14 15 16

USER: Engineering

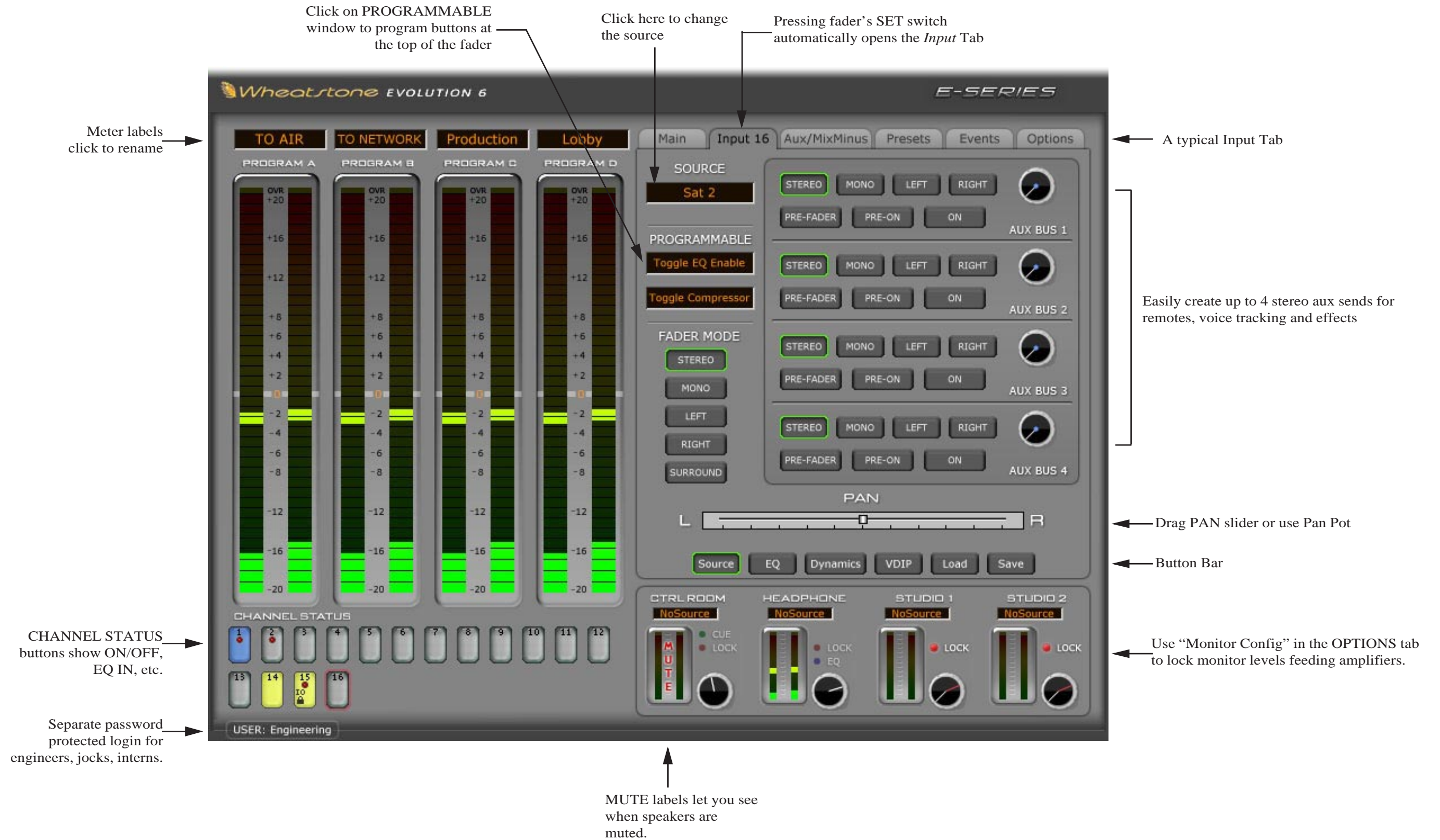
Function Tabs

Functions display:  
Clock, timer, current event, and  
switched meter

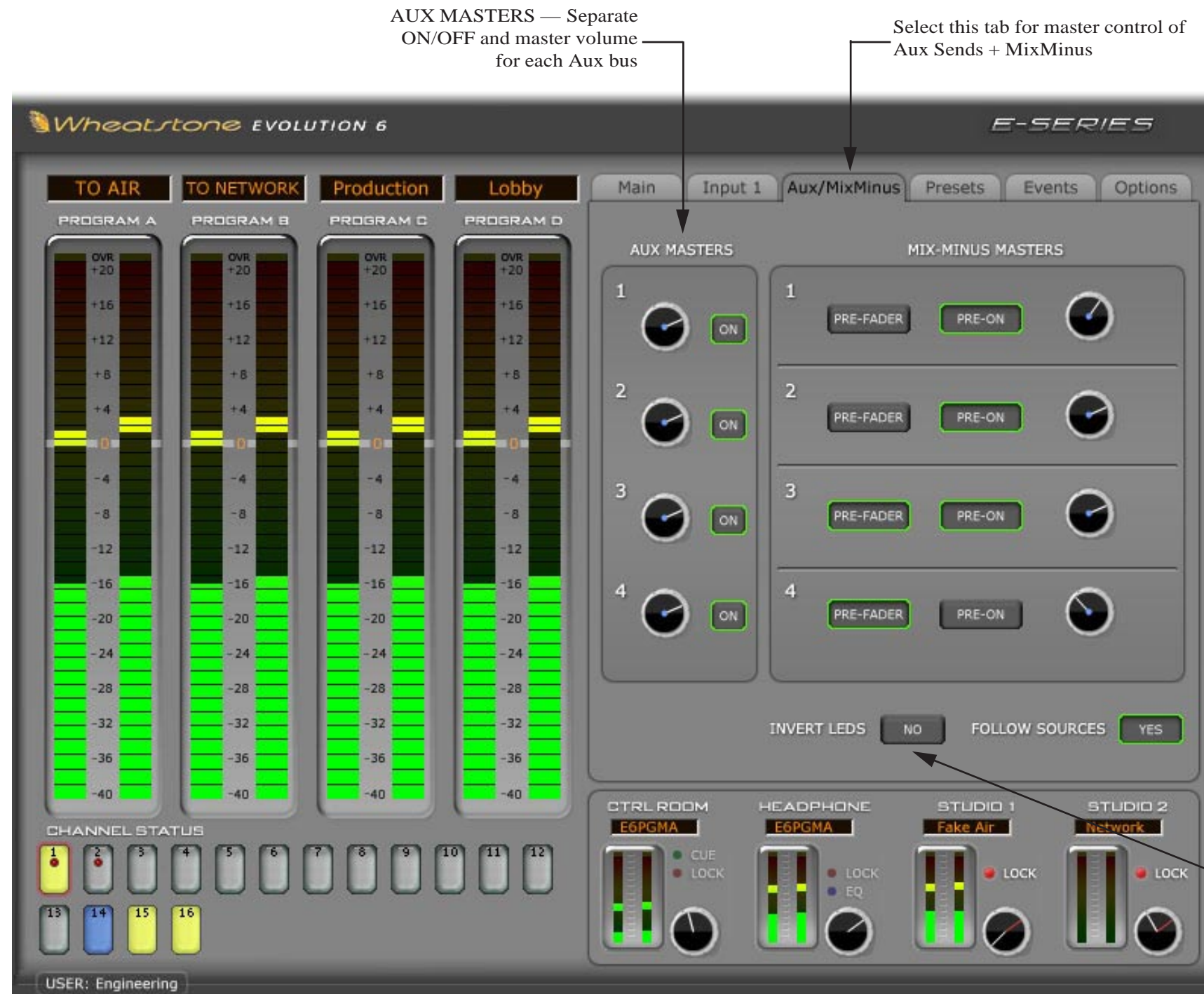
Click on EXT windows to choose source

Monitor Controls





E-6 GUI Input Tab Screen Controls



AUX MASTERS — Separate ON/OFF and master volume for each Aux bus

Select this tab for master control of Aux Sends + MixMinus

Input channel Pre-Fader and Pre-On/Off are global for MXM bus

Adds MXM assign attribute to source signals. For example, if you have a source called ISDN1 and you assign it to MXM 2, 3, 4 but not MXM1, you can move ISDN1 to any fader and it will automatically get assigned to the desired MXM signals — cool!

Invert LED's — When you say YES all input fader sources automatically feed all 4 MXM busses. Now all you have to do is press the MXM assign switch to “drop” a source out of an MXM bus. In this mode, when the MXM LED is lit, the audio on that fader is NOT going to the bus. It is very easy to see which faders are “minused” out.



Wheatstone EVOLUTION 6 E-SERIES

TO AIR TO NETWORK Production Lobby

PROGRAM A PROGRAM B PROGRAM C PROGRAM D

OVR +20 +16 +12 +8 +4 0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40

Main Input 1 Aux/MixMinus Presets Events Options

TYPE EQ SELECTED PRESET flat

COPY FROM CH 1 NEW RENAME

PRESETS

- flat
- Sally's Mic
- Club Mix
- Live Remote
- Bob's Mic

CHANNEL ASSOCIATIONS

- Ch 01 - Bob's Mic
- Ch 02 - Sally's Mic
- Ch 10 - Live Remote
- Ch 12 - flat

DELETE

SOURCE ASSOCIATIONS

- Mic 1 - Bob's Mic
- Mic 2 - Sally's Mic

DELETE

CTRL ROOM HEADPHONE STUDIO 1 STUDIO 2

E6PGMA E6PGMA Fake Air Network

CUE LOCK LOCK EQ LOCK LOCK

CHANNEL STATUS

1 2 3 4 5 6 7 8 9 10 11 12

13 14 15 16

USER: Engineering

Use the TYPE drop down list to pick a category

Click here to open Preset Manager tab

- Use this tab to view, rename, copy presets
- TIP—Use the *Input* Tab and SAVE on the Button Bar to save a new preset

Shows which fader strips have the selected preset applied to them

Shows which sources have the selected preset applied to them



Events Manager tab — “Events” are snapshots of the entire control surface. All faders, switches, sources, EQ, Dyn, etc. are stored and recalled.

← Last event taken

← Event Recall

To recall an event:

- click on event name
- click ARM
- click TAKE
- click UNDO to go back

← Event Editor

This section lets you manage:

- NEW—Save current surface state to a new event.
- SAVE TO—Lets you save current surface state to an existing event.
- RENAME—3 guesses? Just click on the event name, the virtual keyboard opens up.
- DELETE—Just click on the event name, click DELETE and confirm.





Options Manager tab — Provides access to a whole host of system options. Some are self explanatory, but see the Options Details section for details.



Choose fader sources

Press SET on a fader to open main INPUT screen

Setup Programmable Buttons

Use the Button Bar to navigate various input screens

The main console interface features a top navigation bar with tabs for Main, Input 16, Aux/MixMinus, Presets, Events, and Options. The central area is divided into sections for SOURCE (currently 'Sat 2'), PROGRAMMABLE functions (Toggle EQ Enable, Toggle Compressor), FADER MODE (STEREO, MONO, LEFT, RIGHT), and PAN. Below these are four AUX BUS sections (AUX BUS 1-4) with their own STEREO/MONO and PRE-FADER/ON controls. At the bottom, a button bar includes Source, EQ, Dynamics, VDIP, Load, and Save. To the left, a 'CH 1 Input Signals' window lists sources like Mic 1-4, Fake Air, CD, DAT, ISDN, Caller 1-2, Network, Server, NewsRoom, Effects, Sat 1-2, and SURF1. A 'Channel 1 - Pgm Button 1' window lists actions such as 'Take A Source', 'Toggle EQ In/Out', and 'Toggle Compressor'. On the right, a larger console view shows program meters for TO AIR, TO NETWORK, Production, and Lobby, along with a timer, clock, and various control meters.

EQ

The EQ screen displays a frequency response graph with a grid from 20 to 20K Hz. It features three filter sections: HPF (High Pass Filter), LO (Low Shelf), and HI (High Shelf). Each section has sliders for FREQ, WIDTH, and LEVEL. The HPF section includes settings for 81.1 Hz, 49.0 Hz, 1.00 oct, +0.0 dB, 794 Hz, 0.50 oct, and -4.0 dB. The LO section has 2.83K Hz, 0.67 oct, +3.0 dB, 16K Hz, 0.40 oct, +8.0 dB, and 5.5K Hz. The HI section has 2.83K Hz, 0.67 oct, +3.0 dB, 16K Hz, 0.40 oct, +8.0 dB, and 5.5K Hz. Buttons for HI PASS, LO SHELF, and HI SHELF are present. The bottom of the screen has a button bar with Source, EQ, Dynamics, VDIP, Load, and Save.

Dynamics

The Dynamics screen features a graph of OUTPUT vs INPUT. It includes a COMPRESSOR section with sliders for GAIN (+0.0 dB), THRESH (-20.1 dB), RATIO (3.00 : 1), ATTACK (5.00 mS), RELEASE (320 mS), and MAKEUP (+3.9 dB). The EXPANDER section has sliders for THRESH (-20.9 dB), RATIO (1 : 2.0), DEPTH (+14.1 dB), OPEN (5.00 mS), HANG (100 mS), and CLOSE (300 mS). Both sections have 'ENABLED' buttons. The bottom of the screen has a button bar with Source, EQ, Dynamics, VDIP, Load, and Save.

VDIP

The VDIP screen contains several checkboxes for signal processing: PFL/CUE Dropout, EFS, PGM D Pre Fader, PGM D Pre On, Timer Restart, Fader Cue, Machine Start Pulsed, and Remote Ready. It also has STUDIO MUTES (1-4) and STUDIO TALLIES (1-24) sections. The bottom of the screen has a button bar with Source, EQ, Dynamics, VDIP, Load, and Save.

PRESET TYPE EQ

Bob's Mic  
Club Mix  
flat  
Live Remote  
Sally's Mic

CANCEL LOAD

The Preset Load screen shows a dropdown menu for PRESET TYPE set to EQ. Below is a list of presets: Bob's Mic, Club Mix, flat, Live Remote, and Sally's Mic. At the bottom are CANCEL and LOAD buttons.

SAVE TO TYPE EQ

Channel 2  
Channel 3  
Channel 4  
Channel 5  
Channel 6  
Channel 7  
Channel 8  
Channel 9  
Channel 10  
Channel 11

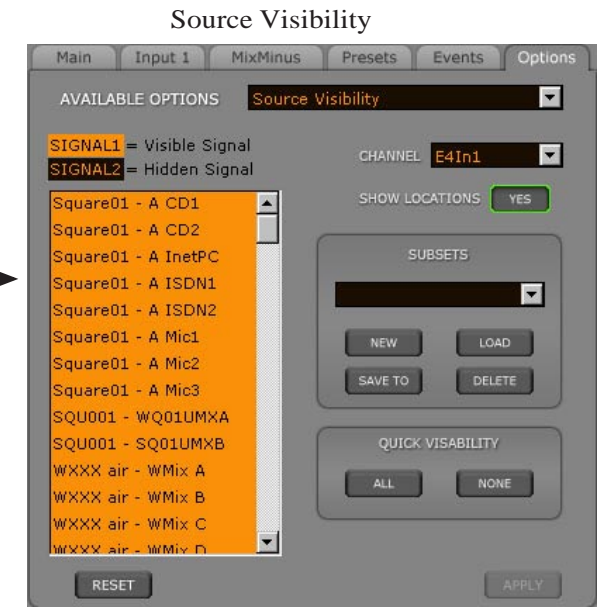
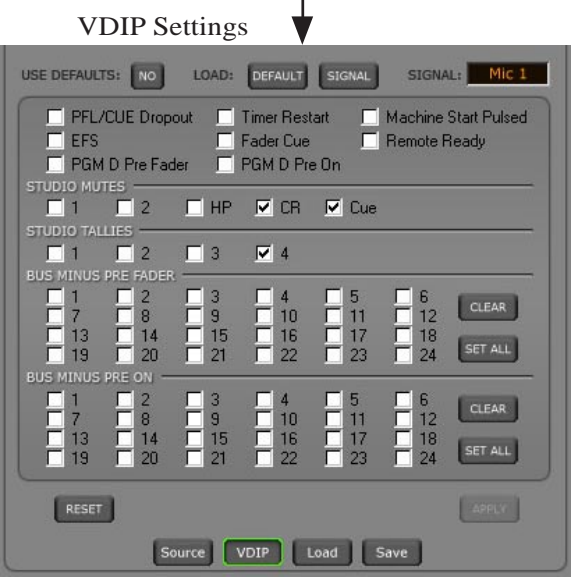
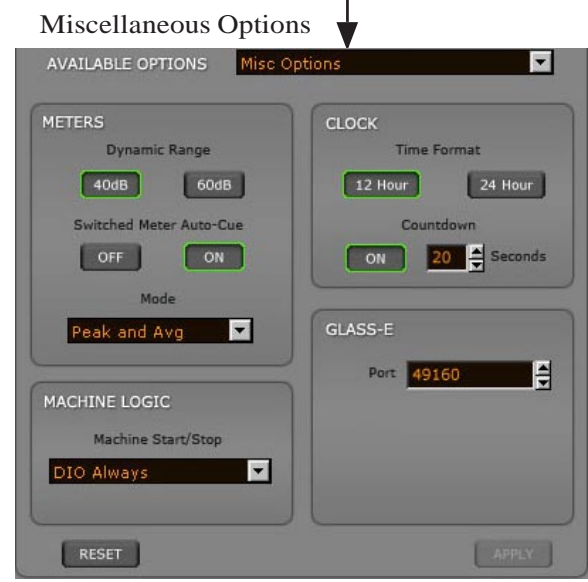
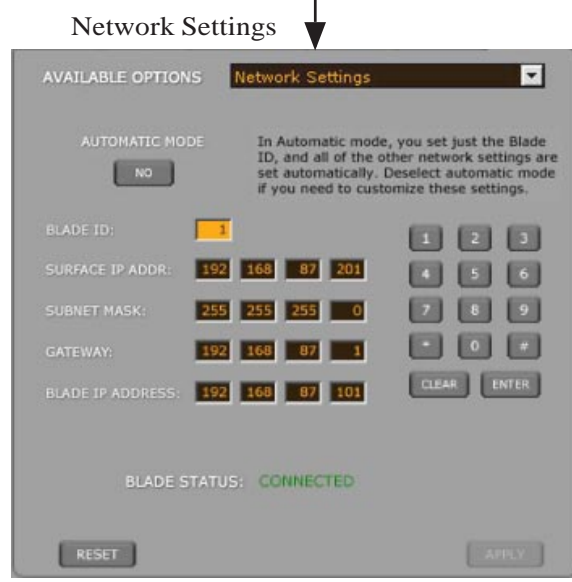
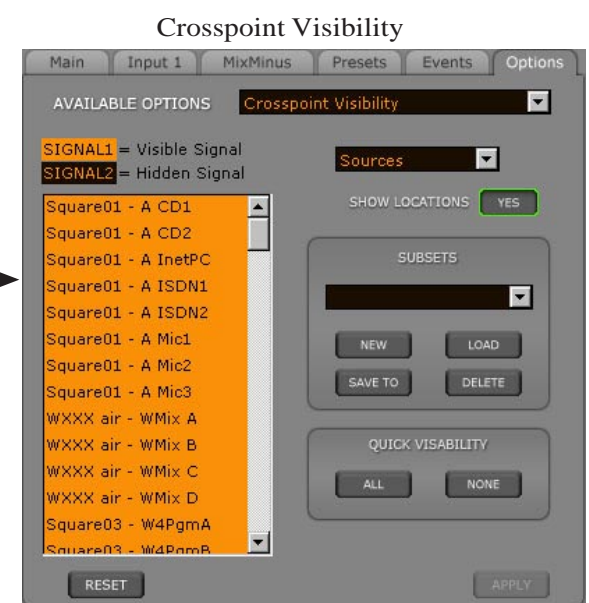
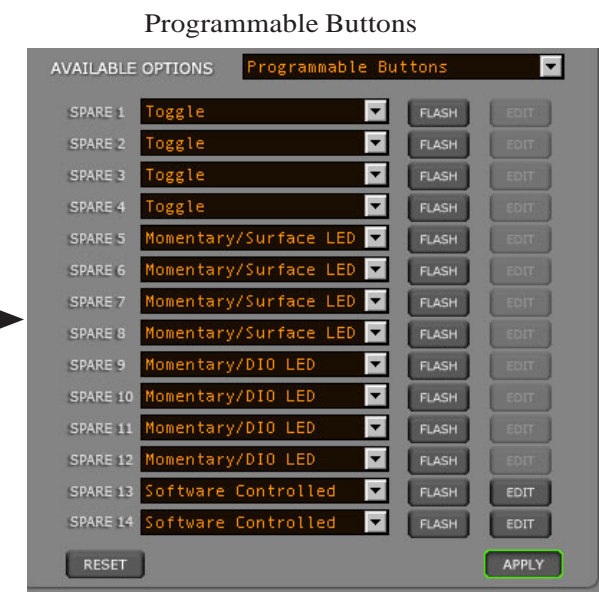
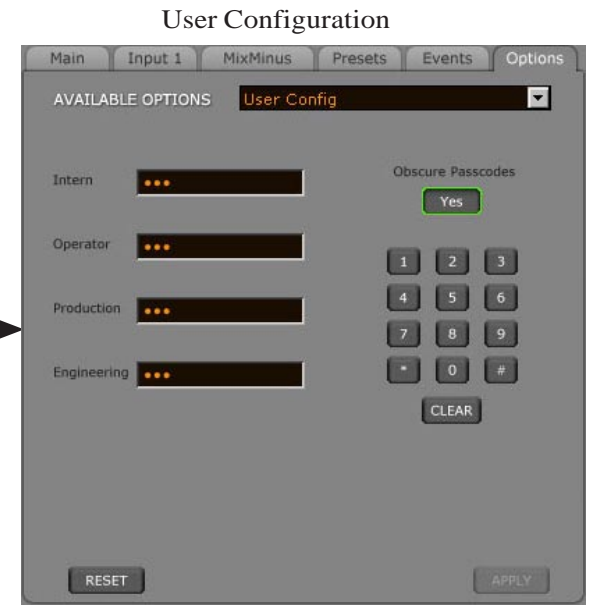
SAVE ACTION  
Save current EQ settings on Channel 1 to Channel 2.

CANCEL SAVE

The Preset Save screen shows a dropdown menu for SAVE TO TYPE set to EQ. Below is a list of channels from Channel 2 to Channel 11. At the bottom, there is a 'SAVE ACTION' section with a text box containing 'Save current EQ settings on Channel 1 to Channel 2.' and CANCEL and SAVE buttons.

E-6 GUI Input Tab Screens





This screen available only for the system with WheatNet-IP engine BLADE.