
E-4 Digital Control Surface

TECHNICAL GUIDE



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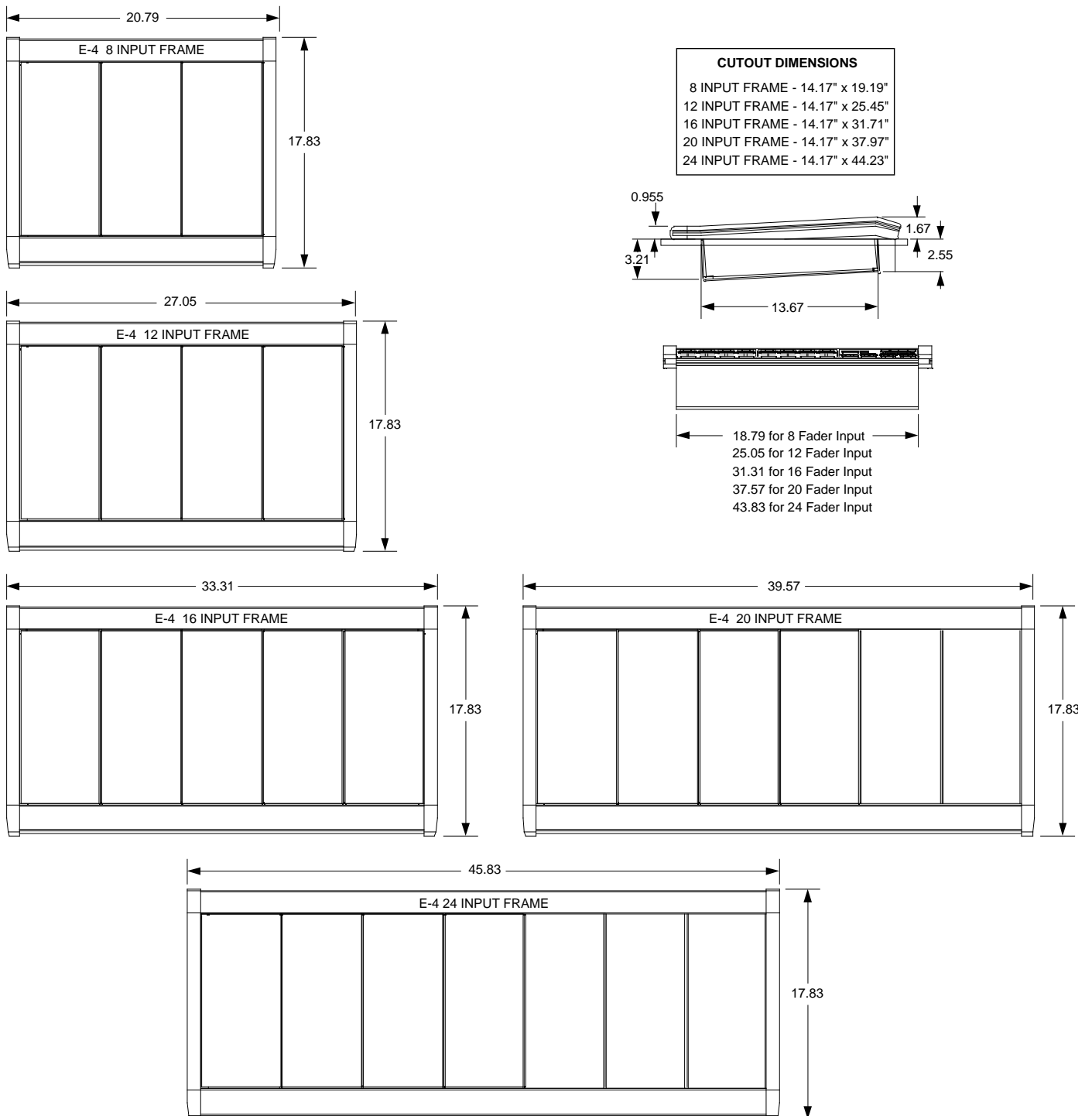
General Information

Introduction

Designed to integrate flawlessly with the E-series Satellite digital audio network router and WheatNet-IP Audio Over IP Network, the E-4 control surfaces allow you to easily create large- or small- platform-based systems that are exceptionally user-friendly and flexible. A simpler version of our E-6 surface, the E-4 control surface carries less features, keeping the control surface simple to use yet giving the operators the features needed for some of the most demanding shows. Four mix output buses, four mix-minus buses, and individual fader bus minus with talkback are some of the standard features. The E-4 also has event recall, three monitor outputs, and pan, mode, and phase reverse for each channel. It supports multiple arrays of programmable input channel and master panel switches for customized functions like phone, intercom, salvos, or machine commands. The E-4 drives a user-supplied VGA monitor display, via the Embedded E-4 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-4 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.



Getting Started

The E-4 control surface comes with the E-4 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. A serial or PS-2 mouse may be used for navigation (mouse port provided on the rear of the surface).

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

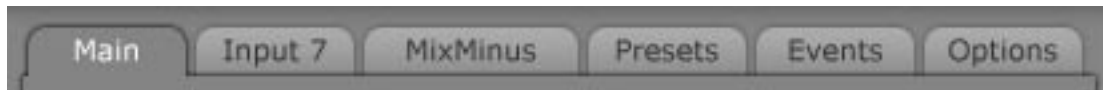
When the surface boots, it enters the log in level that was last accessed. Look in the lower left corner of the VGA screen to see the button that display the current ACCESS AUTHORIZATION level. Pressing this button opens the PASSCODE ACCESS window. Select a user level - *Intern, Operator, Production, or Engineering*- with the mouse, 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-4 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-4 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 window, Mode, and Pan 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*, *VDip*, *Load*, and *Save* to access these features, described later.



MixMinus Tab - displays controls for the four Mix-Minus Outputs.

Presets Tab - the E-4 includes the ability to save, copy, and paste the channel’s settings. Settings are stored as Presets. The Preset Pane allows you to manage and apply presets to Sources and faders.

Events Tab - the E-4 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-4 for your application.

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

Input Panel (IPE-4)

Controls and Functions

Each input panel of the E-4 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-4 surface. Here you find easy access to most of the fader strip's parameters. The 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 configuration, 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 window is interactive.

A Button Bar located near the bottom of the *Input* Tab provides for navigation between the SOURCE, 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.

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



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.



Fader Mode Controls and Indicators

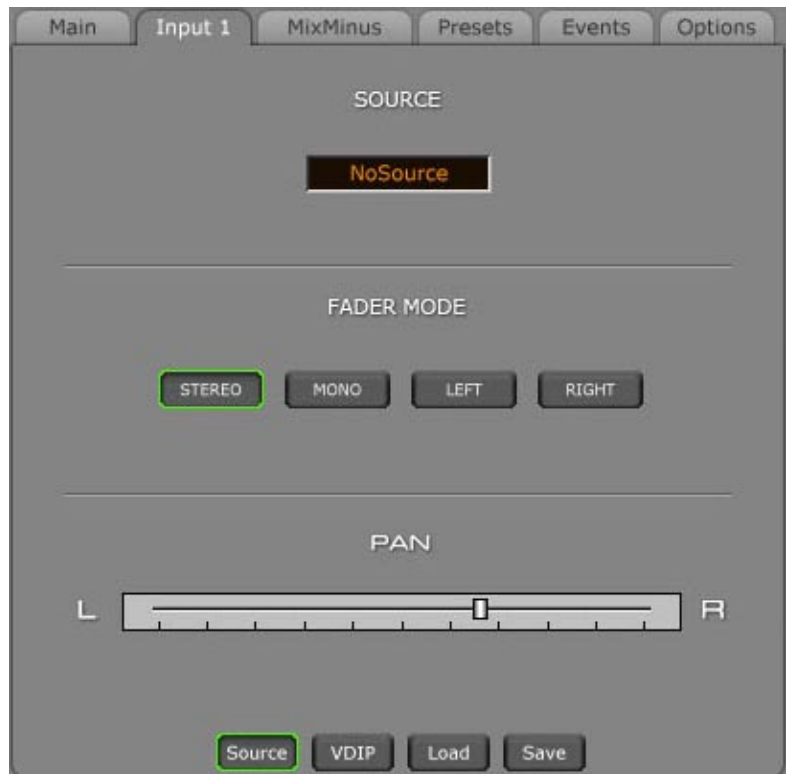
There are four available channel modes: Stereo, Mono, Left only, and Right only. Click on the desired mode and its virtual switch will light.

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.

MONO – selects mono mode. If a stereo source is selected it is summed to mono and reduced by 6dB.

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.



Pan

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

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.



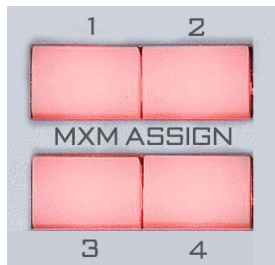
Other Physical Switches and LEDs

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-4 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 3-6).

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.

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.



Master Panel (MNE-4)

Controls and Functions

The E-4 digital audio control surface is equipped with one MASTER panel. This panel contains numerous controls, including INPUT SOURCE select, PAN, and CUE controls, MXM ASSIGN buttons, TIMER control buttons, four PROGRAMMABLE buttons, and three MONITOR sections with buttons to select PROGRAM sources, plus two additional EXT (programmable) sources, as well as level controls. Add to that a separate TB button for each MXM and for STUDIO monitor, and a group of seven switches to deal with various operational modes.

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 as a Source signal selector for fader strips.

- 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 the selected channel. When the desired input source is scrolled into the SOURCE window, pressing

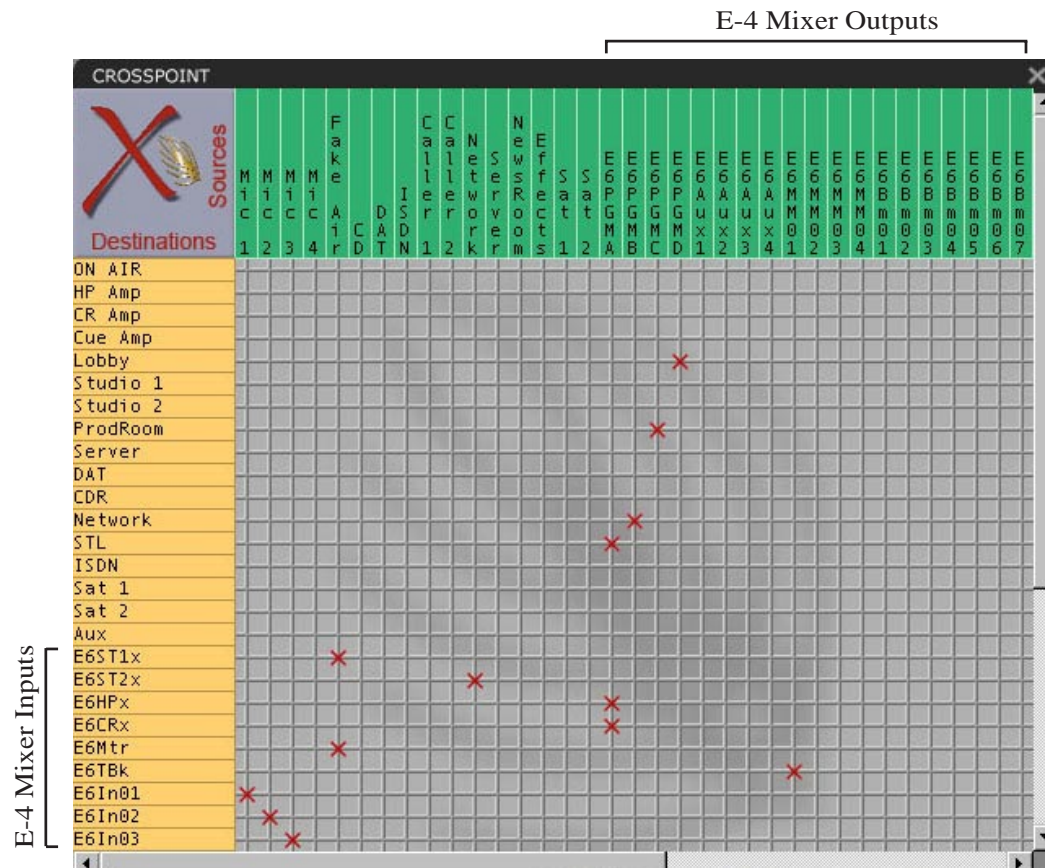
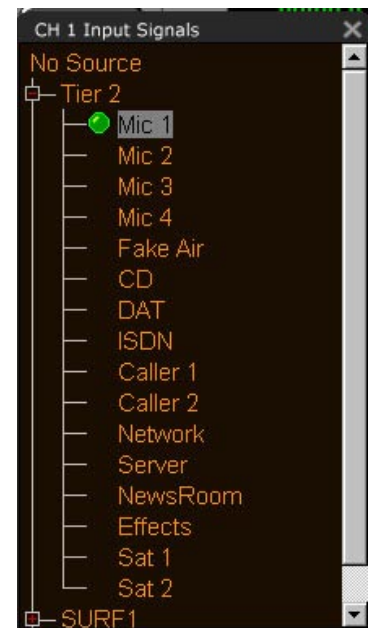


the INPUT SOURCE knob will cause that source to be switched to the input of the channel. If you fail to press the knob, the display will revert to its original setting after a timeout of approximately 4 seconds, and the original source remains in effect. Note you can also simply click in the SOURCE window on the Input Tab, or press the INPUT SOURCE knob on the Master panel, and select the desired Source from the signal list.

- When no SET button is pressed, pressing the INPUT SOURCE knob will open a screen showing a full list of input sources and locations for quick source selection on a fader, or for making other connections within the system. This operation may be denied to a user in the Access Authorization settings.

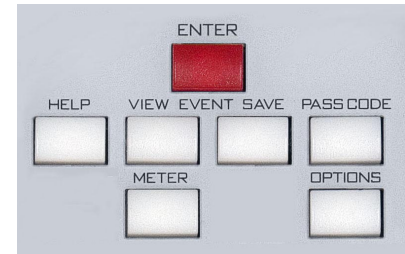
Sources can also be selected in the XPoint program.

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, 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.



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.

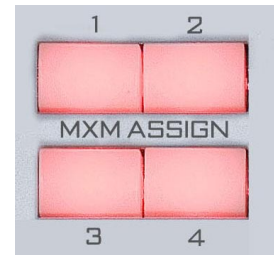
You can change the channel you are affecting visibility on by selecting the desired channel in the channel drop down box.

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 3-15).

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

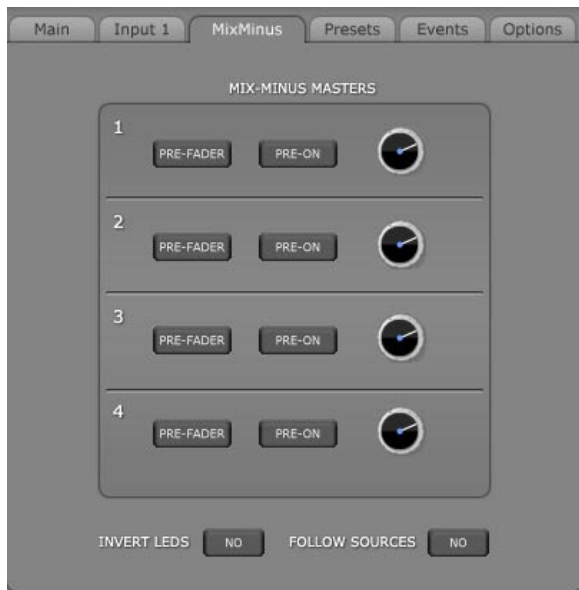


MXM Master Controls

Click the *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 PRE-FADER 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-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.

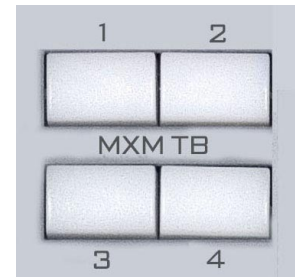
FOLLOW SOURCES - This setting is used to activate the MXM follow attribute for source signals. When set to NO, the MXM assignments made at the fader strip “stick” with that strip no matter which source is selected. Choosing YES causes the MXM bus assign settings to “stick” to the Source signal selected 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-4’s built in Route function. The TB signal may be any Source signal in the router, including any MXM bus. The E-4’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-4. 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-4 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-4 panel has the controls for three monitor outputs: CONTROL ROOM, STUDIO, 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, as well as two program-mable EXT buttons. There is also a TB button in the STUDIO section. Each monitor output has options for Muting, Locking the output level, and interrupting the output with Cue audio.



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, and two programmable sources (EXT 1 and EXT 2). 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 monitor select bank, the buttons really only represent two stored signal choices. All three EXT 1 switches are mapped to one source, and the three 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-4 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.

Studio Section

The Studio output section has a dedicated source select bank, metering, and a level knob. Microphones located in the studio are normally programmed using VDip to MUTE the 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. The Studio level control may be locked to a user defined volume level (see the E-4 Monitor Options section below).



Talkback to Studio

The 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-4's built in Route function. The TB signal may be any Source signal in the router, including MXM busses. The E-4'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-4. You can use Programmable Buttons to momentarily route other sources to the Studio output.

E-4 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 Studio. 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.



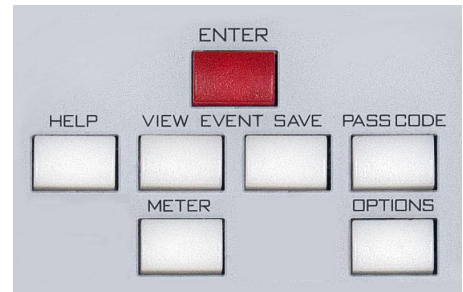
Events

The E-4 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.

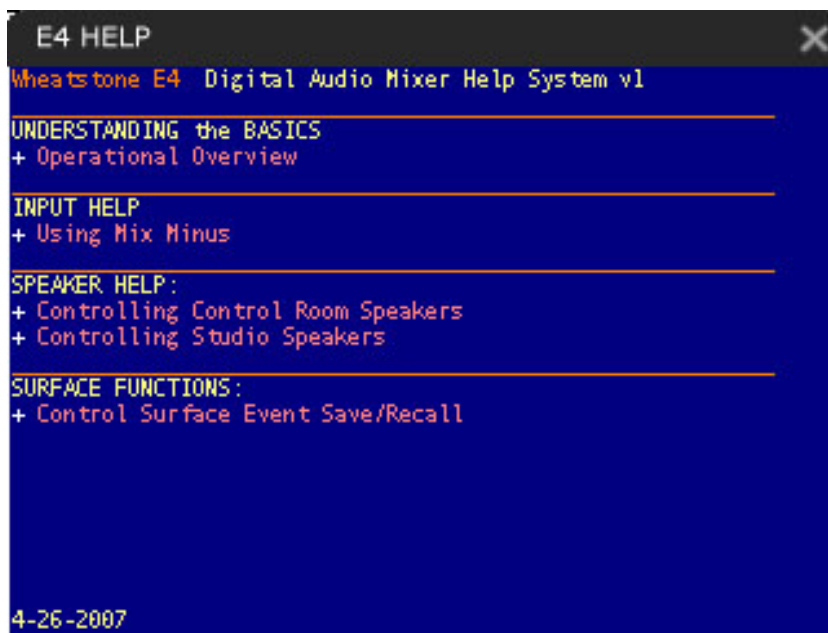
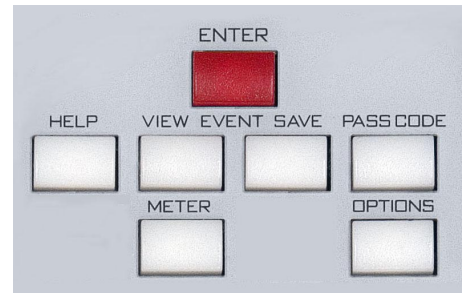


Enter Button

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.

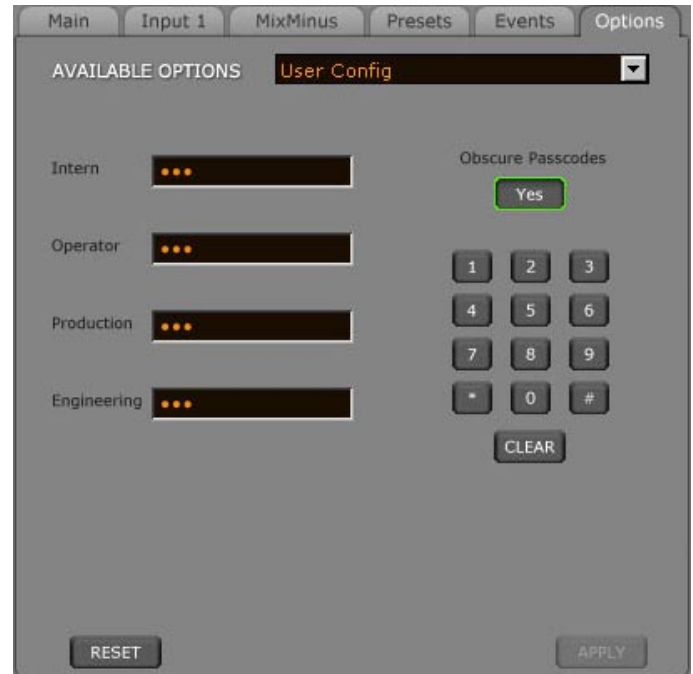
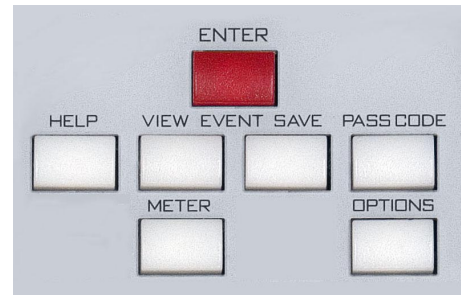
Help Button

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-4 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.



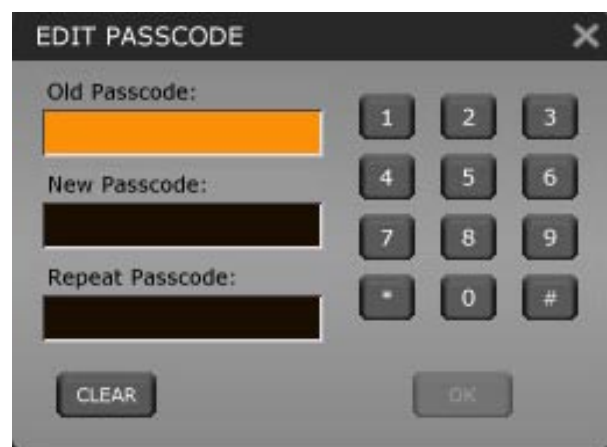
To log in to a given mode, press the button on the lower left corner of the VGA screen that displays the current ACCESS AUTHORIZATION level.



ACCESS AUTHORIZATION

This brings up the PASSCODE ACCESS dialog box. 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.

Presets Tab Functions

TYPE - this drop down category list lets you select the preset type: Mode, Pan, 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 **PRESET LOAD** screen. Choose the **PRESET TYPE**, highlight the desired preset, and press **LOAD**.

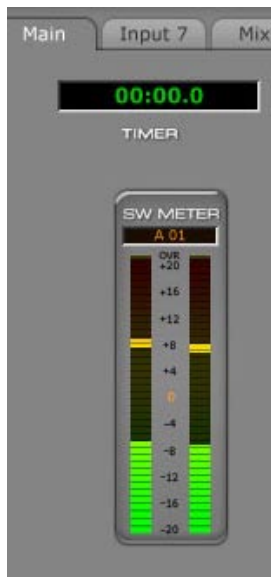
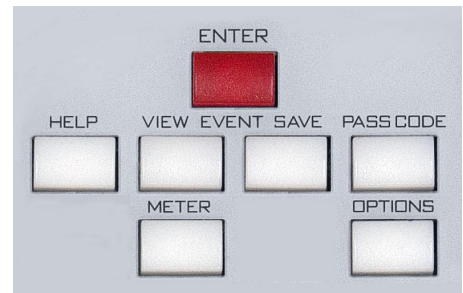


Save

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 *Options* Tab allows you to turn off Auto-Cue to this meter.

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-4 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-4 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.



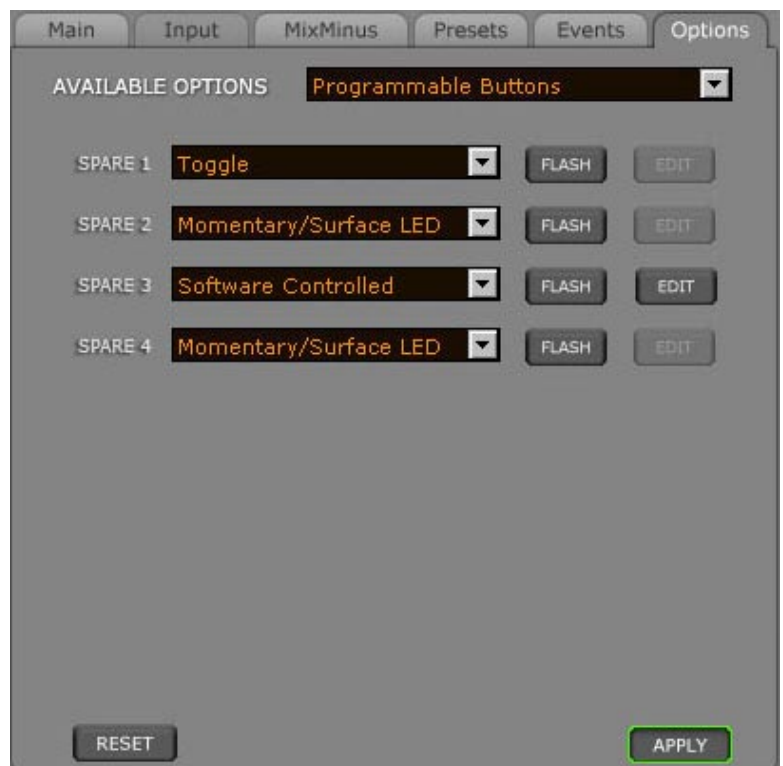
Programmable Buttons

Also known as “Spare buttons,” these four (4) 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.

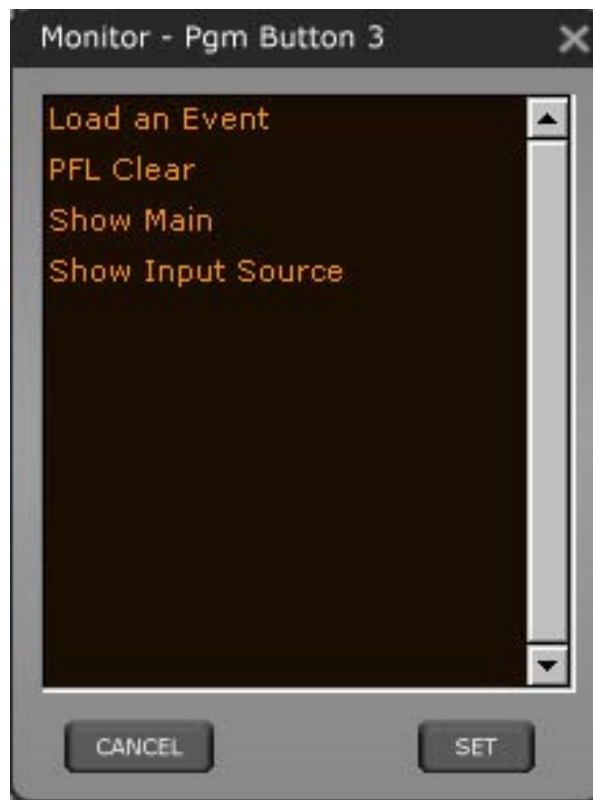
Some of the spare button programming can be done via the E-4 GUI. Press the *Options* tab and choose Programmable Buttons from the AVAILABLE OPTIONS scroll down list to display the Programmable Buttons form. You will see a separate line on the form for each of the four buttons; each line has a drop down 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-4 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.

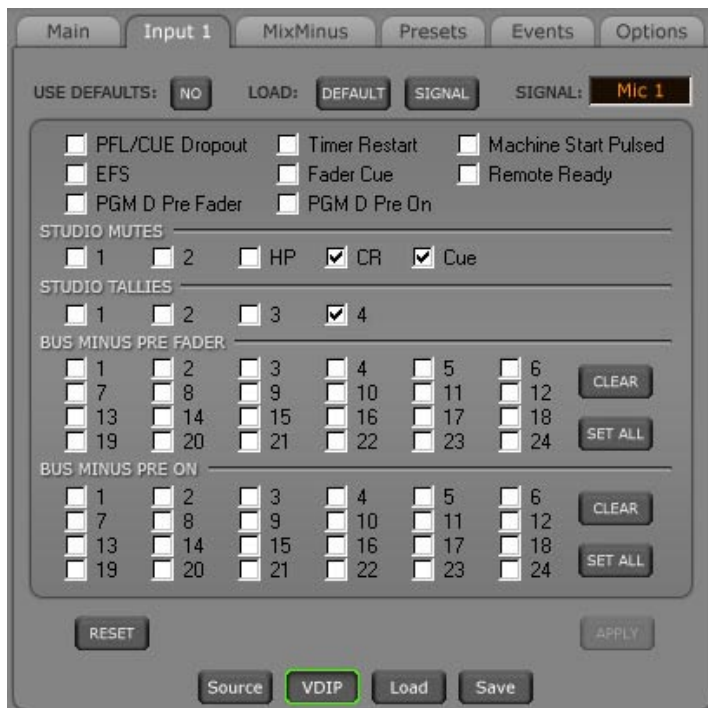


VDIP Settings

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-4 directly or by using the VDip dialog box in XPoint software. It is convenient to configure VDip right on the E-4, but you may have to use XPoint if you have other surface models.

To configure VDip on the E-4, 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 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. Note that the Studio 2 mute has no effect on the E-4 surface.

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-4 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.

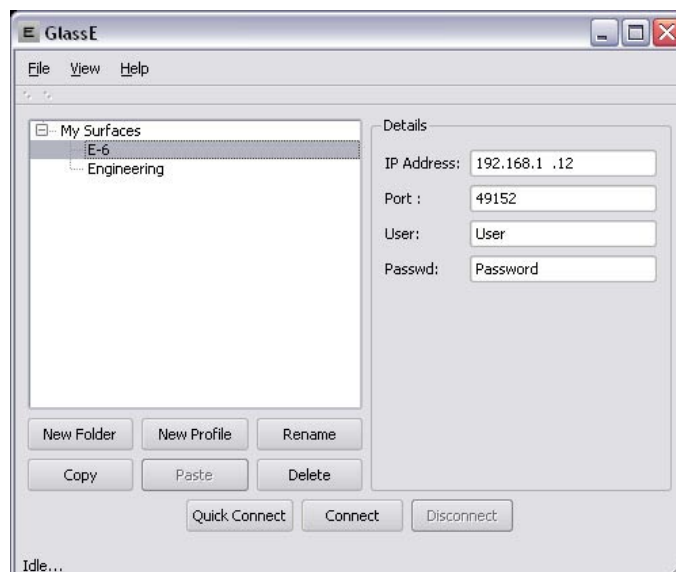
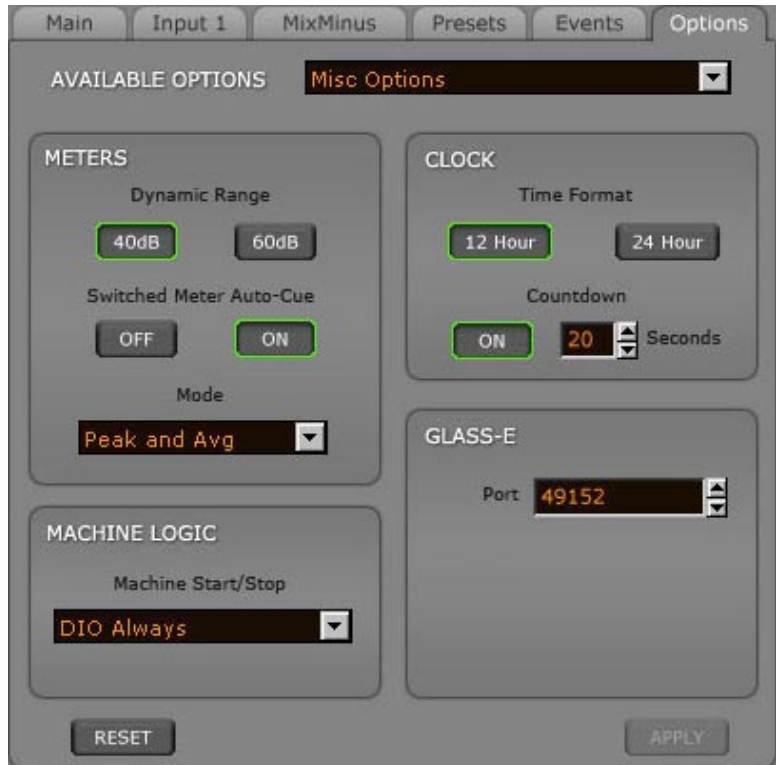


Optional Glass E Interface

Wheatstone offers the optional PC-based software, called “Wheatstone Glass E Virtual Control Surface,” that controls the E-4 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-4 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.

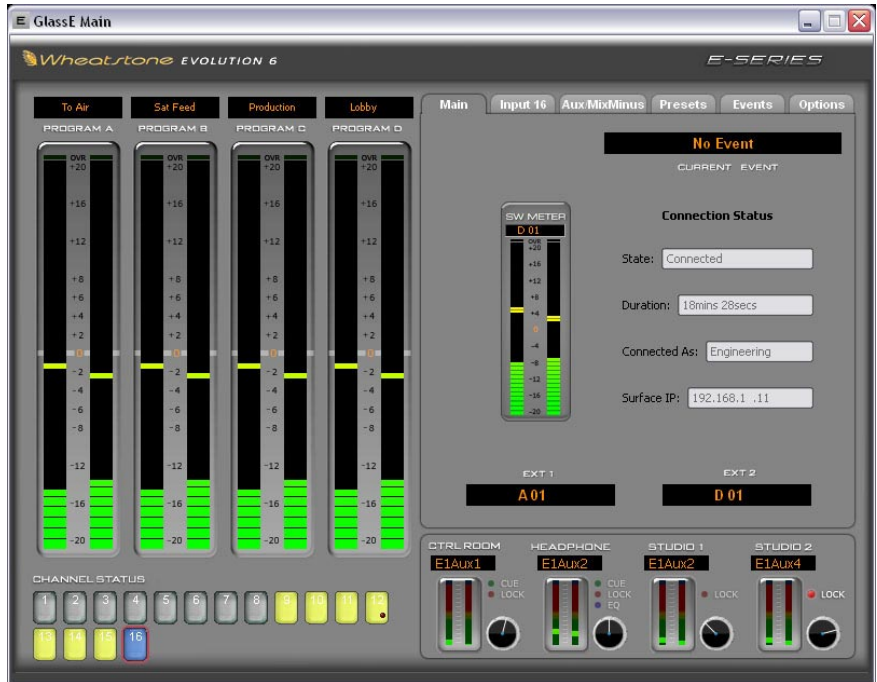
On the PC that’s running the Glass E software, start the software. You should see the following screen:



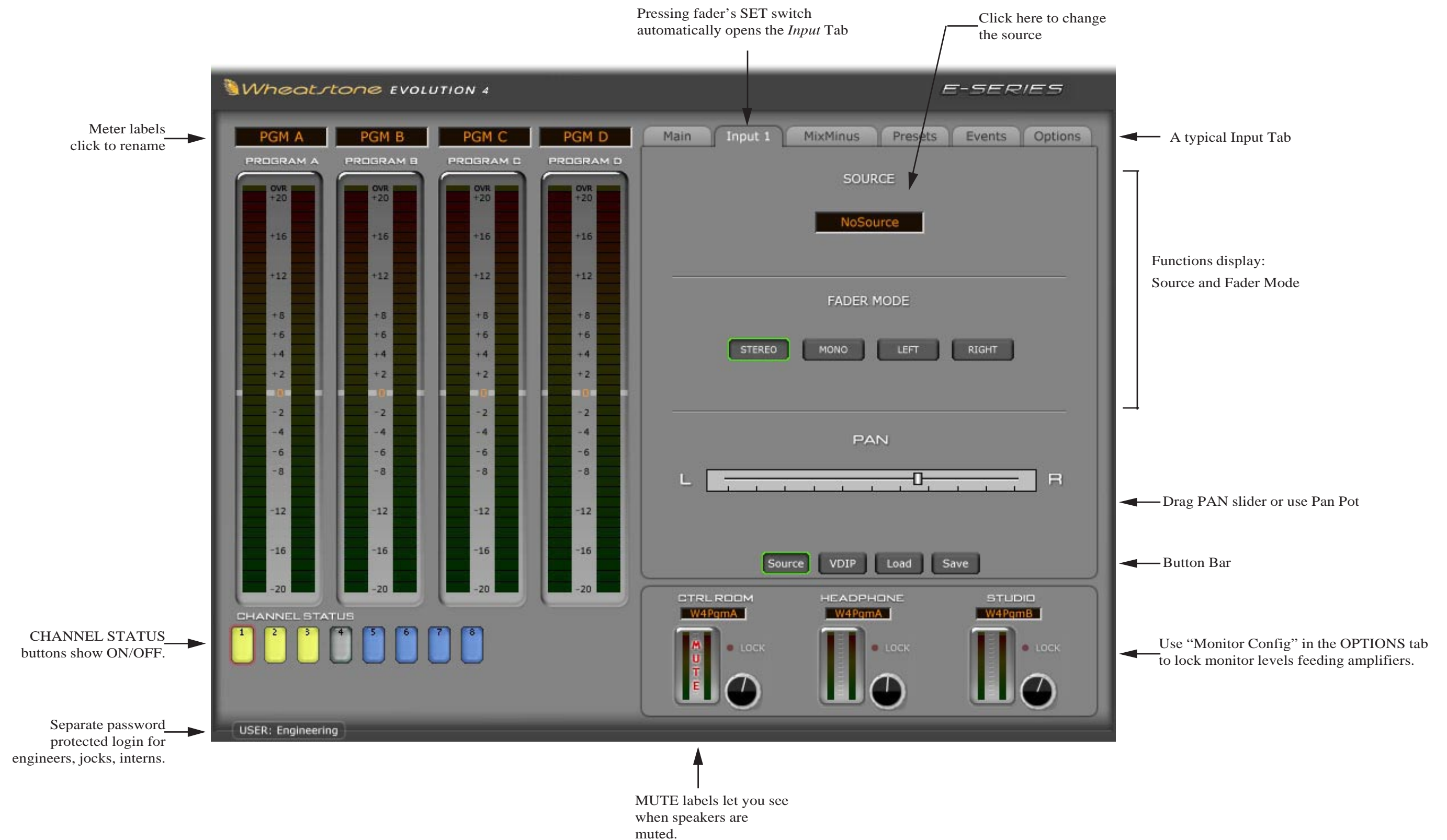
Enter the surface's IP address and the Port, User name, and Password you previously set up at the E-4, and you should then see screens similar to following two screens (shown for E-6 surface) on the PC running Glass E:

The first screen is a duplicate of the surface's 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.







E-4 GUI Input Tab Screen Controls





Events Manager tab — “Events” are snapshots of the entire control surface. All faders, switches, sources, 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.

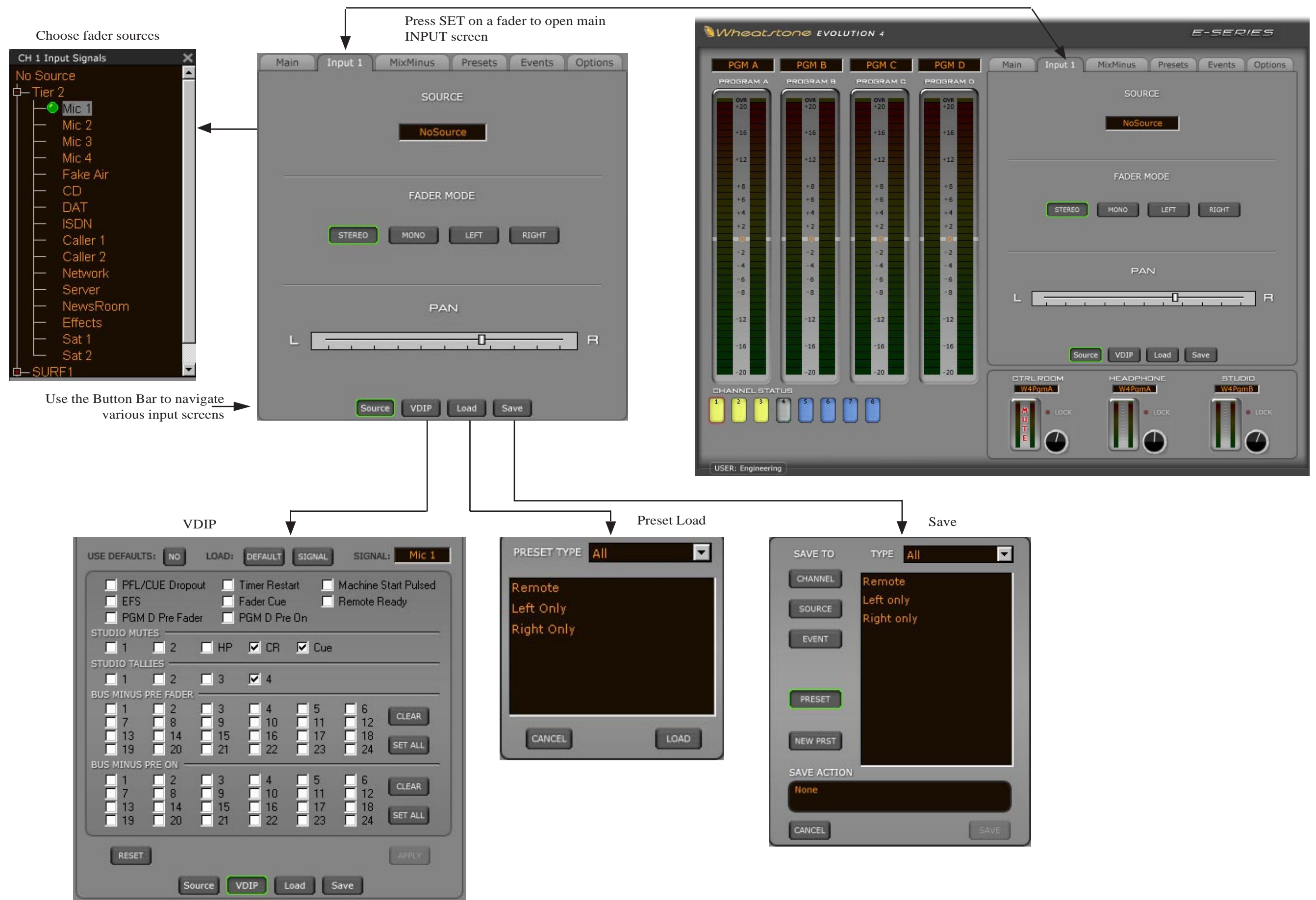
RENAME—3 guesses? Just click on the event name and the virtual keyboard opens up.

DELETE—Just click on the event name, click DELETE and confirm.

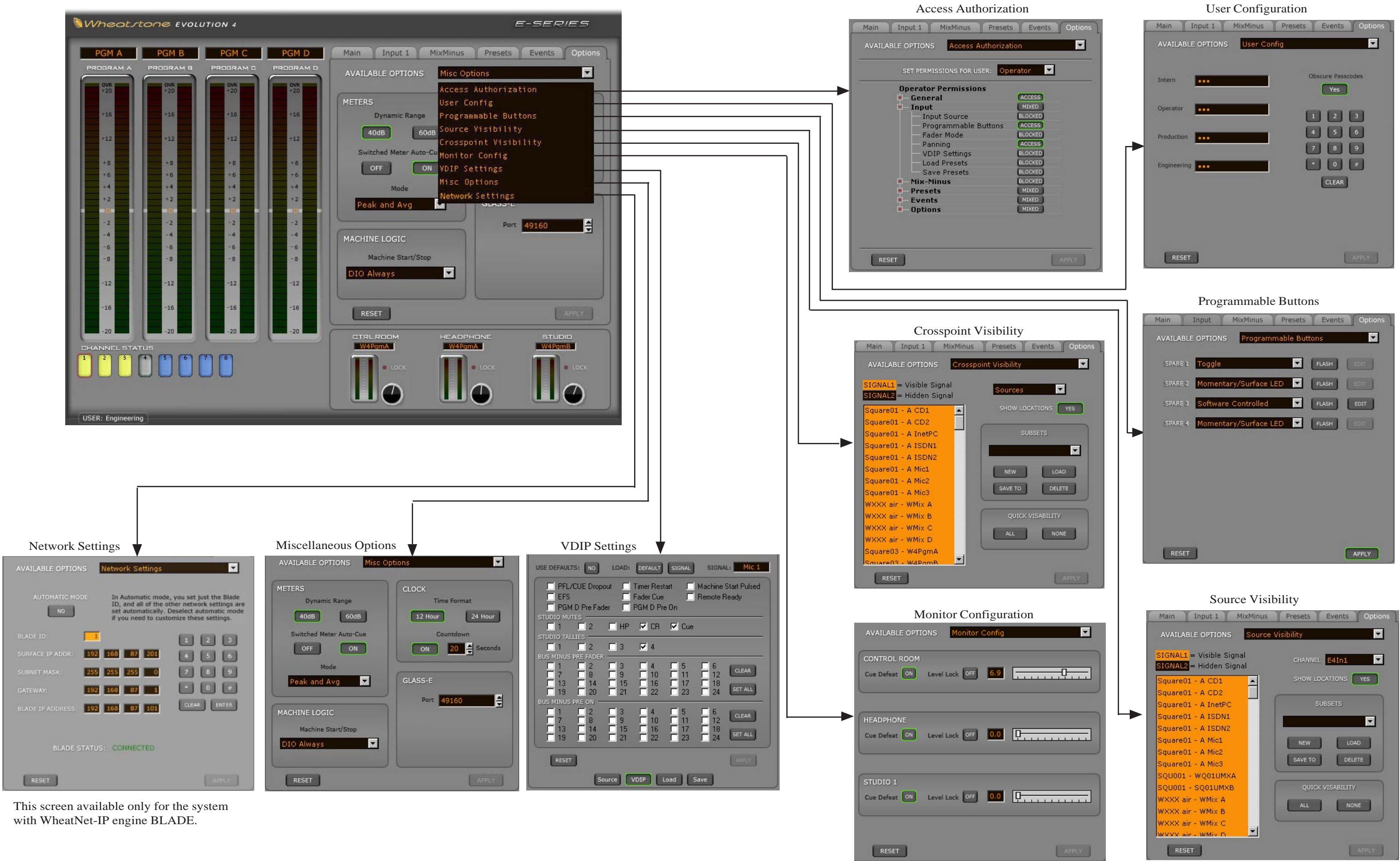


Options Manager tab — Provides access to a whole host of system options. Some are self explanatory, but see the Options Details section for details.

E-4 GUI Options Tab Screen Controls



E-4 GUI Input Tab Screens



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