iAM-AUDIO-1
iAM-AUDIO-1-DANTE
iAM-AUDIO-2
iAM-AUDIO-2-DANTE

1RU/2RU, Multi Channel, Touch Screen Audio Monitor

User Guide

Part Number 821808, Revision F

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Introduction

Overview

The iAM-AUDIO units are 1RU/2RU multichannel multi-source audio monitors with multiple standard copper connections and multiple SFP module options facilitating high density coax and optical fiber connections. The unit also accepts Audio over IP signals via an Ethernet connector. Refer to the Specifications section or contact Wohler Sales for more information.

The iAM-AUDIO is compact and simple to operate. It has touch screen LCD displays providing high resolution meters, menus and basic monitor controls. Any channel (or group of channels that are clustered) from any source stream may be audibly monitored and summed with the other selected channels.

Setups are created and configured using a web browser over a network connection. Setup configurations can easily be copied to other iAM-AUDIO units.

Each iAM-AUDIO can be configured with a number of presets. Nothing about the configurations of those predefined setups can be changed from the front panel. This prevents less experienced or hurried operators from making accidental setup changes that could compromise their usage of the unit. It also reduces operator training to a minimum.

Safety

Instructions

1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.
6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

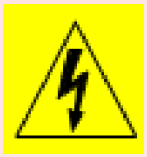
Important:

7. Protect the power cord from being walked on or pinched, particularly at plug connection on the equipment and at the socket.

8. Use only the attachments/accessories specified by the manufacturer.
9. Unplug the equipment during lightning storms or when unused for long periods of time.
10. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:
    a. The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.
    b. Liquid had been spilled or objects have fallen onto the equipment.
    c. The equipment has been exposed to rain or moisture.
    d. The equipment does not operate normally.
    e. The equipment has been dropped.

Safety Symbols

WARNING:



The symbol to the left warns of electric shock hazard inside the unit. Disconnect the power cord before removing access panels when installing upgrades. Only qualified service personnel are to operate the equipment with covers removed, and are to exercise caution to avoid personal injury.

Mounting

The unit is designed for a standard 19" rack. Install it at ear/eye level for best high frequency response and visual observation of the display screens. Please adhere to the following clearances:

Table 1-1: Clearance Recommendations

Clearance	Surface
24″	Front
3″	Rear
2″	Sides
1.75″	Top and Bottom (if either radiates heat)
0″	Top and Bottom (if no heat)

Heat Dissipation

The ambient temperature inside the mounting enclosure should not exceed 40° Celsius (104° Fahrenheit). Adjacent devices can be rack mounted (or stacked) in proximity to the unit if this temperature is not exceeded. Otherwise, allow a 1RU (1.75″/44.45mm) space above and below the unit for air circulation.

Important -

Heat generated by the class D power amplifiers, power supplies, and other components is vented by slots in the sides and back of the unit. Therefore, as a safety precaution, you must allow proper ventilation on these surfaces.

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.) in the rack may be serious enough to interfere with the unit's sound quality. If you experience sympathetic vibrations, use thin card stock, felt, foam, or weather-stripping between the vibrating surfaces. Tie loose cables securely with cable ties.

Mechanical Bracing

Both the 1RU chassis and the 2RU chassis are securely attached to the front panel. In addition, the chassis has mounting tabs through which you attach it to the rack rail. This feature will reduce or eliminate rear bracing requirements in many mobile/portable applications. The weight of internal components is distributed fairly evenly around the unit.

Electrical Interference

Be careful to avoid mismatched cable types and other similar causes of undesired reflections in digital signal systems. If severe enough, such reflections can result in corruption of the digital data stream. As with any audio equipment, maximum immunity from electrical interference requires the use of shielded cable; however, satisfactory results can sometimes be obtained without it. The internal circuitry ground is connected to the chassis.

Power

The unit comes with a standard external 18 VDC / 3.9 A power supply that connects to an AC mains power source (100 to 240 VAC, 1.5A, 50/60Hz) using an IEC power cord.

When the mains plug or appliance coupler is used as the disconnect device, the disconnect device should remain operable.

Compliance

FCC

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 their own expense.

ICES-003

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CHAPTER 2: Local Operation

Startup

The iAM-AUDIO unit will begin its startup process when it is connected to power through its external power supply. There is no power switch. It is normal for the product to require just over two minutes to start up and be ready to use.

When the iAM-AUDIO unit completes its startup, the **Power** indicator will turn green. Depending upon optional settings, all channel clusters will either be in the muted condition or set in a predetermined way. You may then use the **Mute** and **Un-Mute Selectors** to enable only the channel clusters you want to hear.

Front Panel

The front panels for the 1RU and 2RU models are shown in Figures 2-1 and 2-2. Operation and controls for the 1RU and 2RU models are identical, except for the sizes of the displays and speakers.

Figure 2–1: iAM-AUDIO-1 (1RU) Front Panel

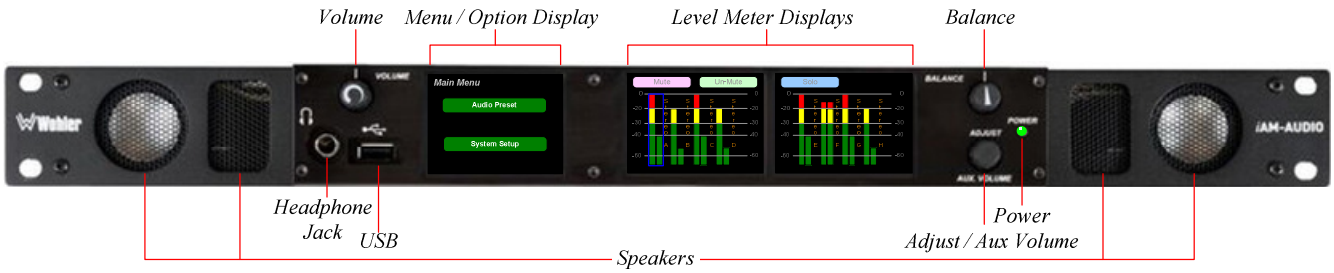
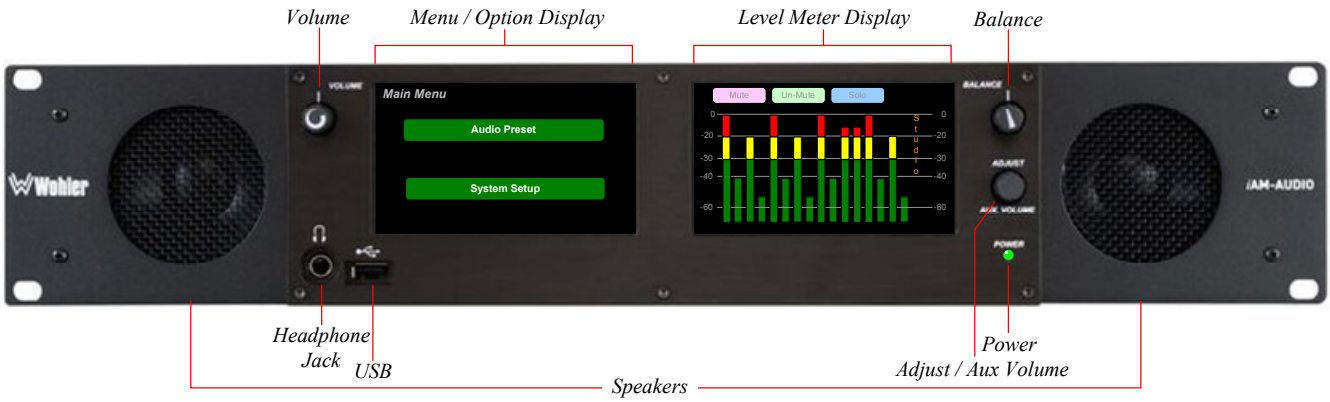


Figure 2–2: iAM-AUDIO-2 (2RU) Front Panel



1. **Speakers**: Local near field audio monitoring is achieved through the use of class D amplifiers. Two (left/right) low and mid/high range speakers are in the iAM-AUDIO-

1 (1RU) model. Two full range speakers are in the iAM-AUDIO-2 (2RU) model.

2. **Headphone Jack**: A 1/4" jack for an optional headphone is provided on the front panel. Speaker audio mutes when headphones are plugged in.

3. **Volume**: This controls the speaker and headphone output level for the entire mix.

4. **Balance**: This controls left/right levels for the stereo mixes. By default, it controls loudspeaker and headphone output, though other options may be set in the Web GUI preferences.

5. **Adjust / Aux Volume**: Turning this control right or left moves a yellow selection box from channel to channel on the metering screen. Pressing the **Adjust** control solos the selected channel. If a muted channel is selected with this control, it is unmuted and soloed. Pressing the **Adjust** control again or touching the meter area anywhere removes the channel solo.

6. **USB 2.0 Port**: This USB Type A connector allows you to use a flash drive (not supplied) to perform software updates and copy system configurations to another iAM-AUDIO or to a PC. Software updates are accomplished from the Web GUI.

7. **Menu / Option Display**: This touchscreen display is used for a limited amount of setup and status display. The large majority of setup functions are performed using the Web GUI.

8. **Level Meter Display(s)**: High resolution bar graph meters appear here showing the levels of up to 16 channels selected for monitoring. These are grouped into clusters as specified in the Web GUI: mono clusters (1.0), pair clusters (2.0), or surround sound clusters (5.1 or 7.1). This touchscreen also contains Mute, Un-Mute, and Solo controls.

9. **Power**: This indicator lights green when the system is powered and ready for use. A solid or blinking yellow color indicates that the product is starting up.

Rear Panel

The rear panels for the 1RU and 2RU models are shown in Figures 2-3 and 2-4.

Figure 2-3: iAM-AUDIO-1 (1RU) Rear Panel Layout

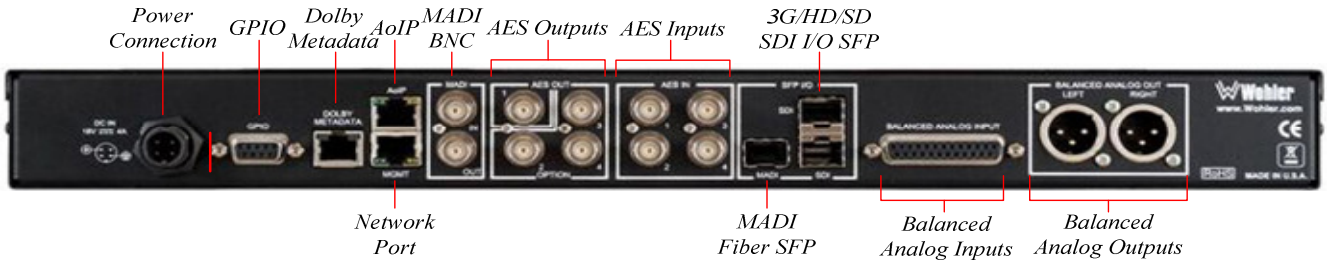
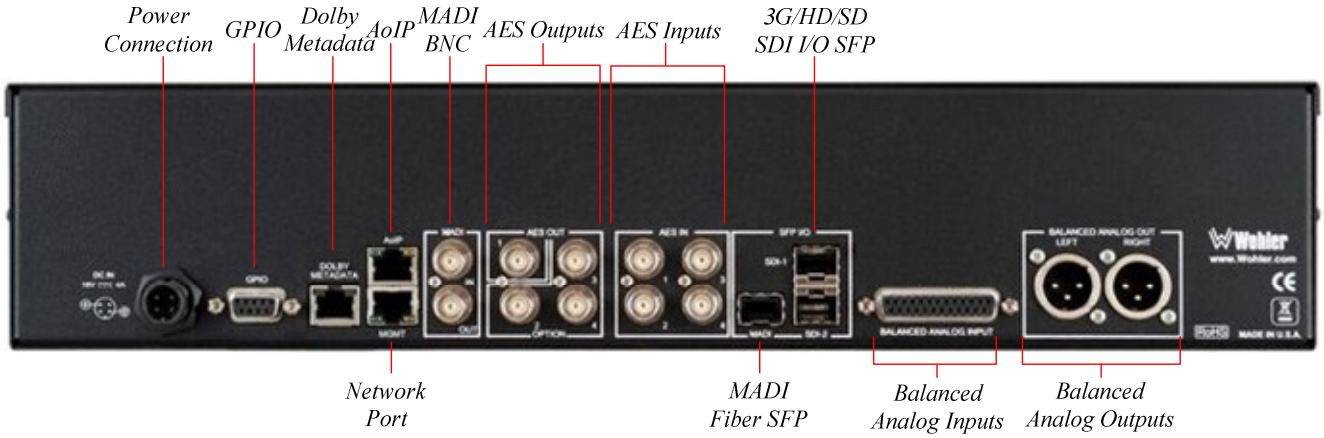


Figure 2-4: iAM-AUDIO-2 (2RU) Rear Panel Layout



1. **Power Connection**: The iAM-AUDIO uses an external AC to 18V DC power adaptor. A locking DC connector for this power supply is provided on the rear panel. The AC inlet on the adaptor is a standard IEC receptacle for 100 to 240 VAC ±10%, 50/60 Hz power connection. Four regional AC power cords, supplied according to shipping region, are available.

Important:

By design, the supplied AC mains power cord will only plug into a three-prong grounded outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

Important:

The monitor and power adapter have been tested as a combined apparatus to verify compliance with applicable safety and electromagnetic compliance standards. Use of another power adapter provided by the user may negate the compliance or cause the monitor to not perform properly. Wohler Technologies cannot accept any responsibility for the outcome in such cases.

2. **GPIO**: (future implementation) This DB-9 connector provides 2 input pins and 2 output pins to perform GPIO functions as defined by the Web GUI.

3. **Network Port**: This Ethernet port can connect to either a LAN or to a PC to let you customize the iAM-AUDIO configuration. It will also allow you to copy system configurations from one iAM-AUDIO to another. It can also be used to update the iAM-AUDIO software and firmware.

4. **AoIP**: This Ethernet port can accept either a Dante or a Ravenna Audio over IP signal. An optional license key must be purchased to enable this function. There are different hardware option cards for each signal and the appropriate/desired capability must be specified at order.

5. **MADI BNC**: This COAX input accepts an AES10 64-channel signal at 48 kHz sample rate. The COAX output is reclocked from the MADI source.

When power to the iAM-AUDIO is not present, the COAX input and output are automatically connected together to allow the MADI signal to pass through.

6. **MADI Fiber SFP**: (optional) This input module accepts an optical AES10 64-channel MADI input signal at 48 kHz sample rate. An optional license key must be purchased to enable this function. The SFP fiber module may be used in conjunction with the MADI BNC connectors to provide COAX to fiber or fiber to COAX conversion. The outputs are reclocked. A software license must be installed for SFP ports to function. Refer to the **System Setup** section in Chapter 4 and to Figure 4-9 to install software licenses.

7. **Dolby Metadata**: This RJ-45 jack transmits metadata from the selected Dolby bitstream in RS-485 serial data protocol.

8. **AES Out**: By default, the AES OUT 1 BNC outputs the same mixed audio as the XLR analog outputs, as heard from speakers or headphones, but as an AES3id pair. This output is adjusted by the **Volume** control. Other options may be set in the Web GUI. **AES Out 1** is a standard feature on the iAM-AUDIO products. The AES OUT 2, 3, and 4 connections are reserved for possible future implementation.

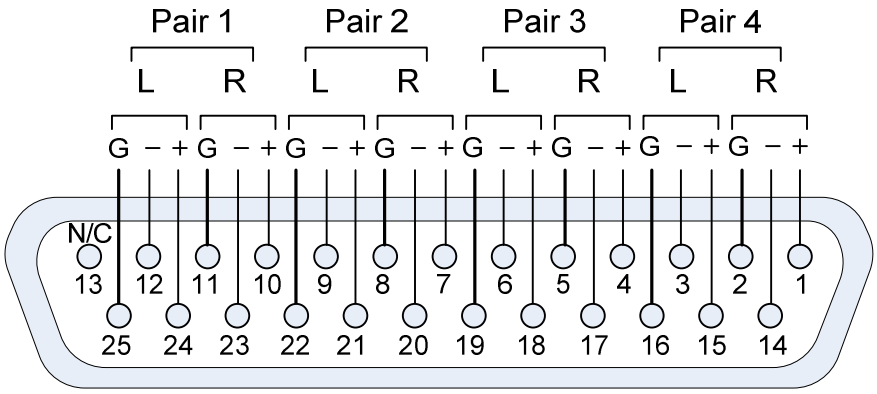
9. **AES In**: These four BNC jacks accept AES3id digital audio pairs at a 48 kHz sample rate. An optional license key must be purchased to enable this function. Channels are selected as AES 1-8.

10. **3G/HD/SD SDI**: The two cages are provided to accept one or two optional SFP modules compatible with SDI coaxial or optical signals. Single or dual transceiver arrangements are possible. The SPF modules are hot swappable for convenience. An optional license key must be purchased to enable each module. A software license must be installed for an SFP port to function. Refer to the **System Setup** section in Chapter 4 and to Figure 4-9 to install software licenses.

11. **SFP 2022-6/7**: (optional) Support for SMPTE 2022-6/7 is available as an SFP module which contains a 10GB Ethernet port. This allows the iAM-AUDIO to monitor SDI audio transmitted in real time over Ethernet. The SPF modules are hot swappable for convenience. An optional license key must be purchased to enable this function. A software license must be installed for the SFP port to function and for this SFP module to function. Refer to the **System Setup** section in Chapter 4 and to Figure 4-9 to install software licenses.

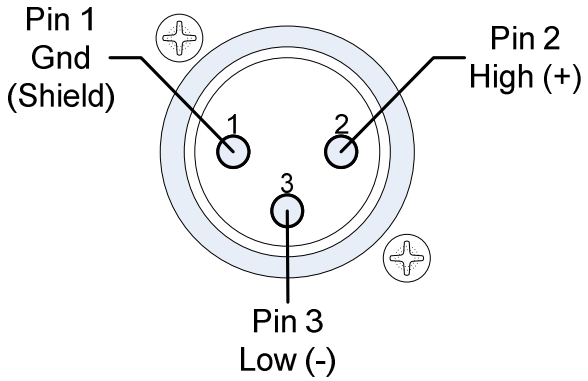
12. **Analog Inputs**: This DB-25 female connector accepts +10dBu broadcast level balanced audio. An optional license key must be purchased to enable this function. Tascam cables may be used, and can be purchased by contacting Wohler Sales. Refer to Figure 2-5 for the pinout of this connector.

Figure 2-5: Analog DB25 Input Connections



13. **Analog Outputs:** These male XLR connectors provide two balanced analog outputs: Left and Right. The source of these signals is the mix of audio as monitored by the internal speakers and is adjusted by the **Volume** control. The **Analog Outputs** are standard on the iAM-AUDIO products.

Figure 2-6: Analog XLR Output Connections



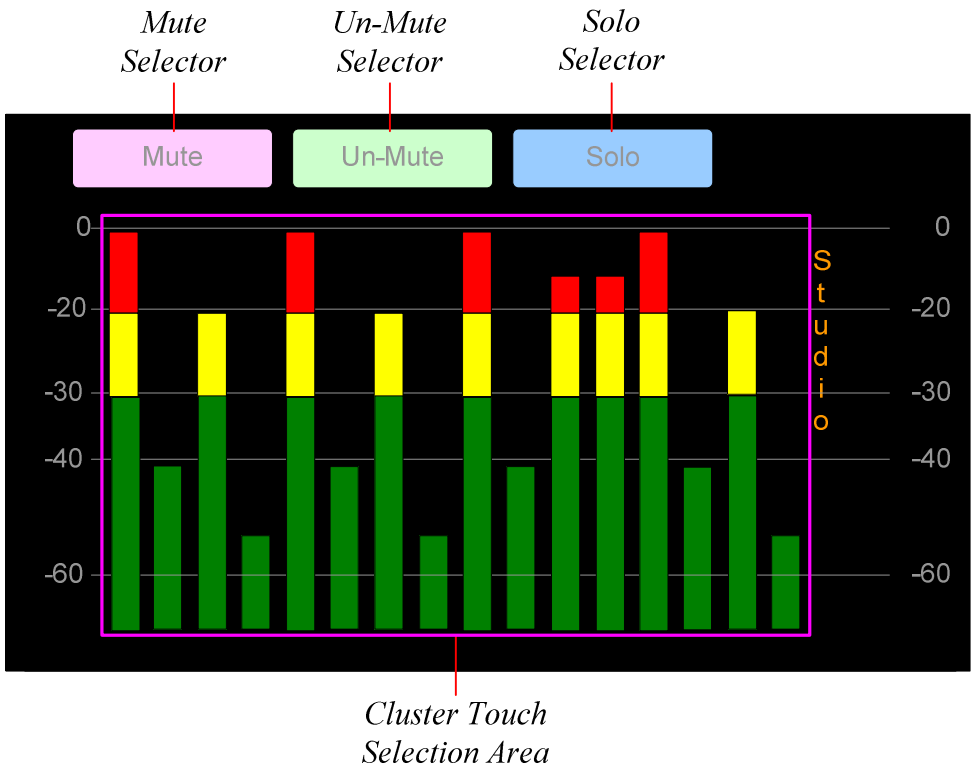
Channel Meters and Touch Operations

The audio mixer terminology of "solo" is used in this manual when referring to muting all but a specific audio channel or subgroup. Since the terms "group" and "subgroup" have different meanings in SDI vs. pro audio, this manual uses the term "cluster" to define a set of audio channels forming an audio program—such as Mono (1.0), Stereo (2.0) or Surround (5.1 or 7.1).

Important: The numbers for a meter bar graph position only indicate its relative position on the display, and not any particular channel number. Meter numbers only serve as references for monitor configurations at the Web GUI level. Different presets typically have different input channels assigned to various meters.

Audio meters are displayed on touchscreen LCD display(s) in labeled clusters, as shown in Figure 2-7. The clusters of channels and other options relating to this are defined using the iAM-AUDIO Web GUI software as described in Chapter 4.

Figure 2-7: Audio Level Meter Screen (iAM-AUDIO-2 display shown)



1. **Channel and Cluster Touch Selection Area**: Touch the meters of a cluster designate it for use with one of the three selectors on the touchscreen. The cluster selected will be surrounded by a light yellow selection box. The touch selectors will then light to show which are enabled for use. Touch one of the lighted selectors to mute, un-mute, or solo the cluster you have selected.

2. **Mute Selector**: After selecting one or more meter clusters, touch the **Mute Selector** to mute them. A pink box will then surround the muted meter cluster, indicating that it is muted. One or more clusters can be muted or un-muted to create custom mixes for monitoring.

3. **Un-Mute Selector**: After selecting one or more muted cluster designated by a pink box, touch the **Un-Mute Selector** to unmute them. The surrounding box will then disappear.

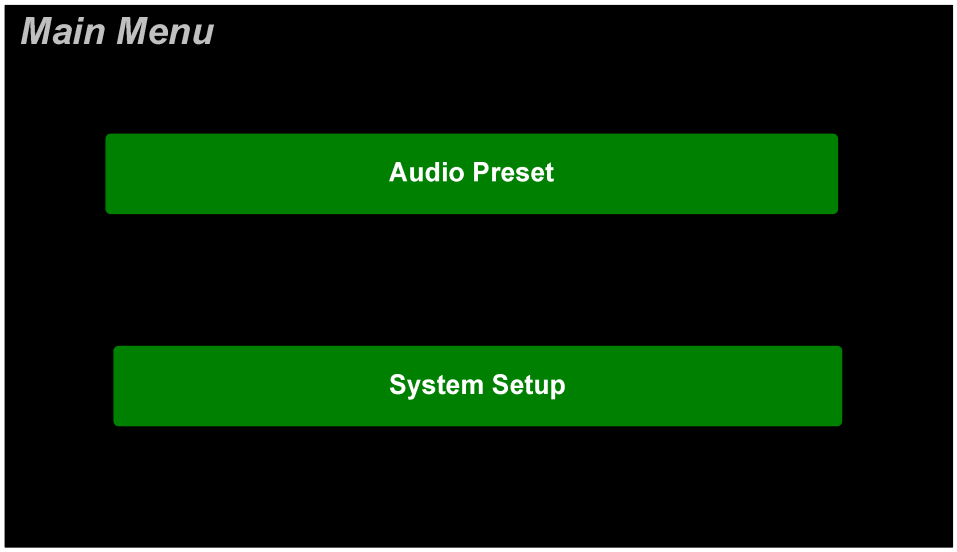
4. **Solo Selector**: Touch a channel cluster you would like to solo. A light yellow box will then surround the cluster. Touch the **Solo Selector** to solo the cluster. The soloed cluster meters will then be surrounded by a blue box, and all other clusters will be surrounded by pink boxes to indicate that they are now muted. Solos are exclusive, that is, only one cluster may be soloed at a time. Only clusters may be soloed, not individual channels. Touch the soloed cluster again and press the **Mute Selector** to remove the solo.

5. **Channel Solo**: Rotating the **Adjust** control will move a yellow selection box from channel to channel. Press the **Adjust** control to solo the selected channel. Press the **Adjust** control again or touch anywhere on the meters to undo the solo.

Menu / Option Touchscreen

By far, most of the option settings are performed using the Web-based GUI software. However, there are a few commonly used setting and information screens that are available locally in the iAM-AUDIO-1 and iAM-AUDIO-2 using the **Main Menu** which appears on the left screen.

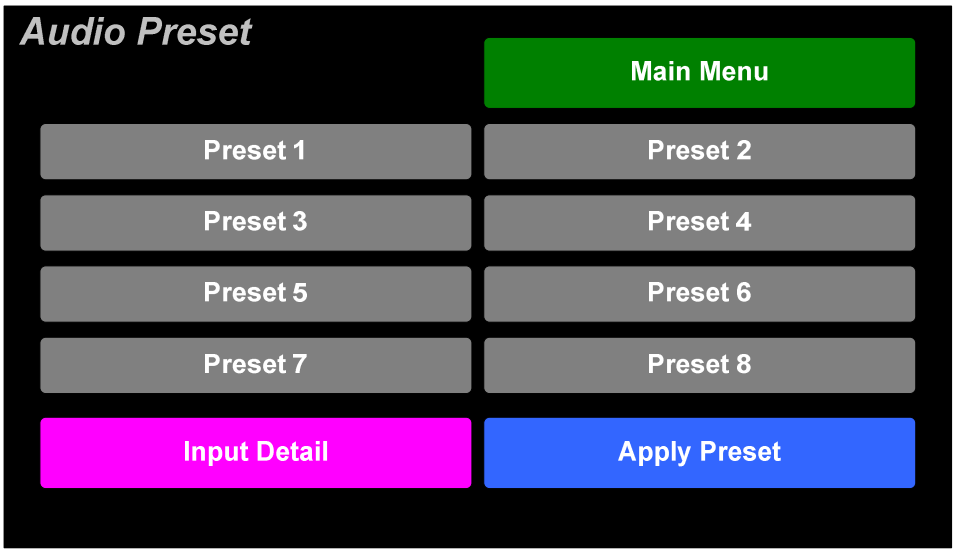
Figure 2-8: Main Menu



Audio Preset

Touch the **Audio Preset** button to display the **Audio Preset** menu as shown in Figure 2-9.

Figure 2-9: Audio Preset Menu



You can set up the content of each Preset using the Web-based GUI software. If you have not set up a Preset, the selection button for it on the **Audio Preset** menu will have a default name, as shown in Figure 2-9 above.

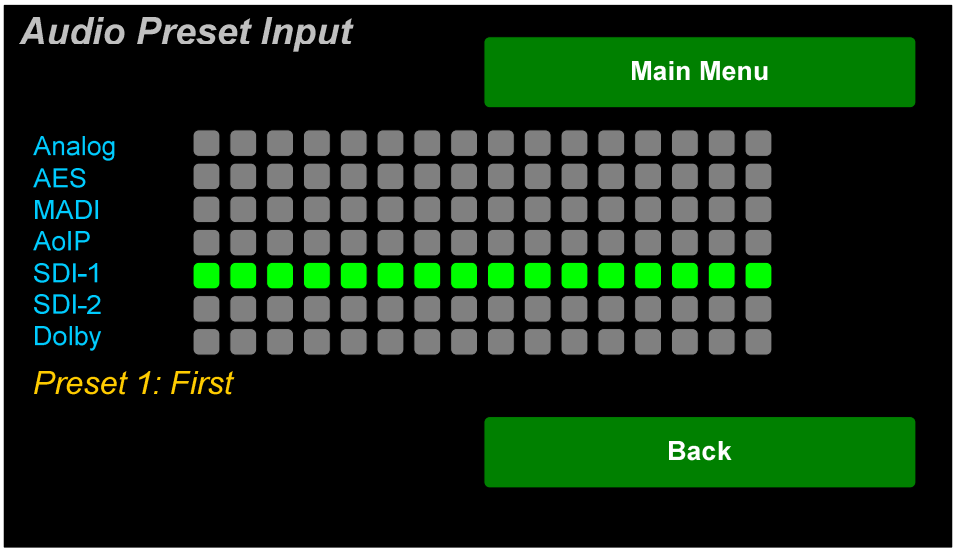
1. The currently selected Preset is shown in green. To select a new preset, touch one of the gray **Preset** buttons. The button will highlight in gold.
2. To put that Preset into effect, touch the **Apply Preset** button. This operation takes about 5 seconds to complete. The meter screen will change to reflect the new preset.

To exit this menu and return to the **Main Menu**, touch the **Main Menu** button.

Input Detail

Touch the **Input Detail** button to display the **Audio Preset Input** screen as shown in Figure 2-10. This shows which channels from each of the input sources are enabled for monitoring in the currently selected Preset. The currently selected Preset is named at the bottom of this screen. The inputs cannot be changed from this screen, but instead can be changed using the Wohler GUI Web GUI. Refer to Chapter 3 of this manual.

Figure 2-10: Audio Preset Input Screen



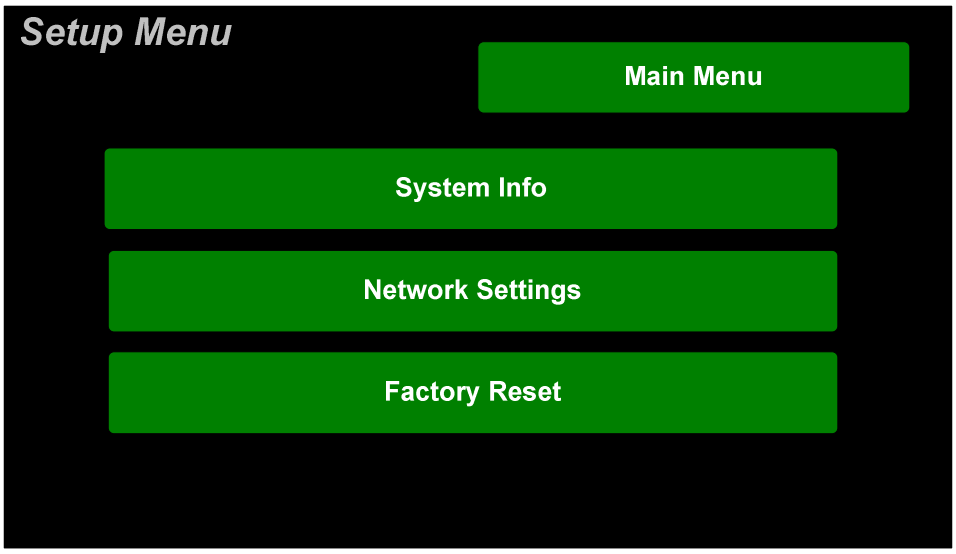
The information shown on this screen is read only and cannot be changed.

Touch the **Back** button to return to the previous screen or touch the **Main Menu** button return to the **Main Menu**.

System Setup

Touching the **System Setup** button on the **Main Menu** displays the **Setup Menu** as shown in Figure 2-11. This screen presents you with a choice of three other screens you can choose.

Figure 2-11: System Setup Screen



The following three sections in this manual describe the functions of each of the

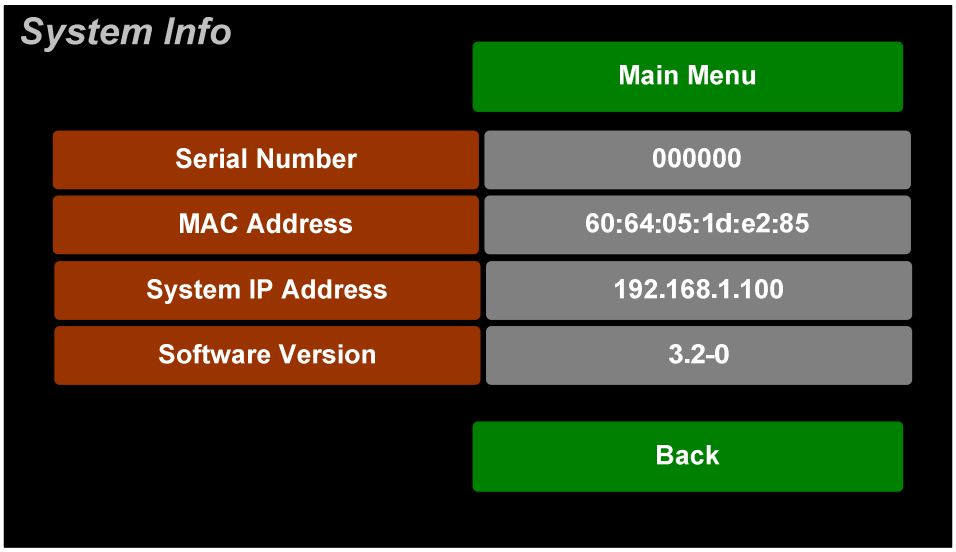
three menu choices on this screen.

Touch the **Main Menu** button return to the **Main Menu**.

System Info

Touching the **System Info** button displays the **System Info** screen as shown in Figure 2-12. This screen lets you view the product Serial Number, the MAC Address, the System IP Address, and the Software Version.

Figure 2-12: System Info Screen



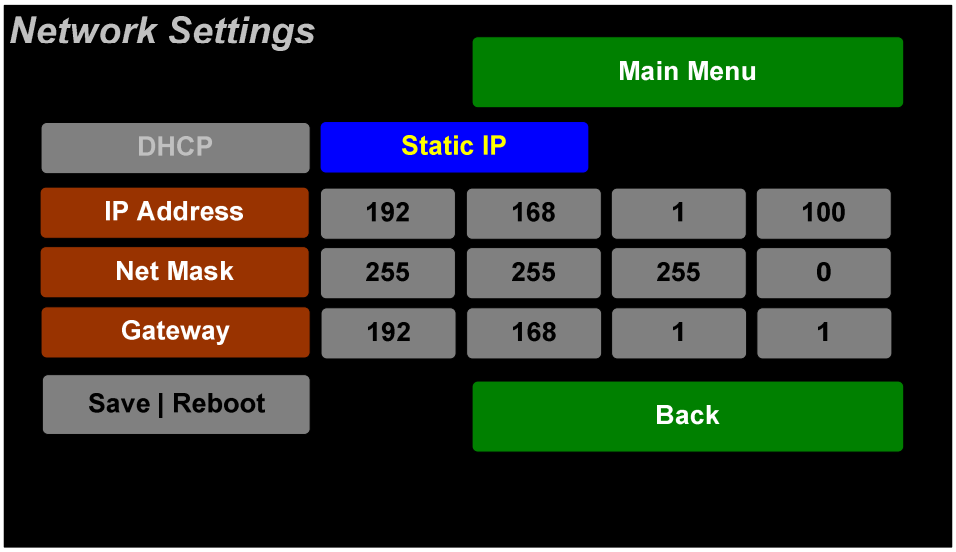
The information shown on this screen is read only and cannot be changed.

Touch the **Back** button to return to the previous screen or touch the **Main Menu** button return to the **Main Menu**.

Network Settings

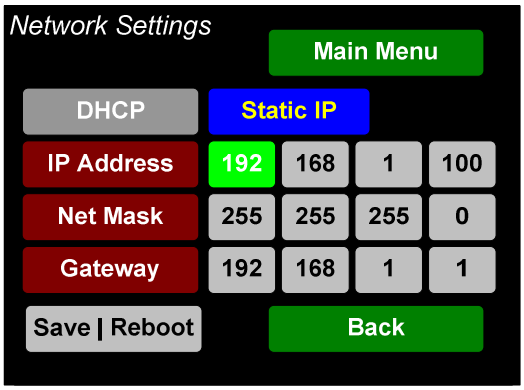
Touch the **Network Settings** button displays the **Network Settings** menu as shown in Figure 2-13. This screen lets you view or change the product IP, the Net Mask, and the Gateway. It also lets you switch between a static (fixed) or a dynamic (DHCP) network address.

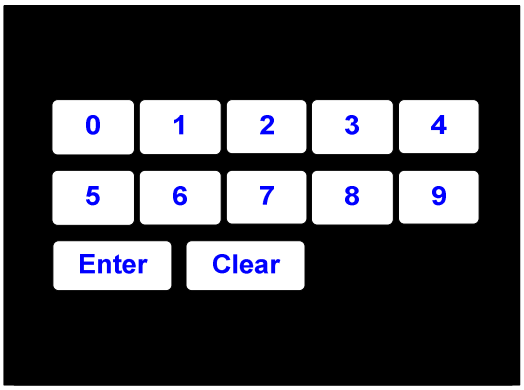
Figure 2-13: Network Settings Menu



1. To change the IP Address, Net Mask, or Gateway, double-tap the digit you would like to change. A keypad will appear, as shown in Figure 2-14.

Figure 2-14: Network Settings: Address Change





2. Touch the digits to be entered and then touch the **Enter** button. The **Clear** button may be touched to erase any mistyped digits.
3. Now repeat steps 1 and 2 until you have replaced all of the necessary digits.
4. To save the newly entered address(es), touch the **Save | Reboot** button. Touch the **Back** button to return to the previous screen without saving any changes, or touch the **Main Menu** button return to the **Main Menu** without saving any changes. Touching the **Save | Reboot** button will change the network address as you specified. It will also reboot the unit.

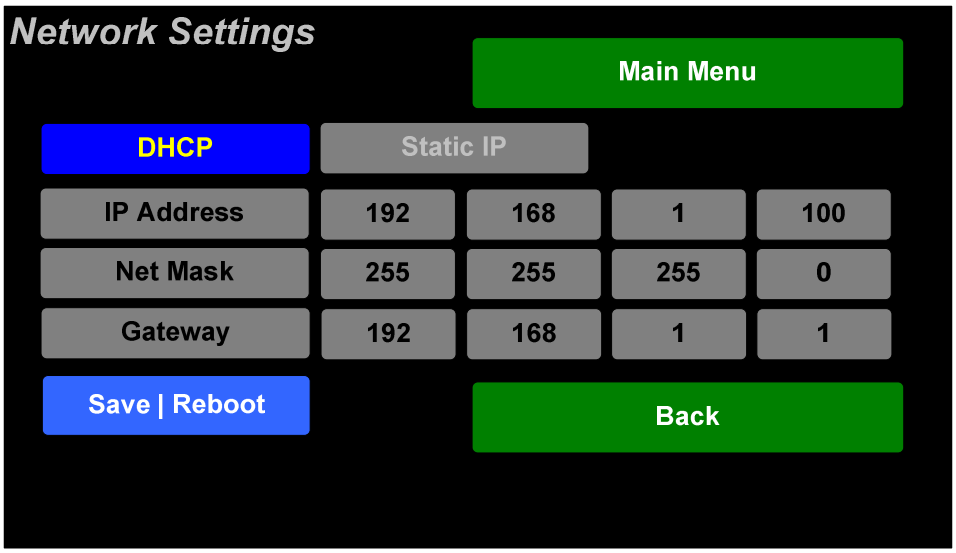
Important:

There is no confirmation for **Save | Reboot**, so make sure you want to perform this action before taking it. The system will take about a minute to reboot before it is once again ready for operation.

To change from a static (fixed) to a dynamic (DHCP) network address, touch the

DHCP button. The screen will change, as shown in Figure 2-15. To change back to a static (fixed) network address, touch the **DHCP** button again. The colors of the buttons will return to the ones depicted in Figure 2-15.

Figure 2-15: Network Settings: DHCP



1. To complete the network addressing scheme change, touch the **Save | Reboot** button.
2. Touch the **Back** button to return to the previous screen without saving any changes, or touch the **Main Menu** button return to the **Main Menu** without saving any changes. Touching the **Save | Reboot** button will save the changes you selected. It will also reboot the unit.

Important:

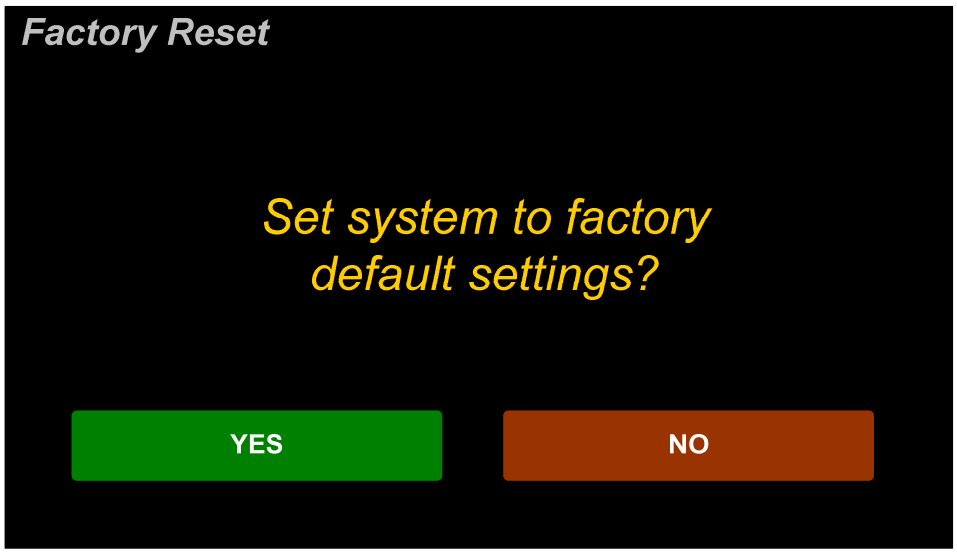
There is no confirmation for **Save | Reboot**, so make sure you want to perform this action before taking it. The system will take about a minute to reboot before it is once again ready for operation.

Factory Reset

Touching the **System Info** button displays the **System Info** screen as shown in Figure 2-16. Because of the large change this function is about to make to the product, it asks for you for verification that you really want to proceed.

The **Factory Reset** function should be used with caution. It deletes all of the settings you have programmed into the system. It returns the system to the way it was when received new from the factory. After using this function, you will need to use the Wohler Web GUI to reprogram everything from the start or else import a Database or the Presets that you previously saved using the Web GUI. Refer to the Database Management section of this Chapter 4.

Figure 2-16: Factory Reset



Note: **Factory Reset** will reset your IP address to the default one (Static IP: 192.168.1.100/Gateway: 192.168.1.1/Netmask: 255.255.255.0) and clear the database of Presets. After reboot the unit will restore default Presets for all licensed options.

If you have any doubt as to whether you should press **YES**, press **NO** instead, and contact Wohler Technical Service for advice. Pressing **NO** will return you to the **Main Menu**.

CHAPTER 3: Technical Info

Table 3–1: iAM-AUDIO Specifications

Specification	Values/Domains
Power Requirements	100 VAC to 240 V AC ± 10%, 50/60Hz
Power Consumption	40 Watts
Dimensions (1RU) (H x W x D)	1.75” x 19” x 7.5” (44mm x 483mm x 191mm), standard 19” rack mounting
Dimensions (2RU) (H x W x D)	3.5” x 19” x 7.5” (88mm x 483mm x 191mm), standard 19” rack mounting
Weight (1RU)	8 lbs. (3.6 kg)
Weight (2RU)	10.4 lbs. (4.7 kg)
Supplied Accessories	Power Adapter, AC Power Cord
Display Type	LCD
Number of Displays	3 (1RU); 2 (2RU)
Screen Resolution	320H x 240V (1RU); 800H x 480V (2RU)
Level Meters	Simultaneous VU & PPM
Level Meter Scale	AES Scale
Sample Rate	48kHz
De-Multiplexing	16 channels from: • 16-channel SD/HD/3G-SDI • 64-channel AES10 MADI
SDI Inputs / Outputs	• 1 or 2 SDI Inputs or Outputs Optional – Single SFP Transceiver: • HD-BNC Coax 3G/HD/SD-SDI • Multi-Mode Fiber: 1 SI Optical SC-Connector, 1300nm • Single-Mode Fiber: 1 SI Optical SC Connector, 1310nm
MADI Inputs / Outputs	• 1 MADI BNC, Standard Coax I/O Optional – SFP Transceiver: • Multi-Mode Fiber: 1 MADI Optical SC-Connector, 1300nm • Single-Mode Fiber: 1 MADI Optical SC Connector, 1310nm
SMPTE 2022-6 Receiver	Optional - SFP Receiver: • Multi-Mode Fiber: LC Connectors,
Cable/Fiber Length (max)	COAX (such as Belden 1694A): > 150 m
	Multi-mode fiber: 1 km
	Single-mode fiber: 10 km

Specification	Values/Domains
AES Inputs / Outputs	• Inputs: 8 AES channels on 4 BNC are optional • Output: 2 AES channels of monitored signal on 1 BNC is optional
Audio over IP Input / Output	Ethernet AoIP I/O accepts either an optional • Dante/AES67 capable signal, or • Ravenna/AES67 signal
SDI Input Termination	75Ω unbalanced
AES/EBU Input Termination	75Ω unbalanced
AES/EBU/MADI Sampling Rate	48 kHz
Analog Inputs	8 balanced inputs (4 L/R channels) on DB25F
Analog Input Impedance	40kΩ balanced
Analog Outputs - Stereo	XLR-3 Male, balanced +24 dBu max
Analog Output Frequency Response	40 Hz to 20 kHz (± 1dB)
Analog Output Distortion	<0.01% THD+N
Analog Output Dynamic Range	> 100 dB
Analog Output Reference Level	-20 dBFS = +4 ± 1.0 dBu
Internal Speakers - Stereo	1RU; 75mm Low, 40mm Mid-Hi 2RU; 80mm Full Range
Peak Acoustic Output (1RU)	98 dBA SPL (@ 2 feet)
Peak Acoustic Output (2RU)	104 dBA SPL (@ 2 feet)
Hum and Noise (1RU)	Better than -68 dB below full output
Hum and Noise (2RU)	Better than -75 dB below full output
Power Output (1RU)	12 Watts RMS, 24 Watts peak (each side)
Power Output (2RU)	15 Watts RMS, 30 Watts peak (each side)
Acoustic Frequency Response	150 Hz to 16 kHz (± 5 dB)
Headphone Out - Stereo	40 Hz to 20 kHz (± 1 dB)
Headphone Load	8Ω to 150Ω

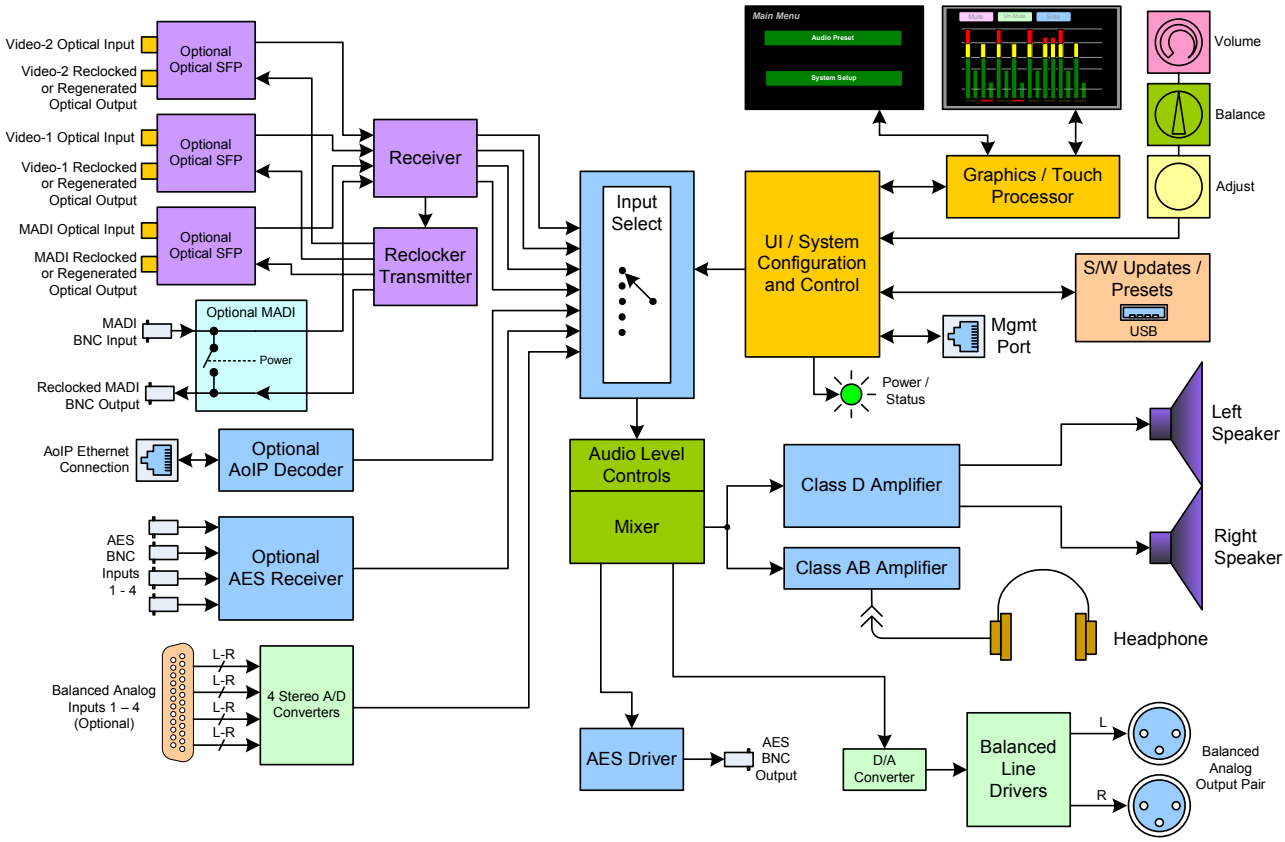
Table 3–2: iAM-AUDIO Processing Options

Option	Part #	Description
OPT-DOLBY	829077	Allows decoding and monitoring of Dolby® D, DD+, & E streams.
OPT-DANTE	829078	Enables decoding and monitoring of Dante™ Input streams.
OPT-RAVENNA	829079	Enables decoding and monitoring of Ravenna™ Input streams.
OPT-MPEG	829094	Enables decoding and monitoring of MPEG2 TS o/ASI and o/IP. 1x 3G – SDI/ASI Up to 1080p60 + 1x Stereo Audio / Transport stream Single SPTS selected out of an MPTS, via ASI or IP. Maximum SPTS bit rate of 15Mb/s.

Table 3–3: iAM-AUDIO I/O Options

Option	Part #	Description
OPT-AES	829080	Enables decoding and monitoring of 4 x AES inputs on DB-25 connector and 1 AES output on BNC connector.
OPT-MADI	829092	Enables decoding and monitoring of 1 x MADI64 input. BNC connectors.
SFP-2022	829088	SMTPE 2022 receiver. LC connectors.
SFP-SDIB	829089	3G/HD/SD-SDI Active Loopback transceiver. HD-BNC connectors.
SFP-MMMF	829081	MADI fiber transceiver. Multi-Mode, LC Connectors.
SFP-MSMF	829082	MADI fiber transceiver. Single-Mode, LC Connectors.
OPT-ANLG	829093	Enables decoding and monitoring of Analog inputs. Software activation key.

Figure 3–1: iAM-AUDIO Block Diagram



CHAPTER 4: The iAM-AUDIO Web GUI

The self-contained iAM-AUDIO Web GUI allows you to customize the configuration of the iAM-AUDIO to suit your needs. The default presets configure the channels in each source in consecutive fashion. If the default configuration of the iAM-AUDIO suits your needs and you prefer to use it that way, then you do not need to use the iAM-AUDIO Web GUI.

Web Browser / Control Device

Any web browser application running on any networked device such as desktop or laptop computer, tablet or smart phone can be used with the iAM-AUDIO Web GUI.

Tablets with no network connector need to be linked to a copper LAN through a Wi-Fi adapter.

Although they can be used, smart phones are not recommended because their smaller screen size would require more scrolling, making operation challenging.

The Chrome® web browser is recommended for speed and compatibility.

First Time - IP Assignments

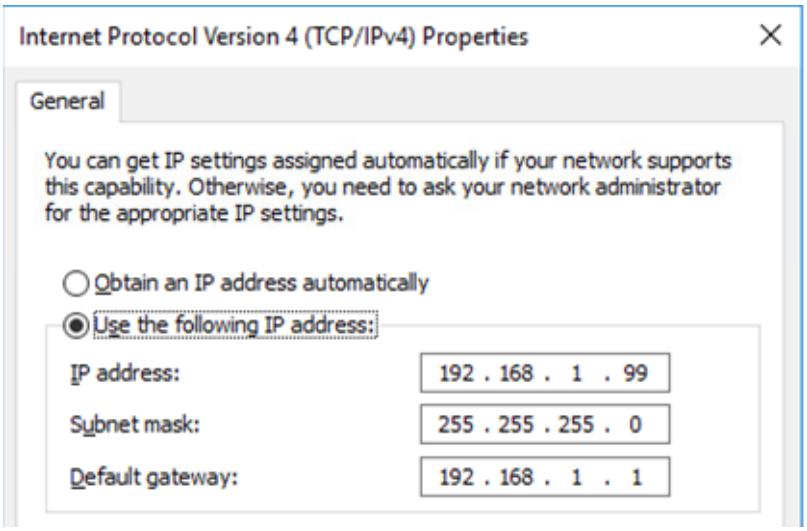
The iAM-AUDIO can operate with a static (fixed) or dynamic (DHCP) IPv4 address. The default address will be **192.168.1.100** when received from the factory or when switched from DHCP to static addressing mode. There two basic types of connections that may be used to connect the iAM-AUDIO to a web browser, a **Peer-to-Peer Connection** or a **Network Connection**.

Peer-to-Peer Connection

The most straightforward way to connect the iAM-AUDIO to a web browser, free of possible network conflicts, is to establish a static peer-to-peer connection between the setup computer and the iAM-AUDIO. A 10/100/1000 MHz Ethernet switch may be used in between, but is not required.

Figure 4-1 shows an example of suitable address settings for the host computer in a Windows 7 control panel.

Figure 4–1: Host IP Settings



Close the control panel and reboot the host computer after making an IP address change to be sure the change takes effect. Either reconnect to the installed network or continue with this direct connection to access the iAM-AUDIO Web GUI.

Network Connection

When connected to a network, the iAM-AUDIO address will need to be changed to another address in order to be compatible with the address assignments for that particular network. Immediately after the host setup is complete, change the iAM-AUDIO's address. Make the corresponding address, mask and gateway changes in the iAM-AUDIO **Network Setup** page. Refer to the **Network Setup** section of this chapter and Figure 4-11.

Otherwise set the iAM-AUDIO to DHCP address mode by checking the box for 'Use DHCP?' in Network Setup and have your IT administrator assign rights and settings for operation on the network. Allow enough time for your network's DHCP server to recognize a new network device and assign an address after booting.

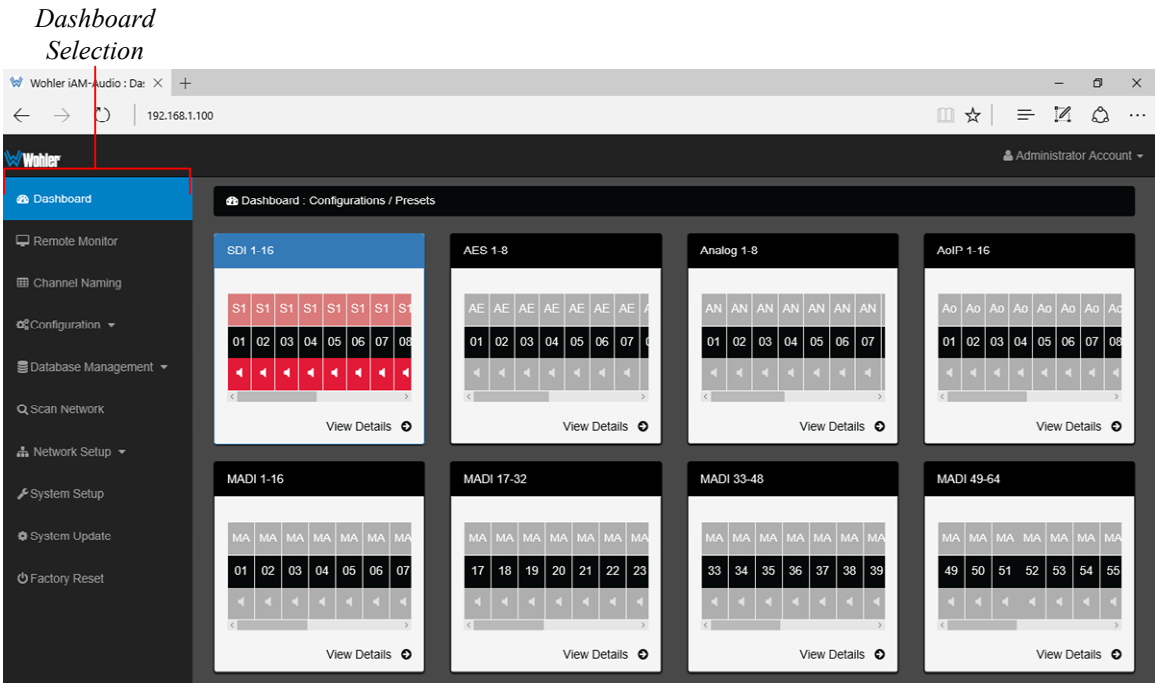
Important:

The iAM-AUDIO uses the next three IP addresses for communication with the front panel displays (172.27.2.3 thru 172.27.2.5). These must be reserved by IT administration to preclude address conflicts with other network devices and proper iAM-AUDIO operation.

Dashboard

Throughout the Web GUI, other pages are a click or two away using the list of selections on the left side. **System Overview** on this **Dashboard** page shows all preset configurations at a glance.

Figure 4–2: Dashboard Preset Overview



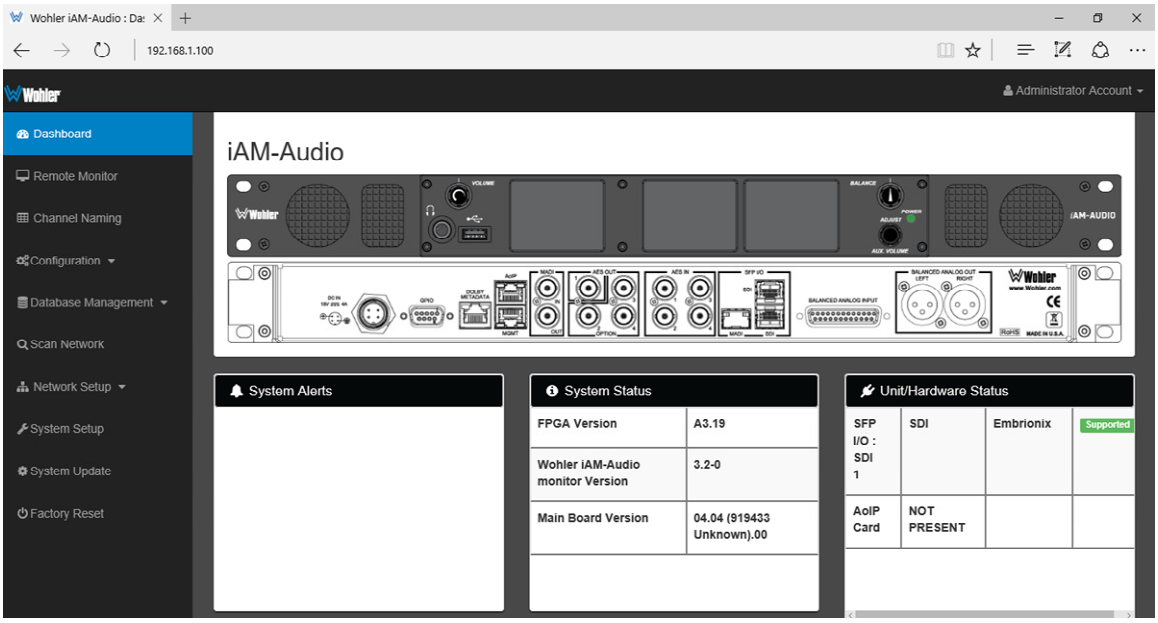
The currently selected preset for local operation is shown full color. Other stored, but not selected, presets have gray backgrounds.

The top row shows which sources are used in the preset. The middle row shows which channel numbers are assigned to each control strip. Colors in the bottom row indicate green for active, or red for muted states.

No changes can be made on this screen. Click **View Details** on the selected preset, or click on **Configuration - Presets Management** in the left navigation pane to make preset changes.

The lower part of the page shows front and rear panels for setup reference, plus alerts, status and license information. Refer to Figure 4-3.

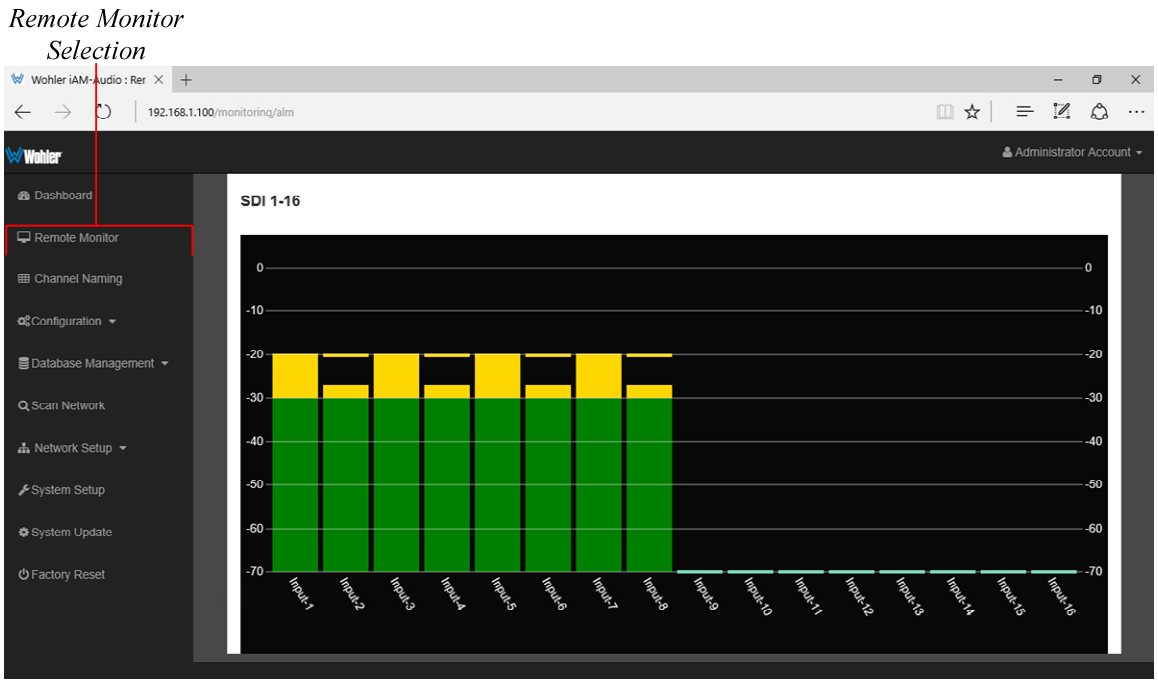
Figure 4–3: Dashboard Device Overview



Remote Metering

Click on the **Remote Monitor** page to provide a live view the audio bar graph meters for the current preset.

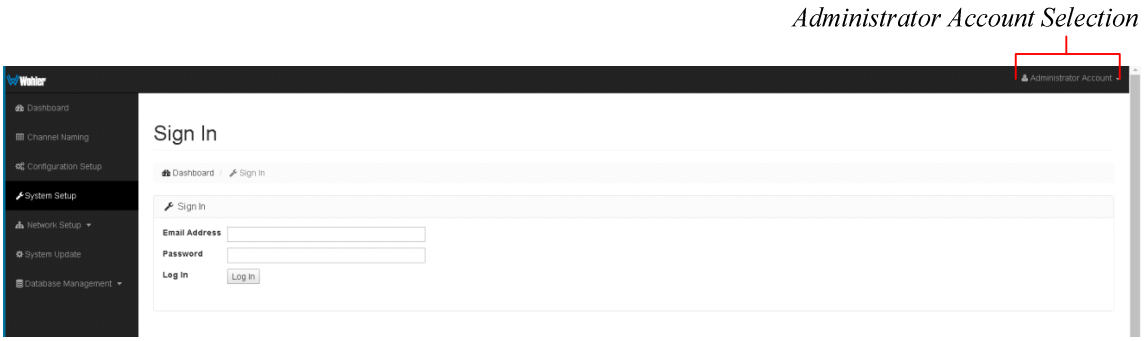
Figure 4–4: Remote Monitor Audio Meters



Sign In

Only authorized users should be allowed to make preset and network changes. Anybody can view the status of iAM-AUDIO units on the network, but logging in with a password is required to make any changes. When logging in is required to make a change, the page shown in Figure 4-5 will appear. Alternatively, log in can be done at any time by clicking on **Administrative Account** selection in the upper right portion of the browser page and clicking **Log In**.

Figure 4–5: Administrative Account Log In



By default, the **User Name** is 'admin'.

By default, the **Password** is 'admin'.

The **User Name** and **Password** are fixed and cannot be changed. You will remain logged in until the browser window is closed or the session is disconnected physically or virtually, or you can **log out** by clicking **Administrator Account** in the upper right of any page.

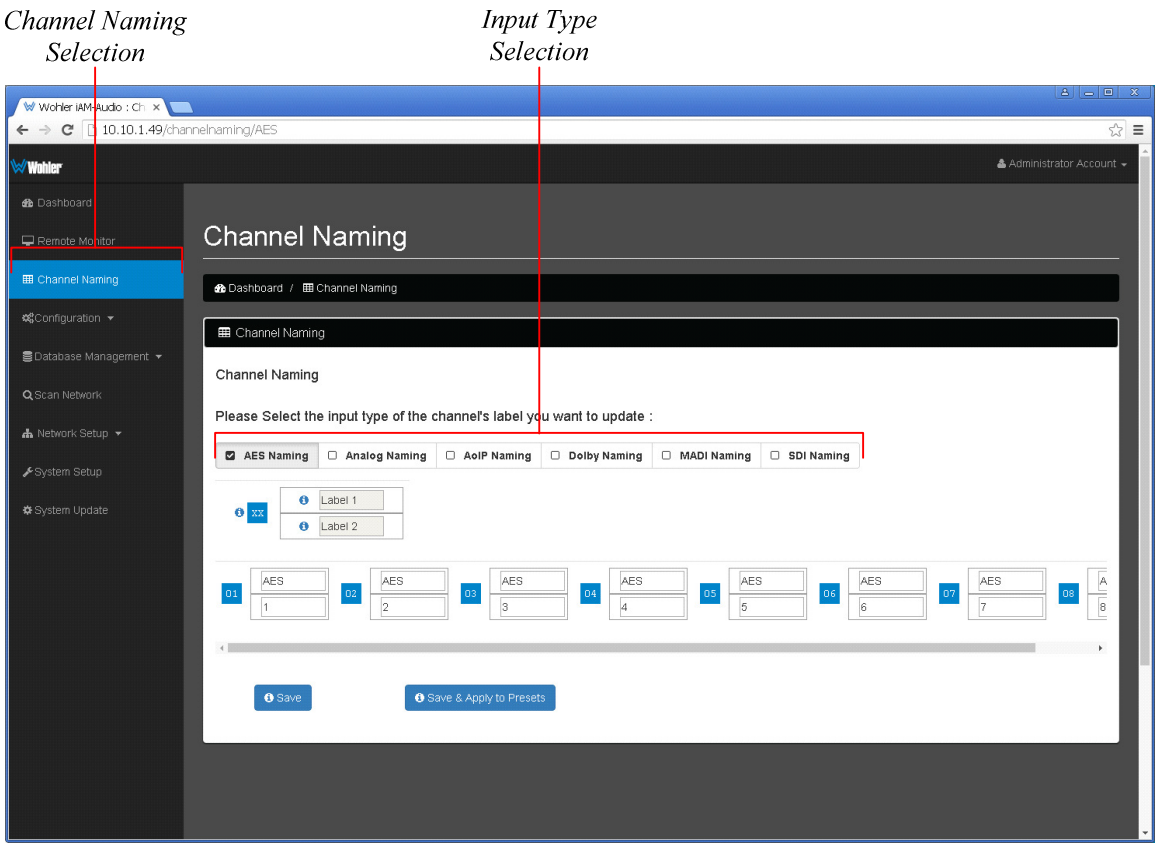
Channel Naming

Each channel will have a preassigned name in the configuration database. There is a separate set of names for each input type. Select the **Input Type** by clicking a check box, as shown in Figure 4-6. The default names (labels) can be changed by normal cursor text entry operations in your browser.

These names will be automatically assigned to the channel-strip label fields in a preset whenever it is selected. Individual channel names will appear on the remote metering screens, but not on the iAM-AUDIO front panel screens, due to space limitations. However, Cluster names, assigned per preset in the **Configuration-Configure Presets** page, will appear on the iAM-AUDIO front panel screens. Refer to the next section in this chapter

To change the channel names, simply click into the appropriate naming fields and type the new names. Click **Save** when you are finished.

Figure 4–6: Channel Naming

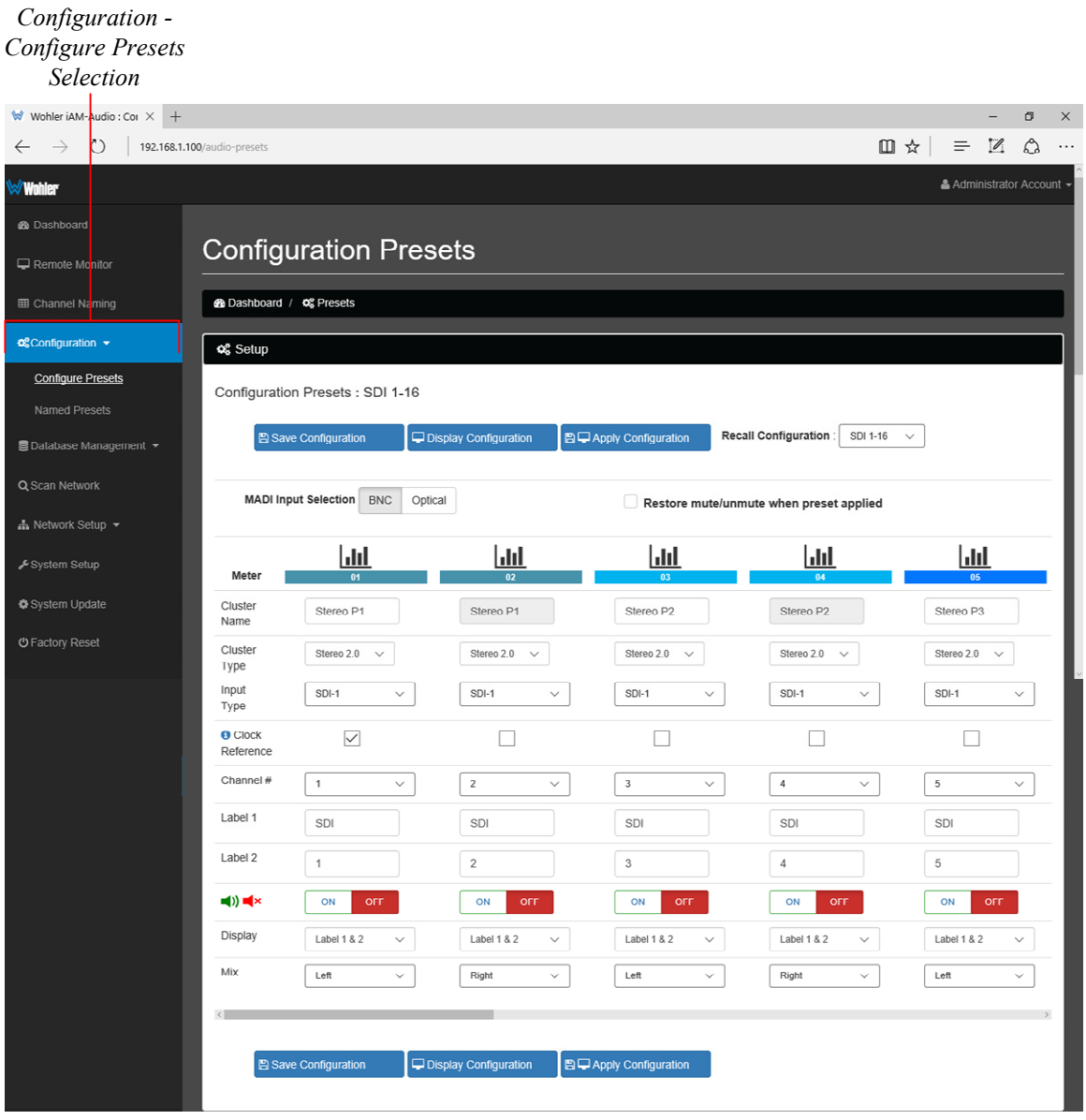


Configuration – Configure Presets

Factory default Presets are provided for each input type as sixteen channels in consecutive order. Default mixes are left for odd-numbered channels and right for even-numbered channels. If one of these simple arrangements works for your application, there is no need to change any of your Presets, since the monitor can be left set to that Preset.

The **Configuration** page is where the routing of signal can be defined in virtually any arrangement. Clicking through from the Dashboard screen will display that Preset for editing of the existing configuration. Select other Presets for editing by clicking on the **Recall Configuration** box.

Figure 4–7: Configuration Presets



There are several settings available for each channel:

1. If **BNC** and **Optical** sources are installed, the **MADI Input Selection** switch will appear. Only one can be enabled for each Preset, though different Presets can use either one.
2. The **Restore mute/unmute when preset applied** checkbox can be checked to cause a predefined mute/unmute status to appear for each channel pair to reappear when the Preset is recalled. If unchecked, all of the channels in the Preset will be muted when the Preset is recalled. Refer to Item 10 of this list.
3. If a second SDI source is installed, the **SDI-1/SDI-2 Indicator** switch will appear. Only one can be enabled for each Preset, though different Presets can use either one.
4. **Meter** numbers 01 to 16 represent the left-to-right order of monitored channels within the Preset.
5. Select a different **Cluster Type** (size) by clicking the box under the meter number where you want the cluster (audio group or program) to begin on the left. Multichannel clusters will expand to the right, and overwrite any clusters on overlapping meter positions, making them Cluster-Type-None & Input Type-None.
6. The **Input Type** box switches between the available inputs. Inputs are enabled by software licenses. SDI and MADI optical inputs must have an SFP module installed for it to work. The iAM-AUDIO loops the selected incoming MADI stream to both coax and fiber outputs (if installed) enabling copper to optical conversion.
7. Check the **Clock Reference** box for the input to serve as clock sync reference. An SDI or MADI stream may exhibit some audible clicks if it is not synchronized externally and is not selected as the clock reference. **A missing signal selected as the clock reference can prevent all audio from being monitored.**
8. **Channel #** is where the source channel for each strip location is set.
9. **Label 1** shows what will be displayed on the upper line of the channel strip, like a scribble strip on a mixing board. **Label 2** is for the lower line displayed. Both labels will be automatically retrieved from the **Channel Naming** page when first selected here. Those names can be changed for this Preset, without affecting **Channel Naming** labels.
10. The RED/GREEN speaker symbol setting can be used to predefine a speaker mute / unmute pattern for each of the channel pairs whenever this preset is recalled or when the iAM-AUDIO is powered up. It is used in conjunction with the **Restore mute/unmute when preset applied** checkbox. Refer to Item 2 of this list.
11. The **Display** box provides a way to not use one of the labels if, for example, labels have too many characters for both labels to fit in the display space.
12. **Mix** is where you can set Left, Right or Left & Right mix assignments for the input source audio to be heard on front panel speakers and headphones, and how the rear panel outputs are mixed. *Expect future versions to make left/right mix assignments automatically.*
13. **Save Configuration** stores the Preset in the database.

14. **Display Configuration** loads the current (edited) Preset into the iAM-AUDIO for test purposes only. It will not be stored, and cannot be recalled later.

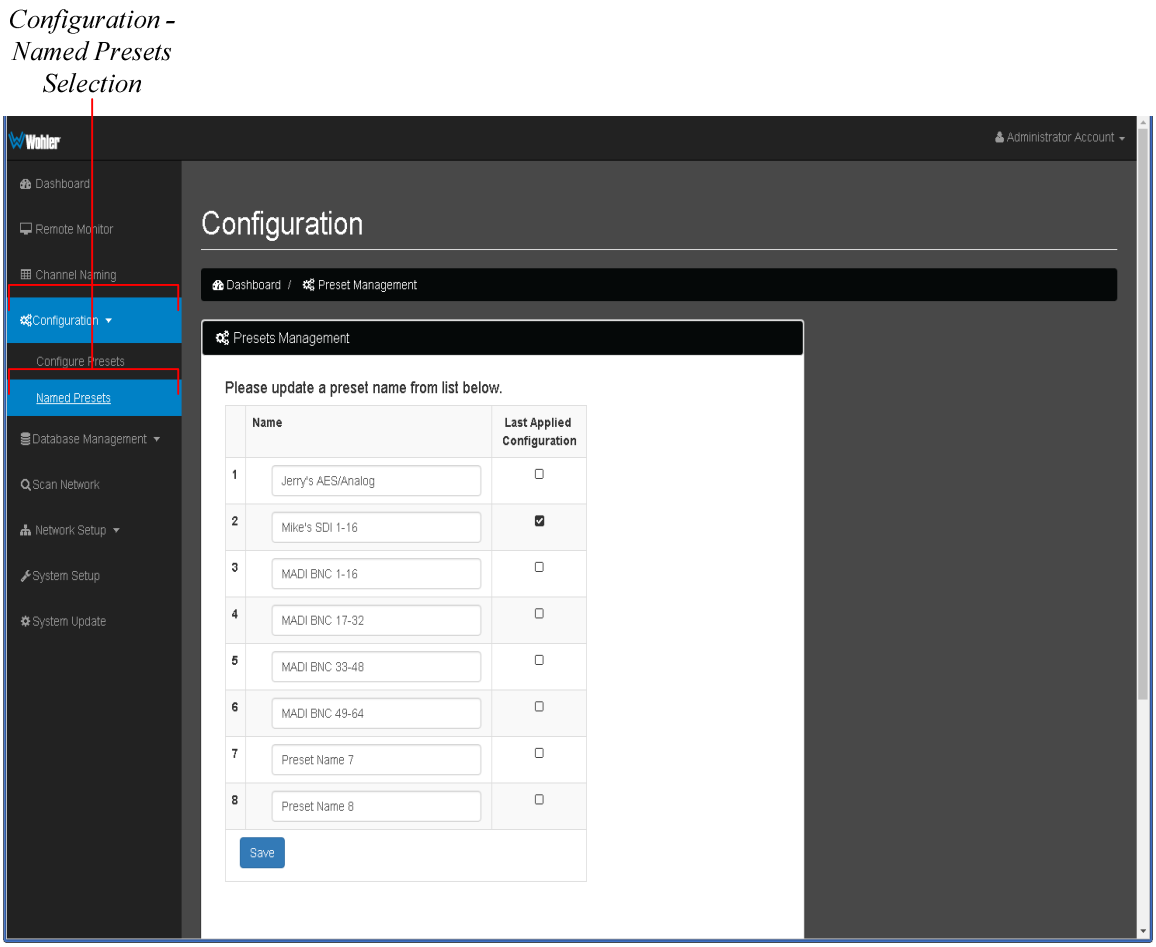
15. **Apply Configuration** saves the Preset to the database and loads it as the active preset.

Presets may be created for any licensed inputs, even if the SPF module for an input is not plugged into its respective socket at the time. This makes it easy to swap SPF input modules without having to recreate presets after the insertion or removal of an SPF module. Note that if a licensed SPF module is not detected, such as when one is removed to be swapped, its monitoring inputs will be muted. Likewise, if the required license has not been entered for an SPF module that is inserted, its monitoring inputs will also be muted. Refer to the **System Setup** section in Chapter 4 and to Figure 4-9 to install software licenses.

Configuration – Named Presets

Use this page to edit Preset names. Click **Save** to store the new name(s).

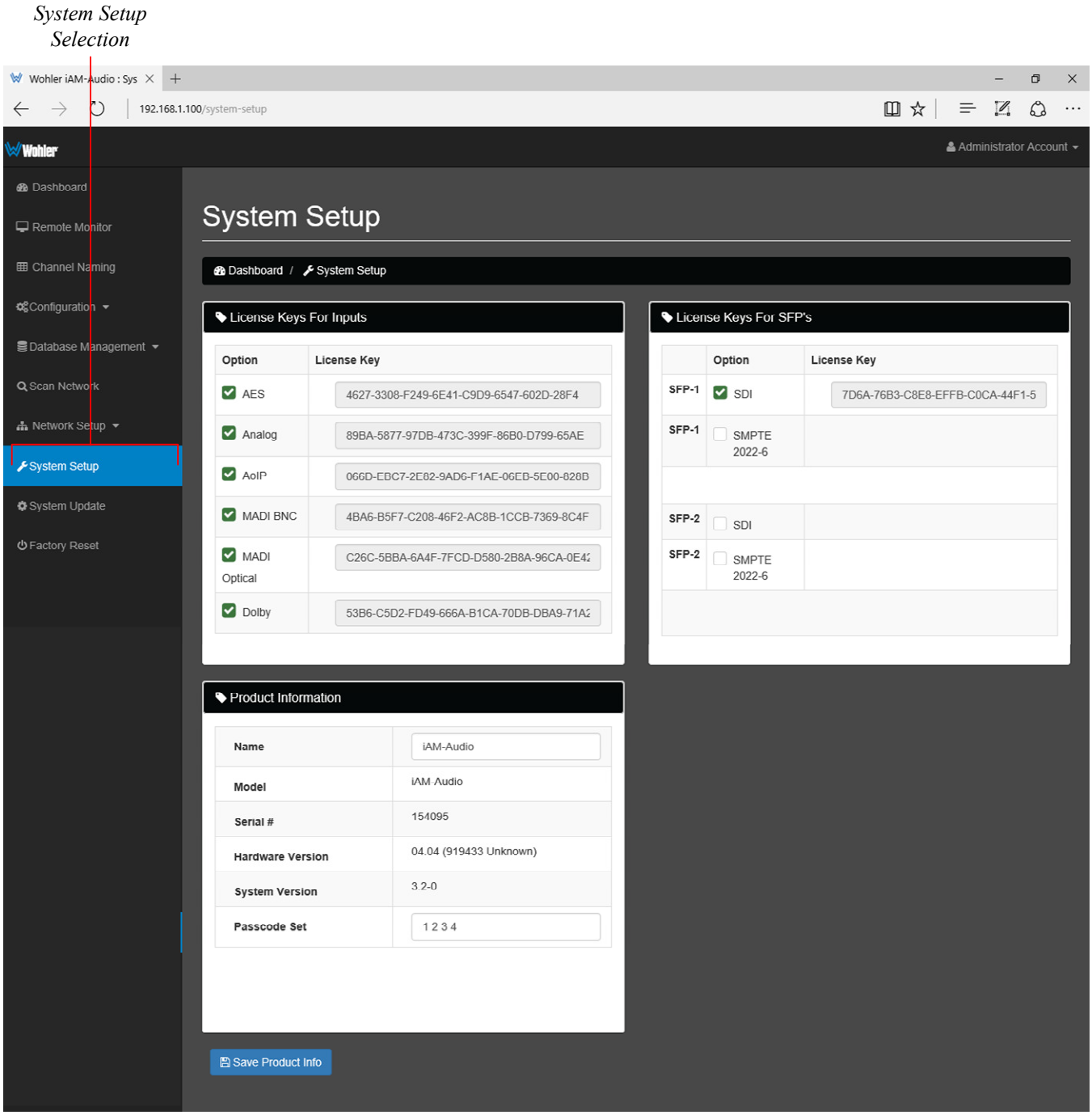
Figure 4–8: Save Preset



System Setup

The **System Setup** page expands upon the status information available in the **Dashboard** page, showing the installed option licenses, and provides a means to add additional option licenses.

Figure 4–9: System Setup



The example above shows an iAM-AUDIO with license keys for inputs and license keys for SPF modules installed. Licenses without keys will not have the box checked.

To enter a the license key provided to you by Wohler Customer Service, use the following steps:

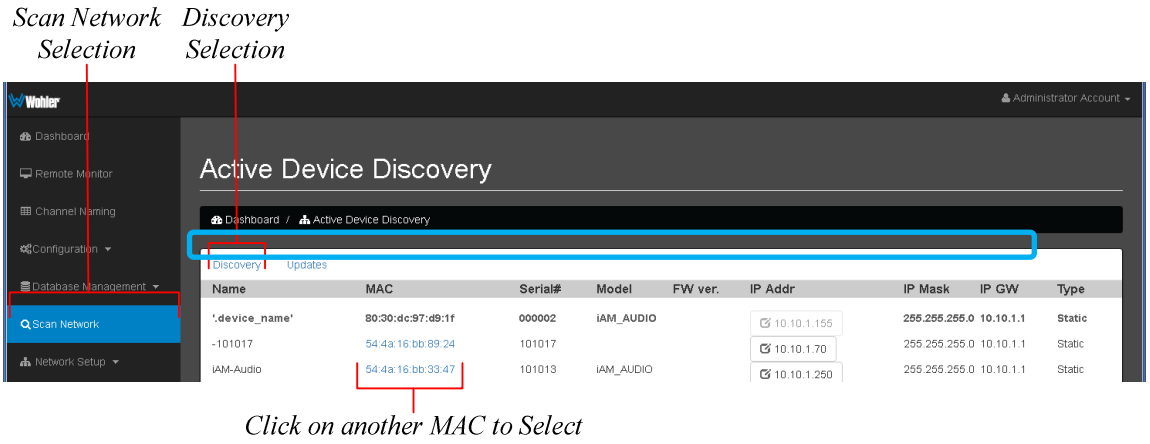
1. Click the checkbox adjacent to the input or module desired.
2. Enter the license key in the boxes that appear.
3. Repeat Steps 1 and 2 for any other license keys that you want to enter.
4. Click the **Save Product Info** button to save the information. Each new license will be immediately available for use.

Product information is also shown in a window on the **System Setup** page for your convenience.

Scan Network - Discovery

This page will scan the network for Wohler iAM monitors installed on the network. Other devices can have their network settings reconfigured by clicking the Edit (pencil) icon. Information about the **Updates** tab is in Installing Software on Networked iAM-AUDIOs.

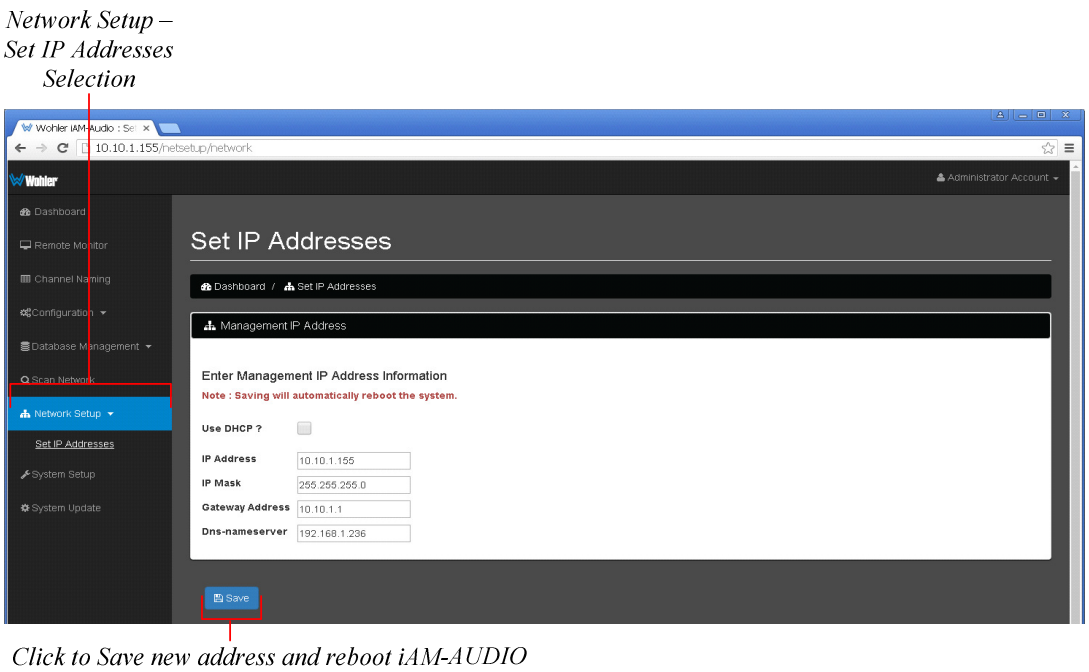
Figure 4–10: Active Device Discovery



Network Setup

Make network **IP Address** changes for the local iAM-AUDIO unit's **Management (MGMT) Port** here.

Figure 4–11: Set IP Addresses



The procedure for changing the IP Address information is as follows:

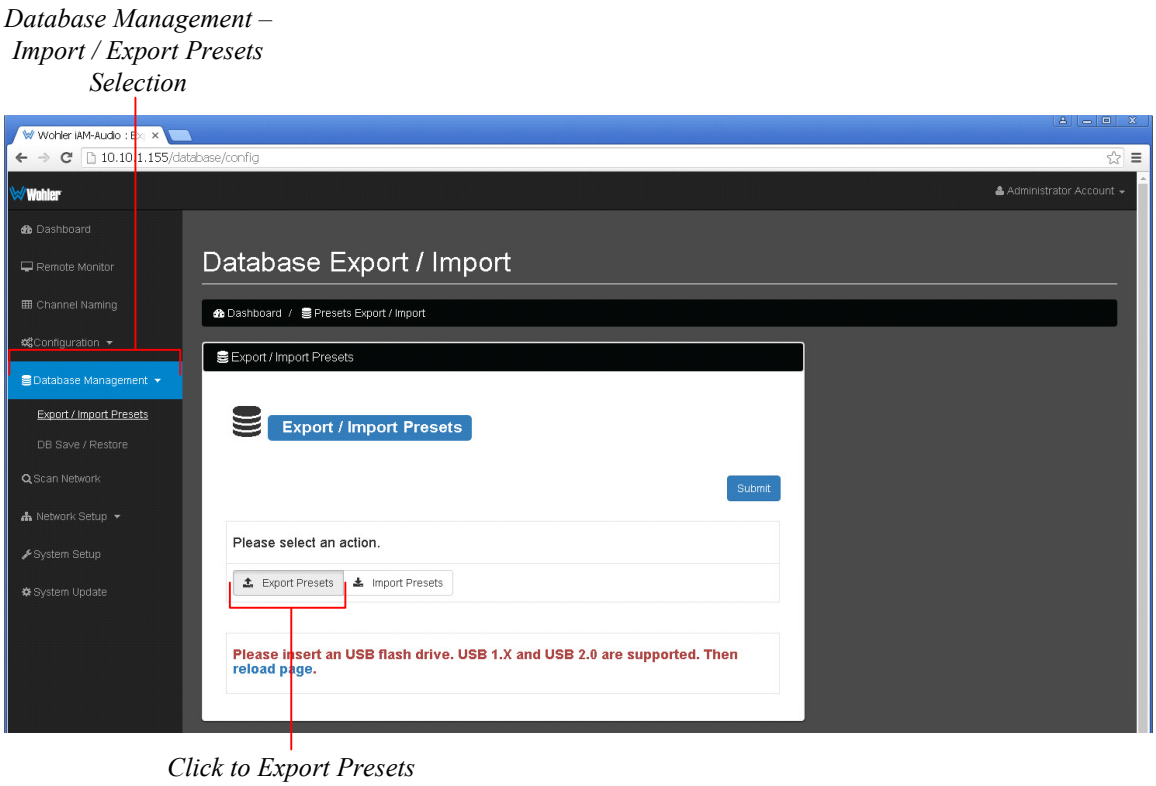
1. **Use DHCP?** Check this box if your network has a DHCP server and you want to use dynamic addressing. Otherwise, you must enter static IP address entries in the four fields which follow.
2. **IP Address**: Enter the network address. Leading zeroes are not required.
3. **IP Mask**: This should usually be 255.255.255.0 unless your network can work across multiple subnets.
4. **Gateway Address**: This should usually be the same domain and subnet address numbers as the IP Address, but with the last octet being .1.
5. **DNS-nameserver**: A default value is shown for reference only. DNS is not normally required for basic static IP network configurations to work. Your IT administrator will specify a value to work with mixed static/dynamic network setups.
6. **Save**: When you have made all of the necessary entries, press **Save** to apply the changes internally before rebooting the unit.

Database Management

Export Configuration

Use the **Database Management - Database Export / Import** page to back up an iAM-AUDIO's Preset database to a USB flash drive.

Figure 4–12: Database Export



Use the following steps:

1. Click the **Export Presets** button on the **Database Management - Database Export / Import** page.
2. Insert a flash drive in the front panel USB jack on the iAM-AUDIO you want to back up.
3. Click the blue **reload page** link at the bottom of the page. The Preset data will be written onto the Flash Drive. Do not withdraw the Flash Drive before all of the data is written to it.

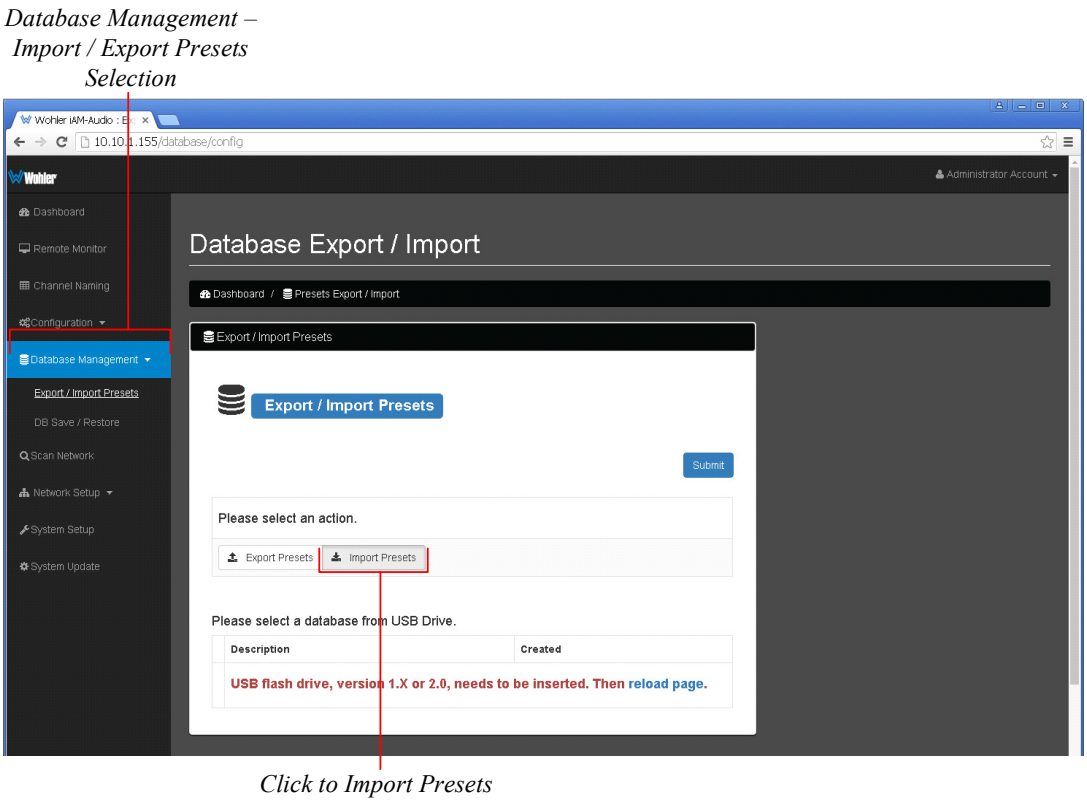
These instructions are summarized on the **Database Management - Database Export / Import** page.

Import Configuration

Use this to retrieve presets from a USB flash drive inserted in the front panel port.

Follow the instructions on the bottom of the page to complete the procedure.

Figure 4–13: Database Import



Use the following steps:

1. Click the **Import Presets** button on the **Database Management - Database Export / Import** page.
2. Insert a flash drive in the front panel USB jack on the iAM-AUDIO you want to recover Preset data from.
3. Click the blue **reload page** link at the bottom of the page. The list of Preset databases that are contained on the Flash Drive will appear on the screen.
4. Select a Preset database from the list. The Preset data you selected will be copied into the iAM-AUDIO. Do not withdraw the Flash Drive before all of the data is copied.

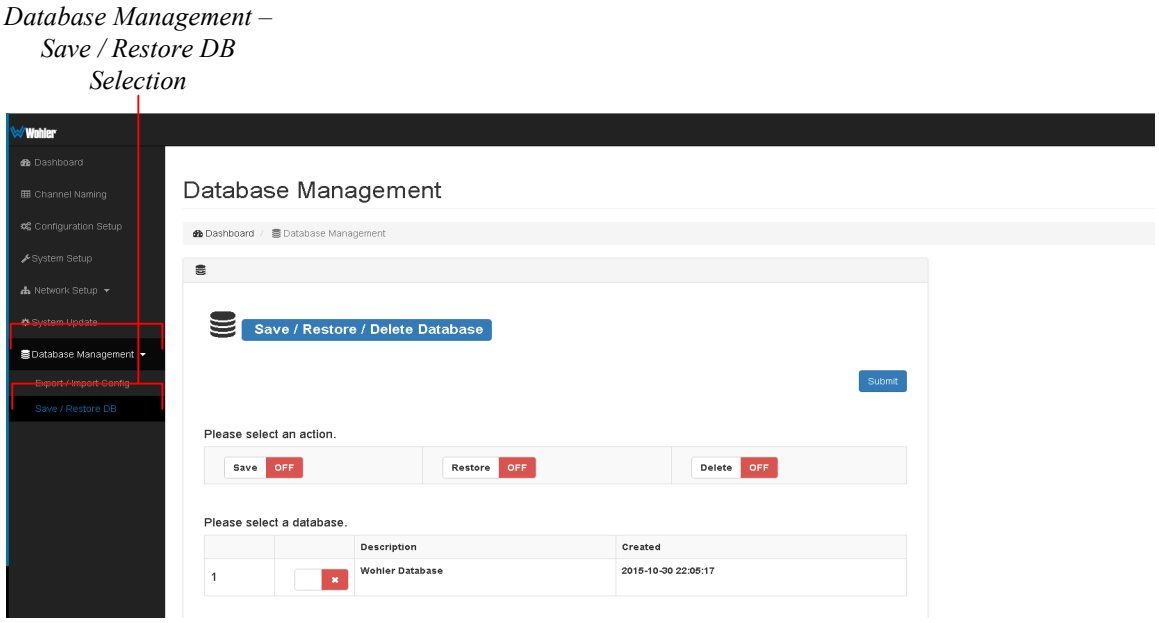
These instructions are summarized on the **Database Management - Database Export / Import** page.

Save / Restore Database (DB)

This page is used to make a backup copy of the database within an iAM-AUDIO unit from which a Restore Database operation can be performed. The dataset stores various information about the unit, including the existing network configuration, channel names, presets, product information and other information.

The backup is made to the unit itself, not to a separate USB or network file. Multiple database copies may be created until a limit is reached, at which point existing copies must be deleted before a new one can be created.

Figure 4–14: Save / Restore Database



A automated database copy will be created whenever you import presets from a new unit in order to enable recovery from a failure.

Use **Save** when you have made modifications to the Database and want to preserve a backup copy of it.

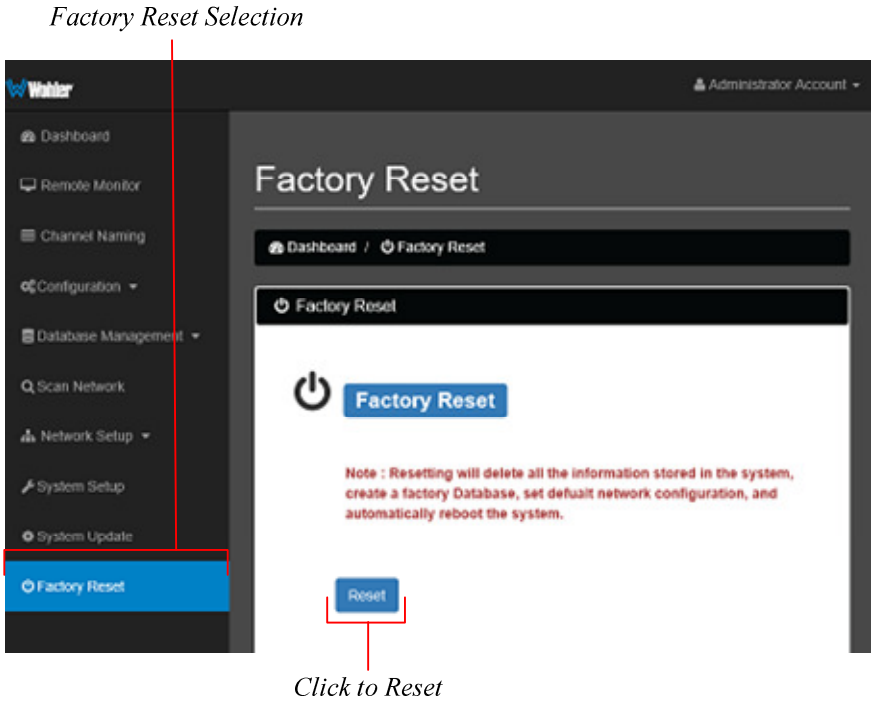
Use **Restore** to reverse database corruption if you notice or suspect the presets are not appearing correctly.

There is no need to **Delete** a database until the maximum number has been reached, and then only to make room for a new one.

Factory Reset

The **Factory Reset** function should be used with caution. It deletes all of the settings you have programmed into the system. It returns the system to the way it was when received new from the factory. After using this function, you will need to reprogram everything from the start or else import a Database or the Presets that you had previously saved. Refer to the **Database Management** section of this chapter.

Figure 4–15: Factory Reset



If you have any doubt as to whether you should perform a Factory Reset, do not click the **Reset** button. Contact Wohler Technical Service for advice.

Note: Factory Reset will reset your IP address to the default one (Static IP: 192.168.1.100/Gateway: 192.168.1.1/Netmask: 255.255.255.0) and clear the database of Presets. After reboot the unit will restore default Presets for all licensed options.

APPENDIX A: Software Upgrades

Introduction

This chapter describes how to download a software update file to your computer, transfer it to a USB flash drive and install the updated into an iAM-AUDIO.

Download the Software

The iAM-AUDIO software update can be found at http://www.wohler.com, or contact Wohler Customer Support for more information.

Unzip and copy the update file(s) from your computer to the root directory (not inside a folder) of a USB flash drive. It must be FAT32 file type, and does not need to be empty.

Both local and remote update methods require that a USB flash drive, with Wohler Update Package(s) installed on it, be inserted into the front panel USB jack of the iAM-AUDIO.

Important:

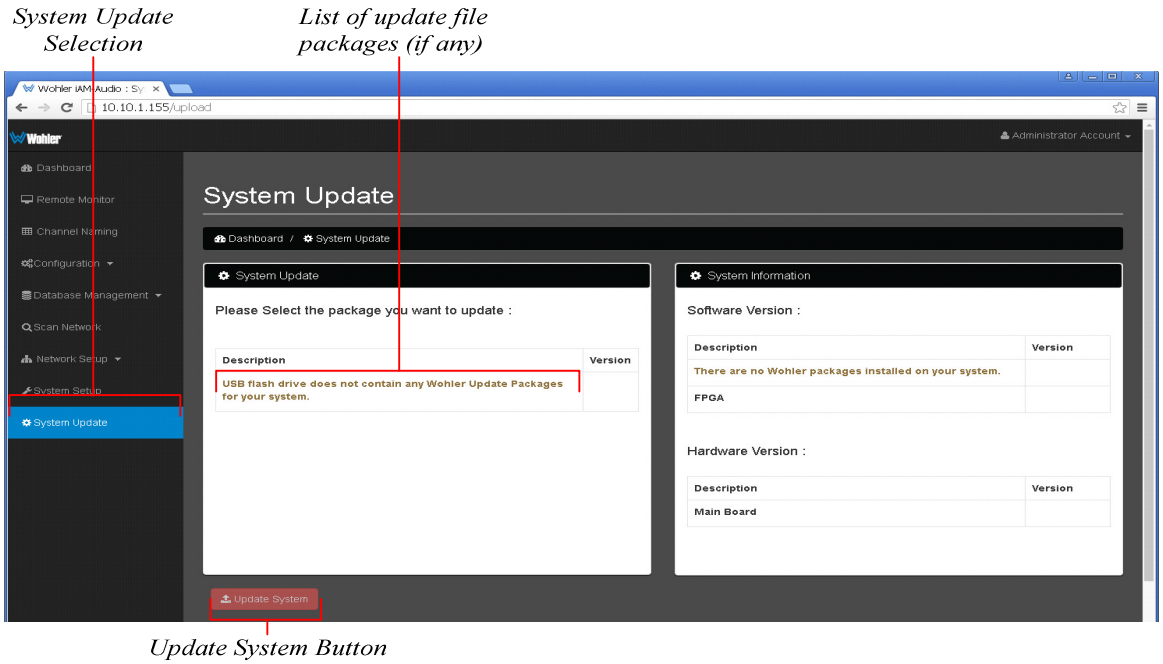
The Web GUI is required to perform the software upgrade procedure. Refer to Chapter 4 **First Time IP Assignments** if not already set up for your network.

Installing the Software Locally

Click on the **System Update** selection in the web browser GUI.

System Information in the right pane shows currently installed software and hardware versions.

Figure A–1: System Update



Use the following steps to install a new software package into the iAM-AUDIO:

1. Insert the USB flash drive with iAM-AUDIO update package(s) into the front panel USB jack. Refer to the Download the Software section of this chapter for the specifics of download and file transfer to the USB flash drive.
2. A list of update file packages present on the USB drive will appear in the **Description** field area shown in Figure A-1, along with software **Version** number(s). Click on the one you want to use. If the "**USB flash drive does not contain …**" message below appears, the system has the latest software in it, and no further action is required or possible.
3. Click **Update System** button.

Important:

Do not interrupt or remove power to the iAM-AUDIO, or remove the USB drive during the installation process. Doing so could crash the iAM-AUDIO software.

4. The Web GUI will indicate progress of the software installation and results.

5. The iAM-AUDIO will display a message when the upgrade is complete and then reboot.
6. Remove the USB drive any time after upgrade is complete.
7. The iAM-AUDIO is finished upgrading and rebooting after the Power indicator returns to its green color and the front panel display is back to normal. The flash drive may now be removed from the iAM-AUDIO unit.
8. After the iAM-AUDIO reboots, either **Refresh** the browser by clicking on the Wohler logo, or close and reopen the browser for normal operation of the Web GUI.

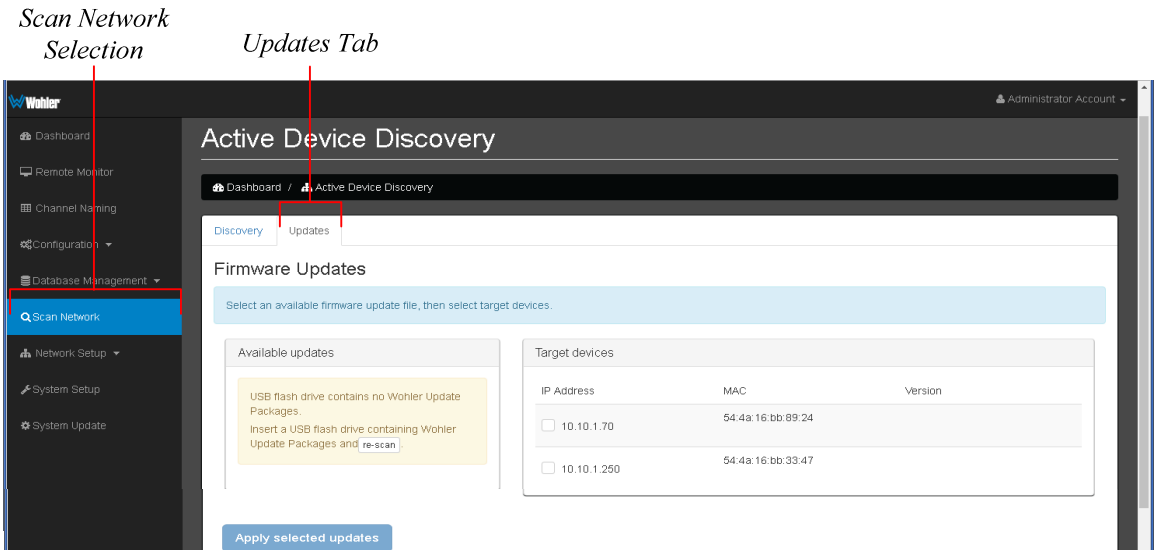
Installing the Software Remotely

Remote upgrading is available for any networked iAM-AUDIO that is currently at version 3.2-0 or higher. This feature is useful if it is inconvenient to physically access some of the iAM-AUDIO units in the system to insert a flash drive. The **Scan Network>Updates** page will scan the network for Wohler iAM monitors installed on the network and allow firmware updates of one or more compatible and accessible iAM-AUDIO units.

The following requirements apply:

1. All of the iAM-AUDIO units must be networked on the same IP subnet.
2. An iAM-AUDIO unit that has already been updated locally is required as part of the Remote upgrade. This will be the **Source** unit of the upgrade.
3. All networked iAM-AUDIO units that are to be updated remotely must already be at software version 3.2-0 or higher. These will be the **Target** units of the upgrade.
4. Each iAM must be of the same type. For example, an iAM-MIX cannot be updated by an iAM-AUDIO.

Figure A–2: Active Device Discovery



Use the following steps to remotely upgrade the **Target** units from the **Source**

unit:

1. Insert the USB flash drive with the iAM-AUDIO update package file(s) into the front panel USB jack of the **Source** unit that you wish to update or wish to use to upgrade others. This unit must have already been updated locally. Refer to the previous section.
2. Click the **Scan Network** page selection. The network will be scanned and the iAM-AUDIO units found will be displayed on the **Discovery** tab. You may use the **Scan** button to rescan if you need to.
3. Click the **Updates** tab. Two windows will open. The **Available Updates** window will show the available options for upgrade. If you haven't yet inserted a flash drive containing the update into the **Source** unit, you may do it now and click **Re-Scan**. Select the needed upgrade from the list.
4. The **Target Devices** window will show a list of the iAM-AUDIO **Target** units that are available to receive the upgrade. iAM-AUDIO units that have already been upgraded or are already at a higher version number will not appear on this list. Select the **Target** units that you would like to upgrade.
5. Before proceeding, note that each iAM-AUDIO **Target** that is being upgraded will no longer be operational for the duration of the update. **If there may be other personnel who may need to use one of the remote iAM-AUDIO units, notify them that the unit will be out of service for a time. During that time, they must not power down or otherwise disturb the unit.**
6. Click the **Apply Selected Updates** button. A window will appear to show the progress of the software upgrade.

Important:

Do not interrupt or remove power to any of the iAM-AUDIO units being updated, and do not remove the USB drive during the update process. Doing so could crash the iAM-AUDIO software.

7. When the update is complete, each updated **Target** unit will restart and again be ready for use. The flash drive may now be removed from the **Source** iAM-AUDIO unit.
8. After the iAM-AUDIO unit(s) reboot, either **Refresh** the browser by clicking on the Wohler logo, or close and reopen the browser for normal operation of the Web GUI.

APPENDIX B: Dante Network Setup

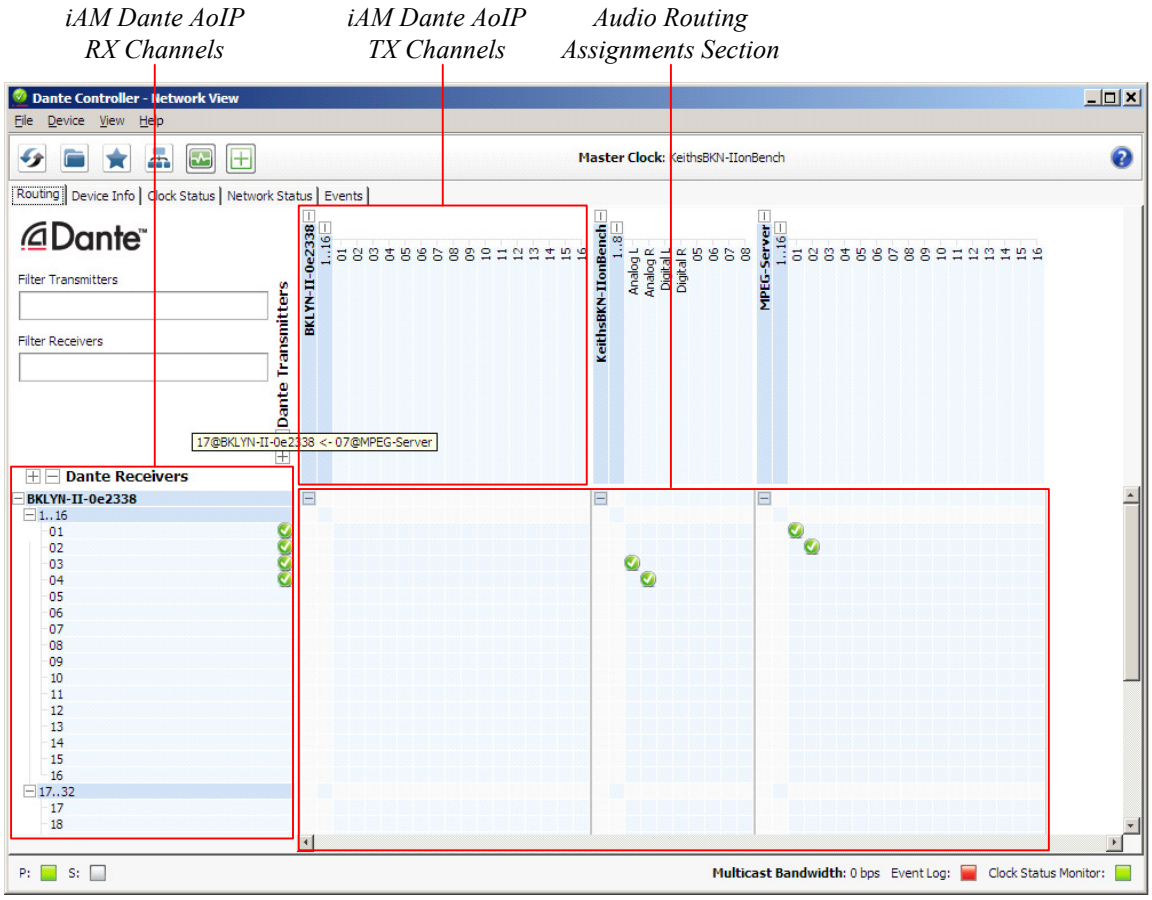
Introduction

Installing the iAM-AUDIO into an existing and functioning Dante network is virtually plug and play. The iAM rear panel AoIP jack supports 1Gb/s and 100Mb/s Ethernet devices in Dante Audio over IP network configurations.

iAM-AUDIO channel source selections are made by choosing **Input Type** '**AoIP**' in the Configuration-Configure Presets page regardless of which AoIP option is installed.

The iAM-AUDIO is set up at the Wohler factory to be used as a slave rather than a master within the Dante network. Other devices or software, such as a **Dante Controller**, are expected to be responsible for most device configurations and all audio routing.

Figure B–1: Network View

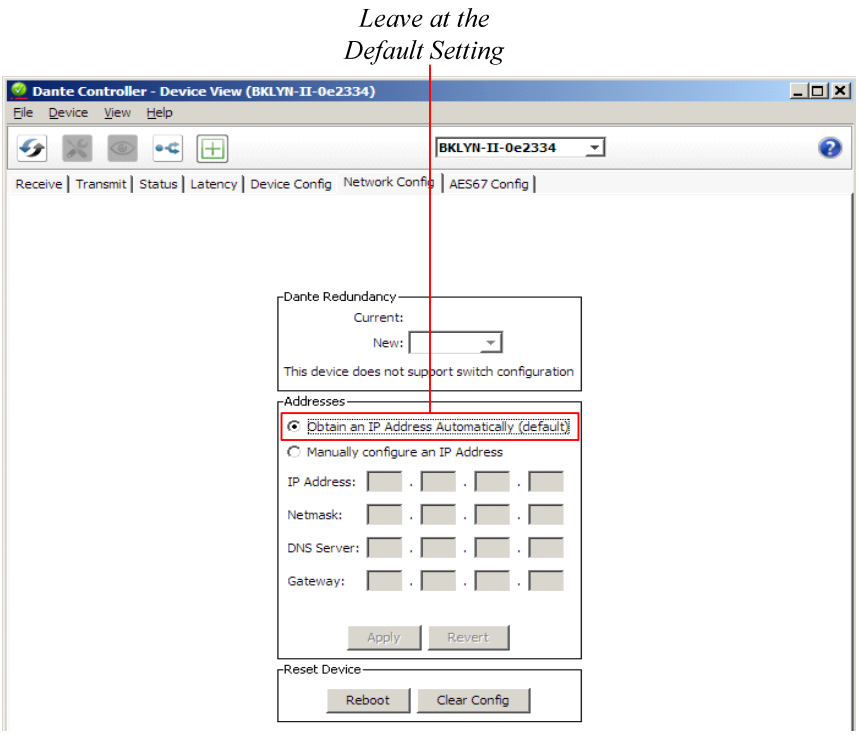


Please refer to the ***Dante Controller User Guide*** or other control device documentation for specific network and device setup information.

What is in the iAM-AUDIO for Dante

The Audinate® Brooklyn II board automatically recognizes Dante™ networks when installed, will alert other devices of its presence and configuration, and will configure its AoIP address per DHCP or local link protocols. There is no need to set a static address for the iAM-AUDIO Dante port, so no address entry method is provided in the iAM-AUDIO for Dante network setup. While it is possible to **Manually Configure an IP Address** from the network, this is *not* a recommended Dante practice and should not be done.

Figure B–2: Device View



Up to sixteen of the 64 AoIP receive channels can be monitored at once in the iAM-AUDIO. The sixteen iAM-AUDIO input channels selected by presets are transmitted to the Dante network.

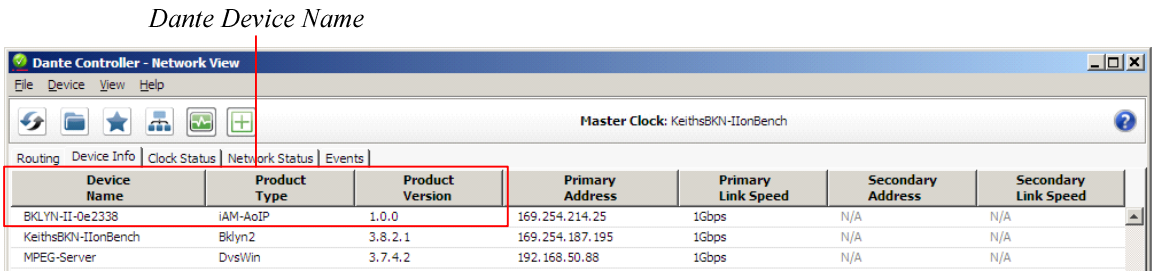
The iAM-AUDIO Dante™ AoIP is configured by the iAM-AUDIO to receive up to 64 channels and transmit 16 channels of Dante AoIP at 48 kHz or 44.1 kHz audio sample rates. 48 kHz is the iAM default rate.

Sample rate selection is left up to the Dante™ Controller device or software. *All devices connected to each other through a Dante network must be set to the same sample rate.* Slight ticking may be heard in the iAM-AUDIO monitor when monitoring different input types at different sample rates or if sources are asynchronous.

Dante™ Device Setup

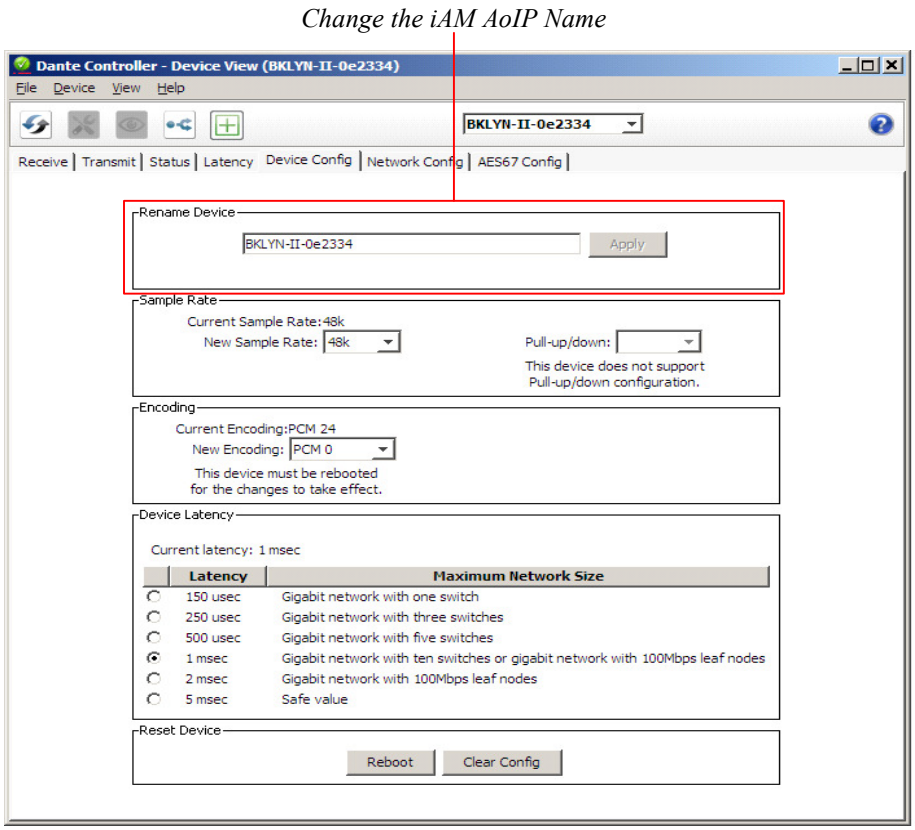
The iAM-AUDIO's default **Dante Device Name** is "BKLYN-II- …" followed by the last 6 digits of the Dante port MAC address, as shown in Figure B-3. This name can be changed by the Dante Controller to appear that way on the network, but that will not change the iAM-AUDIO's unit name appearing on GUI pages and iAM-AUDIO **Remote Metering** or **Discovery** pages.

Figure B–3: iAM-AUDIO Name



During initial setup, you may want to manually change the iAM unit **Name** in the System Setup page to match the reassigned **Dante Device Name** for consistency. Refer to Figure B-4.

Figure B–4: Rename iAM



Other changes such as **Latency** settings can be made by the Dante Controller through the **Device View** menus. Some changes may require remote rebooting of the Brooklyn II card to take effect, temporarily interrupting audio and publishing the new information to the network.

Important:

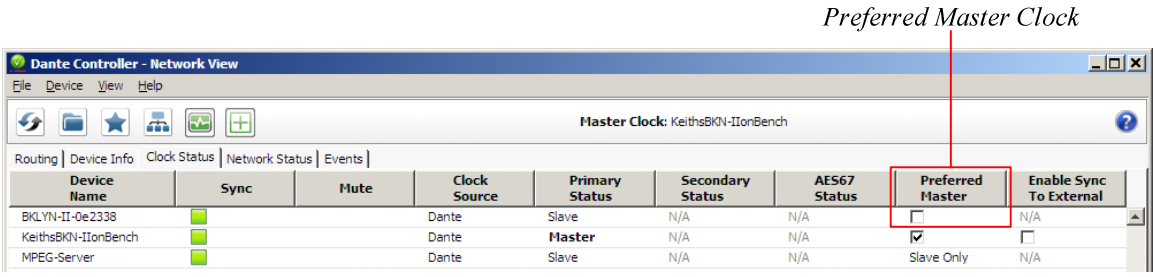
Only 44.1 kHz and 48 kHz audio sample rates are currently supported by the iAM-AUDIO. The Brooklyn II card would accept a Dante Controller command to operate at other rates, without giving an indication it will not be implemented.

Dante Clock Selection

While the Brooklyn's internal clock is highly accurate, the iAM-AUDIO does not have provisions for external sync clocks, such as those that are GPS or media reference (video genlock or audio word clock) based. So it is generally not the best candidate to be the PTP Master Clock (commonly called the "grandfather clock") for the network. It can be set as the preferred master if no better clock source exists. Refer to Figure B-5.

The iAM Brooklyn Dante card will serve as a temporary fallback clock source if preferred masters are interrupted. It functions as an accurate slave clock synchronized to the master clock on the network when not operating as the master.

Figure B–5: Clock Selection



Channel Names

The iAM-AUDIO uses the BKLYN-II default network channel names of Tx 01-16 and Rx 01-64. The network controller can change these names as desired, but iAM channel selections will remain as the original default numbers, unless changed in the Channel Naming - AoIP page. Note these iAM-AUDIO internal channel names are not passed to the Dante network for discovery purposes, and are internal to the iAM-AUDIO.

It is recommended for best operator understanding and system administrator reference that channel name changes made over the Dante network be manually entered in the iAM-AUDIO **Channel Naming - AoIP** page to match.

AES67

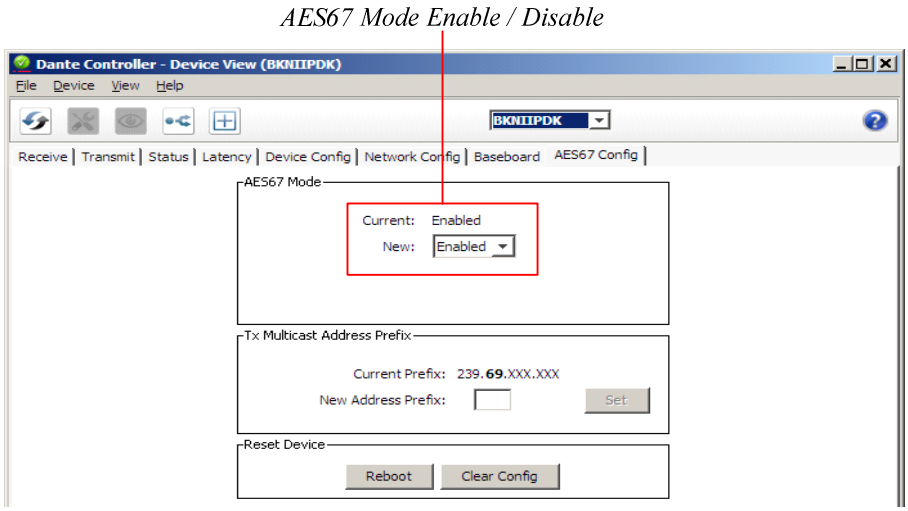
The iAM-AUDIO Brooklyn II can be configured for AES67 operation. AES67 operation with Dante is limited to eight or less receive and transmit channels at 48 kHz sample rates.

24 bit linear (L24) encoding and 1 msec packet time are fixed default transmit parameters.

16 bit (L16) or 24 bit (L24) encoding and 125/250/333/100 µsec packet times can be received.

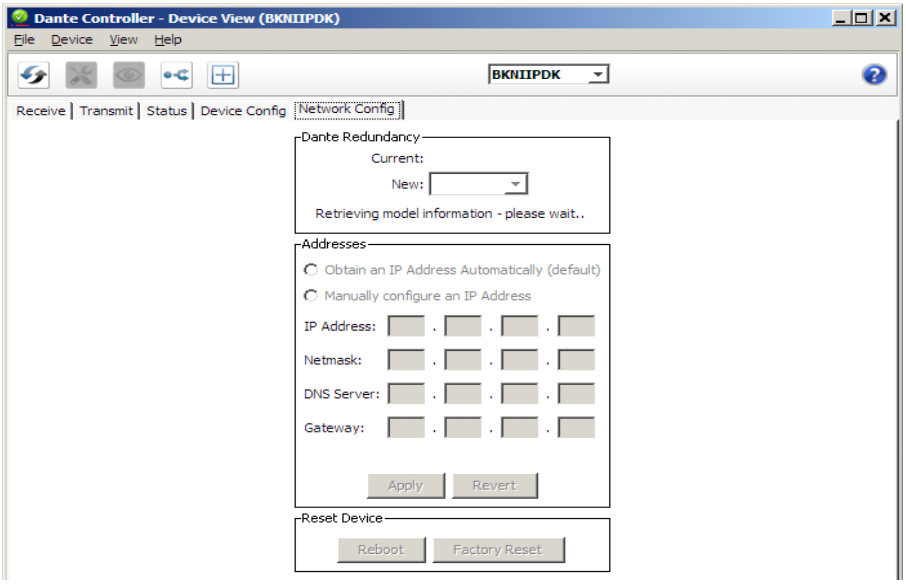
The **Device View - AES67 Config** menu enables/disables AES67.

Figure B–6: AES67 Enable/Disable



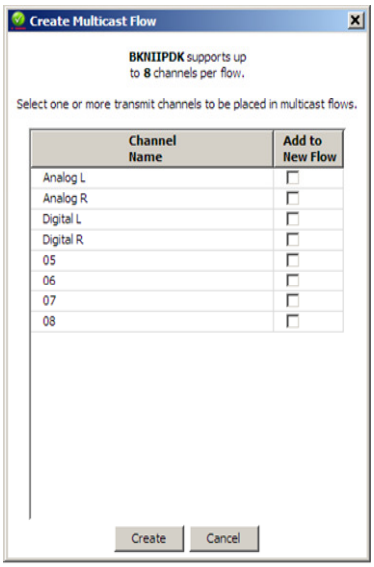
Further, Dante AES67 discovery and operational protocol requires manual assignments for static multicast transmit and receive IP addresses per Dante protocols for discovery and IGMP network operation. Destination addresses in range 239.nnn.0.0 – 239.nnn.255.255, port 5004 o nnn can be configured using the Dante Controller. The default is 69. The destination and receive address range must match. Provisions for this are in **Dante Controller Device View - Network Config**. Refer to Figure B-7.

Figure B–7: Device View - Network Config



The channels to be multicast are selected in the File menu-**Create Multicast Flows** window shown in Figure B-8.

Figure B–8: Multicast



Device Lock

Audinate recently added a feature whereby a remote controller can send a command to lock Dante network device configurations. The iAM-AUDIO does not implement the Device Lock command at this time.

Dante Firmware Upgrades

Wohler iAM-AUDIO monitors ship with current Brooklyn II firmware as of the option installation date. The version information is found in the **Dante Controller Device View-Status** page. iAM software/firmware is tested with the latest Dante code release. Therefore it is strongly recommended that iAM-AUDIO and Dante software/ firmware be updated at the same time to ensure compatibility and support of the latest features.

Use the Audinate **Dante Firmware Update Manager** Windows or OS X application to update the Dante firmware over the Dante network. Follow the application's installation and usage guide plus any applicable technical notes available.

Follow the instructions in Software Upgrades for iAM-AUDIO updates.

Dante™ Legal Disclosures

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APPENDIX C: Ravenna Network Setup

Introduction

Installing the iAM-AUDIO into an existing and functioning Ravenna network is virtually plug and play. The iAM rear panel AoIP jack supports 1Gb/s and 100Mb/s Ethernet devices in Ravenna Audio over IP network configurations.

iAM-AUDIO channel source selections are made by choosing **Input Type** '**AoIP**' in the Configuration-Configure Presets page regardless of which AoIP option is installed.

Note: In addition to the iAM-AUDIO configuration, the Coveloz Bach board needs to configured using its own configuration tool. The menus in this configuration tool are shown in this Appendix.

Note: The instructions provided in this appendix are intended only as an overview. Detailed instructions may be found in the Coveloz Manual.

What is in the iAM-AUDIO for Ravenna

The AES67 enabled Coveloz Bach board supports the following features:

RAVENNA-Compatible Talker/Listener

1) RFC 3551 – RTP Profile for Audio and Video Conferences
   a) L16 16-bit linear format defined in RFC 3551 clause 4.5.11
   b) L24 24-bit linear format defined in RFC 3190 clause 4
   c) AM824 24-bit Audio as defined in IEC61883-6
   d) Multicast and unicast session support
   e) 48 kHz and 96 kHz audio sampling rates
   f) 1 to 8 audio channels per stream
   g) Up to 64 streams
2) Media clock support
   a) 48 kHz and 96 kHz
3) Hitless Stream Redundancy
4) IGMP v3 support
5) Session Announcement Protocol (SAP) support

AVB Ethernet Features

AVB uses the concept of streams and channels. A stream is a connection from one talker to one or more listeners. One stream can be made up of 1-60 audio channels. The Ravenna option supports the following AVB features:

1) AVB 1722 AVTP with multiple subtypes:
   a) IEC 61883-6 MBLA
   b) AM824, 24-bit Audio Encapsulation

c) Support up to 64 streams
d) Up to 8 channels per stream
e) 512+512 Channels of audio
f) 48kHz and 96kHz sampling rates

2) IEEE 802.1Q/SRP
3) IEEE 1722.1/AVDECC control
4) IEEE 802.1AS/gPTP
5) Compatible with Apple OS X devices, such as MacBooks and MacMini computers
6) Media clock per the AVnu specification
7) Hitless stream redundancy

BACH™ Controller Interface

The BACH board includes a Graphical User Interface to review and manage the Bach board. It provides an interface to:

1) Manage connections with ease
   a) Display discovered devices and streams
   b) Connect streams from network to local destinations
   c) Start, stop and monitor stream health/status
2) Enable local BACH™ device configuration & status reporting. Examples include:
   a) Receive buffer statistics
   b) Ethernet statistics
   c) Alarms

The context is device-specific, meaning that:

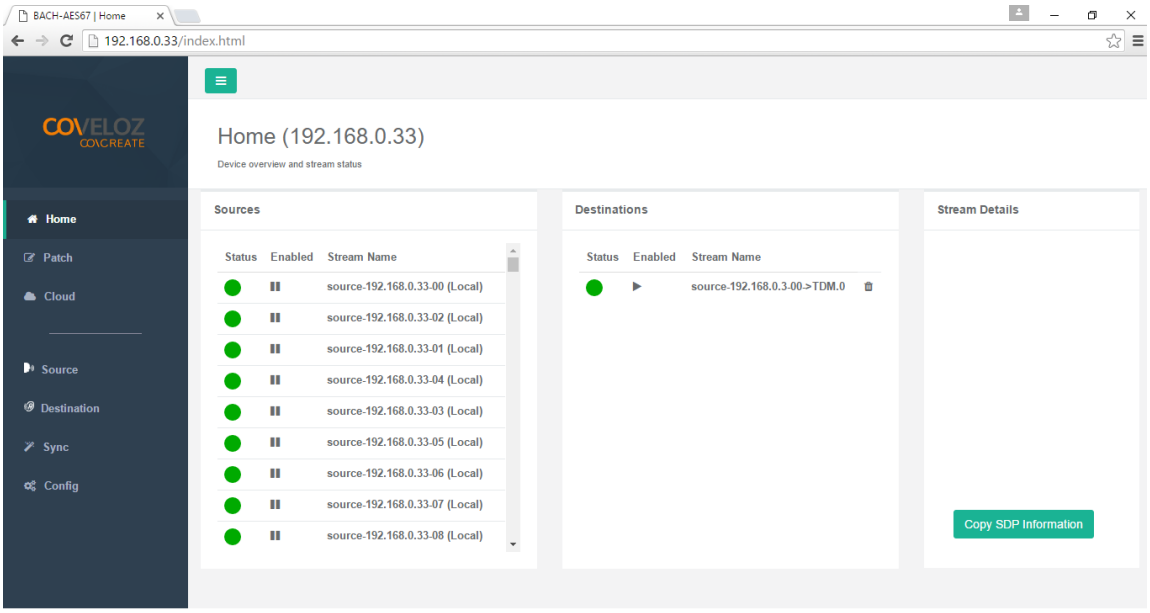
1) a stream "source" refers to this device's source
2) One can change context to another device by selecting it on the **Cloud** Page.

Home Page

You can navigate to different pages within the Bach Controller GUI to review or perform various functions.

The **Home** page can be accessed by entering the 172.27.2.30 IP address. It gives a device overview and stream status.

Figure C–1: BACH Controller Home Page



Configuration/Device Management

The **Configuration** page allows operations such as modifying the IP address, Packet time, Rebooting and so forth.

The first step in setting up the Ravenna option is to configure the Ethernet IP address and other settings. The **Device Configuration** page allows operations such as modifying the IP address, Packet time, Rebooting etc.

Note: There are important considerations when setting up a Ravenna network. Ideally, the Ravenna network must be completely isolated from other Ethernet devices, such as computers, printers, and connections to the internet. This is because the timing of the communications on the Ravenna network is very critical. It should have its own 1Gbps router. However, at least one computer must be connected to the Ravenna network to perform configuration.

Set the Ethernet IP address of the Ravenna option into the "eth1" line on the **Device Configuration** page. The address must be on the same subnet as the other devices on the Ravenna network.

Note: The "eth0" setting is not to be used. Leave it at its default setting.

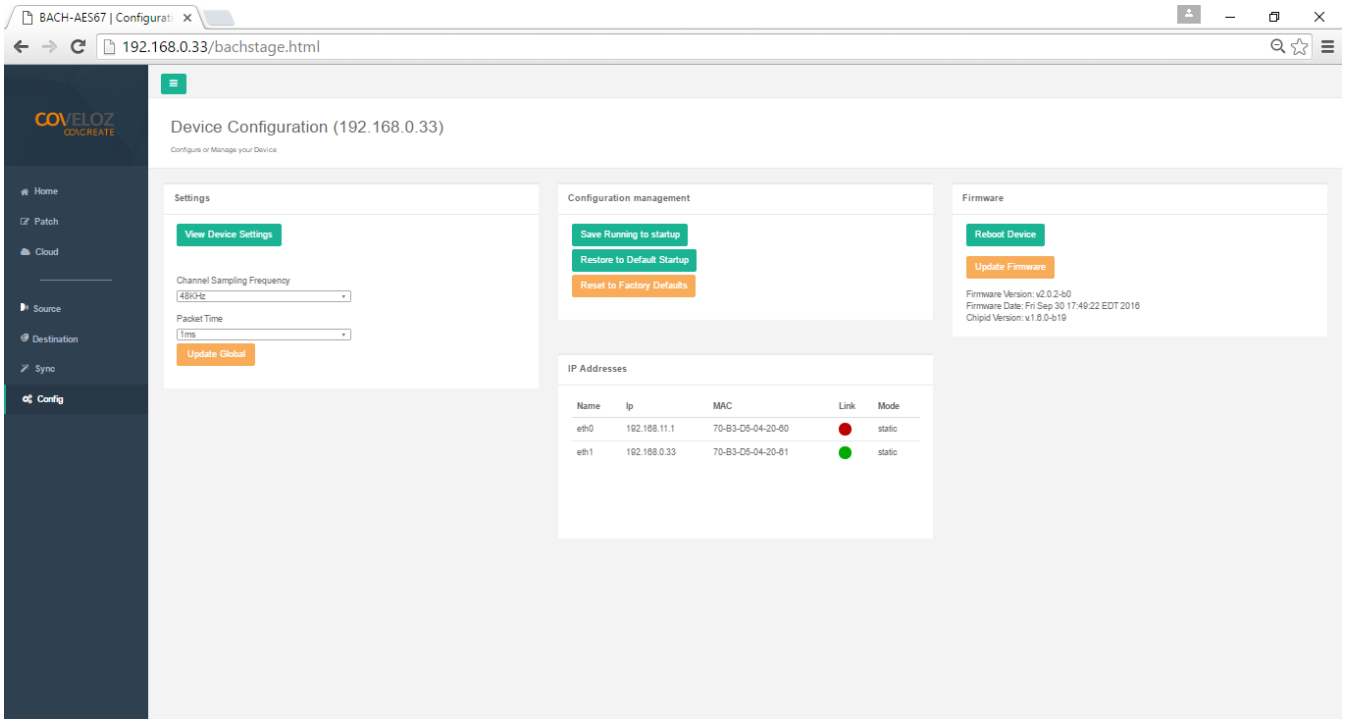
Next, check that the Sampling Frequency is 48 kHz and the Packet Time is 1ms or 250us. Check that the Firmware Version is the same as what is shown in Figure B-3.

Note: ALL Devices must use the same packet time, or sources or destinations may not be available.

If you change any setting on the **Device Configuration** page, click **Save Running to Startup**. If you have changed any Ethernet IP addresses, click **Reboot Device**.

Note: If you do decide to change an IP address, make sure you document this change by writing down the new IP address and affixing it to the rear panel cover plate of the associated Ravenna option card, for your future reference. If you forget the IP address of a card, the only way to find it is to connect it to a very small network consisting of a computer, a switch and the card. Then use Wireshark to discover its IP address.

Figure C–2: BACH Controller Device Configuration



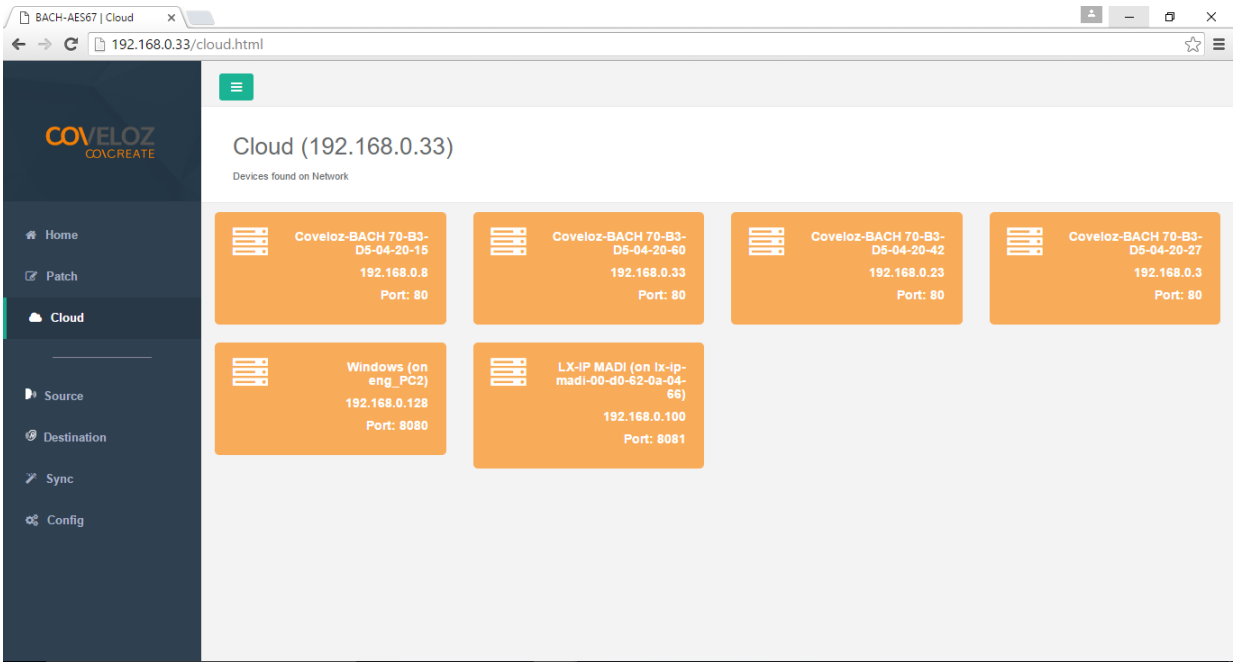
Controller Cloud

The **Cloud** page shows any Ravenna devices on the given network, including any Wohler devices with the Ravenna option installed.

After the configuration described in the previous section, the devices you have set up should now appear on the **Controller Cloud** page.

Note: All devices must be on the same subnet to be discovered. If the subnet of a BACH device is unknown, one must use a tool such as Wireshark to discover the IP address.

Figure C–3: BACH Controller Cloud Page



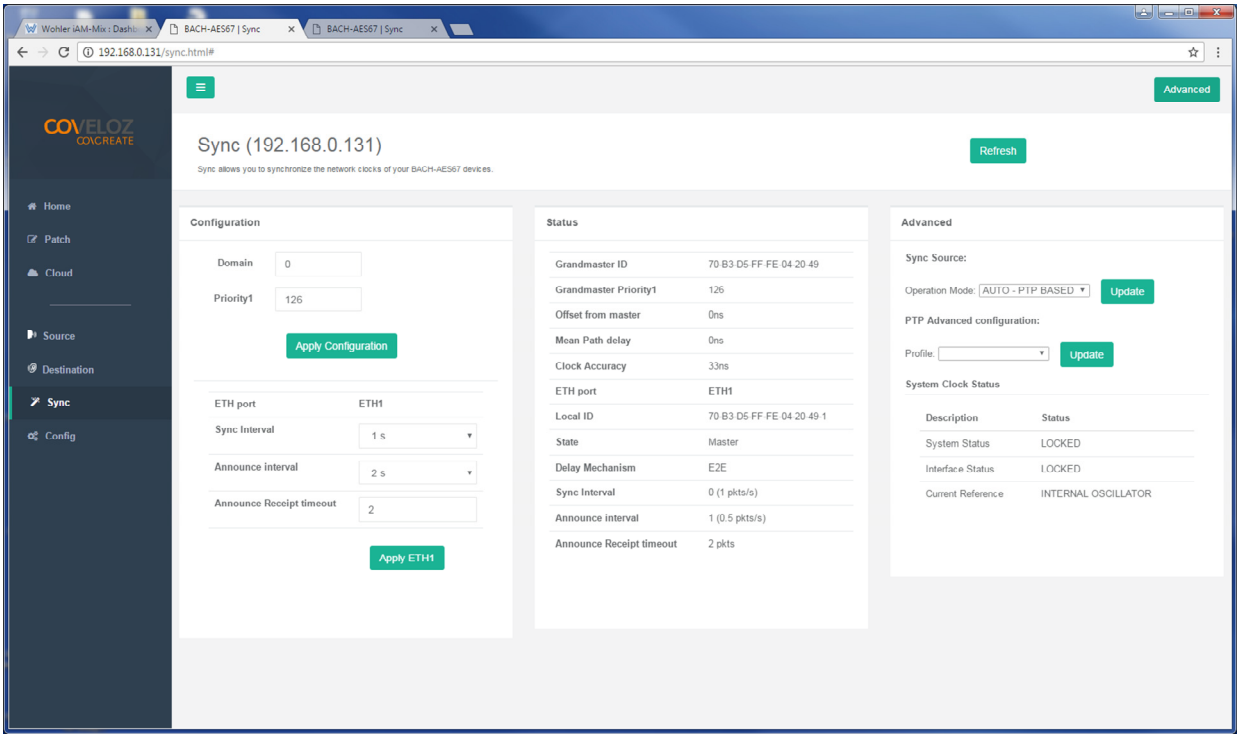
Sync

The **Sync** page allows you to program parameters relating to Precision Time Protocol (PTP) based time synchronization of network clocks of your BACH-AES67 devices. For each of the devices you set up, you may check its associated **Sync** page. An example of a **Sync** page is shown in Figure C-4.

Note: All cards must be set to the same Sync interval, announce interval, etc. The default values should be sufficient. Likewise, although there are a number of clocking options, packet times, and announcement times available, the default values should be sufficient.

Note: Click the **Advanced** button to show which card is the grandmaster clock source. The source card can be the grandmaster clock. Ideally, all Ravenna devices are clocked from a GPS source. Configuration Priority1 should be the lowest value on the network for the grandmaster clock source card.

Figure C–4: BACH Controller Sync Page



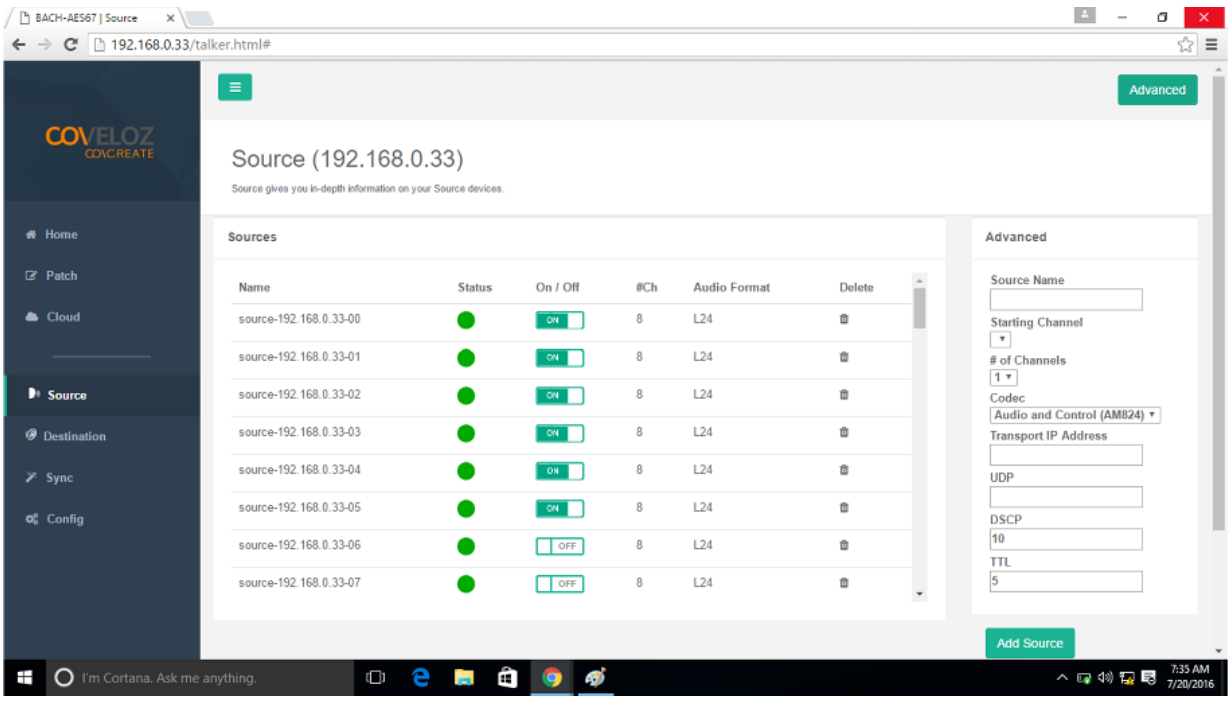
Source Streams

The **Source** page provides in-depth information on source streams that are transmitting (sourcing) Ravenna signals from devices on the network.

Check the Source tab of the source card web page. At lease one source much be turned on. Figure C-5 shows a **Source** page with six sources turned on. The status of each source should be green.

Note: Sources must be turned on to appear on the list.

Figure C–5: BACH Controller Source Stream



Stream Destinations

The **Destination** page provides in-depth information on your destination devices that are receiving Ravenna signals on the network. Clicking the **Advanced** button provides additional options.

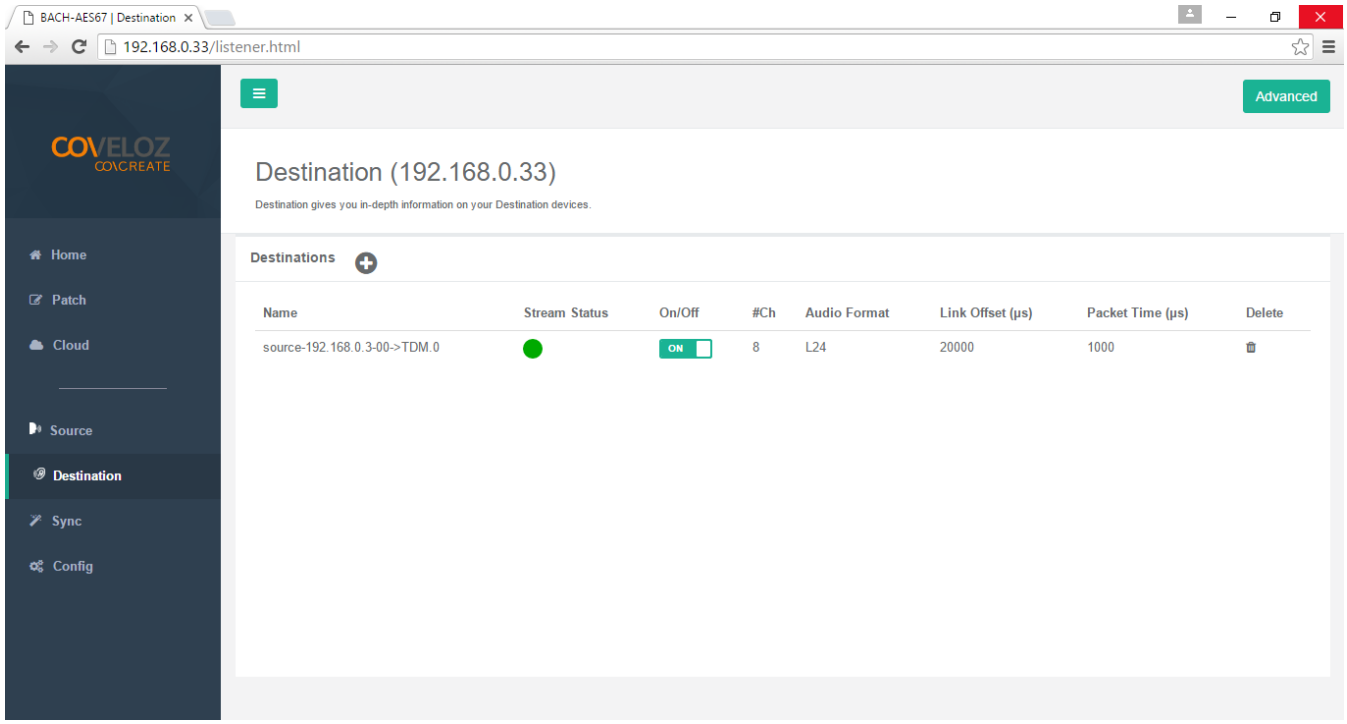
Note: The Destinations must be set to ON.

Table C-1 illustrates the possible channel assignments in the iAM-AUDIO.

Table C-1: Channel Assignments

Group/TDM	Channels	iAM-AUDIO Input Assignment
Group 0 (I2s)	Reserved	Reserved (do not use this group as a
Groups 1-2	0-15	Front panel channels
Groups 3-4	16-31	SDI 1
Group 5	32-39	ASRC
Group 6	40-47	Analog Inputs
Groups 7-8	48-57	Dolby Decoded Outputs
Group 8 Cont'd	58-63	Mute
Groups 9-16	64-128	MADI
Groups 17-24	129-255	?

Figure C–6: BACH Controller Stream Destinations

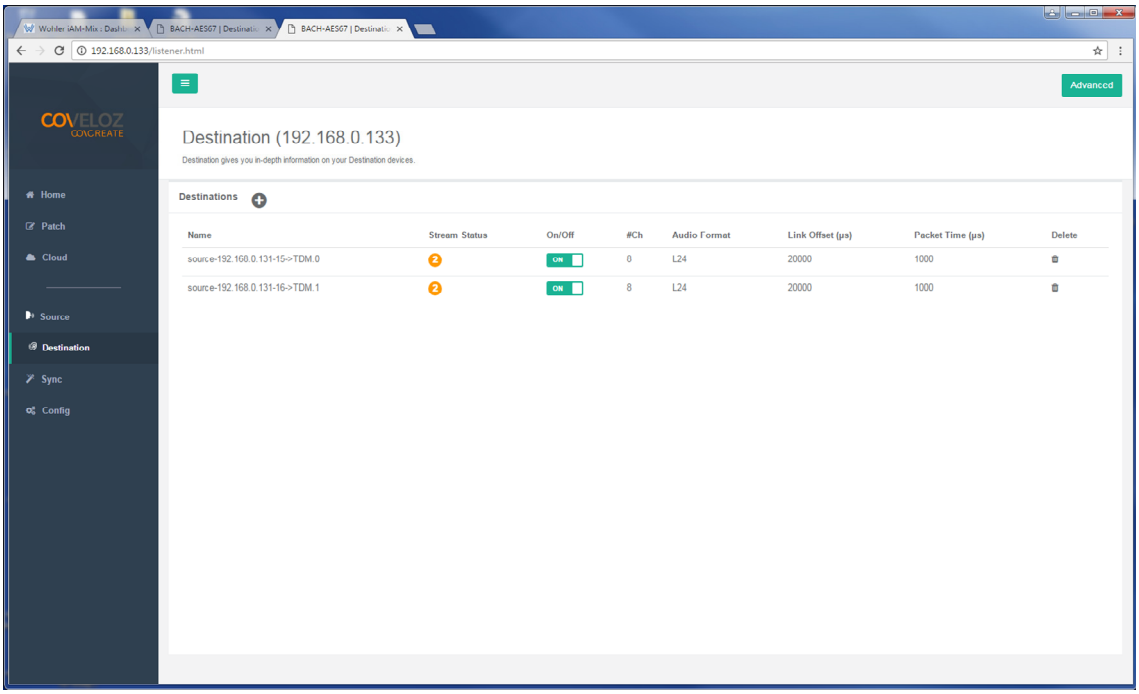


In the event that the Patch tab will not allow you to route to your chosen destination, use this tab to delete all sources routed to those destinations by clicking on the trash can icon in the delete column.

Refer to Figure C-7, which shows destinations that can be deleted. Typically these destinations are from previous network configurations that are no longer used.

Note: The Stream Status indicators for those destinations that can be deleted are yellow instead of green.

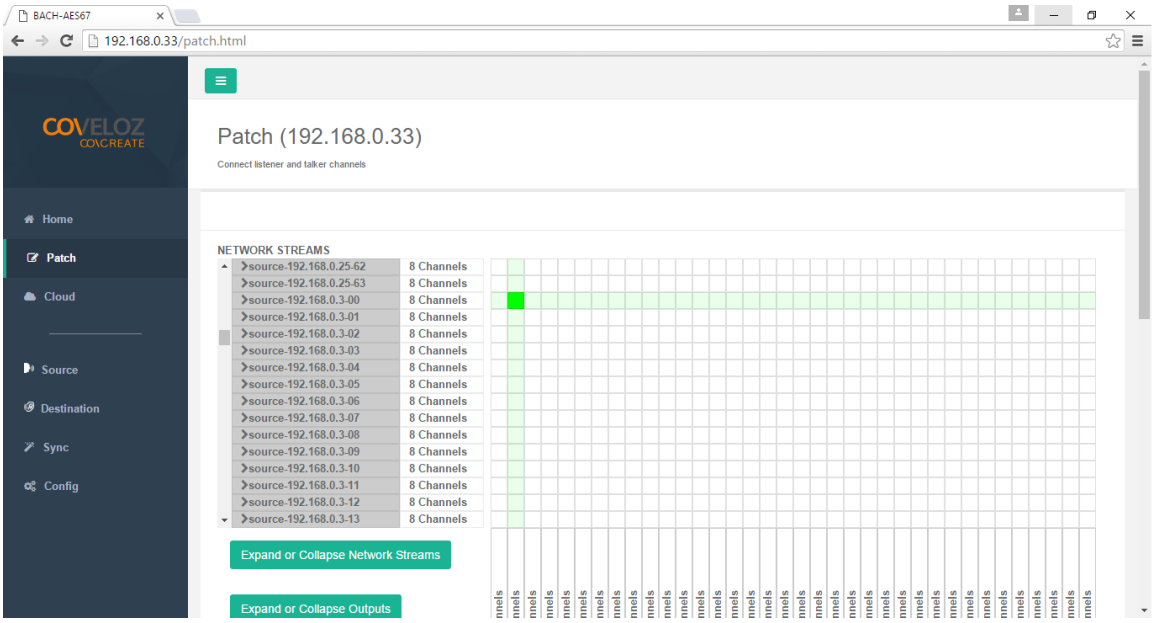
Figure C-7: Deleting Stream Destinations



Patch Panel

The **Patch** page enables routing of connections between listener and talker channels for devices on the network. The highlighted green square indicates a routing connection between a source or talker (left) and a destination or listener (bottom). The Web GUI will allow selection of channels to monitor from among the listeners (bottom).

Figure C–8: BACH Controller Patch Panel



Troubleshooting

It can happen that the iAM-AUDIO Ravenna option doesn't immediately operate as expected. This can be the result of a variety of causes. Refer to Table C-2 for solutions to the problem. If after following the advice in the table, you still cannot resolve the issue please contact Wohler Technical Services for additional help. Contact information is on the second page of this manual.

Table C-2: Troubleshooting

Symptom	Possible Solutions
Source or destination doesn't show up on the network	1. Restart the iAM-AUDIO.
	2. Restart the unit that doesn't show up.
	3. Restart the network.
Cannot open a web page for either a source or a destination	1. Go to the **Cloud** page of a working device and see if the source or destination is listed there. This will help determine whether the IP address was changed or simply entered incorrectly.
	2. Use software such as Wireshark* to check network traffic.
	3. Empty the cache of the browser.
Cannot route to a destination	1. Go to the Destinations tab, delete all of the destinations and then try to route again.
	2. Make sure that the source is turned on.
	3. Go to the **Dashboard** page and check the Sources and Destination blocks. Verify that they are ready and working without timing errors.

***** Wireshark is a free and open sourced packet analyzer software program. It can be used to analyze network traffic and locate IP addresses being used. It may be downloaded from www.wireshark.org.

Ravenna Firmware Upgrades

Wohler iAM-AUDIO monitors ship with current Bach firmware as of the option installation date. The version information is found in the **Firmware** section of the **Bach Device Configuration** page. iAM-AUDIO software/firmware is tested with the latest Bach code release. Therefore it is strongly recommended that iAM-AUDIO and Bach software/ firmware be updated at the same time to ensure compatibility and support of the latest features.

If a Ravenna software update is indicated, follow instructions in the Coveloz Ravenna software update materials.