L-8

Modular Control Surface

TECHNICAL MANUAL

L-8 Modular Control Surface Technical Manual

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ADDENDA
L-12/L-16 Modular Control Surface

The Wheatstone L-12 and L-16 are a 12- and 16-fader version of the L-8 control surface. The L-12/L-16 is powered by a Wheatstone Model PSE-L rackmount power supply (see next page for details). Other then the physical dimensions and two extra slots for the Accessory panels, all other aspects of the L-12/L-16 are the same as the L-8.

The L-12/L-16 audio control surface is designed for countertop placement. The rubber feet on the bottom keep the surface from being easily moved when simply placed on the counter.
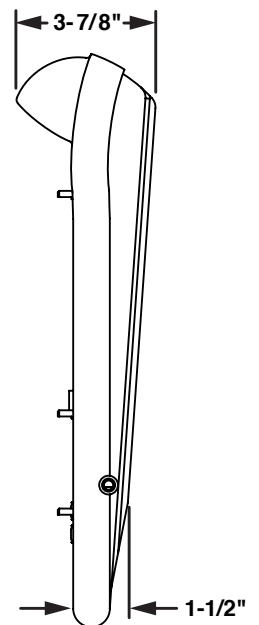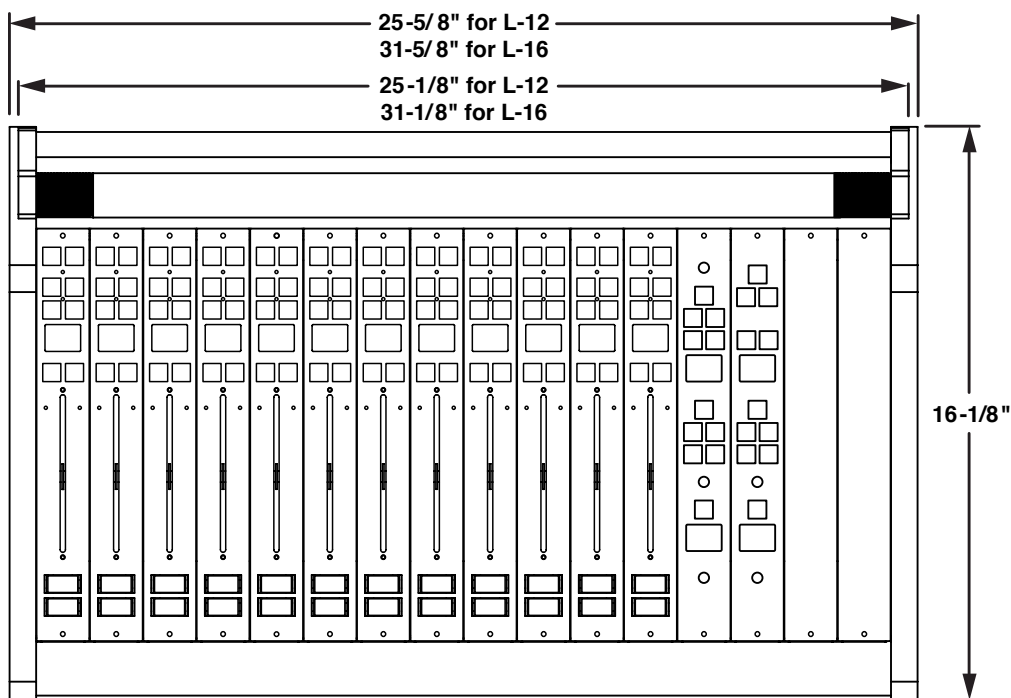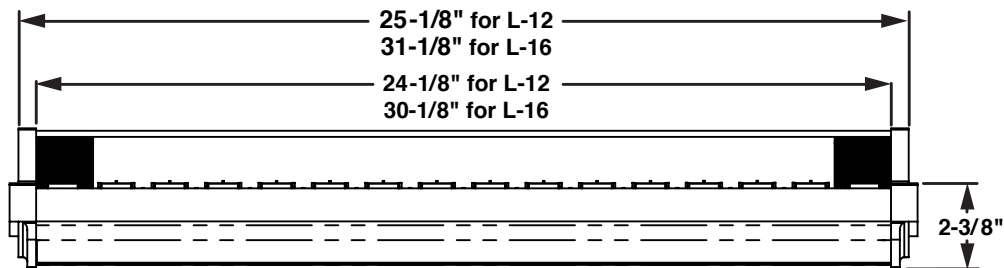
Power and Ethernet Connections

The L-12/L-16 control surface is powered by a Wheatstone Model PSE-L rackmount power supply. This unit occupies a single 19" wide rack space.

Note the power supply should be mounted in an equipment rack within fifteen feet of the control surface.

Once the supply is rackmounted, it should be connected to the control surface using the factory supplied cable. The power and Ethernet connectors are mounted on the Host Controller card (HC-L8 PCB) located behind the control surface's rear panel.

Unscrew the rear panel to make power and Ethernet connections.

The power jack at the left of the HC-L8 PCB is for the power connection. The factory supplied power cable has coaxial power jacks on the both ends to connect the L-12/L-16 to the PSE-L DC OUT connector.

The RJ-45 connector on the right part of the HC-L8 PCB provides control surface connection to a standard Ethernet network switch via a straight (pin to pin) CAT5 cable.

Note that there is a clearance opening at the bottom of the rear panel for cable passage.
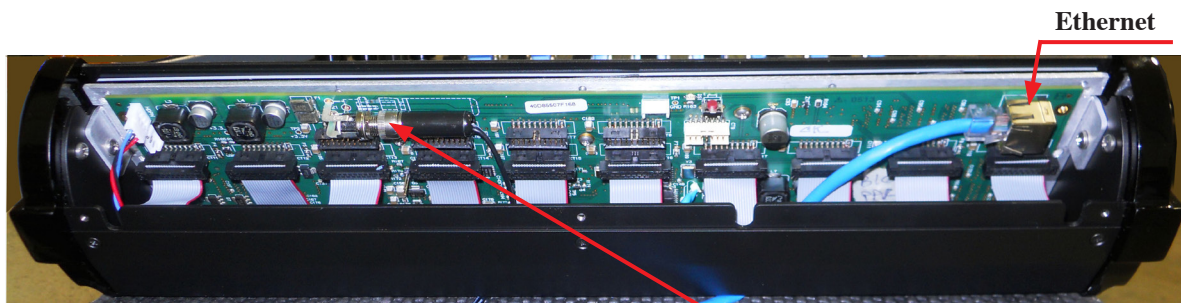
Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point.

The power feed recommended in the text is often installed and referred to in studios as an "isolated AC ground" outlet. It is usually orange in color.

Energizing

Assuming the L-12/L-16 control surface mainframe is properly placed, and its PSE-L power supply correctly rackmounted and connected to the control surface, you may now energize the rackmount power supply by plugging it into the AC mains. The power supply's front panel green "POWER" LED should light up to indicate that the power supply is on. The control surface's switches will assume factory default settings.

Note: To de-energize the control surface, unplug the rackmount power supply's AC cord from the AC mains. *Never de-energize the control surface by disconnecting the cable that connects the control surface and power supply together.*

Attention!

Federal Communications Commission (FCC) Compliance Notice:
Radio Frequency Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

> ⚠ **This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.**

This equipment must be installed and wired properly in order to assure compliance with FCC regulations.

Caution! *Any modifications not expressly approved in writing by Wheatstone could void the user's authority to operate this equipment.*

C E

Adding The L-8/L-12 To The Peripheral Devices* Tab

NOTE: For the L-8/L-12 control surface software versions after v. 1.4.6 the following procedure is no longer needed and should not be performed.

In order to utilize all the features of the L-8/L-12 control surface the device must be added to the System *Peripheral Devices* tab in the Wheatstone WheatNet-IP Navigator program (aka the Navigator GUI). This sheet shows you the basics of that procedure. Refer to the *WheatNet-IP Audio Over IP Network Technical Manual* for additional details.

You will need to know the IP address of the device being added, so you will want to find that out before you start.

Launch the Navigator GUI and make sure that **System 0** is selected in the *System* pane. You will see something like this:


Now select the *Peripheral Devices* tab.

Click the *Add* button to bring up the *Add Peripheral Device* dialog:

Type in a convenient *Name* and insert the *IP Address* of the device being added. Leave the *TCP Port* at the default setting of **60021**. From the *Host BLADE* drop down select the BLADE that you want to associate the Peripheral device with. Click *Ok*.

This completes the process of adding the device to the *Peripheral Devices* tab. The added device should show up in the *System* pane under the BLADE you added it to. If it does not show up, or if it shows up but has a yellow question mark on it, then there is either a network issue that needs attention, or the device is not connected to the network at all, or one or more steps have been omitted or done incorrectly in the configuration process.

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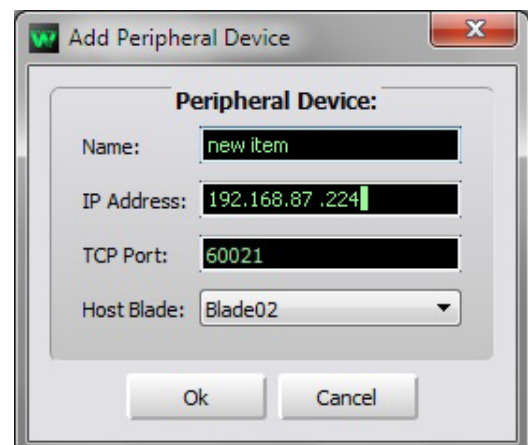
* In previous Navigator GUI versions this was the **System 3rd Party Devices** tab.

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General Information

Chapter Contents

General Information

Introduction

The L‑8 is a sleek, versatile, low profile, tabletop IP control surface that offers assignable sources to any fader.

The L‑8 is designed for use with Wheatstone's WheatNet-IP Intelligent Network. It connects via Ethernet to its audio engine, the WheatNet-IP 88cbl Console BLADE. Additional BLADEs can be added for inputs and outputs in a variety of digital and analog formats. Just plug the L‑8 into your WheatNet-IP Intelligent Network, and quickly assign any source of any type to any fader anywhere in your network.

Please refer to the *WheatNet-IP Audio Over IP Network* Technical Manual for information on configuring your system, and for descriptions of the various types of BLADEs, and the Windows XP Navigator GUI.

The meterbridge features three sets of bright, ultra-high resolution LED meters. A digital timer is also included. The L‑8 has control room and headphone outputs with level control and source selection, as well as an independent studio monitor output.

Each fader provides access to four stereo busses, a stereo cue bus, and its own individual Bus-Minus. An OLED source name display, an A/B/SET source selector, and one programmable soft button are also available. Overpressing the A/B/SET button enables SET mode, which provides access to assignable controls in the master section. Snapshots of the L‑8's configuration can be saved and recalled at the touch of a button, making setup for different working sessions a snap.

Control Surface Placement

The L-8 modular control surface is designed for countertop place-ment. The L-8 is a sleek, versatile, and low profile control surface. Avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures.

NOTE: This console contains static-sensi-tive devices. Normal precautions against static discharge should be observed.
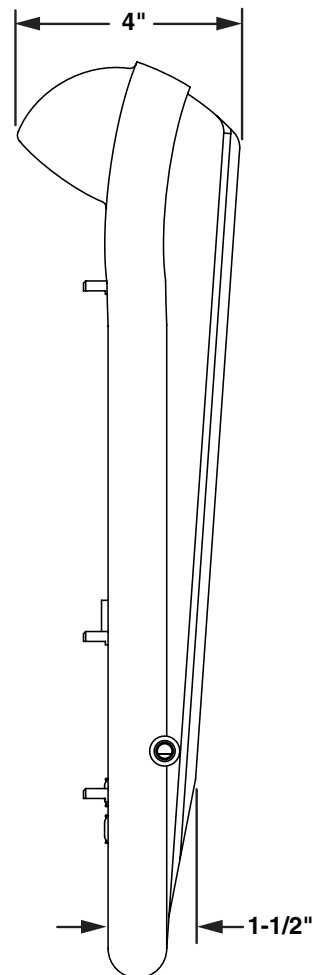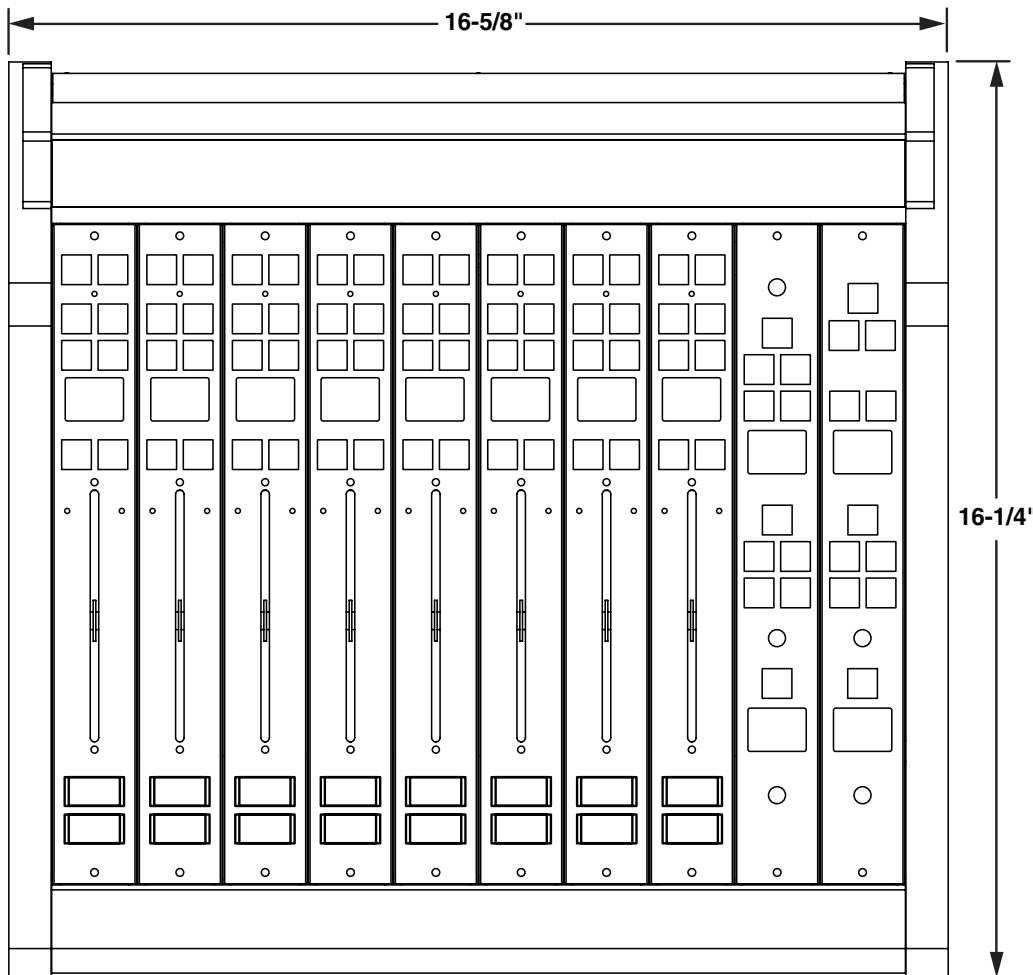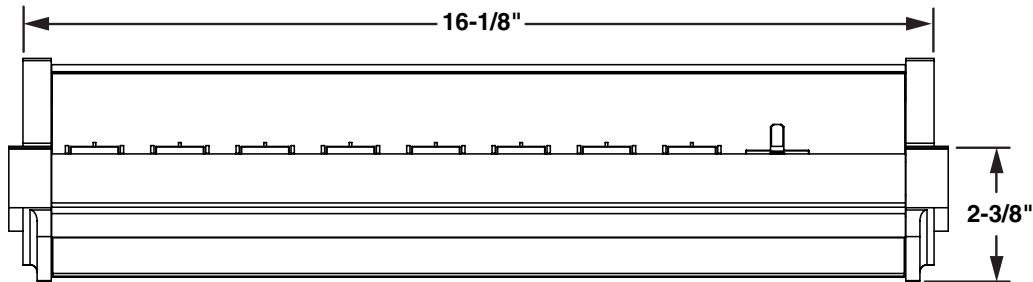
Power and Ethernet Connections

The L-8 control surface is powered up through the WheatNet-IP 88cbl Console BLADE.

The power and Ethernet connectors are mounted on the Host Controller card (HC-L8 PCB) located behind the control surface's rear panel.

Unscrew the rear panel to make power and Ethernet connections.

The power jack at the left of the HC-L8 PCB is for the power connection. The factory supplied power cable has coaxial power jacks on the both ends to connect the L-8 to the WheatNet-IP 88cbl Console BLADE DC OUT connector.

The RJ-45 connector on the right part of the HC-L8 PCB provides control surface connection to a standard Ethernet network switch via a straight (pin to pin) CAT5 cable.

Note that there is a clearance opening at the bottom of the rear panel for cable passage.

Ethernet

Power
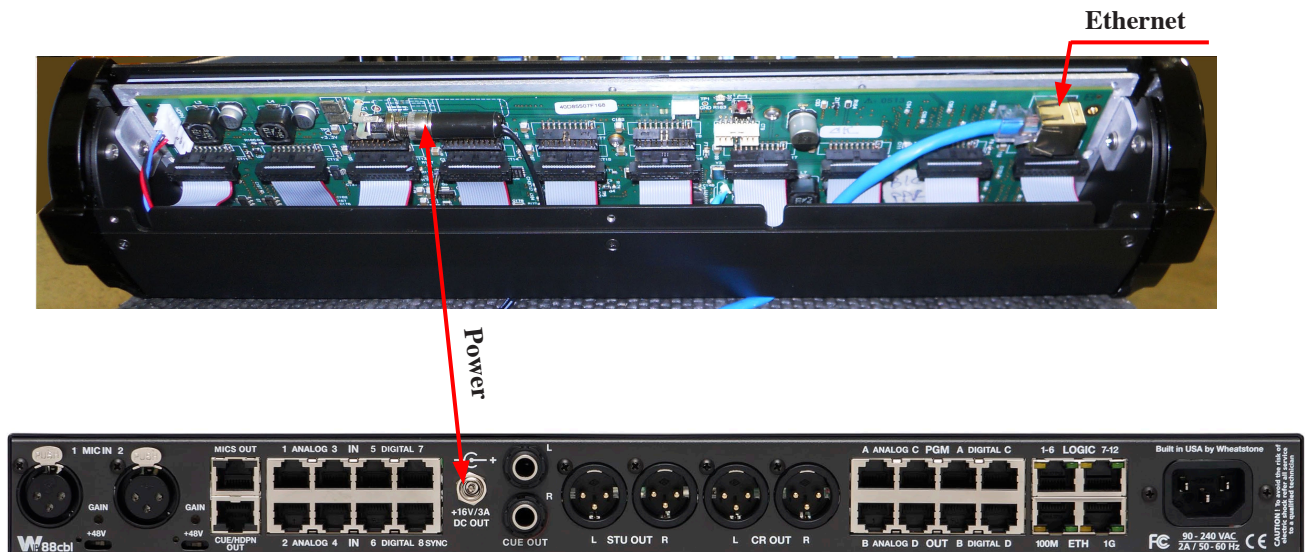
Surface Configuration

Chapter Contents

Typical IP Address - 192.168.87.201

Typical IP Address - 192.168.87.101

Surface Configuration

Getting Started

The L-8 control surface connects via Ethernet to its audio engine, the Wheatstone WheatNet-IP 88cbl audio Console BLADE 3. Note that the Console BLADE 3 must be connected to a Gigabit port on a switch. It *cannot* be connected *directly* to the L-8 because the L-8 port is *not* Gigabit. A powerful 1RU device containing the console's digital signal processing, input, output, and logic circuitry, the engine has no fans and may be located either next to the control surface or at a remote location.

The L-8 control surface comes with the *Wheatnet IP L8 Setup Tool* Graphical User Interface (GUI) program, intended to be straightforward in setup connection between the control surface and the Console BLADE 3. On a user-supplied computer connected through an Ethernet switch to the L-8 and the Console BLADE 3, install the GUI by running the installer file *wheatnetip_l8_setup_X_X_X.exe*, where "*X_X_X*" is replaced with the version number, such as "*1_0_0*". The installer creates a program with a file name of *WheatNetIpL8Gui.exe*. Double-click the icon for this file, or its shortcut, to run the GUI.

Tabbed Navigation

The L-8 GUI features a tabbed navigation architecture to easily access features with a minimum number of mouse clicks.

The L-8 GUI screen is vertically divided into two parts with a Function Pane on the left side and a System Info Pane on the right side. The Main Menu Tab buttons are located on the left side of the function display area. You may access any of the Main Menu Tabs by simply clicking on them.

At the bottom of the screen is a Devices Pane that displays a list of L-8 devices that the L-8 GUI has been configured to communicate with. Click *Add...* to add a device to the list, *Edit...* to change the name of an L-8 or give the GUI a different IP address to talk to it on, or *Remove* to delete the device currently highlighted in the list. To the right of these buttons is the *Online* check box, which is used to toggle the GUI connection to the highlighted device between online (checked) and offline (not checked).

The Function Pane contents change according to the tab selected. Both of the System Info and Devices Panes are relocatable within the GUI window by clicking on the Pane's handle (the rows of the double dots with the Pane name in between) and dragging the Pane to the new location. You can even drag one or both of these Panes outside of the GUI window, a handy feature if you have two monitors. To bring a Pane back into the GUI, double-click its title bar.
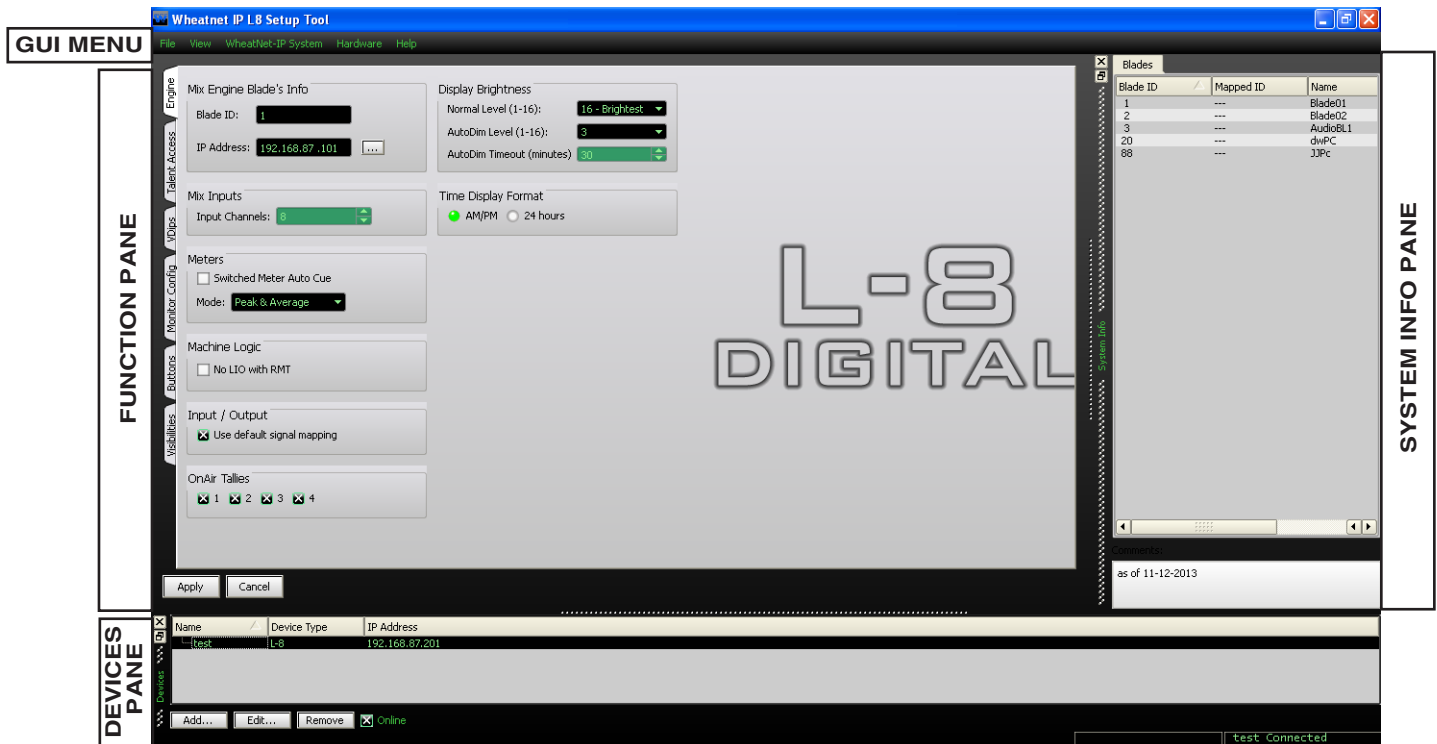
System Info Tab
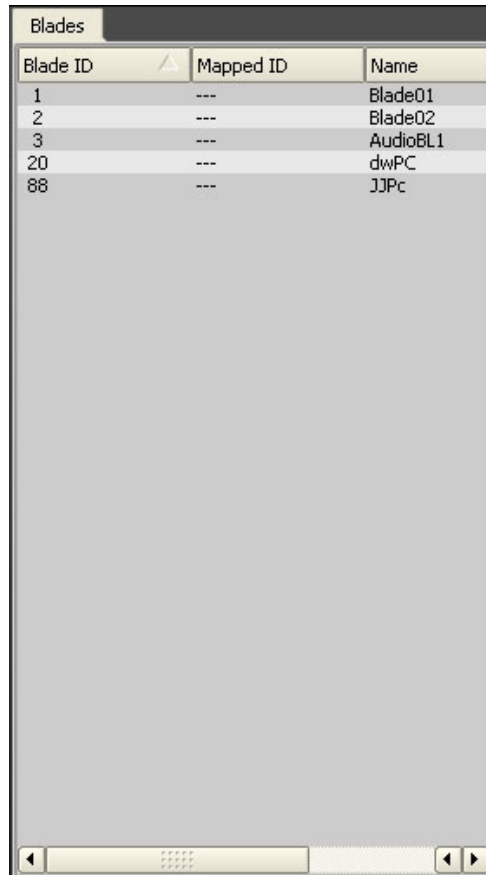
When you first start the L-8 GUI there will be no information showing in the System Info Pane. Assuming that you are connected to a working system, you can get this pane to fill by selecting *WheatNet-IP System>System Scan...* from the GUI menu. This will display the *WheatNet-IP System Scan* screen:

Start by specifying the *Host Blade IP Address*. This can be the IP address of any physical BLADE in the system. Next, click *Start Scan*. When the scan is complete you will see a screen like this (the exact text is system-dependent):
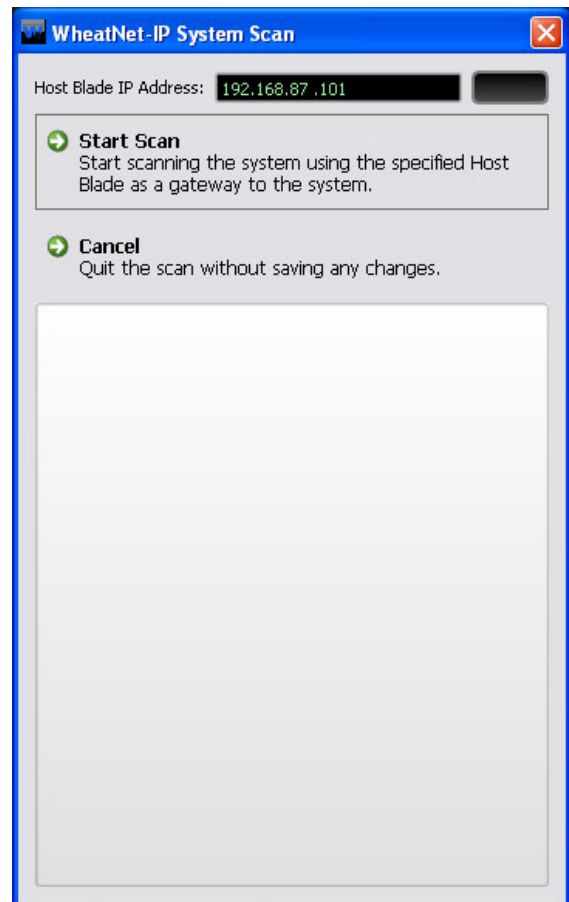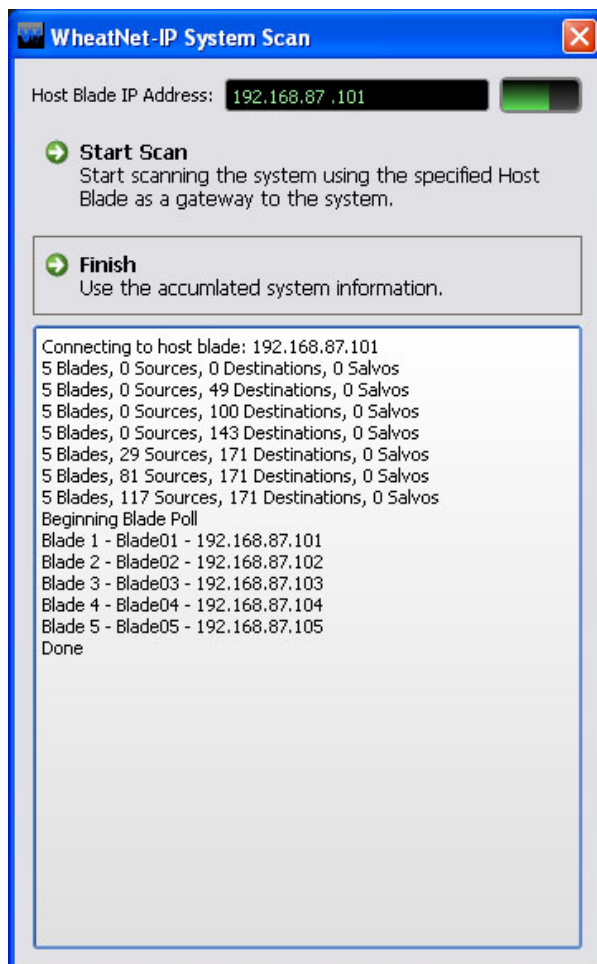
Click *Finish*. You will be asked if you want to save the System Info. If you click *Yes* you will be prompted for the location and name of the saved file, and also given a chance to write a brief description of this saved data set, but for now just click *No*.

You will notice that the System Info Pane now has content. Here is an example of what you might see on the *Blades* tab:

Later we will be using the *Source Picker* dialog to select sources to program for special functions, and we may choose also to limit source visibility for input channels. You will need to do the system scan before performing these operations.

It is important to note that Blade Picker and Source Picker functions will use the last scan information you saved. If you have changed configuration in regard to Blades present or signals defined and their names since last saving the scan information you should rescan and resave.

Engine Tab

Mix Engine Blade's Info – In this section you will set the Mix Engine *Blade ID* and the *IP Address* of the Engine to which the surface will connect.

Once the control surface has been associated with a Mix Engine, the BLADE 3 will query the surface for its configuration information and then automatically generate the required source and destination signals. See Appendix 2 for details.

Mix Inputs – Not Used.

Meters – The switched meter on the surface's meterbridge displays the signal level of a user selected source or the Cue signal level when an input fader's CUE switch is activated. To activate the Auto Cue function check the *Switched Meter Auto Cue* box.

Use the *Mode* dropdown box to choose from *Peak & Average*, *Peak Only*, or *Average Only*.

Machine Logic – The purpose of this option is to allow the privileged operator to determine the conditions under which START and STOP signals are sent in response to a command to turn a channel ON or OFF. Channel ON and OFF commands can come from two 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.

When the **No LIO with RMT** check box is checked, LIO signals are globally blocked for all input faders if the channel ON and OFF commands are initiated from the system Logic I/O card.

Input/Output – In most cases, you will want the *Use default signal mapping* check box to be checked, to insure that signals are properly mapped. This insures that the surface signals appear at the designated connectors on the Console BLADE3. If you want to re-arrange or re-purpose the signals, leave this check box unchecked.

OnAir Tallies – There is an ON AIR indicator at the upper left corner of the surface meterbridge. These check boxes will determine what Studio Tally VDip settings (see VDips tab) will light the indicator when a channel is on. For example, if you only have an X in OnAir Tallies 2, then the On AIR indicator will light only if a fader having a signal using Studio Tallies 2 on the VDips tab is turned on. If 1 and 2 are both checked here then a signal that uses Studio Tallies 1 or 2 on a fader that is ON will cause the ON AIR to light.
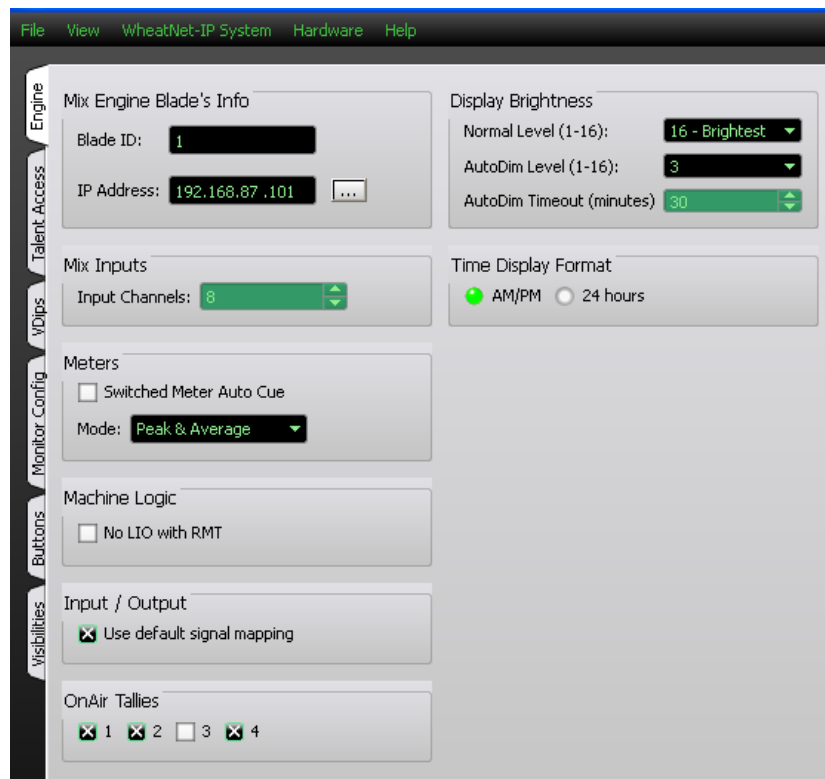
Display Brightness – The brightness of the displays can be controlled globally by the settings in this region. The displays brightness varies from a setting of 1 (which is off) to a maximum of 16. The displays also have a screen-saver mode. After a specified time, the display brightness will be automatically dimmed to an alternate brightness setting. When a button is pressed or an encoder is turned, the brightness returns to the normal level.

- Normal Level – This control specifies the normal brightness level of the display. The possible values vary from a low of 1 (off) to a high of 16.

- AutoDim Level – This control specifies the brightness level to be used when the displays are in screen-saver mode. The possible values vary from a low of 1 (off) to a high of 16.

- AutoDim Timeout – This control specifies how long (in minutes) to wait before entering screen-saver mode. The Control Surface controls must be idle before entering screen-saver mode. The allowed values range from 1 to 59 minutes. A value of 0 is also allowed and is used to turn off the screen saver mode.

Timer Display Format – The time of day is shown on the L-8 and can be shown in 12-hour format or 24-hour format. The default format is 12-hour. To change to 24-hour format, check the *24 hours* check box.

Talent Access Tab

It may be desirable to limit some of the operations that can be performed by talent using the L-8.

Events – Operation of the four EVENT buttons on the L8-CR Control Room Module can be limited as follows:

- If **Allow Save Events** is not checked, the operator will not be able to program the EVENT buttons to save Events.

- If **Allow Take Events** is not checked, the operator will not be able to use the EVENT buttons to take Events.

- If **Allow Panning** is not checked, the operator will not be able to use PAN button to make an adjustments.

- If **Allow Mode** is not checked, the operator will not be able to use MODE button to switch the channel's mode.

Event Names – Shows the list of available events. Names will default to *Event 1*, *Event 2*, etc., if not edited here.

X Controllers – Selection of fader sources by using the A/B input button on the L8-IN Input Module can be limited as follows:

- If **Allow Program A/B Buttons** is not checked, the operator will not be able to program the A/B buttons on any fader or assign a Wild Card source to any fader.

Bus Assignments – Use of the ASSIGN buttons (PGM, AUD, AUX, and UTIL) to determine the bus or buses that the fader will feed can be limited as follows:

- If **Allow PGM Bus Assign** is not checked, the operator will not be able to use the PGM ASSIGN button to change any fader's feed status to the PGM bus.

- If **Allow AUD Bus Assign** is not checked, the operator will not be able to use the

AUD ASSIGN button to change any fader's feed status to the AUD bus.

• If **Allow AUX Bus Assign** is not checked, the operator will not be able to use the AUX ASSIGN button to change any fader's feed status to the AUX bus.

• If **Allow OL Bus Assign** is not checked, the operator will not be able to use the UTIL ASSIGN button to change any fader's feed status to the UTIL bus.

VDips Tab
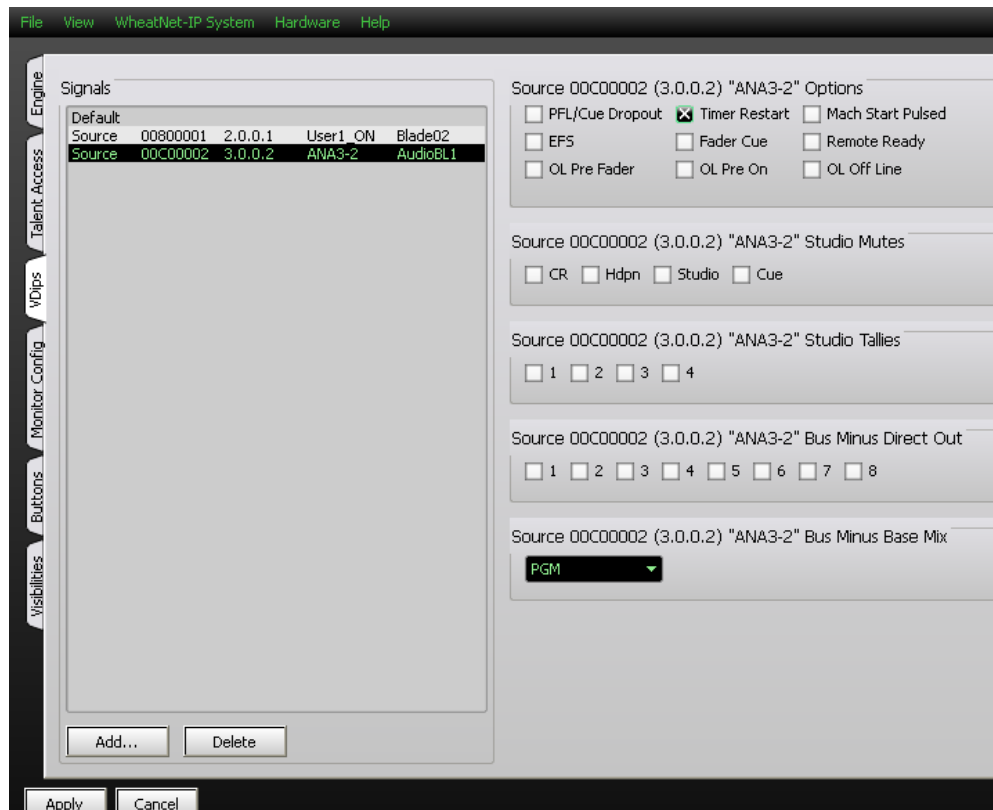
Many surface functions, such as Mute, Tally, and Machine Start Pulsed, are programmed from the VDips tab. VDip settings are attributes of the Source signal and will follow the signal onto different faders of the surface, or even other surfaces.

When the L-8 GUI is first started, the VDips tab *Signals* list contains only one item, *Default*. If you select *Default* you will be editing the VDip settings of all sources in the system, except those you have specifically overridden.

If you want to edit the VDip settings of a specific signal to be different than the default settings you first need to add the signal to the *Signals* list. Click the *Add...* button to bring up the *Add Signal* dialog.
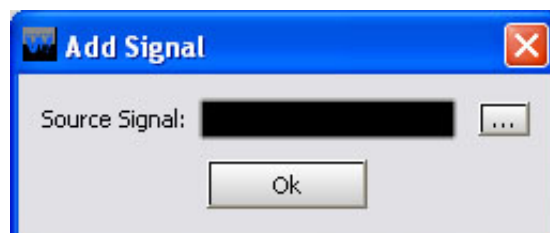
Click the button with the three dots (ellipsis) to the right of the *Source Signal* field to bring up the *Source Picker* dialog.

NOTE: If you have not done the system scan as described on page 2-4 the *Source Picker* dialog will not have any sources to show you. Also, if you have added, deleted, or renamed signals since the last scan and save the signals available to the *Source Picker* dialog may be incorrect.

Find the desired source in the *Source Picker* and double-click on it. This returns to the *Add Signal* dialog with the selected signal's ID in dotted notation in the *Source Signal* field:
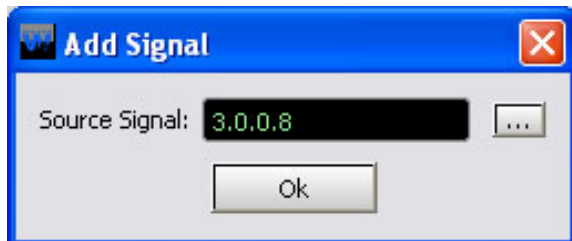
Click *Ok* and the selected signal now appears in the *Signals* list on the VDips tab. You can now select this signal in the *Signals* list and edit its VDip settings.

Once you have edited VDip settings you must click *Apply* for those changes to be used. If you've done some VDip editing and decided you don't want to make that particular change after all you can click *Cancel*, which will cancel any changes you made since entering the VDips tab, or since you last clicked *Apply*.

If you want to set VDip the same on several sources, begin by setting up one signal. Then highlight that source in the *Signals* list and right-click on the area. Select *Copy* from pop-up. Now highlight another signal you want to have the same VDip settings, then right-click and select *Paste*. This copies the VDip settings from the first signal to the second one.

Please note that all VDip settings apply to the programmed <u>signal</u> regardless of which <u>fader</u> the signal appears on.

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 turn OFF when the fader is fully down or turn ON when the fader is brought up from the fully down position. The ON and OFF switches can still control the channel.

OL Pre Fader – When checked, causes the signal, when assigned to the surface's OL output, to be tapped before the fader.

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 L8-SC Studio Control Module has to be activated.

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.
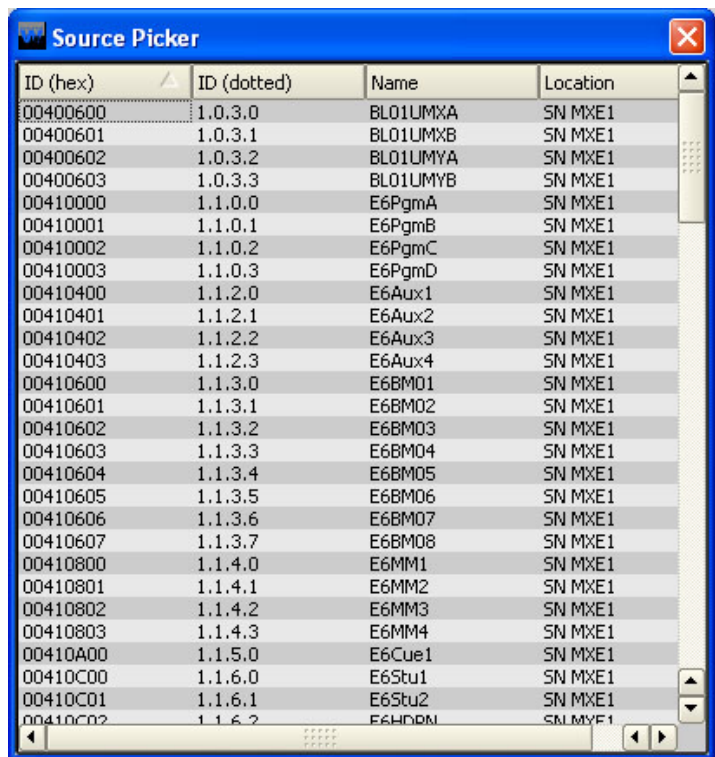
OL Pre On – When checked, causes the signal, when assigned to the surface's OL output, to be tapped before the channel ON switch.

Mach Start Pulsed – If this box is not checked, a Machine Start command will give a steady closure, similar to an On Tally. If your external machine needs to see a momentary pulse instead, check this box.

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 the optional Navigator GUI to fully implement the feature.

OL Off Line – This function determines what will be heard at the fader's Bus Minus output when the fader is off. If the box is not checked, when the fader is off the same bus will feed the bus minus that feeds it when the fader is on, as determined by the *Bus Minus Base Mix* selection below. But if the *OL Off Line* box is checked, when the fader is off the Bus Minus output will be fed from the OL bus instead.

Studio Mutes – Input channels can be programmed to mute the various monitors when the channel is ON. There are four *Studio Mutes* check boxes, one for each monitor section plus one for CUE. The checked boxes show which monitors 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 the optional Navigator GUI to fully implement the feature.

Also note that the *Studio Tallies* selection will have an impact on the lighting of the ON AIR indicator in the meterbridge. See the description of *OnAir Tallies* on the *Engine* tab.

Bus Minus Direct Out – For each fader, determines if the Bus Minus output is a mix-minus of the selected Bus Minus Source (unchecked) or is a Direct Output of the selected input source (checked). On faders where the *Bus Minus Direct Out* box is checked, the OL Off Line box (above) will have no effect.

Bus Minus Base Mix – This function determines which bus the Bus Minus output is a mix-minus of. Any of the four PGM, AUD, AUX, or OL busses can be selected as the Bus Minus Source. If, for example, PGM is selected, then the Bus Minus output will consist of the audio on the PGM Bus, minus the signal assigned to the fader. This is true when the fader is turned on. It also true when the fader is turned off, **unless** the *OL Off Line* box is checked (above). This setting will have no effect on any fader where the *Bus Minus Direct Out* box is checked (above).

Monitor Config Tab

The Control Room, Headphone, and Studio monitor outputs are normally interrupted with cue audio whenever a fader is switched into cue. However, if the *Cue Defeat* box is checked for a given monitor, then cue will no longer interrupt that monitor output.

The output levels of the three monitors normally follow their respective level controls on the L8-CR Control Room Module and the L8-SC Studio Control Module. But it is possible to lock the level of each of the monitors.

Using the studio monitor as an example, adjust the STUDIO level control on the L8-SC to the desired level, then check the *Level Locked* box in the *Studio* section of the Monitor Config tab. The monitor output will remain at the fixed level regardless of any changes in the STUDIO level control position. If at a later time you decide to unlock the level, the level will still be unchanged until the next time the STUDIO knob is moved, at which point it will follow the knob once again.

After making changes you must click *Apply* for the changes to take effect. If you've made a change and decided you don't want to make that particular change after all you can click *Cancel*, which will cancel any changes you made since entering the Monitor Config tab, or since you last clicked *Apply*.
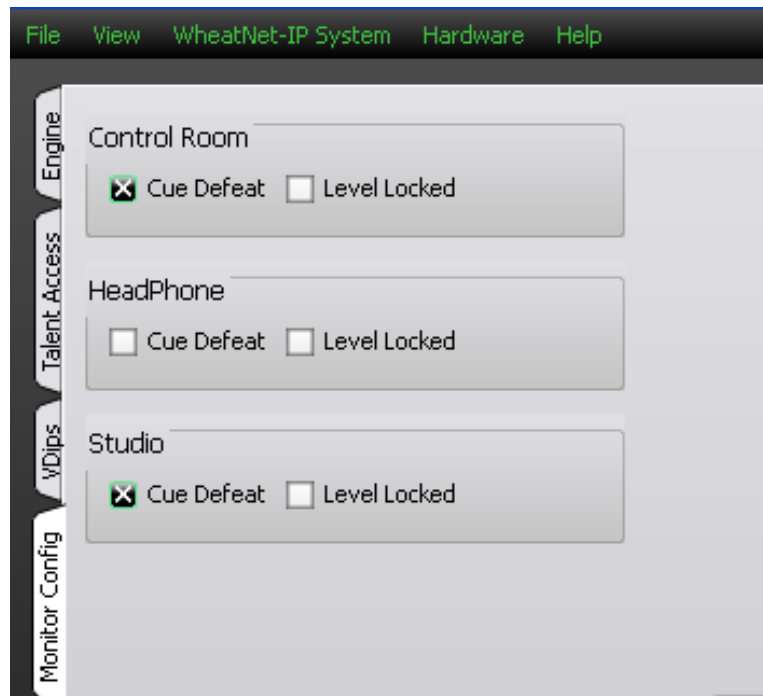
Buttons Tab

The L8-IN Input Modules each have a SOFT button with indicating LEDs. These buttons are also known as Programmable Buttons, and are designed to perform user-programmable functions.

The Buttons tab is used to set up each button at a basic level of functionality by using the *Function* drop-down box on the *Buttons* tab for the particular button being used. The choices are:

- **None** – in this mode button presses are ignored and the button does not light
- **Tally** – in this mode button presses are ignored – the button illumination is controlled by a logic signal programmed to do so
- **Toggle** – in this mode the button acts like a toggle, with one press turning it on and the next press turning it off – the button is illuminated by the surface when in the on state and is not illuminated in the off state
- **Momentary/Surface LED** – in this mode the button has a momentary action, on while pressed and off when released – the button's illumination is controlled by the surface, being lit while the button is pressed
- **Momentary/LIO LED** – in this mode the button has a momentary action, on while pressed and off when released – the button's illumination is controlled by a logic signal programmed to do so

It's important to note that, although basic functionality is set here, in all cases except **None** there will be additional configuration, needed to complete the desired functionality, that must be done in the optional Navigator software. Refer to the *WheatNet-IP Audio Over IP Network* manual for details.
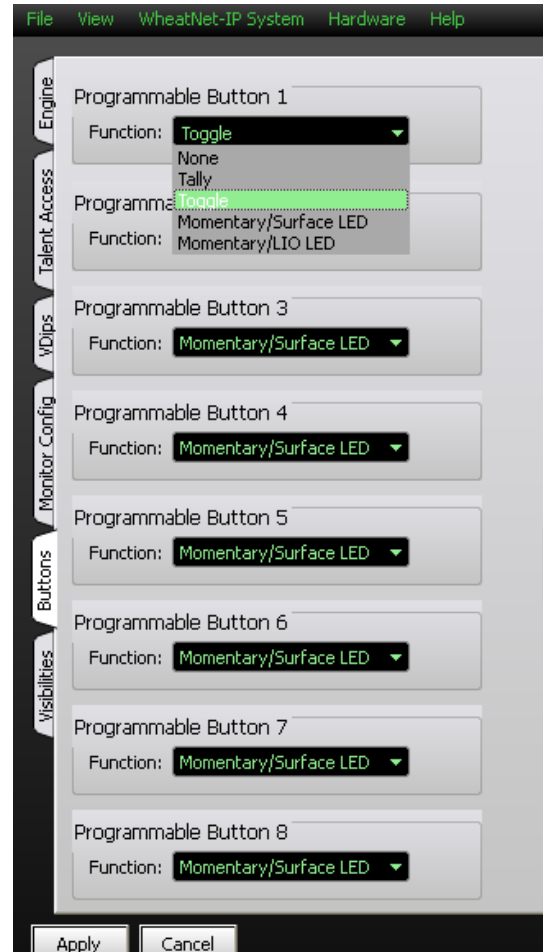
Visibilities Tab

Visibilities – Use the Visibility option setting to limit the sources the user sees when dialing up a source on the L-8. This feature is helpful, especially in large systems with lots of signals. NOTE: If you have not done the system scan as described on page 2-4 you will not see all the sources that are available to the L-8.

Scroll up and down the Channel list, check or un-check signals as desired for that channel, 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 *Cancel*. This will cancel any changes you made since entering the screen or since clicking *Apply*, whichever happened most recently.
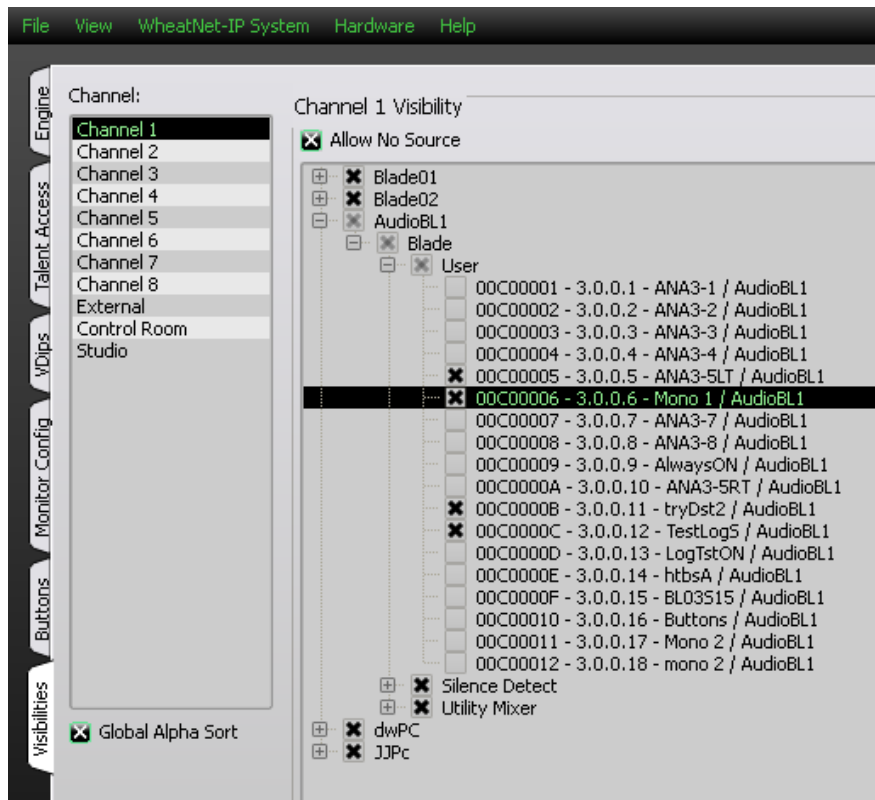
Check the *Global Alpha Sort* box to sort the list of channels in alphanumeric order when selecting sources on the L-8.

Check *Allow No Source* if you want NoSource to be allowed for that channel. If NoSource is not allowed then the channel must always have a source selected.

Right-clicking in the Channel area of the Visibilities tab pops up a menu with some useful shortcuts on it:

- **Copy** – Choose this item to copy the visibility settings of the currently selected channel.

- **Paste** – Choose this item to paste visibility settings that have been copied from one channel to the currently selected channel.

- **Paste All** – Choose this item to paste visibilities that have been copied from one channel to all channels.

- **All** – Choose this item to select all signals in the system to be visible to the currently selected channel. This also puts a check in the *Allow No Source* check box.

- **None** – Choose this item to deselect all signals for the currently selected channel. This also removes the check, if present, in the *Allow No Source* check box.

GUI Menu Summary

The various menus in the L-8 GUI are outlined below.

File – the *File* menu contains items for setting a password and for exiting the program:

- **Set Password...** – Used to set a password that will need to be entered to operate the L-8 GUI – when first installed the GUI requires no password – to set a password you must enter the current password and then enter the new password twice (the second to confirm the password)

- **Exit** – Used to exit the L-8 GUI

View – the *View* menu is used to show or hide certain sections of the L-8 GUI or to change the GUI appearance:

- **Devices** – Used to show or hide the Devices Pane (see page 2-3)

- **System Info** – Used to show or hide the System Info Pane (see page 2-3)

- **Stylized** – Used to toggle the L-8 GUI between a modern appearance and a more traditional one

WheatNet-IP System – The *WheatNet-IP System* menu is used to manage signal sets within the L-8 GUI:

- **File Open...** – Used to open a saved signal set

- **File Save...** – Used to save the current signal set

- **System Scan...** – Used to scan the system to which the L-8 GUI is connected to get a list of all signals currently available in the system (see page 2-4) – this set can then be saved using *File Save...* and then later recalled using *File Open...* even if the L-8 is not connected to the system at that time

Hardware – The *Hardware* menu is used to set up devices in respect to connecting to them and managing their configuration and software:

- **Add New Device...** – Used to set up a new L-8 for the GUI to communicate with (see page 2-3) – brings up a dialog box to set a name, device type, and IP address

- **Edit "Selected Device"...** – Used to change the setup parameters for the highlighted L-8 using a similar dialog box

- **Remove "Selected Device"...** – Used to delete the highlighted L-8 from the list after confirming the delete

- **Version...** – Used to check the current version of software of the currently connected L-8 – this information may be needed in the event that Wheatstone Technical Support needs to be contacted about the L-8

- **Update...** – Used to change the software version of the currently connected L-8

- **Reboot...** – Used to reboot the currently connected L-8 – this is used primarily after doing a software update – a confirm dialog allows you to change your mind.

Help – The *Help* menu gives additional information about the L-8 GUI:

- **About...** – Used to show the version of the L-8 GUI.

Control Surface Menus

There are several operations that can be performed from the L-8 Control Surface. To perform these operations you first must enter the control surface menu system. To do this, press and hold the CONTROL RM and STUDIO knobs button for about five seconds until the INFO display on the L8-CR shows the menu.

The FUNCTION knob is used to scroll through menu selections and parameter choices, by rotating the knob, and in some instances it is used to advance through parameter fields, by pressing and releasing the knob, a process we will refer to by the term "dobby" in this manual. Thus, if we say at some point to dobby the FUNCTION knob, we mean press it, then release it.

The following sections describe the menu functions in greater detail.

Network...

Turning the FUNCTION knob until *Network...* is highlighted and dobbying the FUNCTION knob enters the *Network...* sub-menu, which provides the following choices:
- *IP Addr* – this item allows you to view the L-8 IP address – dobby the FUNCTION knob and you can edit the IP address
- *Netmask* – this item allows you to view the subnet mask for the L-8 – dobby the FUNCTION knob to edit the subnet mask
- *Gateway* – this item allows you to view the gateway setting for the L-8 – dobby the FUNCTION knob to edit the gateway
- *MAC Address* – this item allows you to view the MAC address for the L-8 – note that you cannot edit the MAC address
- *<<Back* – this item returns you to the main menu.

Blade...

Turning the FUNCTION knob until *Blade...* is highlighted and dobbying the FUNCTION knob enters the *Blade...* sub-menu, which provides the following choices:
- *Blade IP* – this item allows you to view the IP address of the L-8's host BLADE – dobby the FUNCTION knob and you can edit this address
- *<<Back* – this item returns you to the main menu.

Versions...

Turning the FUNCTION knob until *Versions...* is highlighted and dobbying the FUNCTION knob enters the *Versions...* sub-menu, which provides the following choices:
- *Station Type* – this item will display L-8
- *FPGA Version* – this item shows the FPGA version information
- *SW Version* – this item shows the software version information
- *Build Date* – this item shows the software build date
- *Build Time* – this item shows the software build time
- *<<Back* – this item returns you to the main menu.

Exit Menu

Turning the FUNCTION knob until ***Exit Menu*** is highlighted and dobbying the FUNCTION knob exits from the control surface menu. If you have the menu displayed and are idle, not turning or pressing anything, for about 20 seconds, the L-8 will automatically exit from the menu.

L-8 Controls and Functions

Chapter Contents

L-8 Controls and Functions

Input Module (L8-IN)

Input Sources

The A/B/SET button on the L8-IN input module (channel) is used for selecting the audio source for the channel. Each channel can be programmed for two preferred sources, designated A and B, and can also be assigned to any other available source without changing the programmed sources for A and B.

To program the A source, start with the A/B/SET button unlit (if it is lit, press it once to unlight it). Now press and hold the A/B/SET until it starts flashing, then use the FUNCTION knob on the L8-CR module to dial up the desired A source, as indicated on the INFO screen below it. When the desired source is found press the TAKE button. This will make the selected source be that channel's A source and will also make it the current source for that channel.

L8-CR Module

To program the B source, start with the A/B/SET button lit (if it is unlit, press it once to light it). Now press and hold the A/B/SET until it starts flashing, then use the FUNCTION knob on the L8-CR module to dial up the desired B source, as indicated on the INFO screen below it. When the desired source is found press the TAKE button. This will make the selected source be that channel's B source and will also make it the current source for that channel.

Once the A and B sources have been programmed you can easily switch between them by momentarily pressing the A/B/SET switch.

Since it may be desirable on occasion to assign a source to a channel other than its two programmed (A and B) sources, we also allow selecting a third source (also called a Wild Card) to the channel without needing to reprogram the A or B source. The procedure is quite similar to that for programming an A or B source, so be careful to note the differences. To temporarily assign a Wild Card source to a channel, no matter whether A or B is currently selected, press and hold the A/B/SET button until it starts flashing, use the FUNCTION knob to dial up the desired source, then press the FUNCTION knob to assign the Wild Card source to the channel.

If a channel currently has its A source selected, the A/B/SET button will be **unlit** and the source name will appear in the channel's INFO display with **white** characters. If a channel currently has its B source selected, the A/B/SET button will be **lit** and the source name will appear in the channel's INFO display with **white** characters. If a channel currently has a Wild Card source selected, the A/B/SET button will be **unlit** and the source name will appear in the channel's INFO display with **red** characters.

Please note that you cannot change the source or program the A or B sources while the channel is ON. Additionally, the surface may be configured via the *Wheatnet IP L8 Setup Tool* to prohibit source programming and Wild Card source select.
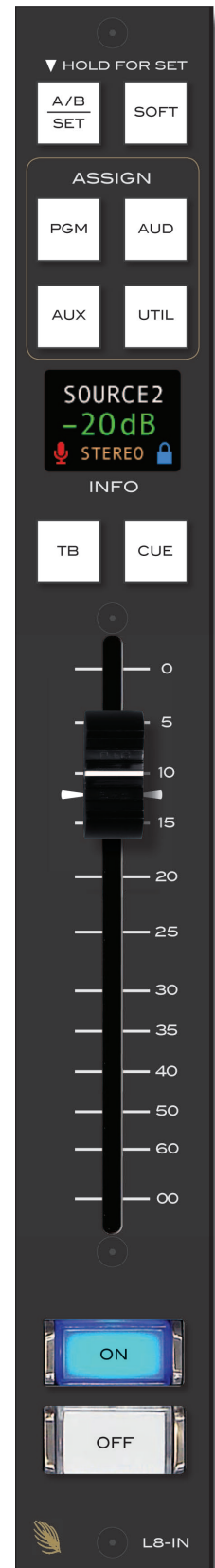
Soft Button

The SOFT button is designed to perform user-programmable functions. These 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 optional WheatNet-IP Navigator GUI program. See the *WheatNet-IP Audio Over IP Network* manual for details.

Assign Switches

Output switches assign the selected source signal to any combination of the surface's four stereo outputs – PGM (program), AUD (audition), AUX (auxiliary), and UTIL (utility). 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.

User access privileges may be configured to limit Bus Assignment on the Talent Access tab of the *Wheatnet IP L8 Setup Tool* GUI.

The UTIL Bus

The UTIL Bus has a special function in relation to a channel's Bus Minus output. Each signal that can be assigned to a channel will specify which bus (PGM, AUD, AUX, or UTIL) provides the base Bus Minus mix (that is, which bus the Bus Minus output is a mix-minus **of**) when that channel is on. When the channel is off, however, the base Bus Minus mix may be the same as when the channel is on, or may be configured to utilize the UTIL bus instead. This allows the Bus Minus output to have different content when the channel is off than it does when the channel is on.

Both the base Bus Minus mix and the use of the UTIL (OL) bus as base when the channel is off are configured in the VDip settings (see the section *VDips Tab* in chapter 2).

Display

The L8-IN contains an OLED display which shows several pieces of information.

Source Name – The topmost line shows the name of the current source for selected channel.

Fader Position – Fader position (in dB) shows on the center of the display.

Channel Mode – The channel's mode (Stereo, Mono, Left only, or Right only) is displayed in the center of the bottom line.

Microphone Icon – On the lower left corner a microphone icon can be seen if the source on that channel has been programmed via VDip for any of the four Studio Tallies. The purpose of this icon is to indicate whether there any live microphones in the studio. When there is a live microphone, the icon will be red instead of gray if so programmed.
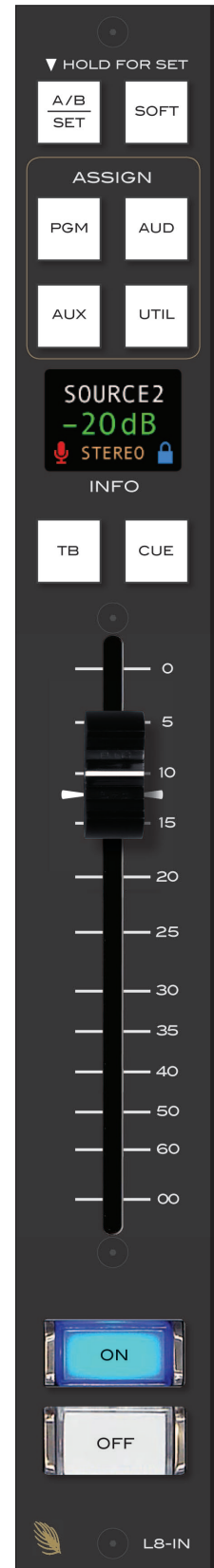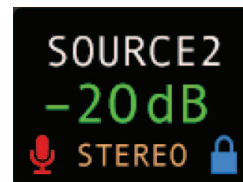
Lock Icon – On the lower right corner a lock icon can be seen. The icon will be grey when the channel is off. If the source is in use on another channel it will turn red but show unlocked when this channel is turned on. If the source is not in use on another channel it will show as blue and locked when this channel is turned on.
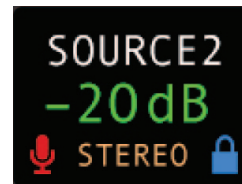
TB Switch

The TB switch routes the TB 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.

CUE Switch

A CUE switch places the channel's signal on the control surface's cue bus, where it may be heard in the external cue speaker, as an interrupt to the control surface operator's headphones, and as an interrupt to the monitor speakers, if so programmed.

Press the CUE button. The channel's input signal will be included in the control surface's CUE output at a level that is independent of the fader setting, and the button will light. The fader does not need to be turned ON. To remove a fader from cue, press the CUE button again; the light will go off to indicate the channel is no longer assigned to cue.

Bus-Minus / Direct Outputs

Each fader has a dedicated Bus-Minus output that includes all active faders on its selected source bus, except for itself. These auto generated monaural Bus-Minus signals may be routed to feed telephone hybrids, remote operator feeds, or other devices as required. Bus-Minus mix outputs for each surface fader appear as Sources in the Surface signal area of Navigator. A typical Bus-Minus output signal name is *L8BM01* but the exact name depends on the channel number.

Any of the four output busses may be selected on the VDips tab (see Chapter 2) as the source bus. Also on the VDips tab, the UTIL Bus (OL) may be selected as the source bus when the channel is off regardless of the bus selected as the (channel on) Bus-Minus source.

Another selection that can be made on the VDips tab is to repurpose the fader's Bus-Minus output as a Direct Output.

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 to the fader's source signal. The switch
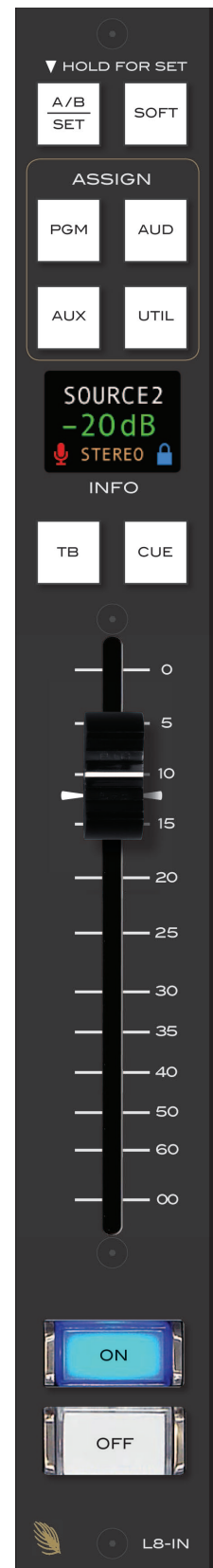
LED lights to indicate the channel is ON and the ON AIR LED will light on the left upper corner of the meterbridge if so programmed (see the discussion of OnAir tallies in Chapter 2's Engine Tab section).

Channel OFF Switch

The channel OFF switch turns the channel signal OFF and fires any channel OFF (STOP) logic mapped to the fader's source signal. The switch LED lights to indicate the channel is OFF.
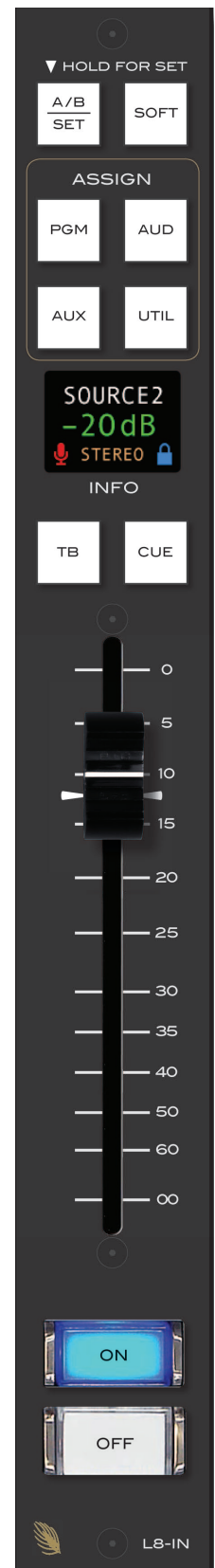
Control Room Module (L8-CR)

This is the console operator's monitor that allows the operator to listen to the console's four stereo outputs and an external stereo line level input. This module includes the FUNCTION encoder and TAKE button, the PAN, MODE, and EVNT buttons, the CR/HDPN bank of source select switches, the SPLIT CUE switch, and CONTROL RM and HDPN level controls for the control room and headphone outputs, along with a pair of OLED displays.

In a typical radio application the control surface is located in the Control Room. Speakers in the Control Room allow the control surface's operator to listen to the control surface bus outputs to be assured that the surface is performing as desired. These speakers are fed by a stereo signal from the control surface's Control Room output. In addition to the monitor output, the operator may also desire to listen to specific isolated faders via the cue system and

L8-IN Module

an external cue speaker, or may want to listen via headphones. Thus, the control room monitor consists of the above mentioned level controls, along with four source select (PGM, AUD, AUX and UTIL) buttons, as well as a programmable EXT/SET button. In some instances the control surface operator may also be performing talent whose voice will be heard over the radio. The operator's microphone may thus provide a part of the signal that is going out over the air. If that signal is the one being monitored with the Control Room speakers, there is the potential for feedback. The amplified signal from the Control Room speakers is picked up by the microphone and amplified to a new, higher, level, which then is once again picked up by the microphone. The signal quickly rises to an ear-splitting screech. To prevent this, the operator's microphone is normally set to MUTE the Control Room output to prevent the occurrence of feedback.

Displays

The L8-CR module houses two OLED INFO displays. The information shown in these displays changes in accordance with function in use, and will be described with each control function. We will be referring to these displays as the top display and the bottom display.

FUNCTION Knob

The FUNCTION knob serves several functions: as a Source signal selector for fader strips, as a Pan control, as a Mode selector, and as an Event recall control. This knob can also be used to cycle through the system and control surface information.

PAN Control

Press and hold the input channel A/B/SET button until it begins to flash, then press the PAN button. When the PAN button is pressed the FUNCTION knob acts as a panpot in MONO, LEFT only, and RIGHT only modes, and
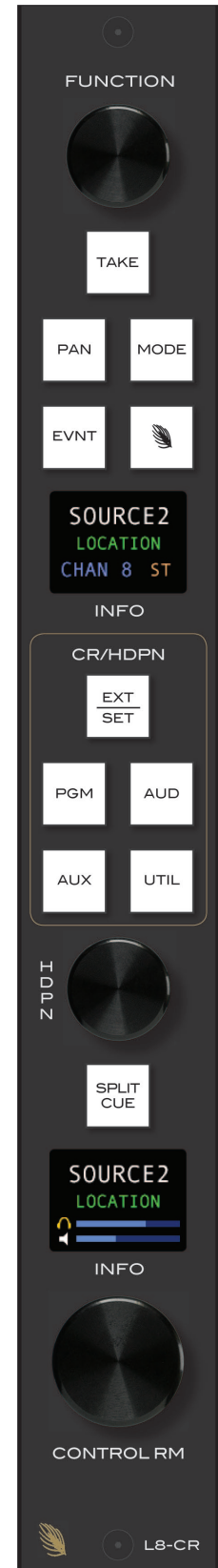
as a balance control in STEREO mode. The PAN slider appears on the top display. Adjust PAN as desired by rotating the FUNCTION knob, then press the flashing A/B/SET button again to set it up. To easily set the PAN to center, you can press the FUNCTION knob twice in rapid succession, like double-clicking a mouse button.

The panning may be denied to a user in the Talent Access tab of the *Wheatnet IP L8 Setup Tool* GUI.

MODE Button

The channel's INFO display shows which one of the four modes (Stereo, Mono, Left only, and Right only) the channel is in on the center of the bottom line of the display:

STEREO – Left in feeds fader L, right in feeds fader R. If a mono source is selected, it will feed both L and R.

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

L8-IN Module

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.

Choose the desired mode by, first, pressing and holding channel's A/B/SET button until it begins to flash, then pressing the MODE button to cycle through the choices. The channel's display will change to reflect the new mode. Choose the desired mode and press the A/B/SET again.

This operation may be denied to a user in the Talent Access tab of the *Wheatnet IP L8 Setup Tool* GUI.

Event

The L-8 includes a snapshot save and recall feature that saves all of the surface's switch, settings to a unique Event file. These saved Events may be recalled as required at any time.

To recall an Event, press and release the EVNT button (the button will light), then dial up the FUNCTION knob until the desired event shows in the top display. Press the TAKE button to complete the process. An Event will not change the status of a channel that is ON when the Event is recalled.

To save an Event, press and hold the EVNT button until it flashes, then dial up the Event you want to save to and press TAKE. The current surface switch settings at the time the save is done will be reestablished when that Event is recalled, except for any channels that are on at the time of recall.

User access privileges may be configured to limit access to Save and/or Take Events in the Talent Access tab of the *Wheatnet IP L8 Tool* GUI.
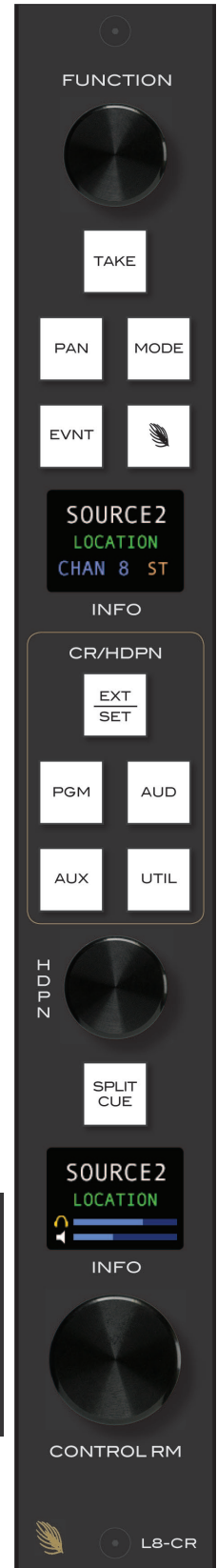
Source Select Switches

The bank of source select switches in the center of the L8-CR module selects the audio signal sent to the speakers and the headphones. This bank includes dedicated switches for selecting PGM (program), AUD (audition), AUX (auxiliary), or UTIL (utility), and a programmable EXT source. Simply press the desired switch to listen to that output bus or external source signal. The button will be lit when the monitor is assigned to its respective bus, and the bottom display will show the source name. Adjust the volume of the headphones and speakers by rotating the HDPN and CONTROL RM level controls respectively.

Programming External Source Switch

The external switch may be programmed to select any allowed source in the system. Press and hold the EXT/SET button until it begins to flash, then rotate the FUNCTION knob until the desired source appears in the module's top display, then press TAKE (which is also lit) to finish programming the button.

Depending on how the L-8 is configured, you may be able to select any source in the system or you may have a limited choice of sources for the external switches.

CONTROL RM Level Control

The CONTROL RM level control determines the overall loudness of the signal being monitored (PGM, AUD, AUX, UTIL, or EXT) as it appears in the Control Room speakers. As the control is turned clockwise, the loudness increases. To decrease the loudness, turn the control in a counterclockwise direction.

The bottom display shows the source name and location of the monitored source, and two horizontal lines. The bottom line indicates the volume level for the control room speaker.

The L-8 may be configured so that this level control has no effect by locking the Control Room outputs on the Monitor Config tab of the *Wheatnet IP L8 Setup Tool* GUI.

NOTE: If the Control Room is muted and you turn the level control all the way up, then remove the condition that has the Control Room muted, the sound in the Control Room speakers will suddenly be VERY LOUD!

HEADPHONE Level Control

The HDPN level control determines the overall loudness of the headphone output signal, which monitors the same source (PGM, AUD, AUX, UTIL, or EXT) as the Control Room speakers.

The headphone output signal appears at the HEADPHONE JACK, located on the right side of the control surface. The jack is provided as a place to plug in user-supplied **stereo** headphones having an impedance of **60 Ohms or higher**.

The bottom display shows the source name and location of the monitored source, and two horizontal lines. The top line indicates the volume level for the headphones.

The L-8 may be configured so that the HDPN level control has no effect by locking the Headphone outputs on the Monitor Config tab of the *Wheatnet IP L8 Setup Tool* GUI.

SPLIT CUE Button

If CUE is allowed to interrupt the headphones (see the discussion of the CUE level Control below) and the SPLIT CUE button is lit, then the normal headphone feed bus will be mono summed to the left headphone and the CUE bus will be mono summed to the right headphone anytime a channel is put into CUE.

System Information

Pressing and holding the CONTROL RM and STUDIO knobs (on the bottom of the L8-ST module) knobs at the same time for several seconds will cause some configuration information and software version to be displayed in the top display. While in this state, turning the FUNCTION knob will cycle through the following items:

```
Network...          ──── IP Addr
Blade...            ──── Netmask
Versions...         ──── Gateway
Exit Menu           ──── MAC Address
                    ──── <<Back

                    ──── Blade IP
                    ──── <<Back

                    ──── Station Type
                    ──── FPGA Version
                    ──── SW Version
                    ──── Build Date
                    ──── Build Time
                    ──── <<Back
```
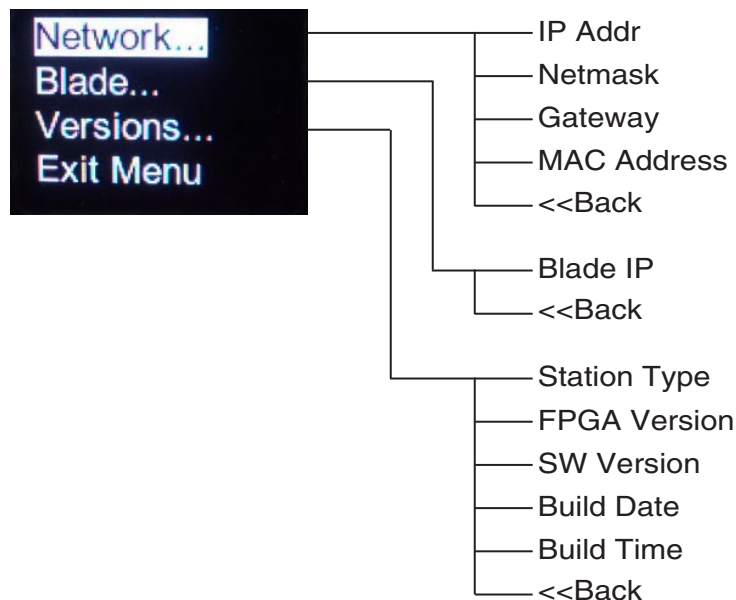
The operator also can change the Network and Blade settings by pressing and rotating the FUNCTION knob.

In the event that you need to discuss an issue with Wheatstone Technical Support you may be asked for some or all of information shown in this display.

This feature is discussed in greater detail in the Control Surface Menus section of Chapter 2.

Studio Control Module (L8-SC)

In addition to the Control Room, there may be a Studio in which one or more performers will be assembled, usually with microphones so that their voices can become part of the mix. Speakers may be provided in the Studio to allow the talent to listen to the control surface bus outputs at times that they are not actually on air. These speakers are fed from the control surface's stereo Studio output.

The studio monitor consists of STUDIO and CUE level controls, a TB (talkback) button, five monitor source select buttons (PGM, AUD, AUX, UTIL, and EXT/SET), meter select buttons, and timer controls.

Displays

The L8-SC module houses two OLED, METER/CLK and INFO, displays. The information shown in these displays changes in accordance with the function in use, and will be described with each control function.

Source Select Switches

The Studio Control monitor output has its own bank of source select switches which select the audio signal sent to the Studio speakers. This bank includes dedicated switches for selecting PGM (program), AUD (audition), AUX (auxiliary), or UTIL (utility), and a programmable EXT source. Simply press the desired switch to listen to that output bus or external source signal. The button will be lit when the monitor is assigned to its respective bus.

Programming External Source Switch

The external switch may be programmed to select any allowed source in the system. Press and hold the EXT/SET button until it begins to flash, then rotate the FUNCTION knob until the desired source appears in the INFO display, then press TAKE (which is also lit) to finish programming the button.

Depending on how the L-8 is configured, you may be able to select any source in the system or you may have a limited choice of sources for the external switches.

CUE Level Control

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 speakers.

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

There are two horizontal lines at the bottom of the INFO display. The top line indicates the volume level of the cue signal.
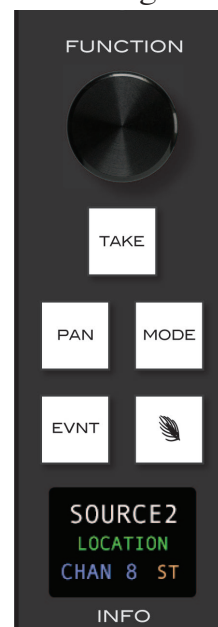
L8-CR Module
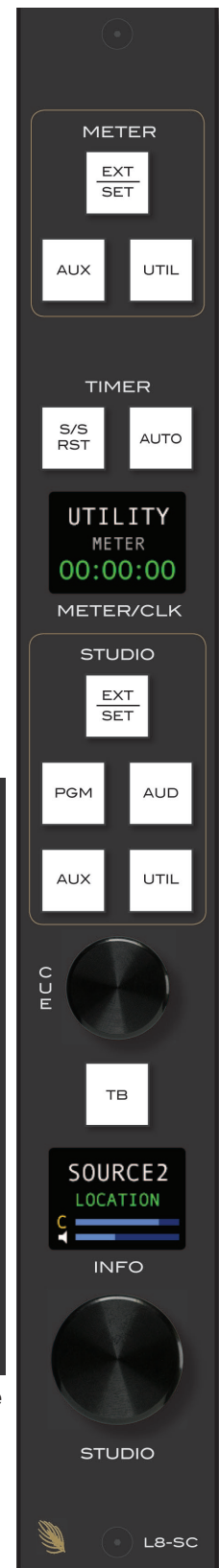
The cue speakers have the potential for feedback and should be muted whenever the control room speakers are. Use the VDips tab of the *Wheatnet IP L8 Setup Tool* GUI to add the Cue mute attribute to any microphone signals located in the studio room.

NOTE: If cue is muted and you turn the level control all the way up, then remove the condition that has the cue muted, the sound in the external cue speakers will suddenly be VERY LOUD!

Note that CUE audio may interrupt the Control Room audio, the Headphone audio, and/or the Studio audio, depending on the Cue Default settings on the Monitor Config tab of the *Wheatnet IP L8 Setup Tool* GUI.

STUDIO Level Control

The STUDIO level control determines the overall loudness of the signal being monitored as it appears in the Studio speakers.

The INFO display, which shows the source name and location of the monitored source, has two horizontal lines at the bottom. The bottom line indicates the volume level for the studio speaker.
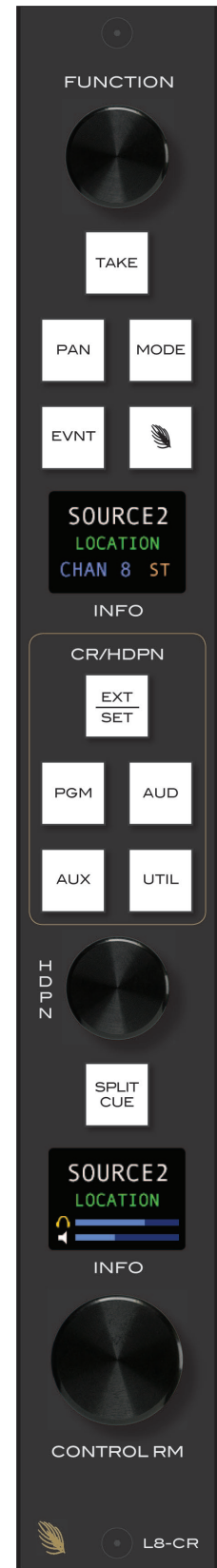
The L-8 may be configured so that this level control has no effect by locking the Studio outputs on the Monitor Config tab of the *Wheatnet IP L8 Setup Tool* GUI.

NOTE: If the Studio is muted and you turn the level control all the way up, then remove the condition that has the Studio muted, the sound in the Studio speakers will suddenly be VERY LOUD!

TB (Talkback) Button

The TB button lets the operator's microphone signal interrupt the normal feed to the studio speakers, allowing the operator to talk to the performers in the Studio. Note that the Talkback source, typically the board operator's mic, must first be cross connected to the surface's TB input.

METERS

The METER section consists of three VU meter pairs on the control surface's meterbridge and a group of METER select buttons, located on the top of the L8-SC module.

VU Meter Pairs

VU meter pairs (PROGRAM, AUDITION, and SWITCHED) are stereo LED bargraph type meters.

The level of the signal being metered is indicated by the number of display elements that are lighted. The more elements lighted, the stronger is the sig-

nal being displayed. The right five LEDs in each bargraph are red to indicate when the signal level is approaching a clipping (distorted) level. The next six LEDs are yellow, indicating a normal level range, and the remaining LEDs are green. The top member of the pair indicates the level of the signal's left channel, while the bottom member of the pair indicates the level of the signal's right channel.
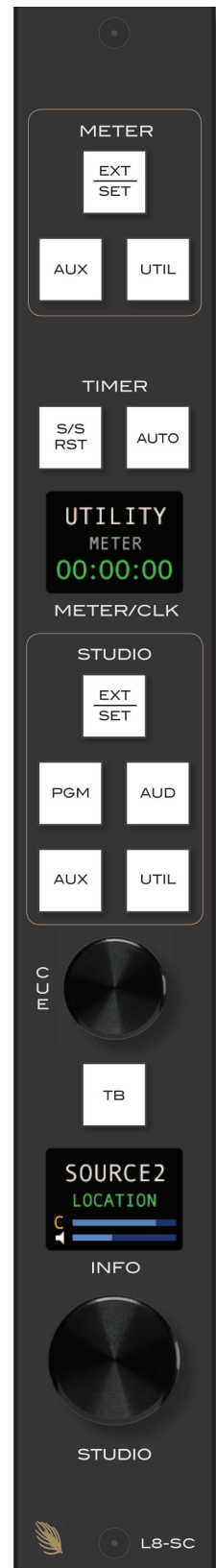
The left VU meter pair shows the level of the PGM output, the middle pair shows the AUD output, and the right VU meter pair (SWITCHED) shows the level of the signal that is selected for it (AUX, UTIL, or EXT). The SWITCHED meters will also display the CUE signal level when an input fader's CUE switch is activated if the L-8 has been so configured. The Auto-Cue function can be configured to be off in the Engine tab of the *Wheatnet IP L8 Setup Tool* GUI.

METER Select Button

The METER buttons select the source for the switched meter pair, as indicated above. The selected source and its location shows in the METER/CLK display.

Time of Day

On the bottom line of the METER/CLK display, the time of day is shown in either 12-hour or 24-hour format, as set in the Engine tab of the *Wheatnet IP L8 Setup Tool* GUI. The time is obtained from the Host BLADE. If no Host BLADE is configured, the time starts at midnight when the control surface is powered on.

TIMER Buttons

The control surface timer is provided with an AUTO-RESTART function so that input modules can automatically reset the timer display (located on the meterbridge) to zero and start a new count, allowing the announcer to easily track his own pace. The AUTO button must be lit to enable this function, and signals must be configured on the VDips tab of the *Wheatnet IP L8 Setup Tool* GUI as well to determine which ones, if any, will trigger the auto restart.

The S/S RST button has stop/start and reset functions.

The S/S (start/stop) function halts the timer, holds the last count, and then restarts and accumulates the count when depressed again–perfect for compiling tapes of desired duration. The S/S RST button is lit while the timer is counting.

Reset function has a dual-mode capability:

- if you press and hold the S/S RST button for three seconds while the timer is counting, the display will reset to zero and start a fresh count;

- if the timer is already stopped, pressing and holding this button for three seconds will reset the timer to zero, where it will hold until start is pressed.

WheatNet-IP 88cbl Console BLADE3

Chapter Contents

WheatNet-IP 88cbl Console BLADE 3

General Information

The WheatNet-IP 88cbl Console BLADE 3 integrates a powerful mix engine with analog and digital I/O to give you a single rack-space console solution. Paired with the L-8 control surface, you have a super-compact, ultra powerful-mix station that functions as a stand-alone console. A powerful device containing the console's digital signal processing, input, output, and logic circuitry, the engine has no fans and may be located either next to the control surface or at a remote location.

The WheatNet-IP 88cbl is designed to fit into an industry standard 19" equipment rack, and requires one rack unit (1.75 inches) of vertical space. The Console BLADE 3 has a depth of 13-1/4" behind the rack rails (including chassis connectors). An additional five inches of space is required for wiring cables to pass through. The chassis of this BLADE 3 has a width of 17-3/8". Space needed in front of rack rails is 3/4". The WheatNet-IP 88cbl has vertical vent slots positioned lower in the side panels. There is no fan inside the Console BLADE 3 because its power consumption is low enough to not require one.

WARNING! **Under no circumstances should the WheatNet-IP unit be opened! The unit contains high voltage circuits that are hazardous and potentially harmful. The unit has no user-serviceable parts inside! If you have a problem the unit must be returned to Wheatstone Corporation for repair.**

Installation Tips

- Place any surge protection circuits as close as possible to the WheatNet-IP or other device being protected.
- Establish a low impedance common ground in your facility and try to route all grounds to that point.
- Choose the best power conditioning/UPS units that you can afford and suitable for your equipment – focus on the features and options you need. The better UPS products can prevent thousands of dollars in equipment damage – some even come with an external equipment damage warranty.
- Unbalanced analog audio connections to the Console BLADE 3 RJ-45 connectors can be done in different ways. The following wiring methods are worthy of consideration:
  - connections can be made with UTP (unshielded twisted pair) cable such as CAT5
    - for an audio input to the BLADE 3, connect the unbalanced source hot wire (for example, the center pin of an RCA connector) to the RJ-45 HI pin, and connect the unbalanced source ground (for example, the shell of an RCA connector) to the RJ-45 LO pin

- • for an audio output from the BLADE 3, the same connections can be made as are used for the inputs
- • although not recommended, connections can be made with shielded twisted pairs, such as is normally used for balanced analog audio connection
  - • for an audio input to the BLADE 3, connect the unbalanced source hot wire to one wire of the twisted pair and the unbalanced source ground to the other wire of the pair – at the BLADE 3 end, connect the wire carrying the hot signal to the RJ-45 HI pin and the wire carrying the ground to the RJ-45 LO pin – connect the shield to a convenient ground connection at one end only – typically when equipment is being connected in this fashion you choose to make your ground connection consistently at either the source or the destination, using the same grounding scheme wherever in the system such connections are made
  - • for an audio output from the BLADE 3, the same connections can be made as are used for the inputs
- • adapters are commercially available with RJ-45 connectors on one end and the appropriate audio connector type, such as RTS or XLR, on the other
- • balanced to unbalanced adapters, also called baluns, are commercially available to transform the unbalanced connection to a balanced connection – these are usually active devices and will account for level differences as well as converting between balanced and unbalanced connections

- • For digital audio connections always use a good quality digital audio cable with a characteristic impedance of 110 ohms.

  The AES/EBU specification, with its broad impedance tolerance, allows for cables with impedances from 88 ohms to 132 ohms – 110 ohms is ideal. Twisted pair cable should be shielded, and in the case of multi-pair cable, each pair should be individually shielded. Foil shielding is recommended for permanent installations and foil shield plus overall braid should be used in applications where frequent flexing of the cable will occur. One cable pair is capable of carrying two channels of digital audio.

  Generic "audio" cable such as Belden 8451 *may* be used for interconnecting AES3 digital audio devices but **only** for distances of less than about 25 feet. The actual cable length that will work satisfactorily in an installation is primarily determined by the error correction and jitter tolerance of the AES3 receiver device and the cable used.

  The impedance of most "analog" cables ranges from 40 ohms to 70 ohms and represents a large impedance mismatch from the nominal 110 ohms required in the AES3 standard. Such mismatch will result in signal reflections, causing bit errors at the AES3 receiver. The higher capacitance of generic analog cables also slows down the rise time of the digital data signals, impairing the ability of the AES3 receiver to accurately detect digital signal transitions. This may result in increased jitter.

Energizing

There is no power switch. The AC line input voltage is permitted to be between 90 and 260VAC, 50 or 60Hz. Power consumption is under 100VA.

Aggressive AC input filtering is utilized at the AC input of the Console BLADE3; however, it is always advisable to use external surge protection and/or an uninterruptible power supply (UPS), especially where AC power quality is questionable, such as at a remote transmitter site.

Power conditioning, surge suppression, and even power backup devices are wise investments when using sensitive modern electronic devices that use an internal computer.

Use of a UPS (uninterruptible power supply) is a good idea and will protect the Console BLADE3 from short duration power interruptions which may cause it to reboot. During boot up, audio is interrupted for approximately 40 seconds.

I/O Connections

Two female XLR connectors are microphone preamplifier inputs. Recessed rear panel phantom power switches and gain trims can be independently configured, and one RJ-45 connector connects the preamp outputs to any one of the Analog Input RJ-45's.

Eight RJ-45 connectors are for audio inputs. The first four RJ-45 jacks are analog inputs which can be set up as four stereo, eight mono, or any combination of stereo and mono. The last four RJ-45 jacks are AES digital inputs.

The Console BLADE3 also has eight RJ-45 connectors for audio outputs. The first four RJ-45 jacks are set up as analog stereo outputs, and the last four RJ-45 jacks are set up as AES digital outputs. The "Console" template, by default, has a signal map that automatically cross connects the surface's Program, Headphone, Cue, and Studio signals to the designated outputs. The Digital outputs follow the Analog outputs and cannot be independently connected to different audio sources.

An RJ-45 is provided for headphone and cue outputs. There also two 1/4" jacks for cue outputs (the RJ-45 and the 1/4" jacks connections are in parallel so you can choose your preferred connector type for cue outputs).

Four XLR male connectors are provided for control room and studio outputs.

The BLADE3 also has two more RJ-45 connectors to provide 12 logic ports, which can be individually designated during setup as inputs or outputs. These ports are where you wire the various external switches, indicators, and control functions you need in your facility.

There are two RJ-45 jacks for Ethernet. One is for 1 Gigabit Ethernet – connect this one to your network. The 100 Megabit Ethernet port is not used – do not connect anything to this port.

Consult the wiring diagram on page 4-9 for detailed information.

The unit has a standard IEC power connector. The BLADE3 has an internal power supply that will accept 90-240 volts 50/60 hertz AC power.

The power jack at the center of the rear panel is for power connection to the L-8 control sutface. The factory supplied power cable has coaxial power jacks on the both ends to connect the L-8 to the WheatNet-IP 88cbl Console BLADE3.

Inputs

The WheatNet-IP 88cbl can be fed from three different types of inputs: microphone, analog line level, and AES-3 digital.

When processing mic level (-50dBu nominal) inputs, the input to the internal microphone preamplifiers is fed from one of the two female XLR connectors. When using the internal microphone preamplifiers, a jumper must be connected from the MIC OUTS RJ-45 to a selected Analog input (1-4). The mic preamps have recessed single-turn trimpots to set gain, up to a maximum of 70dB, and display remarkably high performance and accuracy. Phantom power is available via recessed rear panel switches.

Four RJ-45 connectors can be used for analog line level inputs. The line level analog audio inputs are +4dBu balanced. The analog line inputs exhibit a bridging impedance and can handle signals up to +20dBu.

To handle digital line level sources there are four additional RJ-45 connectors.

The digital inputs of the WheatNet-IP 88cbl (inputs 5-8) will accommodate digital inputs having a wide range of sample rates. These inputs will be sample rate converted to the system's chosen sample rate of 44.1kHz or 48kHz, which is set in the *System Wizard* when bringing up the BLADE3 after a Factory Reset (or when first setting the BLADE3 up out of the box), or via the optional WheatNet-IP Navigator GUI. The GUI also allows you to select input 8 of the digital BLADE3, or of any BLADE3 that has a digital input as input 8, to be a primary external reference, and a digital input 8 from a different BLADE3 to be a secondary external reference. Please note that the sample rate of a digital input 8 should be the same, either 44.1kHz or 48kHz, as the system's chosen sample rate.

AES sources are by design stereo; if the BLADE is not set to be stereo the appropriate Left or Right signal within the AES stream will be applied to the signal path.

MIC IN XLR

XLR#1 Pin 1 – SH ⎤
XLR#1 Pin 2 – HI   ⎥   Mic 1 In
XLR#1 Pin 3 – LO ⎦

XLR#2 Pin 1 – SH ⎤
XLR#2 Pin 2 – HI   ⎥   Mic 2 In
XLR#2 Pin 3 – LO ⎦

Analog 1-4 RJ-45

RJ-45#1 Pin 1 – HI ⎤   Line 1 Lt In
RJ-45#1 Pin 2 – LO ⎦

RJ-45#1 Pin 3 – HI ⎤   Line 1 Rt In
RJ-45#1 Pin 6 – LO ⎦

RJ-45#2 Pin 1 – HI ⎤   Line 2 Lt In
RJ-45#2 Pin 2 – LO ⎦

RJ-45#2 Pin 3 – HI ⎤   Line 2 Rt In
RJ-45#2 Pin 6 – LO ⎦

RJ-45#3 Pin 1 – HI ⎤   Line 3 Lt In
RJ-45#3 Pin 2 – LO ⎦

RJ-45#3 Pin 3 – HI ⎤   Line 3 Rt In
RJ-45#3 Pin 6 – LO ⎦

RJ-45#4 Pin 1 – HI ⎤   Line 4 Lt In
RJ-45#4 Pin 2 – LO ⎦

RJ-45#4 Pin 3 – HI ⎤   Line 4 Rt In
RJ-45#4 Pin 6 – LO ⎦

Digital 5-8 RJ-45

RJ-45#5 Pin 1 – HI ⎤   AES 5 In
RJ-45#5 Pin 2 – LO ⎦

RJ-45#6 Pin 1 – HI ⎤   AES 6 In
RJ-45#6 Pin 2 – LO ⎦

RJ-45#7 Pin 1 – HI ⎤   AES 7 In
RJ-45#7 Pin 2 – LO ⎦

RJ-45#8 Pin 1 – HI ⎤   AES 8 In
RJ-45#8 Pin 2 – LO ⎦

Outputs

The WheatNet-IP 88cbl provide four stereo analog outputs on RJ-45 connectors, four digital AES formatted outputs on RJ-45 connectors, cue and headphone outputs on an RJ-45 connector, cue output on 1/4" jacks, and control room and studio monitor outputs on XLR male connectors.

MIC OUTS RJ-45

RJ-45 Pin 1 – HI
RJ-45 Pin 2 – LO   ] Mic 1 Out
RJ-45 Pin 3 – HI
RJ-45 Pin 6 – LO   ] Mic 2 Out

⚠️

When using the microphone preamplifiers, a jumper must be connected from the MIC OUTS to the desired analog input port (1-4).

CUE/HDPN OUT RJ-45

RJ-45 Pin 1 – HI
RJ-45 Pin 2 – LO   ] HDPN Lt Out
RJ-45 Pin 3 – HI
RJ-45 Pin 6 – LO   ] HDPN Rt Out
RJ-45 Pin 4 – HI
RJ-45 Pin 5 – LO   ] Cue Lt Out
RJ-45 Pin 7 – HI
RJ-45 Pin 8 – LO   ] Cue Rt Out

STUDIO OUT XLR

XLR#1 Pin 1 – SH
XLR#1 Pin 2 – HI   ] Studio Lt Out
XLR#1 Pin 3 – LO
XLR#2 Pin 1 – SH
XLR#2 Pin 2 – HI   ] Studio Rt Out
XLR#2 Pin 3 – LO

CR OUT XLR

XLR#1 Pin 1 – SH
XLR#1 Pin 2 – HI   ] CR Lt Out
XLR#1 Pin 3 – LO
XLR#2 Pin 1 – SH
XLR#2 Pin 2 – HI   ] CR Rt Out
XLR#2 Pin 3 – LO

PGM OUT ANALOG RJ-45

RJ-45 A Pin 1 – HI
RJ-45 A Pin 2 – LO   ] PGM A Lt Out
RJ-45 A Pin 3 – HI
RJ-45 A Pin 6 – LO   ] PGM A Rt Out
RJ-45 B Pin 1 – HI
RJ-45 B Pin 2 – LO   ] PGM B Lt Out
RJ-45 B Pin 3 – HI
RJ-45 B Pin 6 – LO   ] PGM B Rt Out

RJ-45 C Pin 1 – HI
RJ-45 C Pin 2 – LO   ] PGM C Lt Out
RJ-45 C Pin 3 – HI
RJ-45 C Pin 6 – LO   ] PGM C Rt Out
RJ-45 D Pin 1 – HI
RJ-45 D Pin 2 – LO   ] PGM D Lt Out
RJ-45 D Pin 3 – HI
RJ-45 D Pin 6 – LO   ] PGM D Rt Out

PGM OUT DIGITAL RJ-45

RJ-45 A Pin 1 – HI
RJ-45 A Pin 2 – LO   ] PGM AES A Out
RJ-45 B Pin 1 – HI
RJ-45 B Pin 2 – LO   ] PGM AES B Out
RJ-45 C Pin 1 – HI
RJ-45 C Pin 2 – LO   ] PGM AES C Out
RJ-45 D Pin 1 – HI
RJ-45 D Pin 2 – LO   ] PGM AES D Out

Logic Ports

The WheatNet-IP 88cbl has two LOGIC I/O RJ-45 connectors that provide 12 Universal logic ports.

LOGIC I/O 1 - 6 RJ-45

RJ-45 Pin 1 – Digital Ground
RJ-45 Pin 2 – Logic 1 In/Out
RJ-45 Pin 3 – Logic 2 In/Out
RJ-45 Pin 4 – Logic 3 In/Out
RJ-45 Pin 5 – Logic 4 In/Out
RJ-45 Pin 6 – Logic 5 In/Out
RJ-45 Pin 7 – Logic 6 In/Out
RJ-45 Pin 8 – +5V Digital

LOGIC I/O 7 - 12 RJ-45

RJ-45 Pin 1 – Digital Ground
RJ-45 Pin 2 – Logic 7 In/Out
RJ-45 Pin 3 – Logic 8 In/Out
RJ-45 Pin 4 – Logic 9 In/Out
RJ-45 Pin 5 – Logic 10 In/Out
RJ-45 Pin 6 – Logic 11 In/Out
RJ-45 Pin 7 – Logic 12 In/Out
RJ-45 Pin 8 – +5V Digital

MIC INPUTS

XLR-F #1

PIN 1 - MIC 1 IN SH
PIN 2 - MIC 1 IN HI
PIN 3 - MIC 1 IN LO

XLR-F #2

PIN 1 - MIC 2 IN SH
PIN 2 - MIC 2 IN HI
PIN 3 - MIC 2 IN LO

MICS OUT
RJ-45

Pin	
1	MIC 1 OUT HI
2	MIC 1 OUT LO
3	MIC 2 OUT HI
4	
5	
6	MIC 2 OUT LO
7	
8	

CUE/HDPN OUT
RJ-45

Pin	
1	HDPN LT OUT HI
2	HDPN LT OUT LO
3	HDPN RT OUT HI
4	CUE LT OUT HI
5	CUE LT OUT LO
6	HDPN RT OUT LO
7	CUE RT OUT HI
8	CUE RT OUT LO

ANALOG / DIGITAL INPUTS

RJ-45 #1

Pin	
1	LINE 1 LT IN HI
2	LINE 1 LT IN LO
3	LINE 1 RT IN HI
4	
5	
6	LINE 1 RT IN LO
7	
8	

RJ-45 #2

Pin	
1	LINE 2 LT IN HI
2	LINE 2 LT IN LO
3	LINE 2 RT IN HI
4	
5	
6	LINE 2 RT IN LO
7	
8	

RJ-45 #3

Pin	
1	LINE 3 LT IN HI
2	LINE 3 LT IN LO
3	LINE 3 RT IN HI
4	
5	
6	LINE 3 RT IN LO
7	
8	

RJ-45 #4

Pin	
1	LINE 4 LT IN HI
2	LINE 4 LT IN LO
3	LINE 4 RT IN HI
4	
5	
6	LINE 4 RT IN LO
7	
8	

RJ-45 #5

Pin	
1	AES 5 IN HI
2	AES 5 IN LO
3	
4	
5	
6	
7	
8	

RJ-45 #6

Pin	
1	AES 6 IN HI
2	AES 6 IN LO
3	
4	
5	
6	
7	
8	

RJ-45 #7

Pin	
1	AES 7 IN HI
2	AES 7 IN LO
3	
4	
5	
6	
7	
8	

RJ-45 #8

Pin	
1	AES 8 IN HI
2	AES 8 IN LO
3	
4	
5	
6	
7	
8	

STUDIO OUT

XLR-M #1

PIN 1 - ST LT OUT SH
PIN 2 - ST LT OUT HI
PIN 3 - ST LT OUT LO

XLR-M #2

PIN 1 - ST RT OUT SH
PIN 2 - ST RT OUT HI
PIN 3 - ST RT OUT LO

CR OUT

XLR-M #1

PIN 1 - CR LT OUT SH
PIN 2 - CR LT OUT HI
PIN 3 - CR LT OUT LO

XLR-M #2

PIN 1 - CR RT OUT SH
PIN 2 - CR RT OUT HI
PIN 3 - CR RT OUT LO

PROGRAM OUTPUTS

ANALOG

RJ-45 A

Pin	
1	PGM A LT OUT HI
2	PGM A LT OUT LO
3	PGM A RT OUT HI
4	
5	
6	PGM A RT OUT LO
7	
8	

RJ-45 B

Pin	
1	PGM B LT OUT HI
2	PGM B LT OUT LO
3	PGM B RT OUT HI
4	
5	
6	PGM B RT OUT LO
7	
8	

RJ-45 C

Pin	
1	PGM C LT OUT HI
2	PGM C LT OUT LO
3	PGM C RT OUT HI
4	
5	
6	PGM C RT OUT LO
7	
8	

RJ-45 D

Pin	
1	PGM D LT OUT HI
2	PGM D LT OUT LO
3	PGM D RT OUT HI
4	
5	
6	PGM D RT OUT LO
7	
8	

DIGITAL

RJ-45 A

Pin	
1	PGM AES A OUT HI
2	PGM AES A OUT LO
3	
4	
5	
6	
7	
8	

RJ-45 B

Pin	
1	PGM AES B OUT HI
2	PGM AES B OUT LO
3	
4	
5	
6	
7	
8	

RJ-45 C

Pin	
1	PGM AES C OUT HI
2	PGM AES C OUT LO
3	
4	
5	
6	
7	
8	

RJ-45 D

Pin	
1	PGM AES D OUT HI
2	PGM AES D OUT LO
3	
4	
5	
6	
7	
8	

ETHERNET

100M RJ-45

Pin	
1	TX +
2	TX -
3	RX +
4	N/C
5	N/C
6	RX -
7	N/C
8	N/C

NOT USED

1G RJ-45

Pin	
1	TRD0 +
2	TRD0 -
3	TRD1 +
4	TRD2 +
5	TRD2 -
6	TRD1 -
7	TRD3 +
8	TRD3 -

LOGIC I/O

1 - 6 RJ-45

Pin	
1	DIGITAL GROUND
2	LOGIC 1 IN/OUT
3	LOGIC 2 IN/OUT
4	LOGIC 3 IN/OUT
5	LOGIC 4 IN/OUT
6	LOGIC 5 IN/OUT
7	LOGIC 6 IN/OUT
8	+5V DIGITAL

7 - 12 RJ-45

Pin	
1	DIGITAL GROUND
2	LOGIC 7 IN/OUT
3	LOGIC 8 IN/OUT
4	LOGIC 9 IN/OUT
5	LOGIC 10 IN/OUT
6	LOGIC 11 IN/OUT
7	LOGIC 12 IN/OUT
8	+5V DIGITAL

NOTE: CUE OUT RJ-45 and 1/4" jacks audio connections are paralleled. Either may be used.

Front Panel Metering

The front panel of each BLADE 3 model houses metering for every input or output on the BLADE – 12-segment, multi-color LEDs that can be used for metering inputs and outputs as 8 pairs or 16 mono signals. The exception to this is the IP88m Mic unit, which meters eight mono input signals. Please note that these meters show audio levels after any gain trimming has been applied, so if for some reason you have the gain for a particular channel cranked down, you may not see any meter indication even though audio is there.

Front panel logic indicators show status for active logic and direction (in or out) of the BLADE 3.

There also four system indicators:

- Link – Shows network connectivity.

- Route Master – Lights to show that the BLADE 3 is functioning as the System Master.

- Clock Master – Lights to show that the BLADE 3 is functioning as the system's Clock Master.

- Error – Shows an error in network connectivity.

Front Panel Dual OLED's

New BLADE 3s come with dual OLED displays for monitoring and control of most functions right from the front panel, including audio routing setup, monitoring, network information, alarm status, enabling and operating utility mixes, setting input and output gain, and connecting audio processing. Settings can also be done remotely using a PC.

The front panel's two OLED displays, two buttons, and the knob quickly and easily allow you to set up and configure each BLADE 3 unit.

Rotation of the knob navigates up and down a menu when there is a list, or scrolls thru options in a submenu once one has been selected. Pressing the right arrow button navigates through sub-menu options. Pushing the right arrow button or the knob "takes" an option. The [<---] button backs out of a submenu to the main menu.

Use of the controls will become clearer as we go through some examples.

BLADE 3 Setup Mode

As shipped from the factory, each BLADE 3 will initially start up in **Blade Setup** mode.

Activating any of the front panel controls will begin the setup process, during which you will be faced with a small number of choices, as indicated on the right side OLED display.

Your first decision involves "System Size" and is something that should be well thought out before doing **Blade Setup** on your first BLADE 3. Here are the two choices, and their significance:

1-99 Blades – This would be your choice for a small to medium sized system. When you choose this size the setup wizard will automatically assign network settings to the BLADE 3 based on your choice of Blade ID (see below). IP addresses will be assigned within the 192.168.87.xxx subnet, with the last octet being assigned a value of 100 plus the Blade ID. The subnet mask will be set to 255.255.255.0, and the gateway will be set to 192.168.87.1. Once you have gone through the complete **Blade Setup** process you will be able to change the network settings, if desired. If you are setting up a system that you know will never grow beyond 99 BLADE 3 units, then this is your best choice.

100+ Blades – This would be your choice for a large system. When you choose this size the setup wizard will automatically assign network settings to the BLADE 3 based on your choice of Blade ID. For IDs in the range of 1 to 99, IP addresses will be assigned within the 192.168.87.xxx subnet, with the last octet being assigned a value of 100 plus the Blade ID. The subnet mask will be set to 255.255.0.0, and the gateway will be set to 192.168.87.1. For IDs in the range of 100 to 199, IP addresses will be assigned within the 192.168.88.xxx subnet, with the last octet being assigned a value equal to the Blade ID. The subnet mask will be set to 255.255.0.0, and the gateway will be set to 192.168.88.1. Once you have gone through the complete **Blade Setup** process you will be able to change the network settings, if desired. If you are setting up a system with more than 100 BLADE 3 units, or a system that you know will grow beyond 99 BLADE 3 units in the future, then this is your best choice.

Scroll the knob to the desired system size and click the right arrow button to accept that size. If you have chosen either **1-99 Blades** or **100+ Blades** you will then need to select a BLADE 3 Blade ID. Note that each BLADE 3 in the system must have a unique Blade ID.

Once you have completed the decision process for system size, the setup wizard will display the settings on the right side OLED display. Press the right arrow button to advance to the next decision, that of **Default Sample Rate**. Here there are only two choices: **48K** (48kHz), or **44K** (44.1kHz). If you are not sure which one to select, and you are not working

with audio for television, use **44K**. You can change the sample rate at a later time if needed. Scroll to the desired selection and press the right arrow button.

The final choice you need to make is which **I/O Template** to use. Here are the three choices, and their significance:

Stereo I/O – This would be the most common choice if your facility consists primarily of equipment with stereo inputs and outputs, such as tape machines, CD players, computers, etc. When this template is employed the setup wizard will configure the inputs and outputs of the BLADE 3 as stereo signals and add these signals to the system. If you choose this template, you can later on change some of your signals to mono if necessary.

Mono I/O – This would be the most common choice if your facility consists primarily of monophonic equipment, such as microphones, phone systems, etc. When this template is employed the setup wizard will configure the inputs and outputs of the BLADE 3 as mono signals and add these signals to the system. If you choose this template, you can later on change some of your signals to stereo if necessary. Please note that if you have a lot of mono sources you may be tempted to use this template, but you should also consider the rest of your audio equipment; you may actually still have more stereo signal requirements than mono ones.

Custom – This would be a tempting choice if you have a fairly even balance between mono and stereo signals in your facility. However, if you choose this template the setup wizard will not configure the BLADE 3 inputs, nor will it add input signals to the system. With this template, you will need to create the signals for each input connection.

Once all the choices have been made, the setup wizard will complete the configuration process. The right side OLED display will indicate that the BLADE 3 is entering the system:

Once the BLADE 3 has joined the system its basic information will show on the OLED displays:

When the front panel controls are idle for a while the OLED displays will show the Screen Saver:

BLADE 3 Front Panel Configuration

Activating any of the front panel controls will replace the screen saver display with the main menu screen.

Press the left arrow button `<---` twice to open up the BLADE 3 information screens:

On the left window of the Info screens you will find your digital system clock rate, that can be either 44.1K, 48K, External Reference, or AES 67. The "Master" on the top row will be displayed if this BLADE 3 assumes the role as system master over

the rest of the BLADE 3s in your network, or a square wave icon shows if this BLADE 3 is acting as the clock master. The BLADE 3's Name, ID number, and inside temperature also display in this window. The RJ-45 connector icon will show green and have moving dots next to it if the BLADE 3 is connected to the network. If it is not connected the RJ-45 icon will show red and there will be no dots.

The right window of the Info screens displays whether the BLADE 3's signal meters are displaying input or output, and also shows the BLADE 3 IP Address and Uptime.

Pressing the left arrow button again will take you back to the screen saver display.

Clockwise rotation of the knob navigates up and down a menu when there is a list, or scrolls thru options in a submenu once one has been selected. Pressing the right arrow button navigates through sub-menu options. Pushing the knob "takes" an option.

To edit any parameter or name, press the right arrow button to highlight the parameter. Turn the knob to find the desired value or character, then press the right arrow button to take it. If the parameter has more than one field you can press the knob to cycle through the fields.

The `<---` button backs out of a submenu to the main menu.

For example, when you select *Headphone...* by pressing the right arrow button the main menu list will be displayed in the left window and *Headphone Level* and *Connected Status* show in the right window.

To adjust the volume level, turn the knob to highlight *Headphone*

Level and push the knob. You can then adjust the volume to a safe and comfortable level by turning the knob. Once complete, push the knob to exit the adjustment mode.

Press the [<---] button to get back to the main menu.

For *Gain Levels...* select *Sources...* or *Destination...*

that brings up screens with list of sources (shown) or destinations and gain levels.

Try your hand at making some adjustments to help you get more familiar with the front panel controls.

The main menu of the BLADE 3 shows all of the options available from the front panel. These options are:

- **Headphone...** – Selects the headphone source and volume level.
- **Inputs...** – Sets the gain structure and phantom power (BLADE 3 Mic type only).
- **Blade...** – Displays current info of the BLADE 3, software and hardware version, external clock reference, and network settings. These settings can also be edited from this submenu.
- **Display...** – Sets the display's brightness and screen saver time.
- **Gain Levels...** – Displays the gain levels for selected sources and destinations and allows the user to set the input level for each source and destination.
- **Utility Mixer...** – Each BLADE 3 has two Utility Mixers. Their features include panning, channel On/OFF, fader levels, and access to any source signal in the system. They also include a full ACI (Automation Control Interface) allowing remote control, ducking, auto fade, channel on/off, levels, source assign, etc.
- **Routing...** – Routes any audio input to any output or all outputs.
- **Status...** – Displays Uptime, Runtime, Date/Time, Temperature, ANNC Pkts/Errors, LIO Pkts/Errors, and GUI information, Surface availability (BLADE 3 Engine or Console types only), Route and Clock Master status.
- **Meters...** – Sets the front panel meter mode for BLADE 3 to show the input signal levels for each source or output signal levels for each destination.
- **Logic...** – Displays LIO Status and allows testing of the LIO outputs.
- **Password...** – Allows you to set a password to secure front panel access.

Front Panel Menu Diagram

Headphone...
- Headphone Level 🎧 ▬▬▬▬
- Connected Source - BL30UM4B/Blade30 or No SRC

Inputs...
- Mic Gain...
  - MIC 1 52.0dB
  - ⋮
  - MIC 8 52.0dB
- Phantom Power...
  - MIC 1 48V Phantom
  - ⋮
  - MIC 8 OFF

Blade...
- Name_Blade 11
- ID_11
- System ID_0
- Type_IP-88m
- Date/Time...
  - Date/Time Mode_Manual or NTP
  - Date_2014SEP08
  - Time_15:16:43
- Pri Ext Ref_23
- Sec Ext Ref_2
- Version...
  - Software_3 2014 REV2 CPU
  - Hardware_27 20140402.2356
- Network...
  - IP Address_192.168.87.111
  - Subnet Mask_255.255.255.0
  - Gateway Address_192.168.87.1
  - Mac Address_40:D8:55:1D:70:DE
  - Change Settings...
    - Gateway Address_XXX.XX.XX.XX
    - Mac Address_XXX.XXX.XXX.X
    - IP Address_XXX.XXX.XX.X
- Reboot...
  - No
  - Yes
- Factory Reset...
  - No
  - Yes

Display...
- Brightness_15
- Dim Brightness_4
- Screen Saver_10 min
- Screen Dim_10 min

Gain Levels...
- **Sources...** — Source Gain List / Source Gain Levels
- **Destinations...** — Destination Gain List / Destination Gain Levels

Utility Mixer...
- Mixer 1
- Mixer 2

Routing...
- Destination_st
- Source_WOrbit4/WOrbit

Status...
- Uptime_32 days 06:00:18
- Runtime_32 days 05:59:31
- Date/Time_09/08/14 15:38:02
- Temperature_47.3 C
- Annc Pkts_9841 Rx 13030358
- Annc Errs_Tx 0 Rx 0
- LIO Pkts_Tx 0 Rx 231
- LIO Errs_Tx 0 Rx 0
- GUI_0 Connected
- Surface_Not available
- Route Master_No or Yes
- Clock Master_Yes or No

Meters...
- **Selected Meters...** — Inputs / Outputs

Logic...
- LIO Status...
- LIO Out Test...

Password...
- Change Pasword

Host CPU (HC-L8)

Chapter Contents

Host Controller (HC-L8)

Overview

The host controller provides the centralized intelligence for the L-8 control surface. The HC-L8 communicates to the Console BLADE 3 via TCP/IP over Ethernet through a standard ethernet hub or switch.

Hardware and software configuration, as well as real time crosspoint information, is saved in non-volatile storage on the HC-L8 card and is restored at power up or reset. This configuration information provides details to the host application running on the HC-L8, such as the specific audio hardware available.

Ethernet IP Addressing

The Wheatstone L-8 control surface ships with the host controller IP address set to 192.168.87.201. Stand-alone systems (not interfaced to a station's existing network) require no IP address changes.

Ethernet Interface Wiring

Networked systems are connected to the network hub or switch via a straight (pin to pin) CAT5 cable. Typical CAT5 cable pinouts are included in the "Hook-Ups" section later in this chapter. This connection is for communicating with the Console BLADE 3, any other BLADE 3s or controllers in the system, and the configuration computer.
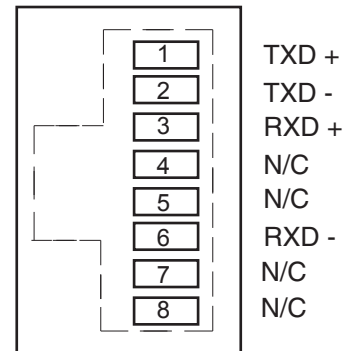
Hook-Ups

The "CT4" RJ-45 connector for Ethernet connection is located at the right upper corner of the HC-L8 PCB.

"CT4" RJ-45 – ETHERNET CONNECTOR

Pin 1 – TXD +
Pin 2 – TXD -
Pin 3 – RXD +
Pin 4 – N/C
Pin 5 – N/C
Pin 6 – RXD -
Pin 7 – N/C
Pin 8 – N/C

*Ethernet Connector
(RJ-45)*

1	TXD +
2	TXD -
3	RXD +
4	N/C
5	N/C
6	RXD -
7	N/C
8	N/C

TYPICAL ETHERNET CABLE

	PIN			PIN	
White/Orange	1	TXD +	1	White/Orange	
Orange	2	TXD -	2	Orange	
White/Green	3	RXD +	3	White/Green	
Blue	4	N/C	4	Blue	
White/Blue	5	N/C	5	White/Blue	
Green	6	RXD -	6	Green	
White/Brown	7	N/C	7	White/Brown	
Brown	8	N/C	8	Brown	

RJ-45 Plug (left) *RJ-45 Plug* (right)

Used for connecting the host controller to your network hub.

Appendices

Appendix 1

Contents

For the most part there are no user-replaceable parts in the L-8 controle surface. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, ON/OFF switches, etc.). A complete list of available components follows. Contact Wheatstone technical support for further information.

Wheatstone Corporation (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, or electronic mail "techsupport@wheatstone.com".

REPLACEMENT PARTS - L-8 CONTROL SURFACE

COMPONENT	DESCRIPTION	WS P/N
L8-IN MODULE	INPUT MODULE	010300
L8-CR MODULE	CONTROL ROOM MODULE	010301
L8-SC MODULE	STUDIO CONTROL MODULE	010302
L8-BK	BLANK FACEPLATE	010319
IP-L8 LOADED CARD	INPUT MODULE LOADED CARD ASSEMBLY	010320
CR-L8 LOADED CARD	CONTROL ROOM MODULE LOADED CARD ASSEMBLY	010321
SC-L8 LOADED CARD	STUDIO CONTROL MODULE LOADED CARD ASSEMBLY	010322
ONSW-L8 LOADED CARD	ON SWITCH LOADED CARD ASSEMBLY	010340
VU-L8 LOADED CARD	VU LOADED CARD ASSEMBLY	010342
HC-L8 LOADED CARD	HOST CONTROLLER LOADED CARD ASSEMBLY	010043
POWER CABLE	L-8 POWER CABLE ASSEMBLY	010395
FADER	MONO LINEAR TAPER FADER WITH LONGER KNOB BRACKET AND BLACK KNOB ROHS COMPLIANT	540052
FADER KNOB	BLACK FADER KNOB, 11mm FOR 3000 SERIES FADER	520001
POT KNOB	BLACK SOLID ALUMINUM 23MM KNOB NO INDICATOR 6MM SHAFT	520127
POT KNOB	BLACK SOLID ALUMINUM 18MM KNOB NO INDICATOR 6MM SHAFT	520131
ENCODER	11MM ROTARY ENCODER WITH THREADED BUSHING, 17MM SHAFT LENGTH	560004
ON/OFF SWITCH	SINGLE POLE MOMENTARY REED KEYBOARD SWITCH	510109
NKK SWITCH	JB15 SWITCH W/BRIGHTER RED LED AND SILICON GASKET	510290
NKK SWITCH	JB15 SWITCH W/BRIGHTER YELLOW LED AND SILICON GAS-KET	510291
SWITCH	MOMENTARY SWITCH PCB MT RT ANGLE	510248A
SWITCH CAP	V2 BUTTON BASE, CAP AND BLUE CAP INSERT	530355
SWITCH CAP	V2 BUTTON BASE, CAP AND WHITE CAP INSERT	530356
SWITCH CAP	WHITE SWITCH CAP	530004
FLAT RIBBON CABLE	1MM PITCH 40 COND FLAT RIBBON CABLE FOR 2MM CONNEC-TOR, 5 FEET LONG	150198
PLUG	3 PIN .098" PLUG FOR #26 AWG	230028
PLUG RIBBON	2MM 20 POSITION RECEPTACLE IDC RIBBON PLUG	270067

REPLACEMENT PARTS - L-8 CONTROL SURFACE

COMPONENT	DESCRIPTION	WS P/N
HEADER	3 PIN .098" HEADER	250062
HEADER	4 PIN .098" HEADER	250063
HEADER	5 PIN .098" HEADER	250064
HEADER	20 POSITION 2MM BOX HEADER	270066
SOCKET	2MM 20 POSITION SOCKET	270067
CONNECTOR	RJ-45 SINGLE R/A CONNECTOR W/GREEN/YELLOW LED	220138
HEADPHONE JACK	RTS JACK	260005
POWER JACK	RIGHT ANGLE 2.5MM CENTER PIN DC POWER JACK	260103
POWER PLUG	LOCKING DC POWER PLUG 2.5MM ID, 5.5MM OD	260104
ON SWITCH LED	3MM BLUE LED LAMP	600078
OFF SWITCH LED	3MM WHITE LED LAMP	600079
SOURCE DISPLAY	1.27" OLED DISPLAY	610029
MANUAL	TECHNICAL MANUAL FOR L-8 CONTROL SURFACE	010399

Appendix 2

## Contents

Configuring L-8 for Use in WheatNet-IP Systems

In order to use a L-8 control surface with the WheatNet-IP system it must be properly configured. There are two parts to this configuration. First, the control surface must be equipped with the correct version of WheatNet-IP specific software. If you have ordered your control surface as a part of a WheatNet-IP system, this will be taken care of automatically. If you are moving a control surface purchased previously, its software may need to be updated. Consult with Wheatstone Technical Support; they can assist you with any required software updates.

The second part of the configuration is to mate a specific control surface to its mixing engine BLADE 3 within the WheatNet-IP system. This mate up process is actually done at the control surface itself. To complete this process successfully, the control surface and its intended WheatNet-IP engine must be powered up and connected to the same LAN.

First, be sure that you know the BLADE 3 ID and IP address of the intended WheatNet-IP engine BLADE 3. This BLADE 3 must be available and unassociated with any other control surface. You can confirm this information via the front panel controls on the engine BLADE 3, or from the WheatNet-IP Navigator GUI.

The L-8 control surface comes with the *Wheatnet IP L8 Setup Tool* Graphical User Interface (GUI) program, intended to be straightforward in setup connection between the control surface and the Console BLADE 3. Click on the *Engine* tab and enter the Blade ID and IP address in the boxes provided, and verify that the IP address of the control surface is correct (it must be on the same subnet as the BLADE 3s). While you are at it, it is highly recommended that you use the IP address number convention for the control surface IP address. This convention makes it easier to understand and trouble shoot your system architecture. Simply take the ID number of the engine BLADE 3 and add 200 to it. Thus Engine BLADE 3 ID=02 would have IP address 192.168.87.102 and the mating surface would have IP address 192.168.87.202.

Reboot the control surface.
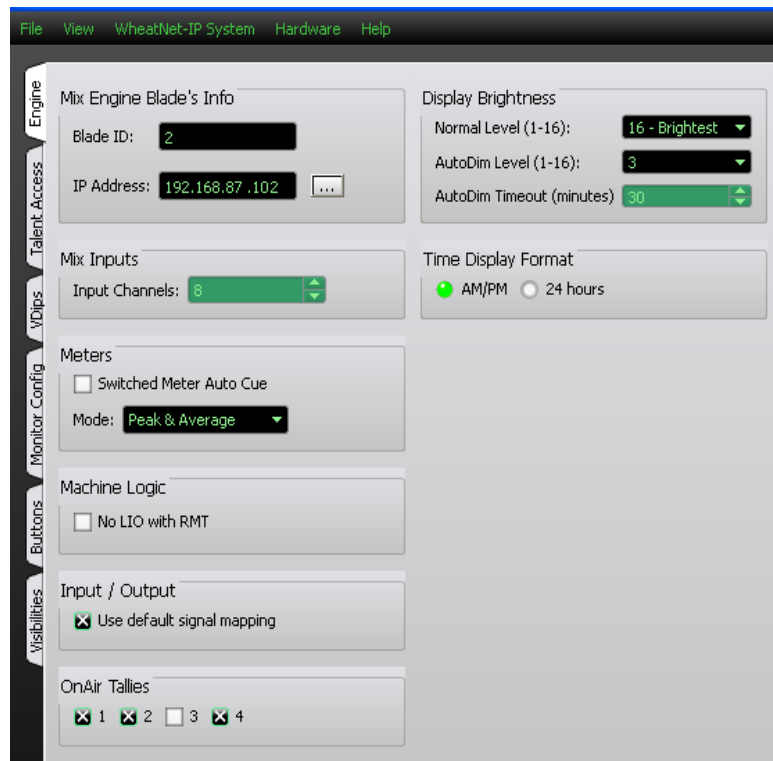
Once the control surface has been associated with a WheatNet-IP engine, the BLADE 3 will query the surface for its configuration information and then automatically generate the required source and destination signals.

A control surface icon (showing its IP address) will be added to the WheatNet-IP Navigator GUI system view, attached to the mating engine BLADE 3.

The specific signals created and their default names are a function of the model and size of the associated control surface.
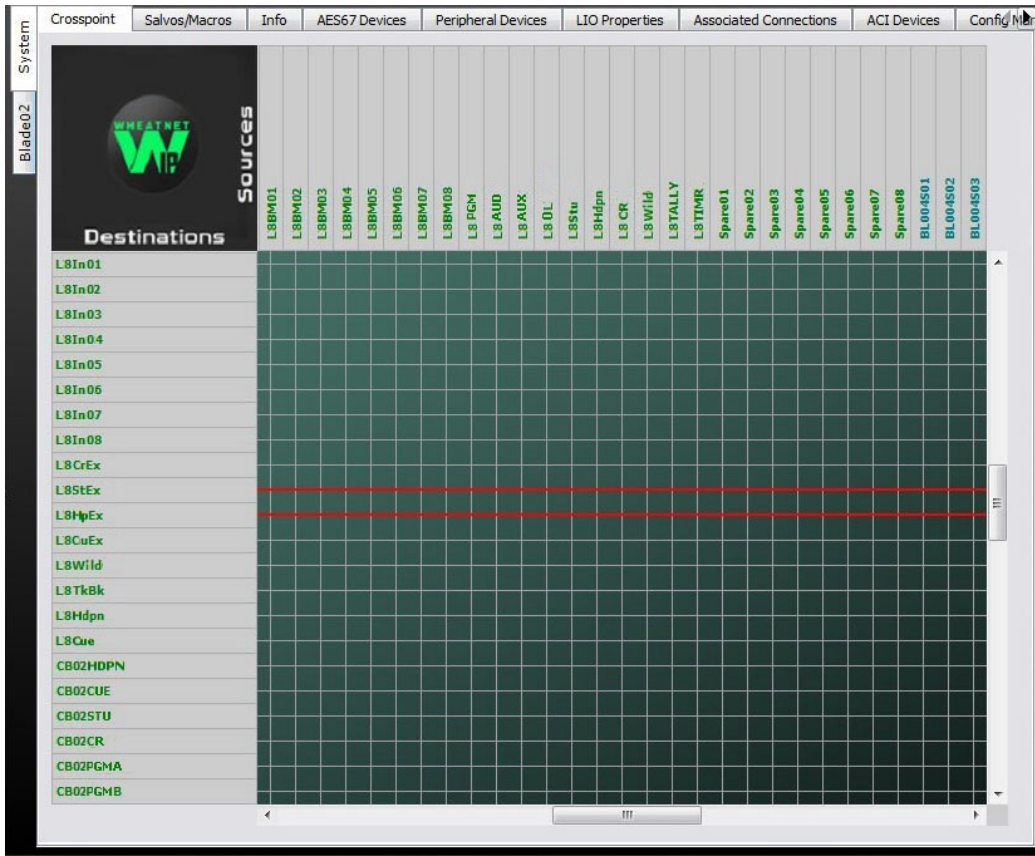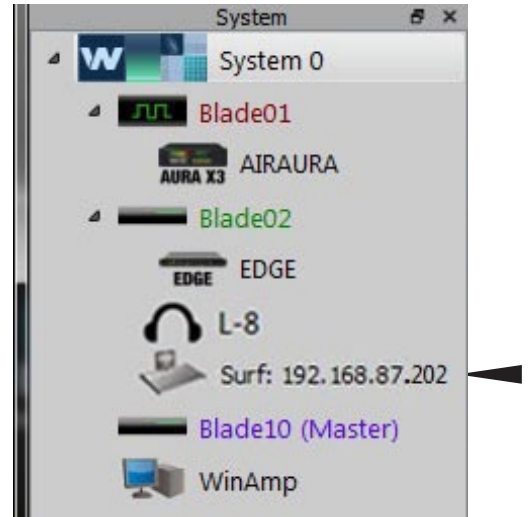
The following is a listing of a typical set of signals for a XX fader L-8 control surface. Of course, just as with any other signals, you can rename these however you choose; if you've done so, the names on your system may not exactly match the ones on the following list.
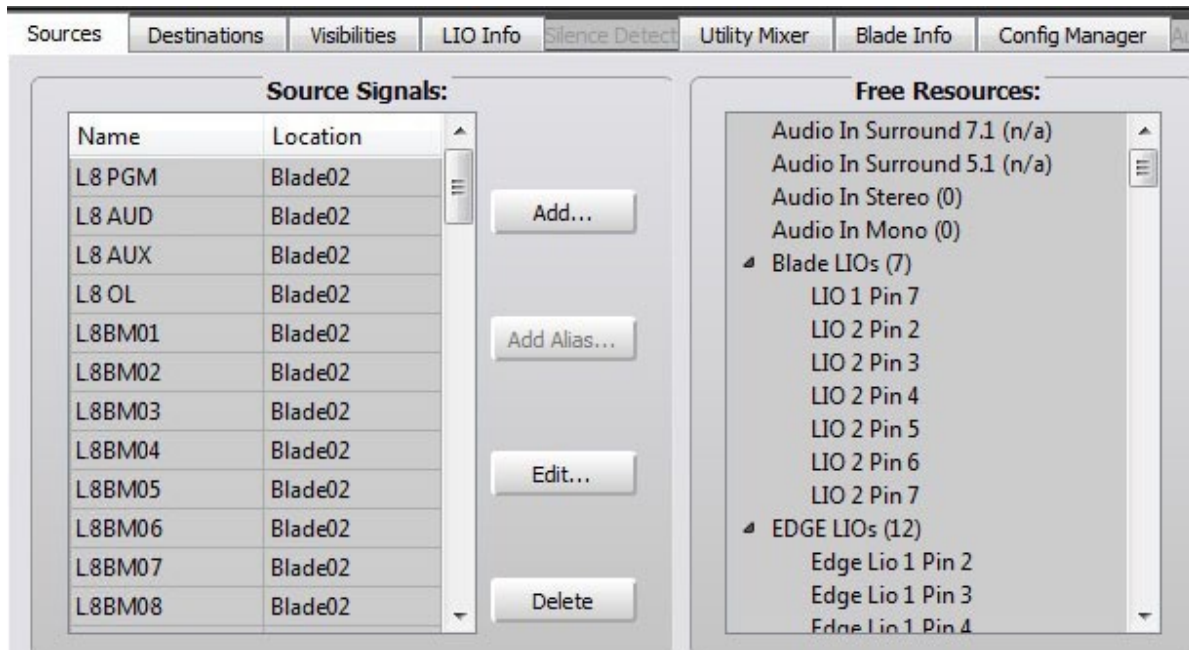
Sources

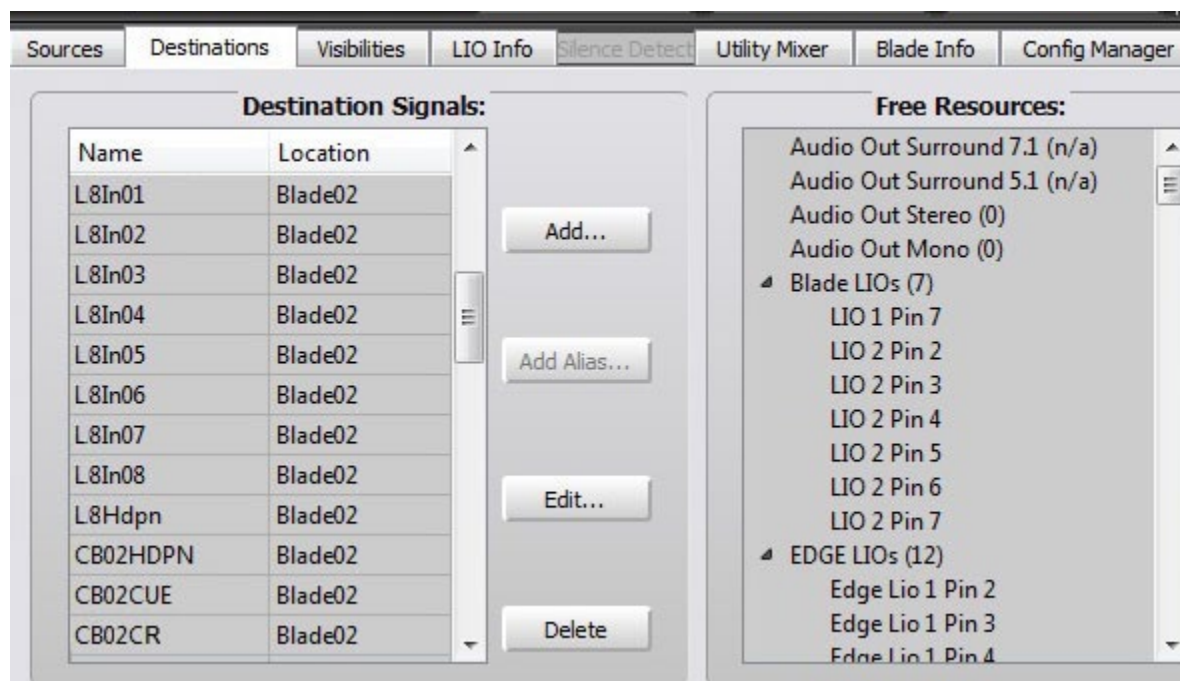|	
Spare01	Logic signal associated with programmable button #1
Spare02	Logic signal associated with programmable button #2
Spare03	Logic signal associated with programmable button #3
Spare04	Logic signal associated with programmable button #4
Spare05	Logic signal associated with programmable button #5
Spare06	Logic signal associated with programmable button #6
Spare07	Logic signal associated with programmable button #7
Spare08	Logic signal associated with programmable button #8
L8 PGM	Program audio mix
L8 AUD	Audition audio mix
L8 AUX	Auxiliary audio mix
L8 OL	OL (Off Line) audio mix
L8BM01	Bus minus 1 audio mix (for fader 1)
L8BM02	Bus minus 2 audio mix (for fader 2)
.....	
L8BM08	Bus minus 8 audio mix (for fader 8)
L8 CR	Control room monitor audio mix
L8 CUE	Cue monitor audio mix
L8 Stu	Studio monitor audio mix
L8Hdpn	Headphone monitor audio mix
L8TIMR	Timer logic signals
L8TALLY	Mute/Tally logic signals
L8Wild	Output of switchable meters

Sources	Destinations	Visibilities	LIO Info	Silence Detect	Utility Mixer	Blade Info	Config Manager

Destination Signals:

Name	Location
L8In01	Blade02
L8In02	Blade02
L8In03	Blade02
L8In04	Blade02
L8In05	Blade02
L8In06	Blade02
L8In07	Blade02
L8In08	Blade02
L8Hdpn	Blade02
CB02HDPN	Blade02
CB02CUE	Blade02
CB02CR	Blade02

Add...
Add Alias...
Edit...
Delete

Free Resources:

Audio Out Surround 7.1 (n/a)
Audio Out Surround 5.1 (n/a)
Audio Out Stereo (0)
Audio Out Mono (0)
⊿ Blade LIOs (7)
  LIO 1 Pin 7
  LIO 2 Pin 2
  LIO 2 Pin 3
  LIO 2 Pin 4
  LIO 2 Pin 5
  LIO 2 Pin 6
  LIO 2 Pin 7
⊿ EDGE LIOs (12)
  Edge Lio 1 Pin 2
  Edge Lio 1 Pin 3
  Edge Lio 1 Pin 4
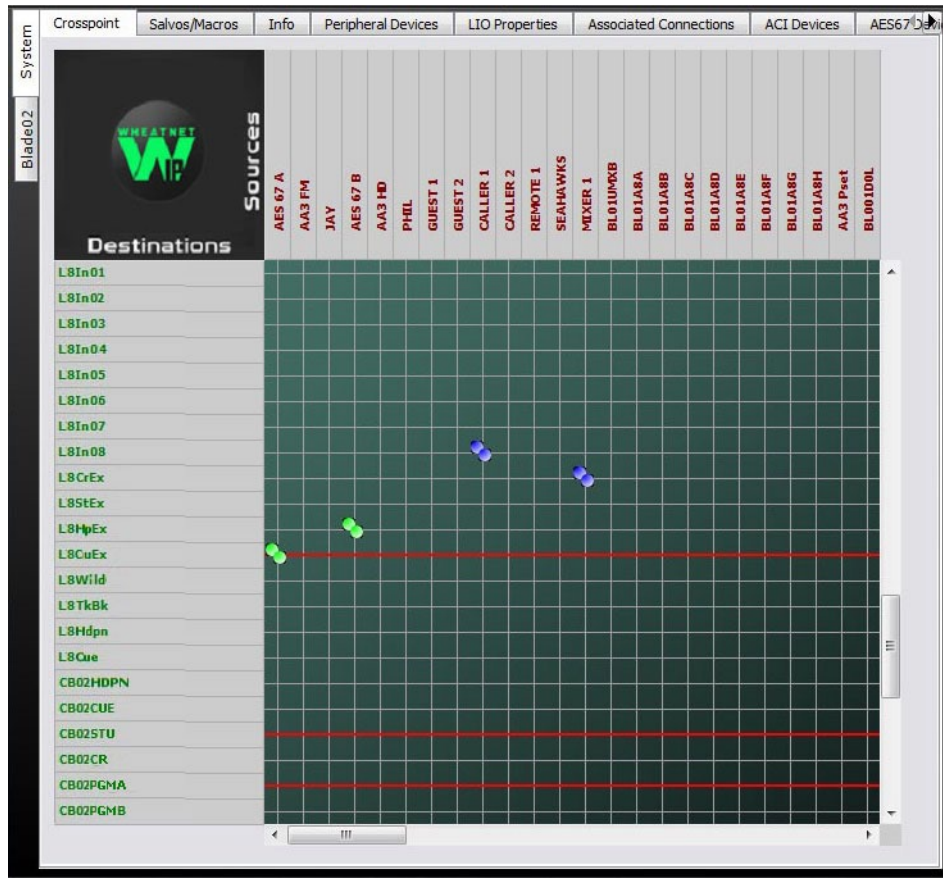
Destinations

CB02HDPN	Surface Headphone audio mix
CB02CUE	Surface Cue monitor audio mix
CB02STU	Surface Studio monitor audio mix
CB02CR	Surface Control Room monitor audio mix
CB02PGMA	Surface Program audio mix
CB02PGMB	Surface Audition audio mix
CB02PGMC	Surface Auxiliary audio mix
CB02PGMD	Surface OL (Off Line) audio mix
L8In01	Input to first fader channel
L8In02	Input to second fader channel
.....	
L8In08	Input to eights fader channel
L8CrEx	External input for Control Room monitor
L8StEx	External input for Studio monitor
L8HpEx	External input for Headphone monitor
L8CuEx	External Cue monitor audio mix
L8TkBk	Input for talkback channel
L8Wild	Input for switchable meters
L8Hdpn	Input for Headphone monitor
L8Cue	Cue monitor audio mix

Once these signals have been auto-generated, the control surface is now ready for use. You can make connections to the fader channels either with the Navigator GUI, or

through the control surface front panel controls, and begin mixing. One thing you will notice is that, as soon as a fader channel is turned on, the system automatically locks the connection (as shown by the red line on the GUI screen) to prevent someone else from breaking your connection while you are on air.

Remember, you must also make connections from the mixer signals to actual audio destinations before the mixes are routed through the WheatNet-IP system. Use the GUI to make these connections and lock them if necessary.

Lastly, you can continue setting up control surface options, for logic, mutes, signal visibility, and others.