



iAM-AUDIO-1

1RU Multi-Channel Touch Screen Audio Monitor

User Guide

Part Number 821809, Revision F

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CHAPTER 1: Installation

Introduction

Overview

The iAM-AUDIO-1 is a 1RU multichannel multi-source audio monitor with multiple standard copper connections and multiple SFP module options facilitating high density coax and optical fiber connections. An optional module will allow decoding of Dolby D, DD+, and E from SDI, SMPTE 2110, SMPTE 2022-6, and AES streams. It has options for VoIP formats including MPEG2/4 TS and SMPTE 2022-6, 3G/HD/SD-SDI, and a growing range of additional I/O options via an SFP interface. Refer to the Specifications section of this manual 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 level meters, phase meters, menus and basic monitor controls. Any channel (or group of channels that are clustered together) from any source stream may be audibly monitored and summed with the other selected channels to provide flexible monitoring capabilities.

Loudness of programs can be monitored using the ITU-R BS.1770-3 standard, and over/under visual loudness alarms can be set.

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

Each iAM-AUDIO can be configured with Presets, which are complete monitoring configurations. Very little 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

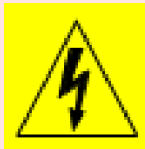
1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.
6.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

Important:

By design, this monitor will only plug into a three-prong outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

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

The 1RU chassis is 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

Local vs Remote Operation

The iAM-AUDIO can be operated locally or remotely. Locally, all of the monitoring functions are available, as well as a limited set of programmable options, as described in this chapter. It may be operated remotely in two ways, via the Wohler Web GUI or by third party equipment via Application Programming Interface (API) commands. The Wohler Web GUI is described in Chapter 4 of this manual. The API commands are described in Appendix D of this manual.

Startup

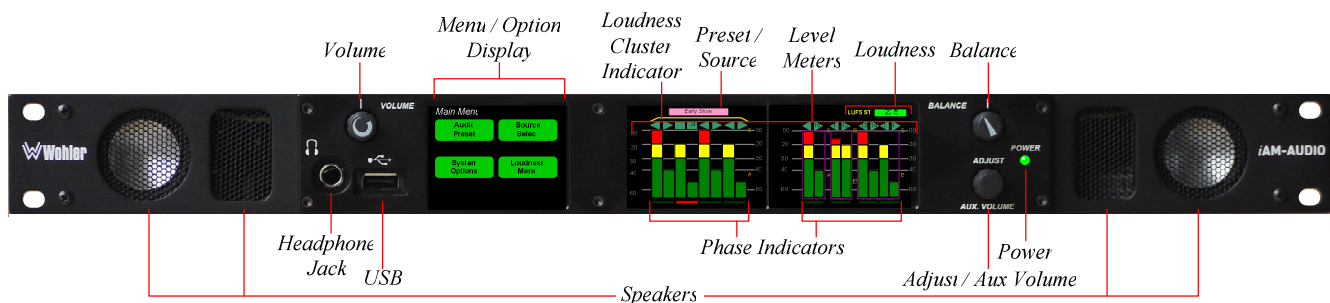
The iAM-AUDIO unit will begin its startup process when it is connected to power through its external power supply. There is no power switch. It is normal for the product to require about two and a half minutes to start up and be ready to use.

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**, **Un-Mute** or **Solo** capabilities to enable only the program channels you want to hear.

Front Panel

The front panel is shown in Figure 2-1.

Figure 2-1: iAM-AUDIO-1 Front Panel



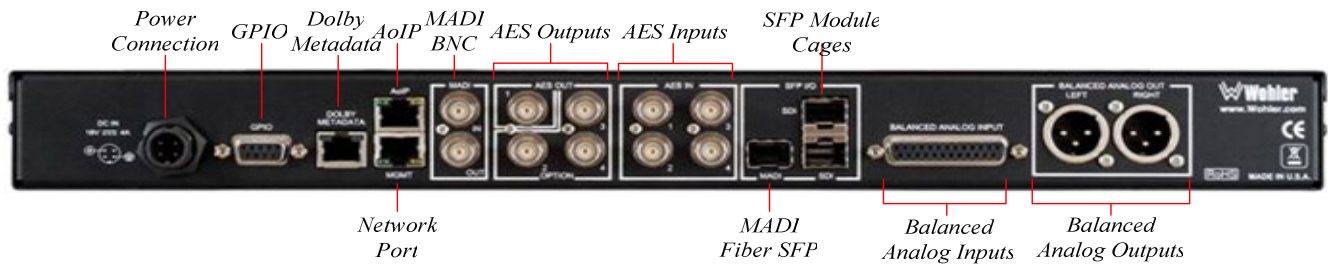
1. **Speakers:** Local near field audio monitoring is achieved through the use of class D amplifiers. There are two (left/right) low and two mid/high range speakers. The speaker response may be adjusted with tone controls. Refer to the **Menu / Option Touchscreen** section of Chapter 2.
2. **Headphone Jack:** A 1/4" jack for an optional headphone is provided on the front panel. Speaker audio can be optioned to mute when headphones are plugged in.

3. **Volume:** This controls the speaker and headphone output level for the monitoring mix.
4. **Balance:** This controls the relative 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 white 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. On units equipped with the Dolby Decode option, if the **Adjust** control is used to select a Dolby channel, the Dolby Zoom feature will activate and display the channels within the Dolby signal, as well as Dolby metadata.
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. Refer to Appendix A of this manual to learn about different methods for performing a software update.
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 Meters:** 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). Alternatively, they can display unclustered input channels.
9. **Phase Indicators:** There is one Phase Indicator per channel pair. It is green when the channels are in phase and red when they are out of phase. Using the **Configuration | System Preference | Phase Indicator Configuration** tab in the Web GUI, you may determine which channel pairs should have a Phase Indicator and which shouldn't, for example, because they contain unrelated signals.
10. **Preset / Source:** The name of the current Preset is displayed here. When sources are directly displayed, this shows the name of the input source.
11. **Loudness:** When Loudness calculations are set up using the Web GUI, this green box displays the loudness of the selected Loudness Cluster as well as the loudness units.
12. **Loudness Cluster:** The Loudness Cluster for which loudness is being displayed is shown by a gold colored bracket above the channel indicators. To select a different Loudness Cluster, touch the green **Loudness** box. It will turn orange, indicating that you may now touch a new cluster. After touching the cluster you choose, touch the orange **Loudness** box to complete the selection.
13. **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 panel is shown in Figure 2-2.

Figure 2-2: iAM-AUDIO-1 Rear Panel Layout



Power Connection: The iAM-AUDIO uses an external AC to 18 VDC 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 $\pm 10\%$, 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.

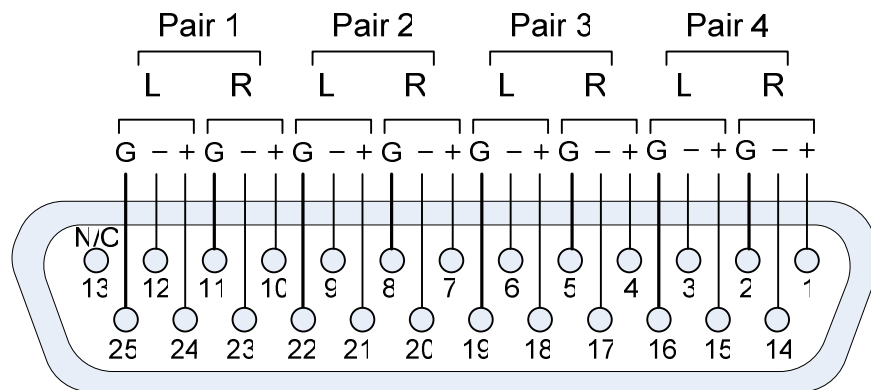
1. **GPIO:** (future implementation) This DB-9 connector provides 2 input pins and 2 output pins to perform GPIO functions as defined by the Web GUI.
2. **Network Port:** This Ethernet port can connect to either a LAN or to a PC to let you customize the iAM-AUDIO configuration remotely. The PC running the Wohler Web GUI will also allow you to copy system configurations from one iAM-AUDIO to another, as well as to update the iAM-AUDIO software and firmware. The Wohler Web GUI is described in Chapter 4 of this manual. Third party equipment, connecting to the iAM-AUDIO via a LAN plugged into this port and using an API commands, can view and change product options, as well. This API is described in Appendix D of this manual.
3. **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

and desired capability must be specified at order.

4. **MADI BNC:** This COAX input accepts an AES10 64-channel signal at 48 kHz sample rate. An optional license key must be purchased to enable this function. 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.
5. **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 4-22 to install software licenses.
6. **Dolby Metadata:** (optional) This RJ-45 jack transmits metadata from the selected Dolby bitstream in RS-485 serial data protocol. Refer to the **System Setup** section in Chapter 4 and to Figure 4-22 to install software licenses.
7. **AES Out:** By default, the **AES OUT 1** BNC outputs an AES3id pair containing the same mixed audio channels as the XLR analog outputs and as heard from speakers or headphones. It is affected by Solos and Mutes, however it is not affected by the **Volume** control setting. 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.
8. **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.
9. **SFP Module Cages:** The two SFP 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 SFP 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 4-22 to install software licenses. The following SFP modules are offered:
 - a. **3G/HD/SD-SDI Single Video Receiver with Active Loopback:** This uses HD-BNC connectors.
 - b. **3G/HD/SD-SDI Video SFP with Optical Input:** This uses LC fiber connectors. It is a Single-Mode Receiver, Medium Haul, Non-MSA, and no output.
 - c. **3G-SDI Transceiver:** This uses HD-BNC connectors. Input and output are both SDI.

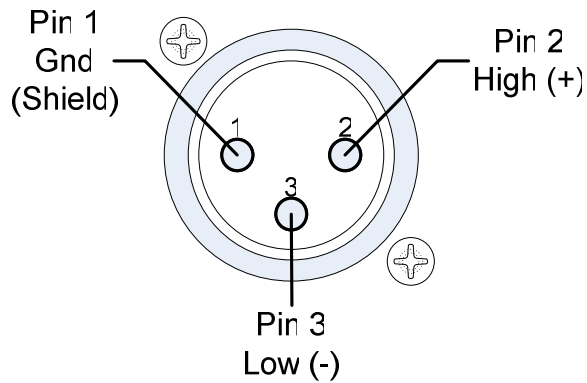
- d. **SMTPE 2022-6 Receiver:** This uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM-AUDIO to monitor SDI audio transmitted in real time over Ethernet. You must use the emSET configuration software to set up this option. It is available from Wohler Technologies Technical Service.
 - e. **SMTPE 2110 Receiver:** This uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM- AUDIO to monitor SDI audio transmitted in real time over Ethernet. You must use the emSET configuration software to set up this option. It is available from Wohler Technologies Technical Service.
 - f. **SMTPE 2110 or 2022-6 Receiver:** This uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM- AUDIO to monitor SDI audio transmitted in real time over Ethernet. You must use the emSET configuration software to set up this option. It is available from Wohler Technologies Technical Service.
10. **Analog Inputs:** This DB-25 female connector accepts +10 dBu 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 2-3 for the pinout of this connector.

Figure 2-3: Analog DB25 Input Connections



11. **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. Refer to Figure 2-4 for the pinout of this connector.

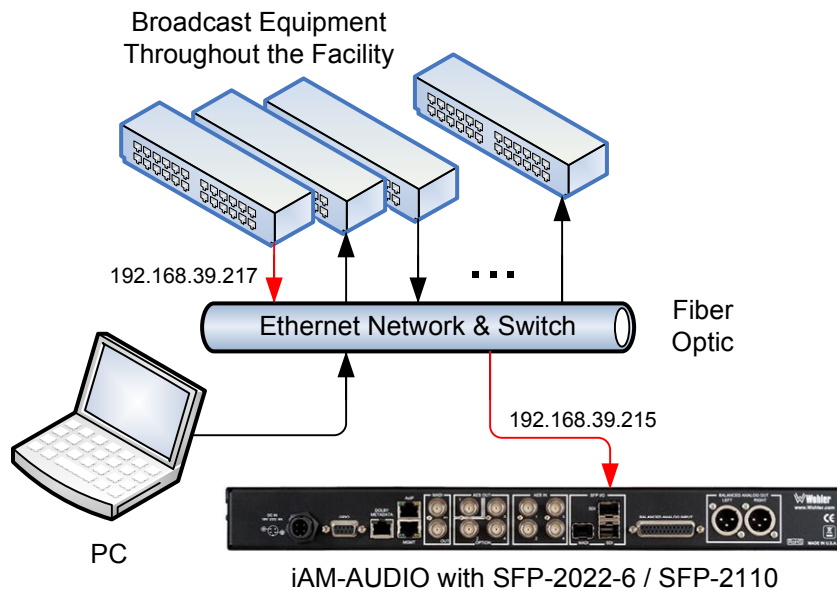
Figure 2-4: Analog XLR Output Connections



SFP-2022-6 / SFP-2110 Address Setup

While the optional SFP-2022-6 and SFP-2110 modules monitor program audio created from distinctly different technologies, both are connected to the network in the same way and have the same requirements for addressing. Figure 2-5 illustrates the network connections they need.

Figure 2-5: SFP-2022-6 and SFP2110 Network Diagram



The optional SFP-2022-6 or SFP-2110 module furnished by Wohler Technologies is manufactured by Embrionix and comes from the factory with a default IP address. To integrate it into your digital network, you need to set its address to the source to be monitored. You must use the emSET configuration software to set up this option. It is available from Wohler Technologies Technical Service. The procedure to accomplish this is described in the **SFP-2022-6 / SFP-2110 Setup Guide** (part number 821822), which is available at <https://www.wohler.com/wp-content/uploads/2016/09/SFP-2022-6-SFP-2110-Setup-Guide-821822A.pdf>

Channel Meters and Touch Operations

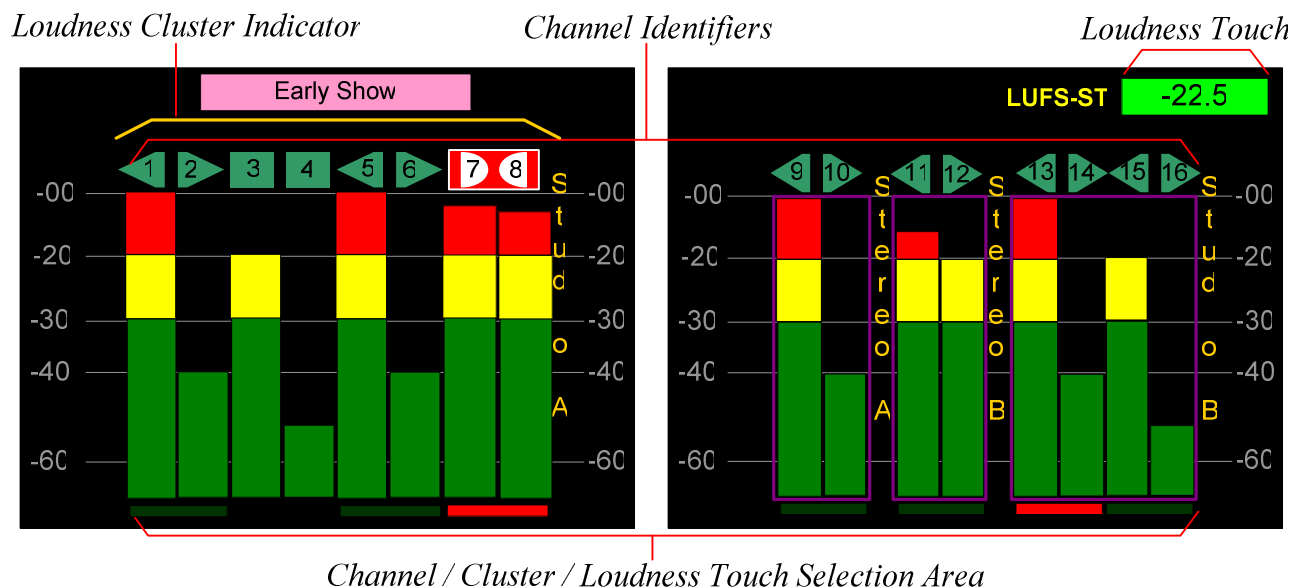
The audio mixer terminology of “solo” is used in this manual when referring to muting all but a specific audio channel or subgroup. Since the terms “group” and “subgroup” have different meanings in SDI vs. pro audio, this manual uses the term “cluster” to define a set of audio channels forming an audio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

Important:

The numbers above each 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 2-6. 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 2-6: Audio Level Meter Screen



1. **Channel Identifiers:** Above the level meters are the Channel Identifiers. They indicate the following:



An arrow pointing to the left indicates that this is a left channel and will be monitored in the left speaker.



An arrow pointing to the right indicates that this is a right channel and will be monitored in the right speaker.



A square indicates that this is a center channel and will be monitored in both speakers.



The symbol shown on channels 7 and 8 in Figure 2-6 indicates that this channel pair is a Dolby bitstream. Refer to the **Dolby Zoom** section of this chapter.

The channel numbers within the symbols indicate the numbered position in the meter display, not the channel position within the monitored stream. Channel assignment is made in the **Configure Presets** page of the Web GUI.

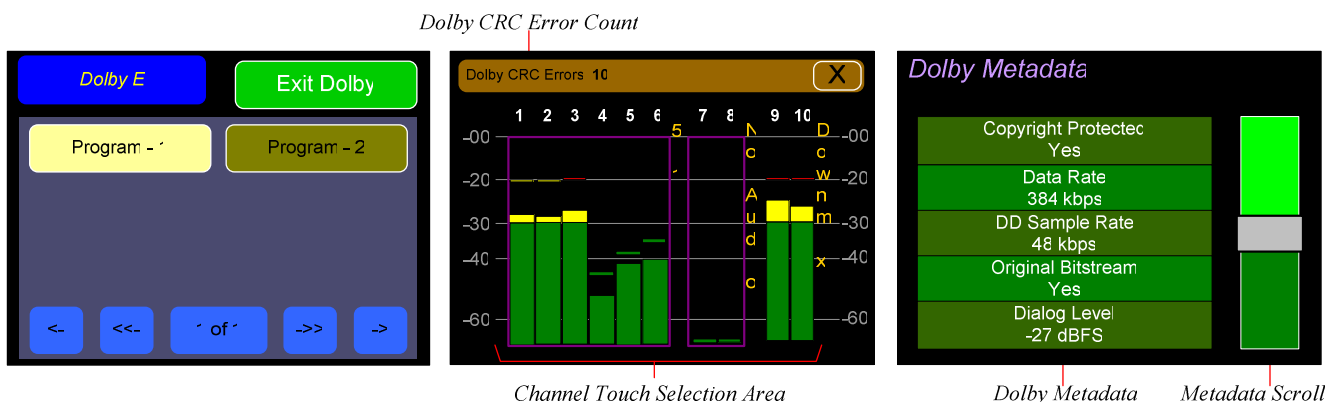
2. **Loudness Cluster Indicator:** The Loudness Cluster for which loudness is being displayed is shown by a gold colored bracket above the channel indicators. To select a different Loudness Cluster, touch the green **Loudness** box. It will turn orange, indicating that you may now touch a new cluster. After touching the cluster you choose, touch the orange **Loudness** box to complete the selection.
3. **Channel / Cluster Loudness Touch Selection Area:** Touching the meters of a cluster will let you mute, un-mute, or solo the associated channel(s). Colored boxes surrounding the cluster or channel indicate what operation is being performed. The following describes each function:
 - a. **Mute / Un-Mute Selection:** A violet box surrounds any channel cluster that is muted. Typically, when the iAM-AUDIO is first powered or when a preset is changed, all of the channel clusters are muted. Touching a muted channel cluster un-mutes it and removes the violet box. Muting and un-muting by touching is an alternate action function.
 - b. **Solo Selector:** Touch for two seconds any channel cluster you would like to solo. A blue box will then surround the cluster and that will be the only cluster you hear. Any violet boxes will disappear. Touch again to return the combination of monitored clusters to the way they were before you soloed the cluster.
 - c. **Channel Solo:** Rotating the **Adjust** control will move a white selection box from channel to channel. Press the **Adjust** control to solo the selected channel. That channel alone will then be surrounded by a blue box and it will be the only channel being monitored. Press the **Adjust** control again or touch anywhere on the meters to undo the solo and return the combination of monitored clusters to as it was before you soloed the channel.
 - d. **Loudness Cluster:** Touch the green Loudness Touch selector and it will turn orange. Touch the cluster you would like to measure the loudness of. Touch the orange Loudness Touch selector and it will return to green, locking in your Loudness Cluster selection and allowing you to perform Mute, Unmute, or Solo selection.

Dolby Zoom Screen

Dolby Zoom is a very powerful analysis tool. Much as a camera lens can "zoom" into a single subject of interest out of many, the **Dolby Zoom** feature lets you quickly "zoom" into a single Dolby bitstream, out of multiple encoded Dolby streams and other channels. You can immediately listen to and meter the contained audio channels, as well as view the Dolby metadata. Bitstreams are shown distinctively along with the normal metering channels, as shown in Figure 2-6. The **Dolby Zoom Screen** is shown in Figure 2-7.

Dolby decoding is an optional feature requiring the OPT-DOLBY module. It allows decoding and monitoring of Dolby® D, DD+, & E streams. Refer to the **System Setup** section in Chapter 4 and to Figure 4-22 to install software licenses.

Figure 2-7: Dolby Zoom Screen



When the **Dolby Zoom** screen appears, the speakers will automatically begin monitoring the downmix audio. However, you may solo or mute the individual channels for troubleshooting or other purposes. Use the left screen to select other Dolby E channels to be monitored. Touch and slide the control on the **Dolby Metadata** screen to scroll through multiple lines of metadata.

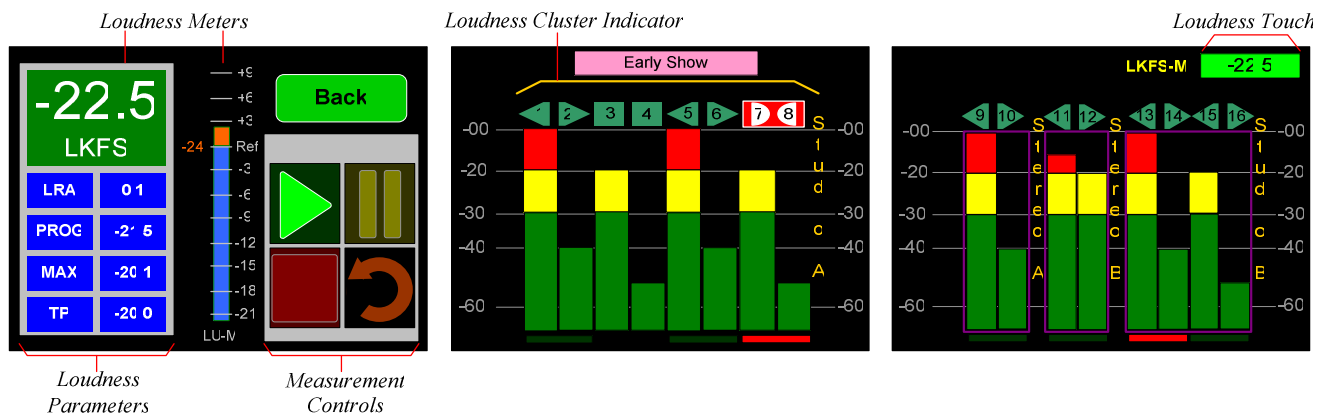
The **Dolby Zoom** screen also displays Dolby CRC (Cyclic Redundancy Check) Errors, which are automatically totaled. Touching the "X" on the Dolby Error Count display, resets the count. The maximum count is 65,535 and it will roll over to 0 and restart counting if this is exceeded. CRC Errors are an indication that the Dolby signal is being disrupted, either by intermittent network issues, poor wiring, or some other cause. Occasional errors probably cannot be heard, but this is a diagnostic tool that lets you measure the extent of the problem, if any.

Touching the **Exit Dolby** button returns you to the monitoring screen from which you came.

Loudness Meter Screen

The **Loudness Meter Screen** is a more detailed view of the Loudness Measurement. It is displayed along with the channel meter screen. Touching the **Loudness Menu** button followed by the **Loudness Meter** button proceeds to the **Loudness Meter Screen**, as shown in Figure 2-8.

Figure 2-8: Loudness Meter Screen



Note: In order to calculate loudness accurately, it is crucial that you correctly set the Channel Function for each channel. Depending upon the designated function of each channel, its signal levels will contribute differently to the Loudness calculation. Refer to the **Configuration | System Preference | Loudness Configuration** tab in the Web GUI.

The following data is available on the **Loudness Meter Screen**:

The Program Loudness (shown as -22.5 LKFS in the figure above) is shown digitally at the upper left of the screen as well as on the meter in the center. At the base of the meter in the center, one of three indications appears:

1. LU-M: This means that the Loudness Window is set to Momentary.
2. LU-S: This means that the Loudness Window is set to Short Term.
3. LU-C: This means that the Loudness Window is set to Custom. The Loudness Window is set in the Loudness tab in the Web GUI.

The LU Meter scale colors have the following meaning:

1. Blue: Loudness is lower than the Reference Level by the Alarm Tolerance.
2. Green: Loudness is within the Alarm Tolerance.
3. Orange: Loudness is greater than the Alarm Tolerance.

Below the digital Loudness meter, in the left column, the following parameters are also displayed:

1. The Loudness RAnge (LRA) is the measure of variation between the calculated loudest and softest passage over the program period (shown as LRA -0.1 above).
2. The Average Loudness is the average of all calculated loudness measurements made over the Program period (shown in gold as PROG -

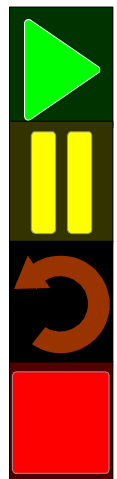
20.8 above).

3. The Maximum Loudness is the maximum calculated loudness over the program period (shown as MAX -20.1 above).
4. The Maximum True Peak Loudness is the absolute loudest peak waveform over the program period (shown as TP -20.0 above).
5. The name of the currently monitored Preset or source selection is shown at the top of the level meter screen in a pink box. The channels being monitored for loudness are shown in the right two screens and are indicated by an orange bracket above them.

Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

The controls available on the Loudness Meter Screen are:

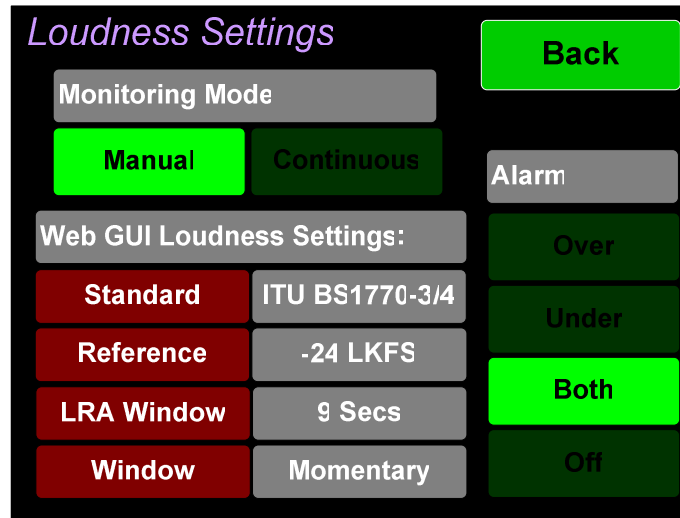
1. **Solo & Mute:** Touch any cluster on the **Level Meter** screens to listen to other channel clusters, or rotate the **Adjust** knob and press to select any channel for listening. Refer to Figure 2-1 for its location. This will not affect any loudness measurement in progress.
2. **Cluster Select:** The monitored channel cluster may be changed by touching the green **Loudness Touch** selector on the upper right of the level meter screens and it will turn orange. Refer to Figure 2-8. Then touch the cluster you would like to measure the loudness of. Touch the orange **Loudness Touch** selector and it will return to green, locking in your Loudness Cluster selection. If you do not make a cluster selection, after 15 seconds, the orange **Loudness Touch** selector will return to green automatically. Changing clusters with this control will reset the loudness readings.
3. **Start:** When **Manual Mode** is selected in the Loudness Settings screen, from a stopped condition, the **Start** button will reset the gathered loudness data and begin a new reading. From a paused condition, data will not reset as monitoring is resumed.
4. **Pause:** The **Pause** button will temporarily stop or continue gathering loudness data. Data will not be reset using this control.
5. **Reset:** The **Reset** button will reset the gathered loudness data. If it is pressed while a loudness measurement is in progress, a new reading will then immediately begin.
6. **Stop:** When **Manual Mode** is selected in the Loudness Settings screen, the **Stop** button will stop gathering loudness data. Data will be held for viewing and not be reset using this control.



Loudness Settings Screen

The **Loudness Settings Screen** allows you to change between **Manual** and **Continuous** Monitoring Modes, and also to set the Alarm mode. It also provides a summary of various Loudness settings, as set in the **Configuration | System Preference | Loudness Configuration** tab of the Web GUI. Refer to Figure 2-9.

Figure 2-9: Loudness Settings Screen



The controls and information available on the Loudness Meter Screen are:

Monitoring Mode:

1. **Manual:** Touch the **Manual** button to enable Manual Mode. This allows you to measure the loudness of a specific program or segment of a program, such as a commercial. In this mode, the **Start** and **Stop** button on the Loudness Meter screen can be manually used to begin and end a loudness measurement interval. The reading for that interval is then held on the Loudness Meter.
2. **Continuous:** Touch the **Continuous** button to enable Continuous Mode. In this mode, loudness readings are continually made. The **Stop** button on the Loudness Meter screen is not active.

Alarm:

1. **Over:** The Alarm indication will only appear when Loudness has exceeded the **Reference Level** by the **Tolerance** amount.
2. **Under:** The Alarm indication will only appear when Loudness is below the **Reference Level** by the **Tolerance** amount.
3. **Both:** The Alarm indication will only appear when Loudness has exceeded or is below the **Reference Level** by the **Tolerance** amount.
4. **Off:** The Alarm indication will not appear.

Web GUI Loudness Settings: These settings are included on this screen for reference only. They cannot be changed on this screen.

1. **Standard:** This is the loudness standard by which the loudness calculation is made.
2. **Reference:** This is the setpoint in the loudness measurement about which the determination is made as to whether an alarm should be displayed.
3. **LRA Window:** This is a moving window of time over which the loudness measurement is made.
4. **Window:** This may be set to **Momentary**, **Short**, or one of 22 values, ranging from one second to two hours.

Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

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 using the **Main Menu** which appears on the left screen. Figure 2-10 is a diagram of the menu arrangement, a tree showing how to reach any menu from the **Main Menu**. Figure 2-11 shows the **Main Menu**.

Figure 2-10: Menu Tree

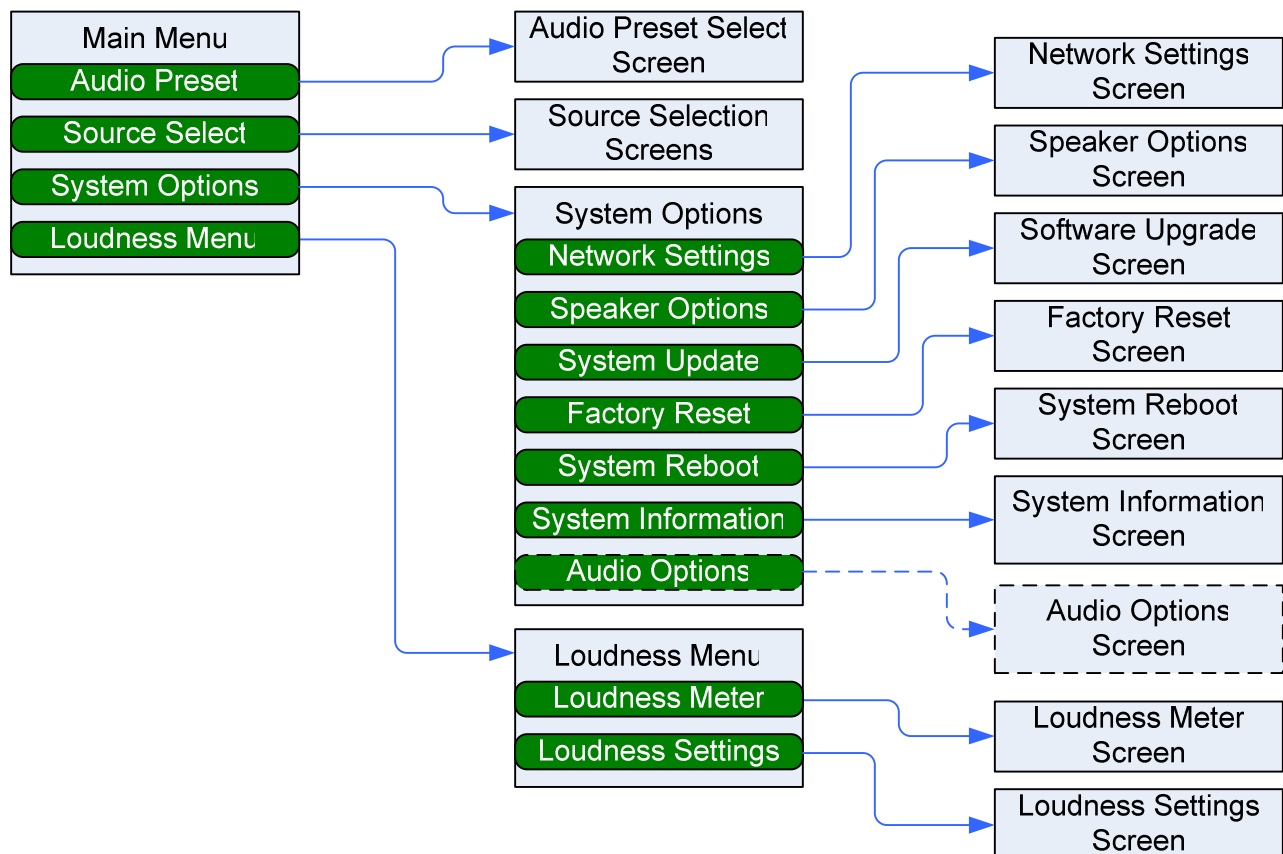
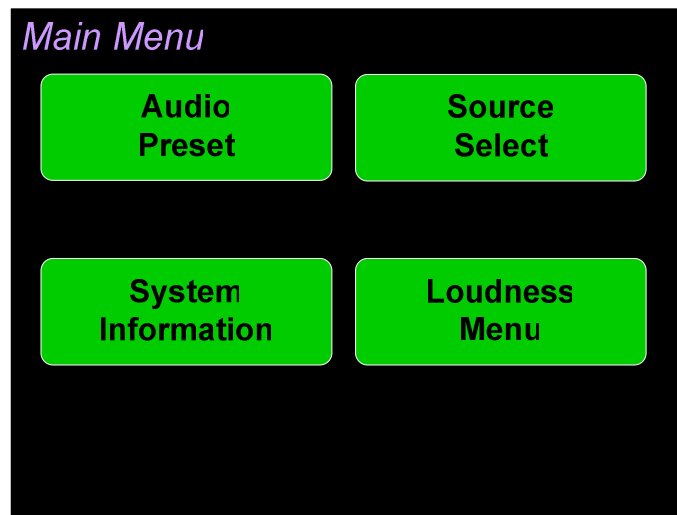


Figure 2-11: Main Menu



Audio Preset

Touch the **Audio Preset** button to display the **Audio Preset** menu as shown in Figure 2-12.

Figure 2-12: Audio Preset Menu



Using this screen, the operator can quickly select the needed set of sources to monitor as well as their arrangement on the metering screens. An example of this screen is shown in Figure 2-12. If you have not set up any Presets, use the **Configure Presets** page in the Web GUI to do so. Or, if you prefer not to set up Presets, simply monitor the sources directly using the **Source Select** button in the **Main Menu**.

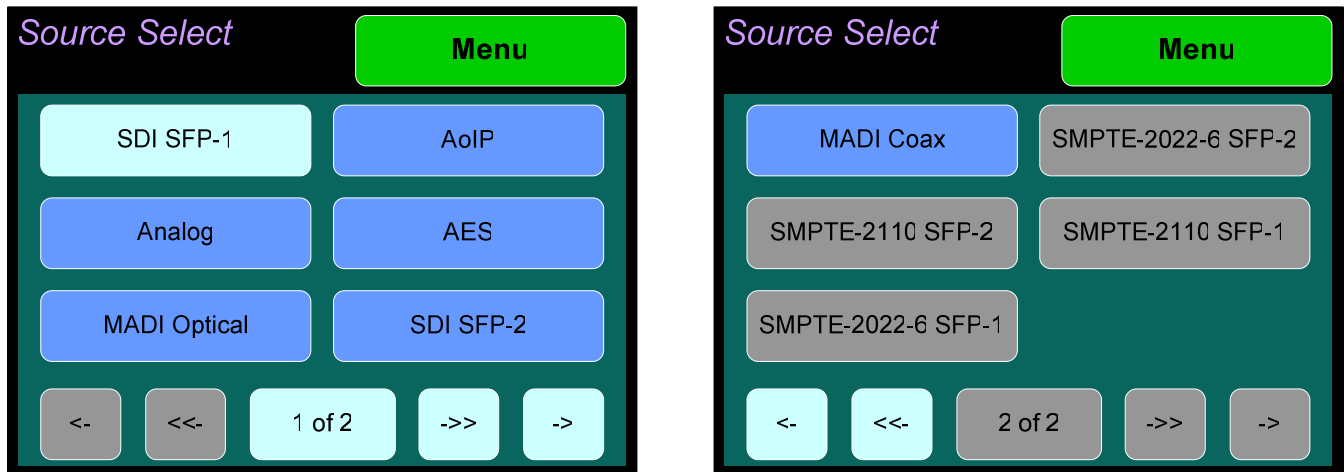
1. The currently selected Preset is shown in yellow. To select a new preset, touch one of the darker **Preset** buttons. The button will highlight in yellow and the new Preset will be in effect.
2. If there are more presets than will fit on this menu, touch the scrolling

buttons at the bottom of the screen to locate the Preset you are looking for. To exit this menu and return to the **Main Menu**, touch the **Menu** button.

Source Select

Touch the **Source Select** button to display the **Source Select** screens as shown in Figure 2-13.

Figure 2-13: Source Select Screens



Using this screen, the installer can quickly determine that the sources are correctly connected and are ready for use. It allows you to directly monitor each selected source.

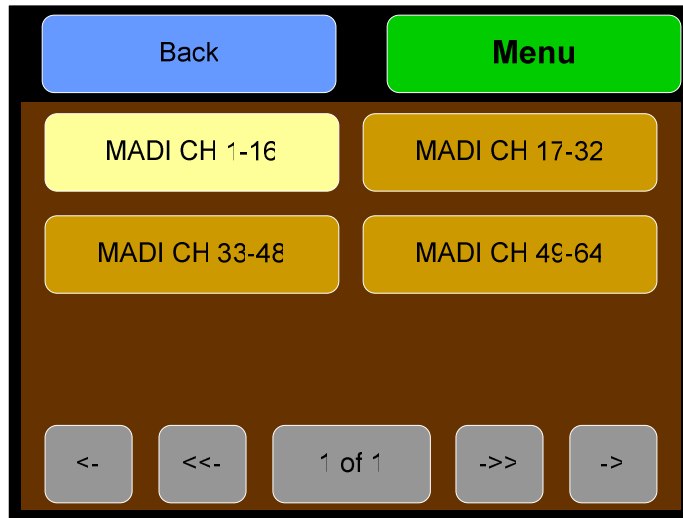
1. The most recently selected source is shown in light blue.
2. Sources that the iAM-AUDIO is equipped to monitor are shown in blue.
3. Sources that the iAM-AUDIO is capable of monitoring, but are not licensed for monitoring are shown in gray. If you would like to license additional signals, contact Wohler to purchase the source module and/or license.

To select a source, simply touch the associated button. After a quick 2-second delay, the metering screens will show the channels contained in that source, and the **Main Menu** will reappear. The channels will be muted. Touch the channels you would like to hear on the metering screen.

There are several pages of source selections. To flip between them, use the arrow buttons at the bottom of the screens. To exit this menu and return to the **Main Menu**, touch the **Menu** button.

If the source contains more than 16 channels, an additional selection screen will appear so that you can further narrow your selection to a particular range of 16 channels. An example of this screen is shown in Figure 2-14.

Figure 2-14: Select the 16 Channels to be Monitored

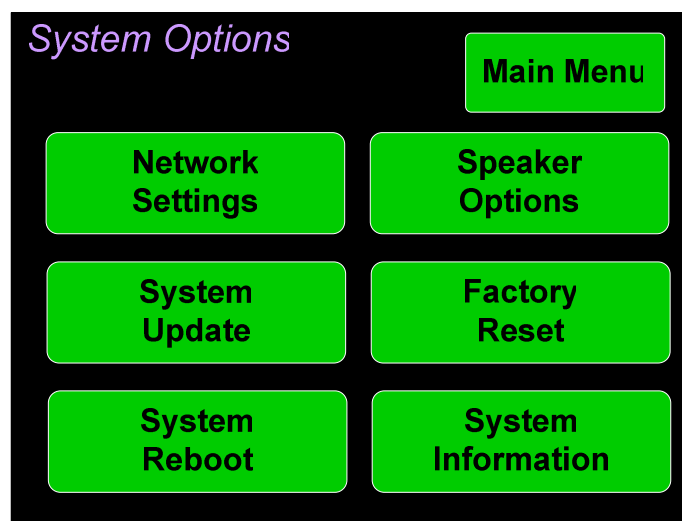


To return to the Source Select screen without making a channel range selection, touch the **Back** button. To exit this menu and return directly to the **Main Menu**, touch the **Menu** button.

System Options

Touch the **System Options** button displays the **System Options** menu as shown in Figure 2-15. This screen is an access point to the **Network Settings**, **Speaker Options**, **System Update**, **Factory Reset**, **System Reboot**, and **System Information** screens. If the **Solo Audio** option is set in the **Configuration | System Preference** tab of the Web GUI, then an **Audio Options** selection will also appear.

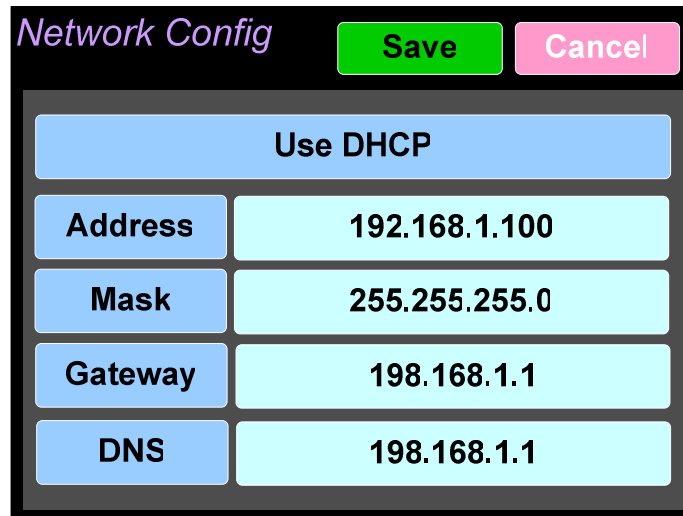
Figure 2-15: System Options Menu



Network Settings

Touch the **Network Settings** button displays the **Network Settings** menu as shown in Figure 2-16. This screen lets you view or change the product IP, the Net Mask, Gateway and DNS. It also lets you switch between a static (fixed) or a dynamic (DHCP) network address.

Figure 2-16: Network Settings Menu

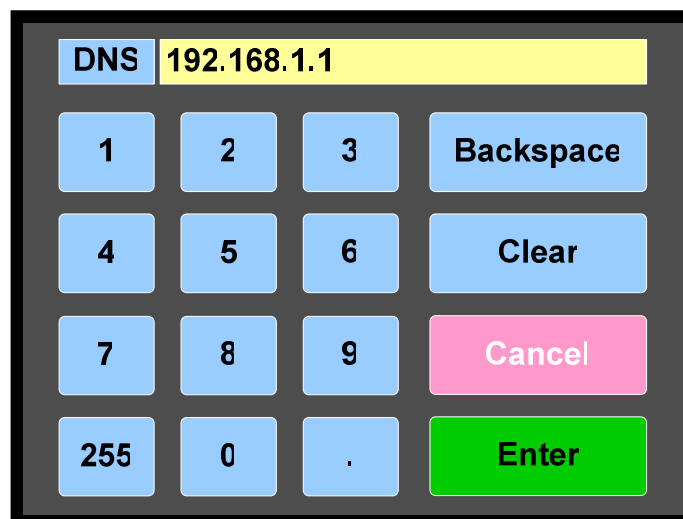


The 'Network Config' menu features a title bar with 'Network Config' in purple, a green 'Save' button, and a pink 'Cancel' button. Below is a blue bar labeled 'Use DHCP'. The main area contains four rows of settings, each with a blue label box and a light blue value box: 'Address' (192.168.1.100), 'Mask' (255.255.255.0), 'Gateway' (198.168.1.1), and 'DNS' (198.168.1.1).

Network Config	
Use DHCP	
Address	192.168.1.100
Mask	255.255.255.0
Gateway	198.168.1.1
DNS	198.168.1.1

1. To change the IP Address, Net Mask, Gateway, or DNS, tap the item you would like to change. A keypad will appear, as shown in Figure 2-17.

Figure 2-17: Network Configuration: Setting Change



The keypad shows the 'DNS' label and the value '192.168.1.1' in a yellow box. Below is a grid of buttons: a 3x3 numeric keypad (1-9), a '255' button, a '0' button, a '.' button, a 'Backspace' button, a 'Clear' button, a pink 'Cancel' button, and a green 'Enter' button.

DNS 192.168.1.1			
1	2	3	Backspace
4	5	6	Clear
7	8	9	Cancel
255	0	.	Enter

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 **Enter** button. Touch the **Cancel** button to return to the previous screen without saving any changes.

Important:

There is no confirmation for **Save**, so make sure you want to perform this action before taking it. The system does not need 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 2-18. 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 2-16.

Figure 2-18: Network Settings: DHCP

The screenshot shows a 'Network Config' window with a title bar containing 'Network Config', a green 'Save' button, and a pink 'Cancel' button. Below the title bar is a white button labeled 'Use DHCP'. Underneath this is a table with four rows, each representing a network setting. The first row is 'Address' with the value '192.168.1.100'. The second row is 'Mask' with the value '255.255.255.0'. The third row is 'Gateway' with the value '198.168.1.1'. The fourth row is 'DNS' with the value '198.168.1.1'.

Use DHCP	
Address	192.168.1.100
Mask	255.255.255.0
Gateway	198.168.1.1
DNS	198.168.1.1

1. To complete the network addressing scheme change, touch the **Save** button. This will save the changes you selected.
2. Touch the **Cancel** button to return to the previous screen without saving any changes.

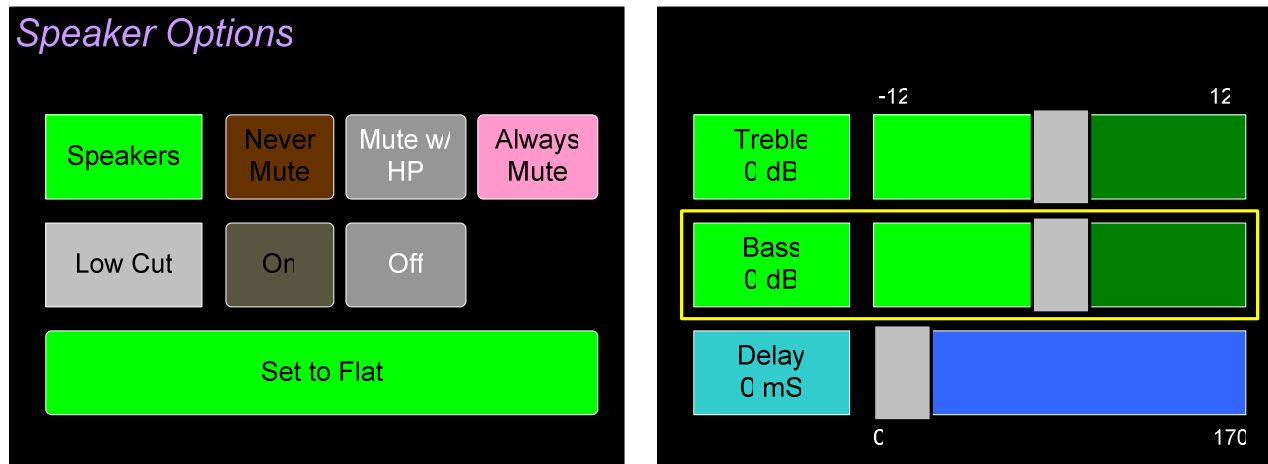
Important:

There is no confirmation for **Save**, so make sure you want to perform this action before taking it. The system will not need to reboot before it is once again ready for operation.

Speaker Options

Touching the **Speaker Options** button on the **Main Menu** displays the **Speaker Options** screen as shown in Figure 2-19. The controls on this screen affect various characteristics of the monitored audio as heard on the iAM-AUDIO. The adjustments made on this screen are not saved with each preset. Note that setting changes made here will reflect on similar settings made using the Web GUI.

Figure 2-19: Speaker Options



The controls function as follows:

1. **Speakers:** This setting controls whether the monitor speakers are never muted, muted while a headset plug is inserted into the headset jack on the front panel, or always muted.
2. **Low Cut:** **Low Cut** is provided for cases where unusually deep content produces audible distortion and interferes with monitoring.
3. **Treble:** This tone control adjusts the high frequency speaker audio response from -12 dB to +12 dB. Lowering **Treble** compensates for high frequency pre-emphasis or removes sibilance effects. Increasing **Treble** will add "sizzle" to the sound and bring high-pitched sounds out of the mix. The control can be touched and moved left or right to adjust in 1 dB increments. Alternatively, after touching the control, the **Adjust** knob can be used to more critically adjust the setting.
4. **Bass:** This tone control adjusts the low frequency speaker audio response from -12 dB to +12 dB. Lowering **Bass** will unmask midrange band sounds, while increasing **Bass** will make the sound "fatter". The control can be touched and moved left or right to adjust in 1 dB increments. Alternatively, after touching the control, the **Adjust** knob can be used to more critically adjust the setting.
5. **Set to Flat:** This button sets both the **Treble** and **Bass** controls to 0 dB, removing any emphasis or de-emphasis they can provide. Selecting **Flat** provides the flattest measured response from the internal speakers.
6. **Delay:** The speaker audio can be delayed from 0 to 170 mS to synchronize with video delays, when necessary. The control can be touched and moved

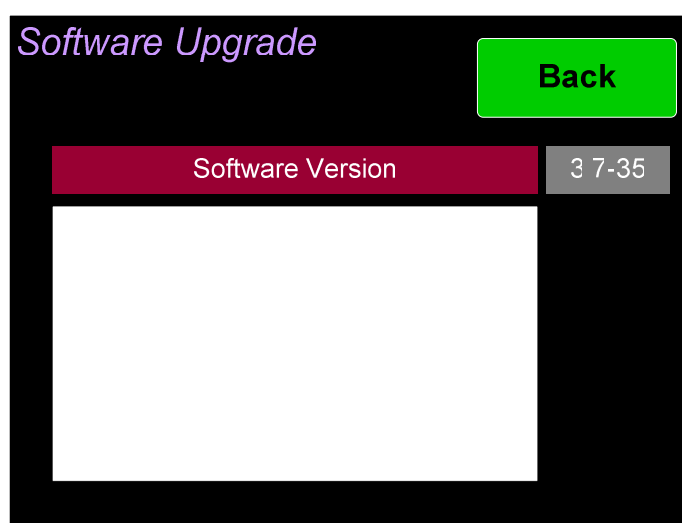
left or right to adjust in 1 dB increments. Alternatively, after touching the control, the **Adjust** knob can be used to more critically adjust the setting. The monitored audio changes dynamically as the setting is adjusted, which allows audible and visual synchronization with video monitored on another product.

Touch **Main Menu** to exit this screen.

System Update

Touching the **System Update** button displays **Software Upgrade** screen as shown in Figure 2-20, showing the current software version of the product. To update the system software locally from the iAM-AUDIO front panel, follow the procedure in the **Local Update from the Front Panel** section of Appendix A.

Figure 2-20: Software Upgrade Screen



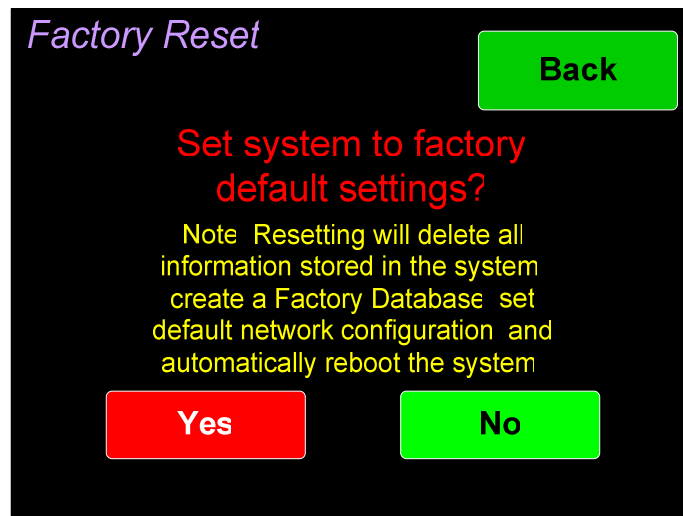
Touch the **Back** button return to the **System Options Menu**.

Factory Reset

Touching the **Factory Reset** button displays the **Factory Reset** screen as shown in Figure 2-21. 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 Chapter 4.

Figure 2-21: Factory Reset



Note: **Factory Reset** will also 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.

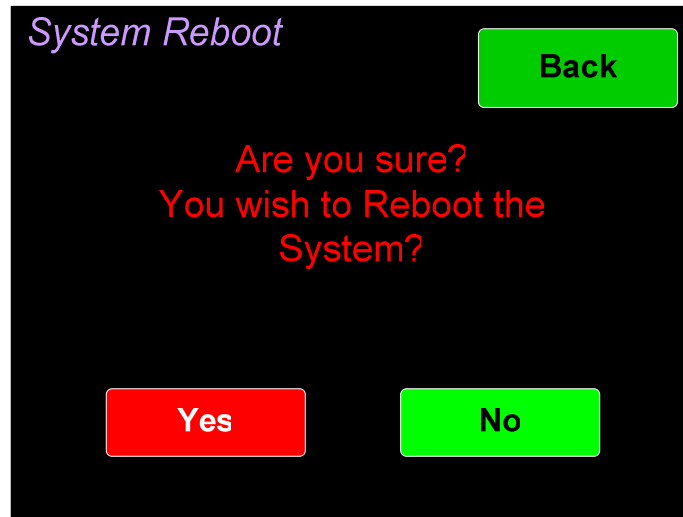
If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

System Reboot

Touching the **System Reboot** button displays the **System Reboot** screen as shown in Figure 2-22. This function is normally only used upon request from Wohler Technical Service to troubleshoot or correct an issue.

The **System Reboot** function should be used with a bit of forethought. It puts the system out of service for several minutes while it is rebooting.

Figure 2-22: System Reboot

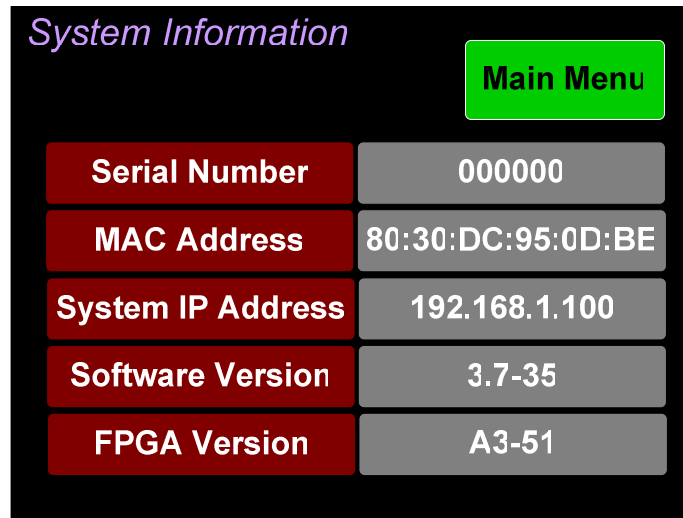


If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

System Information

Touching the **System Information** button displays the **System Information** screen as shown in Figure 2-23. This screen lets you view the product Serial Number, the MAC Address, the System IP Address, the Software Version, and the FPGA Version.

Figure 2-23: System Information Screen



The information shown on this screen is read only and cannot be changed. Touch the **Main Menu** button return to the **Main Menu**.

Audio Options

If the **Solo Audio** option is set in the **Configuration | System Preference** tab of the Web GUI, then an **Audio Options** selection will also appear on the **System Options Menu**. Touching the **Audio Options** button displays the **Audio Options** screen as shown in Figure 2-24. This screen provides additional controls for monitoring clusters, channel pairs, and channels. These settings affect only the internal speakers and the analog outputs.

Figure 2-24: Audio Options Screen



The controls are alternate action selections. Touching each control enables its function and changes its color from green to violet. The controls are independent of each other and may be used together in any combination. They function as follows:

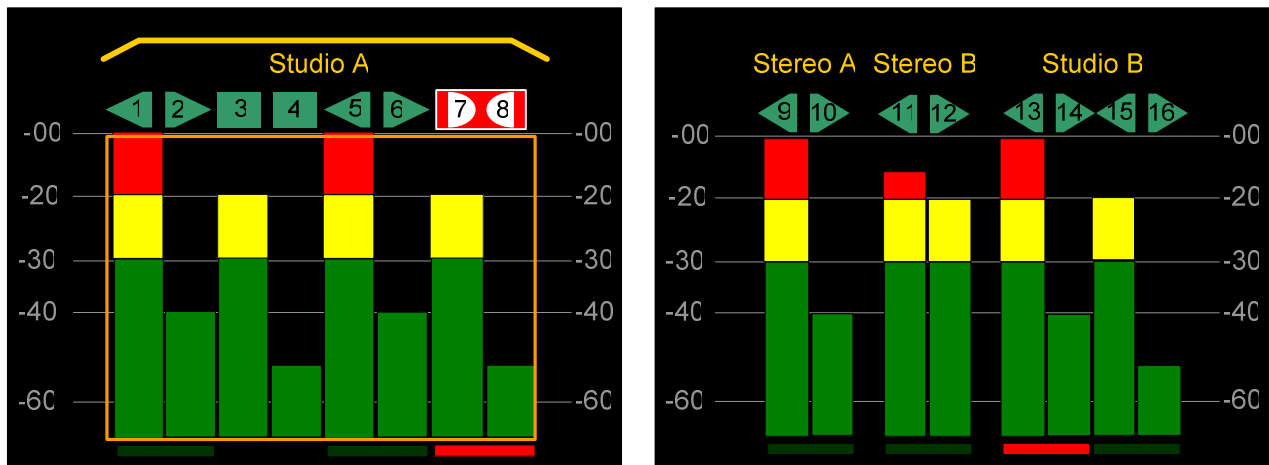
1. **Mono**: This selection combines the channels being audibly monitored into a monophonic channel and plays the result through the speakers. If a multichannel cluster is being monitored, then a 6dB loss will automatically be applied to the result.
2. **Dim**: This selection is used to temporarily reduce the volume of the monitored sound by 12dB so that the monitored audio will not interfere with a conversation. Touching it again restores the volume level to the way it was before it was dimmed.
3. **Ph. Rev**: This selection reverses the phase of one of the stereo channels. It can be used to help diagnose problems in channel phasing.
4. **+20dB**: This selection adds 20dB of gain to the monitored channel(s) to allow you to hear quieter sounds in the program or on a channel, for example, to listen for unwanted noise. If the **Mono** option is also selected and a multichannel cluster is being monitored, then the resulting gain is only 14dB.
5. **Cut**: This selection mutes the internal speakers and the analog outputs.

If the **Solo Audio** option is set in the **Configuration | System Preference** tab of the Web GUI, then the meter screens will also change their appearance somewhat, as shown in Figure 2-25. The channel cluster names will appear horizontally above

each cluster, rather than vertically at the right side. When a cluster has been touched for listening, it will receive an orange box around it to indicate that it is the one being monitored. The name of the current Preset and the digital Loudness meter will not appear on the screens.

To monitor Loudness, you may still call up the **Loudness Meter** screen from the **Loudness Menu**. However, the monitored Loudness cluster will always be the same as the one selected for audio monitoring. As usual, it is shown by the gold bracket above the meters. Changing the monitored cluster by touching a different cluster of meters will simultaneously change the Loudness cluster, and the Loudness measurement will be restarted for the newly selected cluster.

Figure 2-25: Meter Screen (Audio Options Mode)



To exit the **Audio Options** screen, touch the **Back** button. To return to the **Audio Options** screen later, click **System Options** in the **Main Menu** and then click **Audio Options** in the **System Options** menu.

CHAPTER 3: Technical Info

Table 3-1: iAM-AUDIO-1 Specifications

Specification	Values/Domains
Power Requirements	100 VAC to 240 VAC \pm 10%, 50/60Hz
Power Consumption	40 Watts
Dimensions (H x W x D)	1.75" x 19" x 7.5" (44mm x 483mm x 191mm), standard 19" rack mounting
Weight	8 lbs. (3.6 kg)
Supplied Accessories	Power Adapter, AC Power Cord
Display Type	LCD
Number of Displays	3
Screen Resolution	320H x 240V
Level Meters	Simultaneous Average (VU like) & PPM
Level Meter Scale	Digital Scale
Sample Rate	48kHz
De-Multiplexing	16 channels from: <ul style="list-style-type: none">• 16-channel SD/HD/3G-SDI• 64-channel AES10 MADI
SDI Inputs / Outputs	<ul style="list-style-type: none">• 1 or 2 SDI Inputs or Outputs Optional – Single SFP Transceiver: <ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 1 MADI BNC, Standard Coax I/O Optional – SFP Transceiver: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• Multi-Mode Fiber: LC Connectors, 850nm
SMPTE 2110 Receiver	Optional - SFP Receiver: <ul style="list-style-type: none">• Multi-Mode Fiber: LC Connectors, 850nm
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	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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	98 dBA SPL (@ 2 feet)
Hum and Noise	Better than -68 dB below full output
Power Output	12 Watts RMS, 24 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 from SDI, SMPTE 2110, SMPTE 2022-6, and AES streams. Hardware card with software activation key.
OPT-DANTE	829078	Enables decoding and monitoring of Dante™ Input streams. Hardware card with software activation key.
OPT-RAVENNA	829079	Enables decoding and monitoring of Ravenna™ Input streams. Hardware card with software activation key.

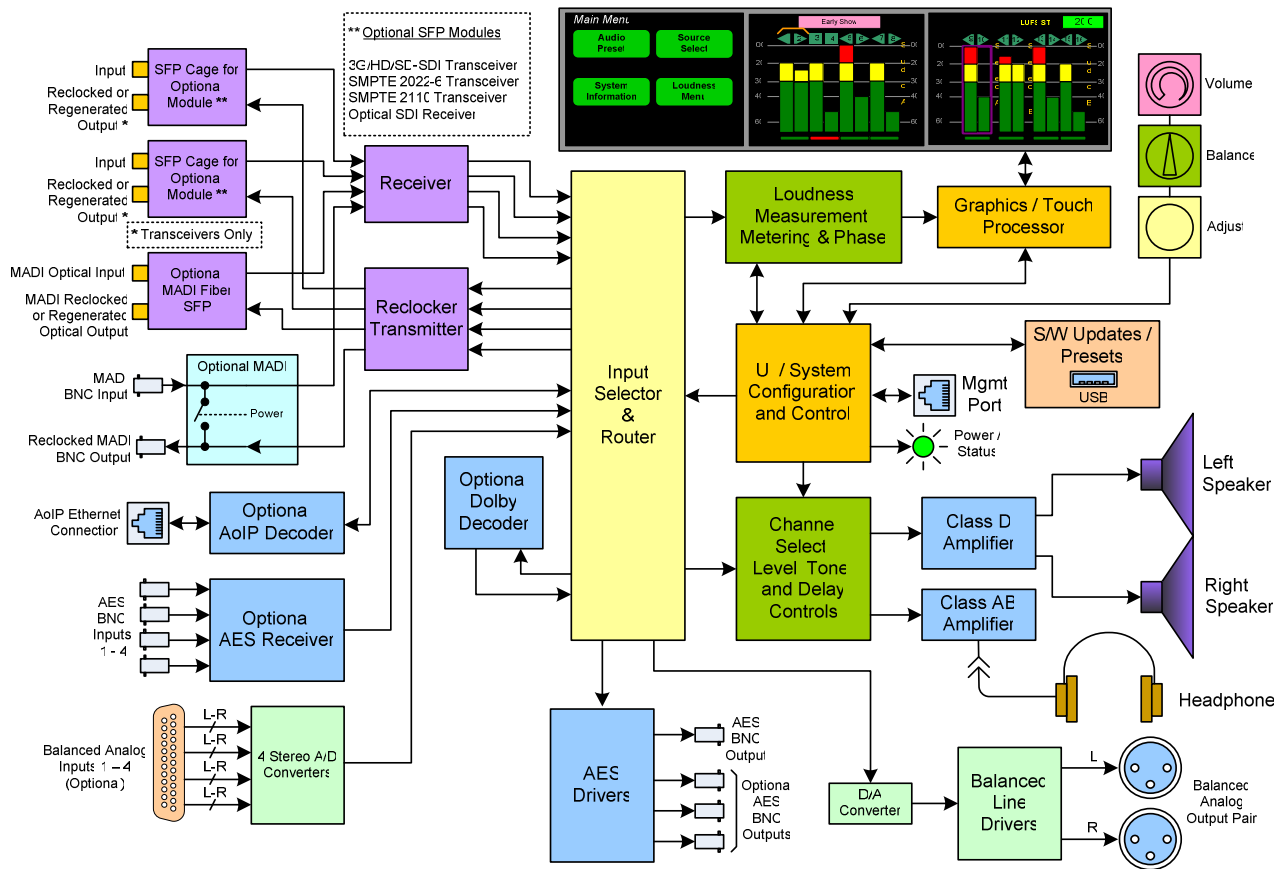
Table 3–3: iAM-AUDIO I/O Options

Option	Part #	Description
SFP-Madi-MM-Fiber	829081	MADI optical fiber transceiver. Multi-Mode, LC (fiber) connectors. SFP module with software activation key.
SFP-Madi-SM-Fiber	829082	MADI optical fiber transceiver. Single-Mode, LC (fiber) connectors. SFP module with software activation key.
SFP-SDI	829089	3G/HD/SD-SDI single video receiver with active loopback, HD-BNC connectors. SFP module with software activation key.
SFP-SDI-Fiber	829084	3G/HD/SD-SDI video SFP optical input; LC (fiber) connectors; Single-Mode Receiver, Medium Haul, Non-MSA, no output.
SFP-SDI-Output	829083	3G-SDI Transceiver; HD-BNC connectors; Input and output are both SDI. SFP module with software activation key.
SFP-2022-6	829088	SMTPE 2022-6 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use emSET** to configure SFP.
SFP-2110	829086	SMTPE 2110 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use emSET** to configure SFP.

SFP-2110+2022-6	829087	SMTPE 2110 or 2022-6 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use emSET** to configure SFP.
OPT-AES	829080	Enables decoding and monitoring of 4 x AES inputs on DB-25 connector and 1 AES output on BNC connector. Requires a software activation key.
OPT-MADI	829092	Enables decoding and monitoring of 1 x MADI64 input. BNC connectors. Requires a software activation key.
OPT-ANLG	829093	Enables decoding and monitoring of Analog inputs. Requires a software activation key.

**emSET is configuration software that is necessary so that you can set up this module. It is available at no cost either from its manufacturer, Embrionix, or by contacting Wohler Technologies Technical Service.

Figure 3-1: iAM-AUDIO-1 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. 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

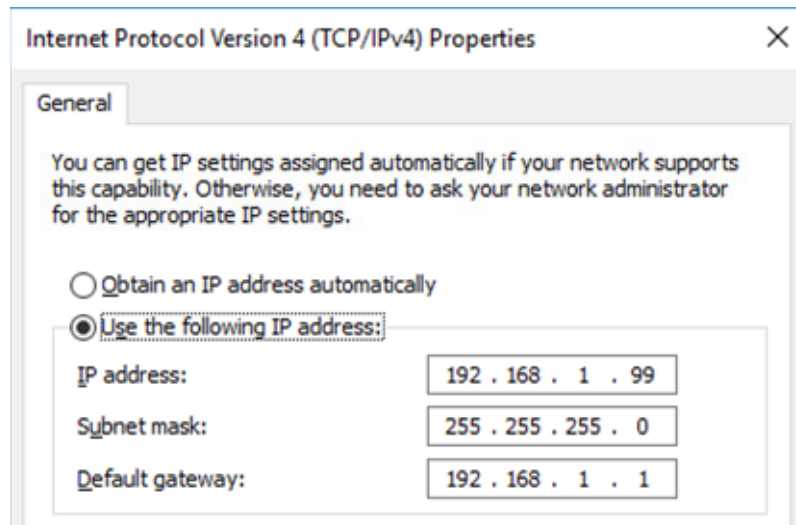
The iAM-AUDIO can operate with a static (fixed) or dynamic (DHCP) IPv4 address. The default address will be **192.168.1.100** when received from the factory or when switched from DHCP to static addressing mode. There two basic types of connections that may be used to connect the iAM-AUDIO to a web browser,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

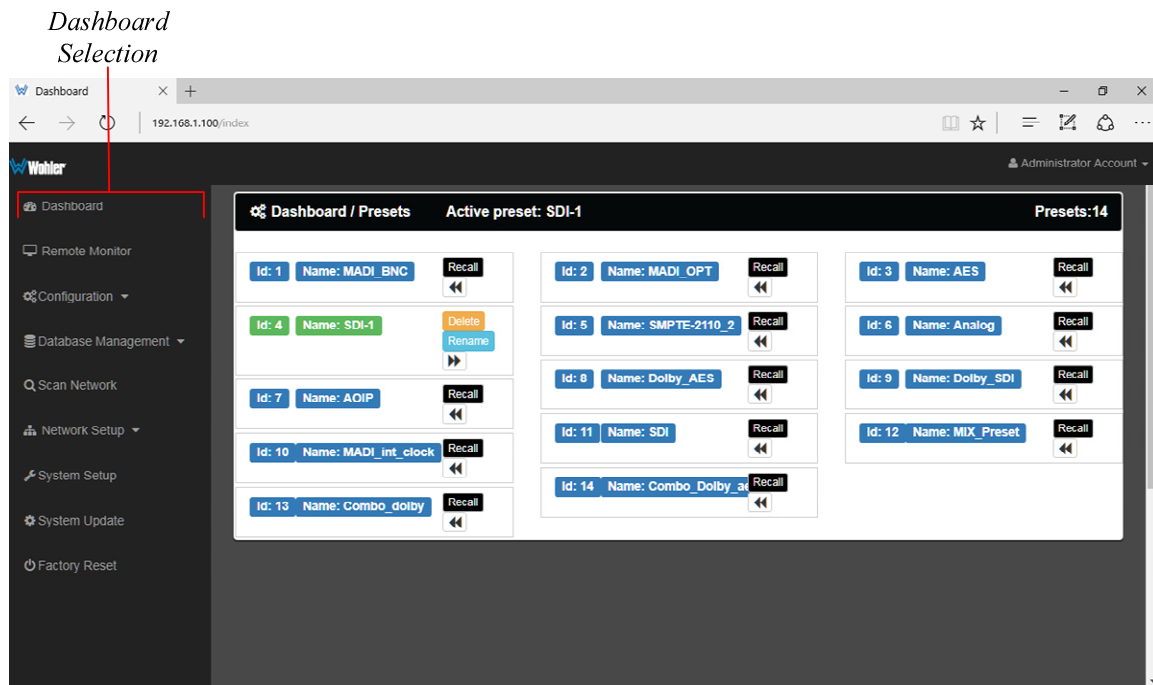
Otherwise set the iAM-AUDIO to DHCP address mode by checking the box for 'Use DHCP?' in Network Setup and have your IT administrator assign rights and settings for operation on the network. Allow enough time for your network's DHCP server to recognize a new network device and assign an address after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

The iAM-AUDIO uses link local addressing for its internal network, so no accommodation for this need be made in the network.

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 in green. Other stored, but not selected Presets are also shown.

Click the **Recall** button to recall a preset.

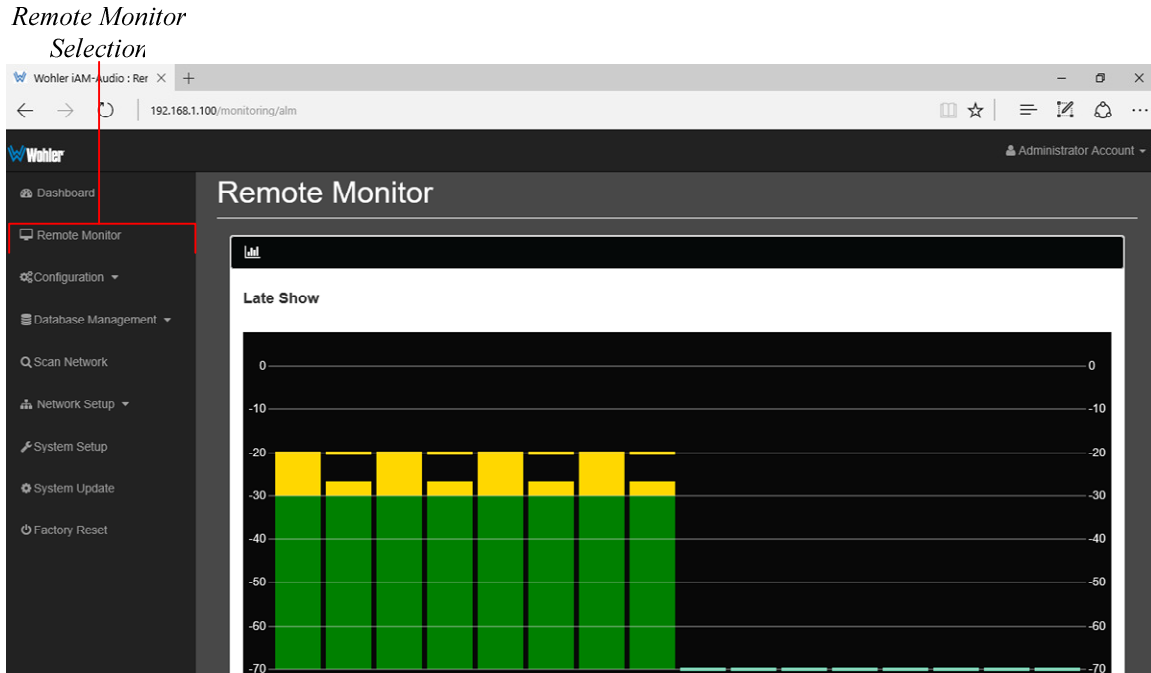
If you are logged in as an administrator, you may use the **Delete** button to delete a Preset or use the **Rename** button to rename a preset.

No changes can be made on this screen. Click **Configuration - Configure Presets Management** in the left navigation pane to make preset changes. You will need to log in to access that screen.

Remote Monitor

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

Figure 4-3: Remote Monitor Audio Meters



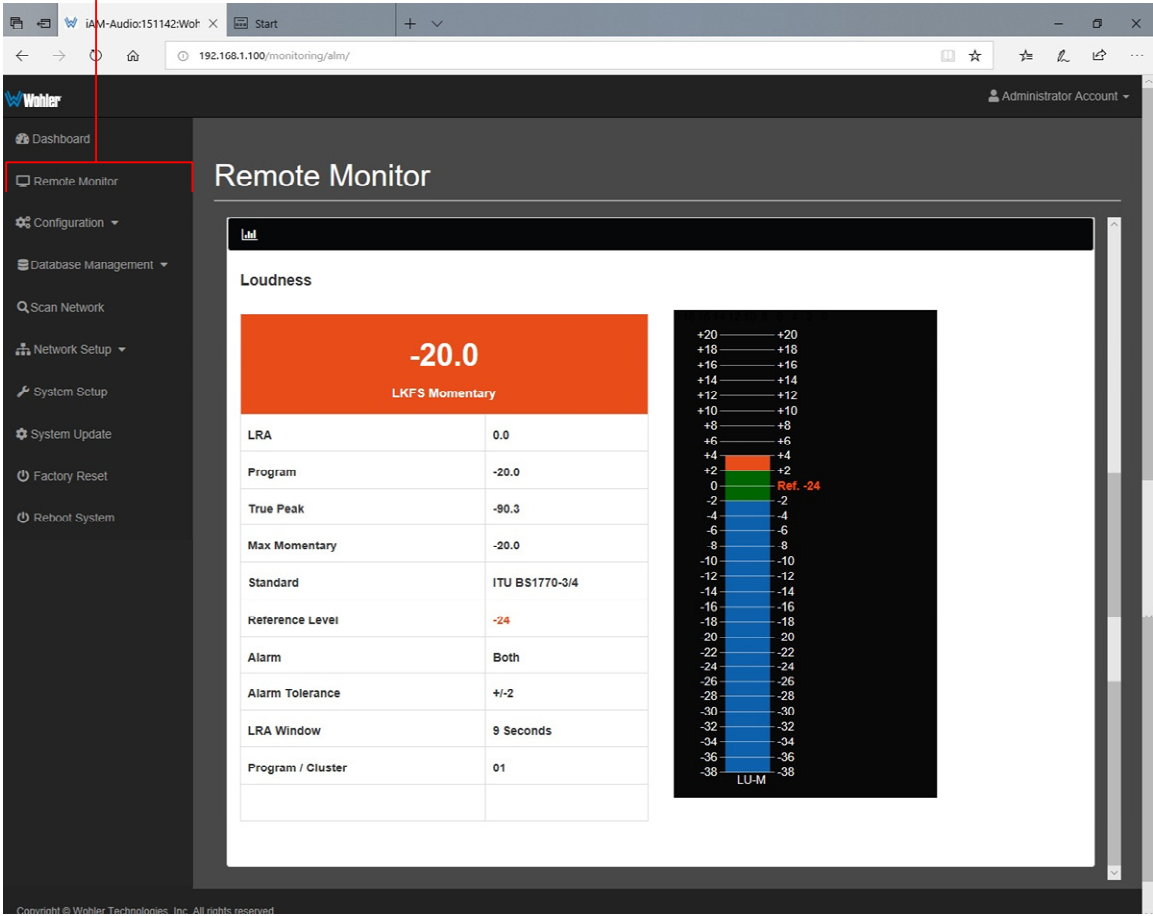
Scrolling down the screen will reveal the Remote Loudness Meter, as shown in Figure 4-4. Both digital and analog meters are displayed. The background color of the digital meter indicates whether or not the displayed level is in an alarm stage. The various alarm stages are denoted by the following colors:

1. No Alarm: **Green**
2. Under Alarm: **Blue**
3. Over Alarm: **Orange**

Included in the view of this meter is a summary of the Loudness settings currently in effect. These parameters can be adjusted in the **Configuration | System Preference | Loudness Configuration** tab of the Web GUI. Refer to Figure 4-12.

Figure 4-4: Remote Monitor Loudness Meter

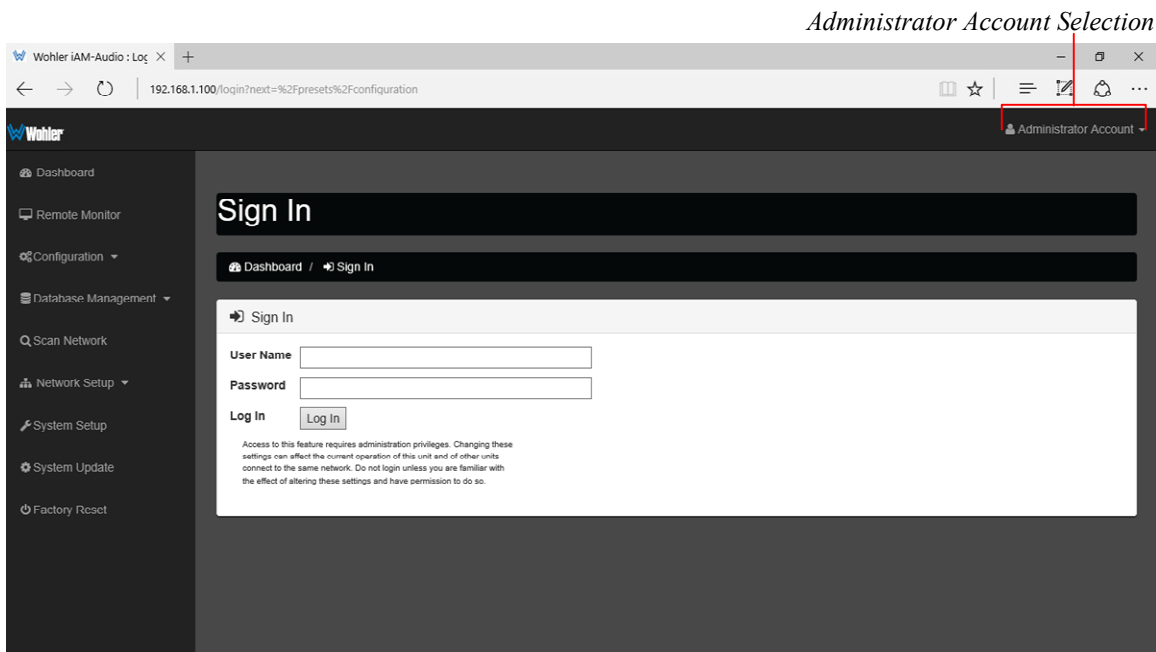
Remote Monitor
Selection



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'.

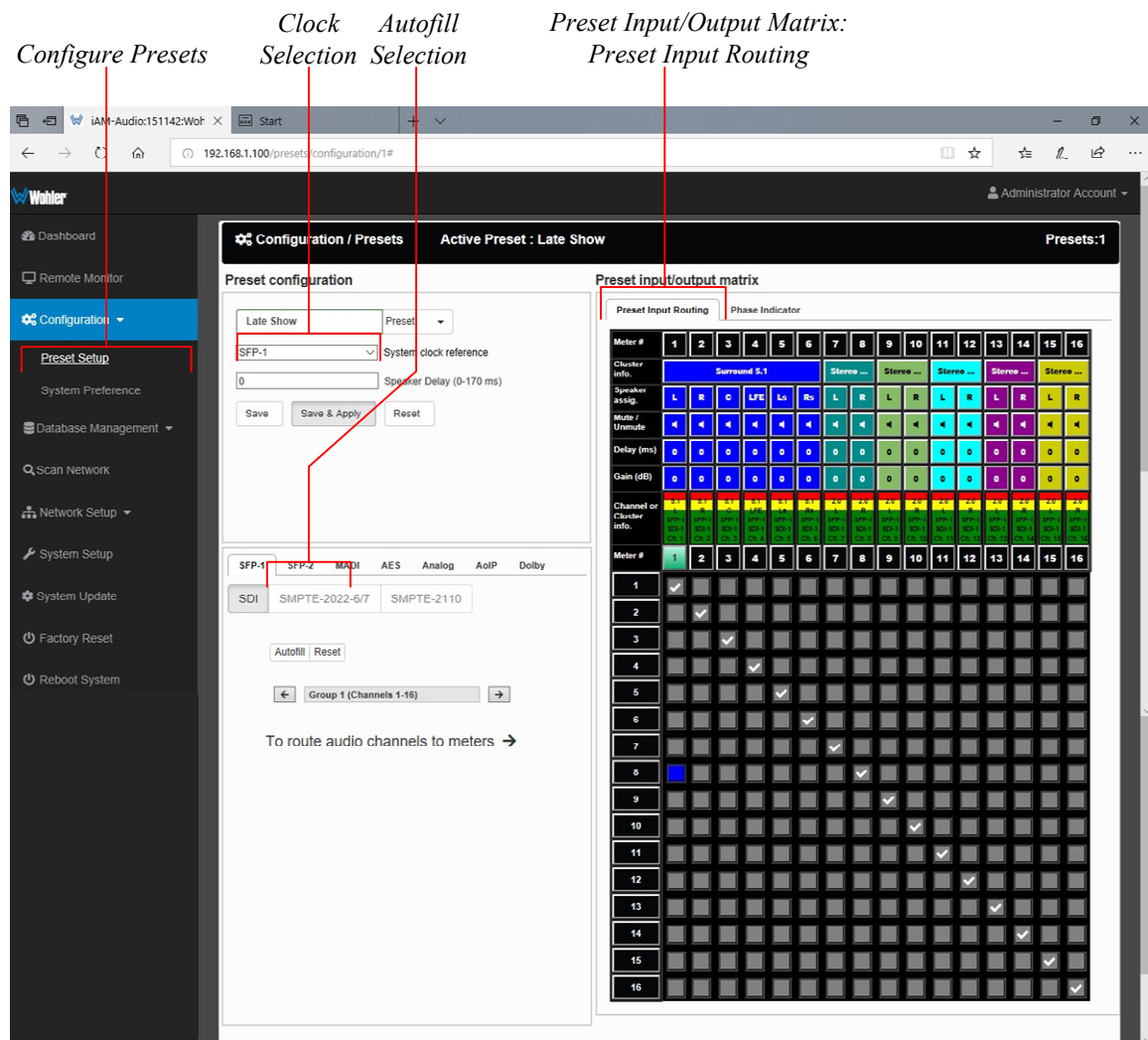
By default, the **Password** is 'admin'.

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.

Configuration - Preset Setup

Presets are monitoring configurations that can be composed of channels from multiple sources and displayed on the meters in any order. Presets should be set up to allow operators to quickly shift between setups for monitoring. The **Configuration - Preset Setup** screen contains selections of all of the details for a Preset, and is largely arranged in a matrix format connecting input channels to monitoring channels. The screen is shown in Figure 4-6.

Figure 4-6: Configure Presets



1. **Preset Configuration:** You may create a new Preset, adjust an existing Preset, or create a new Preset from an existing Preset:
 - **To create a new Preset,** enter the name for the new Preset in the field to the left of the word **Preset**. Then make all of the settings needed and save it.
 - **To make changes to an existing Preset,** select it from the pull down list, make the needed changes and save it.
 - **To create a new Preset starting with an existing Preset,** first select the existing Preset from the pull down list. Next, enter the name

for the new Preset and save it. Then make the needed changes and save it.

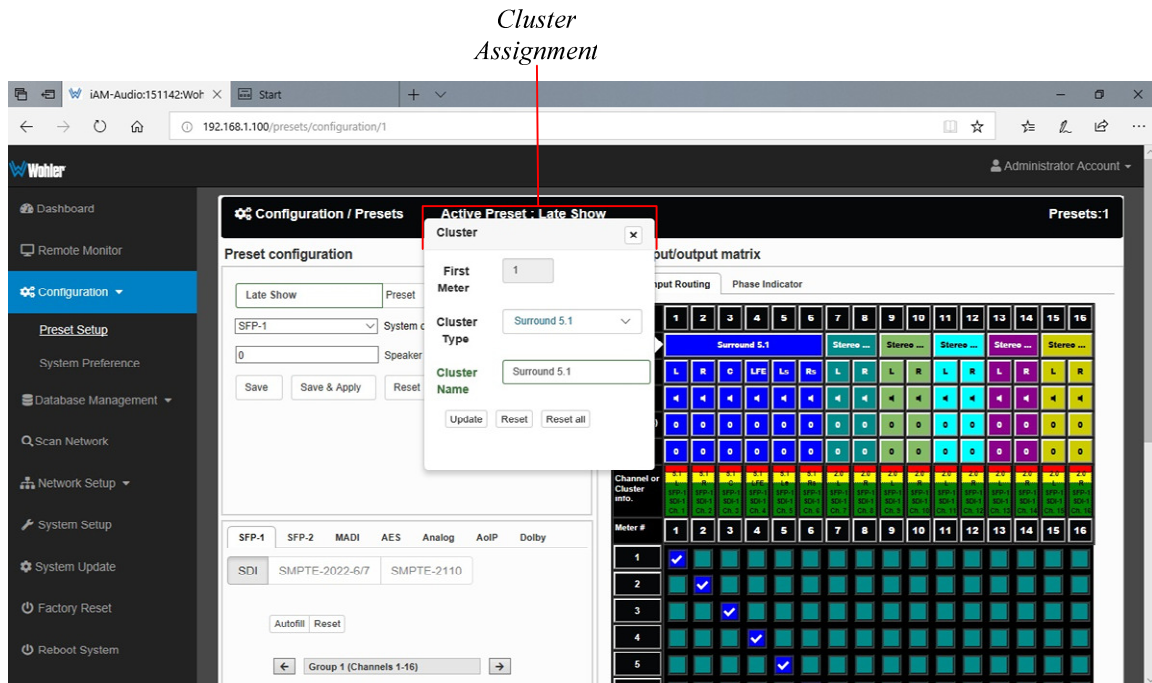
2. **System Clock Reference:** There must be a system clock reference for monitoring to take place. Select a reference from the pull down list. The best choice is a stable, always present clock source locked to house sync. Second to that, use the selected input as the clock. Generally speaking, **Internal** is not the best choice.
3. **Speaker Delay:** If desired, an audio delay may be inserted ahead of the monitor speakers. This delay may range from 0 to 170 mS. Typically, delay is used to align the monitored audio with a video monitored signal.
4. **Input Selection:** Audio from any of the input sources may be applied to the monitoring scheme in any way. For example, you may have 6 channels from an SDI stream, along with 2 AES channels, and along with 2 analog channels assigned your choice of meters. A **Preset Input/Output Matrix** is provided on the lower right side of the screen to allow you to assign each channel. Simply select each input source, one at a time, and then check the boxes in the **Matrix** to apply each input channel number to a metered channel number. They do not have to be applied in any specific order. The order of assignment should be chosen to make it easy for the operator to understand. If there are more than 16 channels in a source, the desired group of 16 can also be selected from the box in the lower left of the screen.
5. **Autofill Selection:** If you simply want to map all 16 input channels to all 16 meters in the same order, click the **Autofill** button. The **Preset Input/Output Matrix** will automatically fill out. To remove all mapping, click the **Reset** button that is adjacent to the **Autofill** button.
6. **Cluster Definition and Naming:** Channel Clusters are a series of channels that are all associated with monitoring the same signal. For example, a Stereo Cluster consists of two channels that together monitor a stereo signal. A Surround 5.1 Cluster consists of 6 channels that together monitor a 5.1 surround sound signal. Refer to Figure 4.7. Clicking a **Cluster Info** box opens a **Cluster** selection box.

In the **Cluster** box, you can select the type of Cluster from a pull down selection. The available **Cluster Type** selections are:

- Mono 1.0: The channel will appear within a single-channel cluster.
- Stereo 2.0: The channels will appear within a two-channel cluster.
- Surround 5.1: The channels will appear within a 6-channel cluster.
- Surround 7.1: The channels will appear within an 8-channel cluster.
- Custom: You may define a 0 to 8 channel cluster.

Multichannel clusters will expand to the right and overwrite any clusters on overlapping meter positions.

Figure 4–7: Cluster Assignment



By default, all odd numbered channels will map to the left speakers and all even numbered channels will map to the right speakers. You may change this using the crosspoint selections in the Input/Output Matrix.

A default name will be chosen and it will appear on the metering screen. You may name the Cluster anything you want by simply changing the words within the **Cluster Name** field.

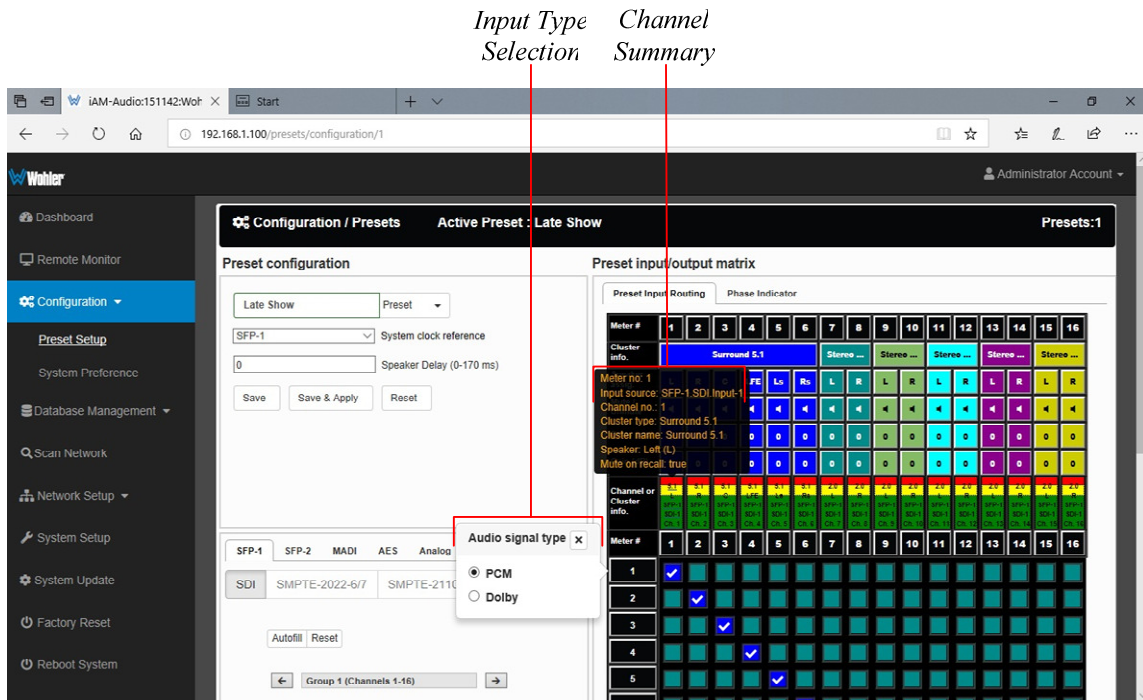
When finished, click **Update**. To undo your change, click **Reset**. To undo all of the Cluster changes for the 16 channels, click **Reset All**. Click **X** to close the box.

7. **Speaker Assign:** Speaker assignments are made automatically when a cluster is set. However, it can be that in an actual signal, the channel assignments may be different than what the automatic assignment assumes. A speaker assignment adjustment is provided for each channel, should you need to override the automatic settings. **It is important to accurately assign the function of each channel so that the Loudness calculations will be accurate.** Clicking a **Speaker Assign** button on a channel opens a box that lets you change the current setting. Click **X** to close the box.
8. **Mute/Unmute:** A **Mute/Unmute** control is provided for each channel, although the adjustment will affect all channels in the Cluster. This allows the operator to just see the meters for certain channels and not hear the audio. This is an alternate action control.
9. **Delay:** A **Delay** adjustment is provided for each channel. Clicking the **Delay** button associated with each channel opens a box that lets you set the audio delay from 0 to 42 ms. This delay is in addition to any speaker delay that is set. Click **X** to close the box.
10. **Gain:** A Gain adjustment is provided for each channel. Clicking the **Gain** button associated with each channel opens a box that lets you adjust the

channel gain from -60 dB to +12 dB. Click **X** to close the box.

11. **Channel Information:** Hovering over each red/yellow/green **Channel or Cluster Info** box opens a summary of channel settings. You may use this to verify that you have correctly entered the needed channel settings. Refer to Figure 4-8.
12. **Audio Signal Type:** If there is a choice of how to interpret the audio signal on a channel, click the channel number and a window will open, as shown in Figure 4-8, and allow you to make the choice.

Figure 4-8: Channel Summary

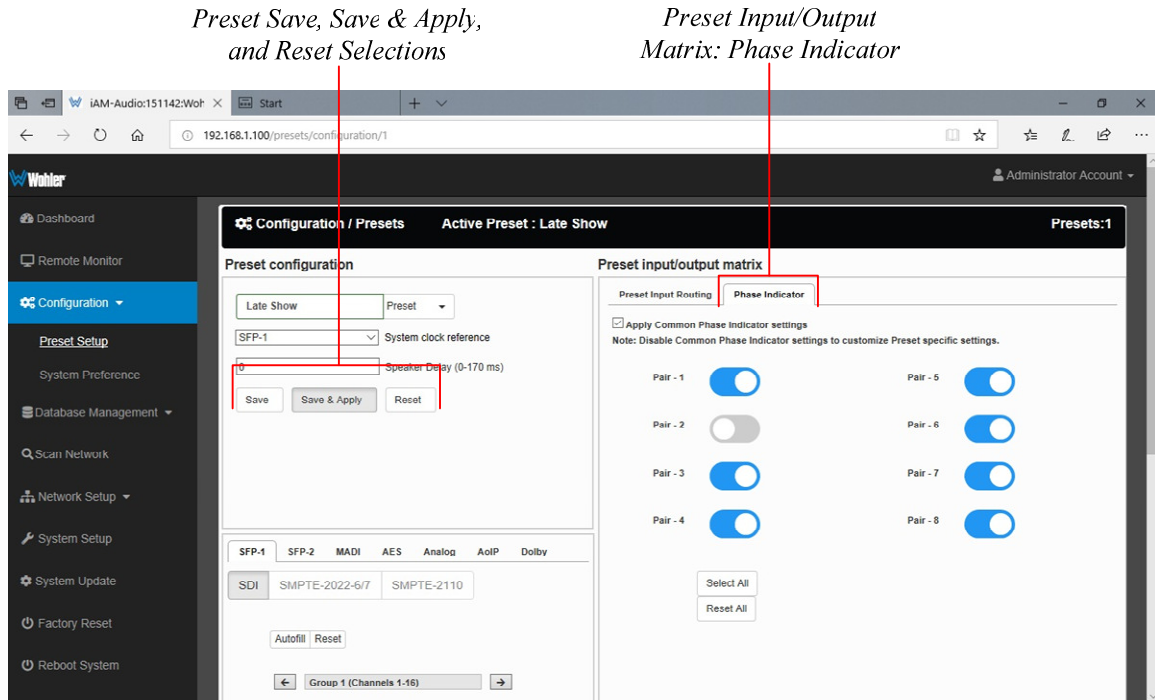


Presets may be created for any licensed inputs, even if the SFP module for an input is not plugged into its respective socket at the time. This makes it easy to swap SFP input modules without having to recreate presets after the insertion or removal of an SFP module. Note that if a licensed SFP module 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 SFP module that is inserted, its monitoring inputs will also be muted. Refer to the **Licenses** section in this chapter and to Figure 4-22 to install software licenses.

13. The **Phase Indicator** tab is as shown in Figure 4-9. It allows you to select which channel pairs will receive a phase meter on the **Metering Screen** in this Preset. Generally, it is useful to monitor the relative phase of stereo pairs. However, sometimes each channel of a pair is unrelated to each other. This can be because the channels are used to convey two independent monophonic signals or that one channel may be a Center channel and the other may be a Low Frequency Effects channel. In these instances, the Phase Indicator would almost always indicate an out of phase condition. Because this would be a needless distraction to the operator, switches are

provided on this tab to individually turn phase monitoring for each channel pair on or off. By default, the settings for a Preset are the same as the system-wide configuration set on the System Preference tab. However, to make unique settings for this Preset, uncheck **Apply Common Phase Indicator Settings** and then simply click each switch to the desired on or off position. **Select All** and **Reset All** buttons are also provided.

Figure 4–9: Phase Indicator Enable / Disable



14. When you have finished creating a Preset or making changes to a Preset, either click the **Save** button to save the Preset, click the **Save & Apply** button to save the Preset and make it the current Preset, or click the **Reset** button to discard the changes just made. These selections are shown in Figure 4-9.

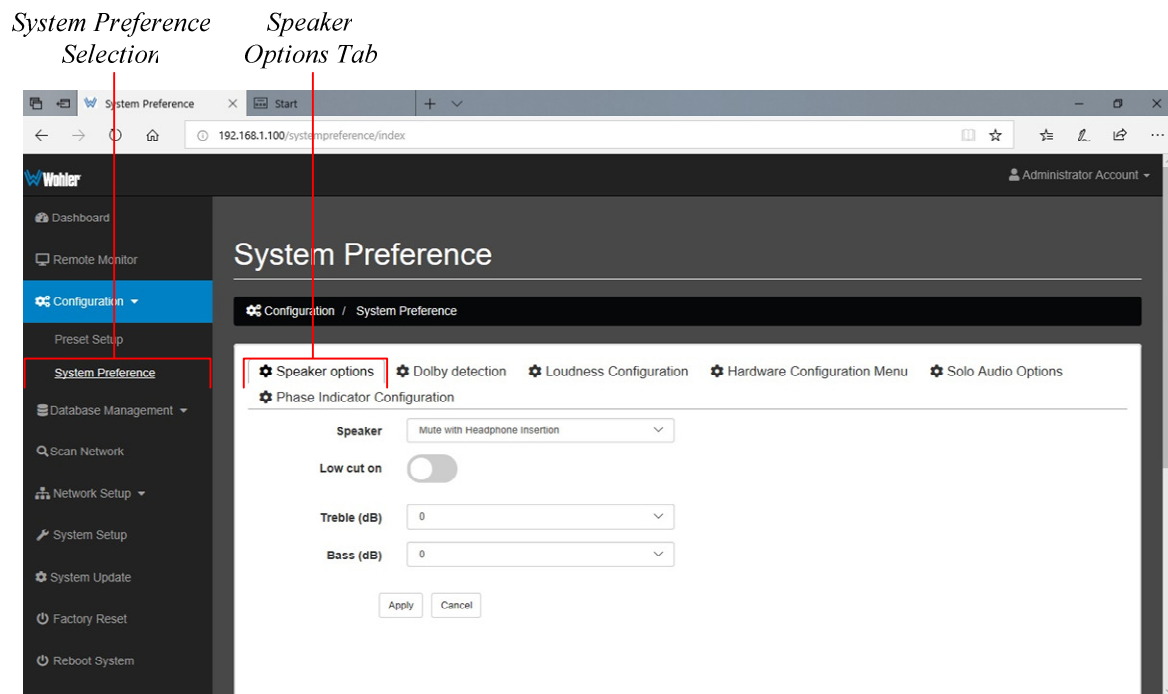
System Preference

Click on the **Configuration - System Preference** to set various options that affect system behavior. There are a number of tabs that you may select from to set up the operational parameters. The following subsections will describe each tab. Additional sections beyond what is shown in this figure may also be shown on this screen, depending upon the configuration of the iAM-AUDIO.

Speaker Options

The **Speaker Options Tab** is shown in Figure 4-10. Note that setting changes made here will reflect on similar settings made using the iAM-AUDIO front panel menus. Click **Apply** to incorporate your adjustments or to **Cancel** to discard changes you just made.

Figure 4-10: Speaker Options Tab



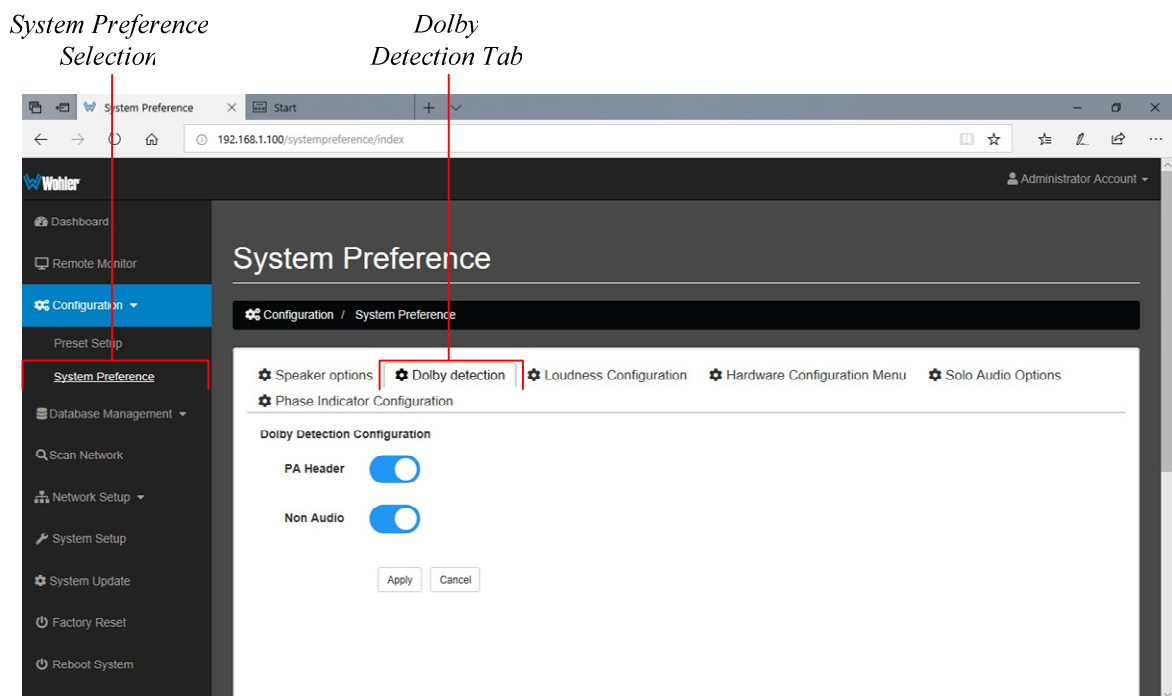
1. **Speaker:** Depending upon the needs of the operator, the speakers of the iAM-AUDIO may need to be programmed as follows:
 - **Never Mute:** The speakers will remain active whether or not a headphone is inserted.
 - **Mute with Headphone Insertion:** The speakers will automatically mute whenever a headphone is inserted.
 - **Always Mute:** The internal speakers always stay silent. This can be useful if external speakers are normally used.
2. **Low Cut On:** This switch may be set to the ON position if the program material generally contains a high level of low pitched sounds, to the extent that distortion is heard in the internal speakers.

3. **Treble:** Depending upon the preference of the operator, high pitched sounds can be emphasized or de-emphasized. The range of adjustment is -12 dB to +12 dB. 0 dB is the flat setting.
4. **Bass:** Depending upon the preference of the operator, low pitched sounds can be emphasized or de-emphasized. The range of adjustment is -12 dB to +12 dB. 0 dB is the flat setting.

Dolby Detection

The **Dolby Detection Tab** is shown in Figure 4-11. In this tab, you may select the encoded parameters that the iAM-AUDIO uses to determine whether an audio signal is actually a Dolby signal or not. Detecting Dolby signals allows their presence to be shown on the meter screen and prevents loud blasts of white noise from being heard if these signals are selected. Unless a reason is known not to, both detection parameters should be turned on. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

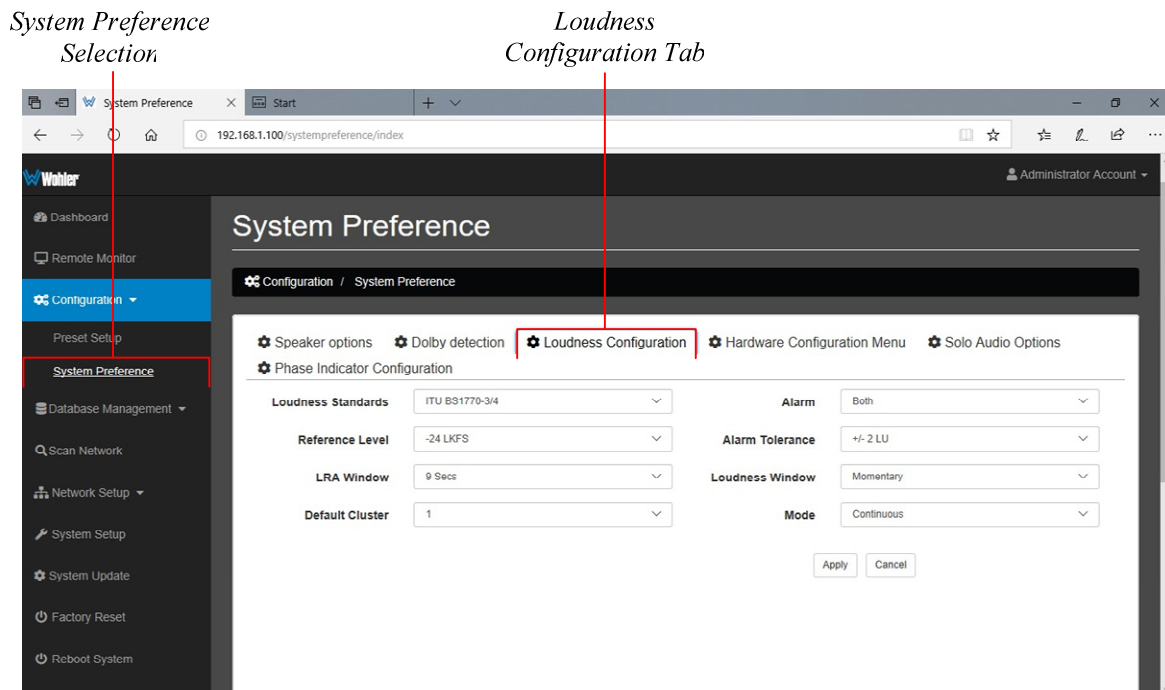
Figure 4-11: Dolby Detection Tab



Loudness Configuration

The **Loudness Configuration** tab is as shown in Figure 4-12. The settings in this tab let you set up the parameters that will be used to accurately calculate loudness to the standard that you need. It is also essential to accurately set up the speaker assignments for each channel of the loudness cluster in the **Configuration | Preset Setup | Preset Input/Output Matrix**. Refer to the **Configure Presets** section of this manual. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

Figure 4-12: Loudness Configuration Tab



1. **Loudness Standards:** Select from the available loudness standards:
 - a. ITU BS1770-3/4
 - b. EBU R128 (+9)
 - c. EBU R128 (+18)
2. **Reference Level:** For ITU BS1770-3/4, the selection ranges from -30 LKFS to -18 LKFS. For EBU R128 (+9) or EBU R128 (+18), the selection ranges from -30 LUFS to -18 LUFS.
3. **LRA Window:** The **LRA Window** is a moving segment of time over which loudness is calculated. Select from the following times segments:
 - a. 9, 15, 30, or 45 Seconds
 - b. 1, 3, 15, 30, or 45 Minutes
 - c. 1, 2, or 3 Hours
4. **Alarm:** Select between the following:
 - a. Over: The Alarm indication will only appear when Loudness has exceeded the **Reference Level** by the **Tolerance** amount.

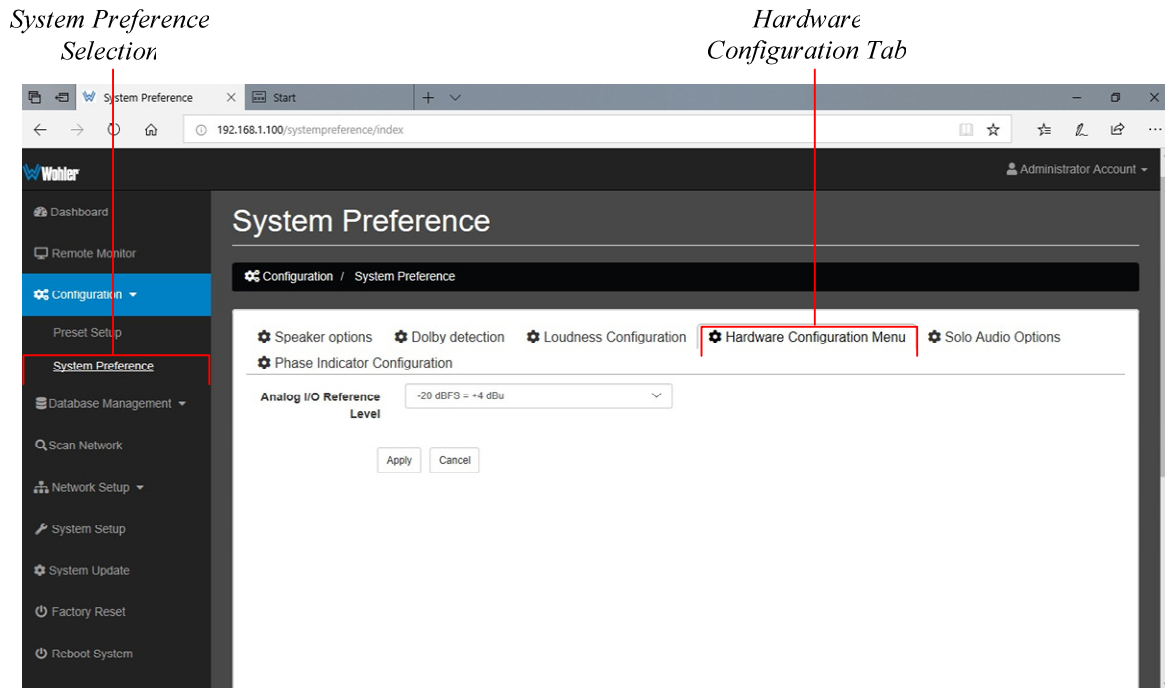
- b. **Under:** The Alarm indication will only appear when the Loudness has been below the **Reference Level** by the **Tolerance** amount.
 - c. **Both:** The Alarm indication will appear when Loudness has exceeded the **Reference Level** by the **Tolerance** amount or has been below the **Reference Level** by the **Tolerance** amount.
 - d. **Off:** The Alarm indication is turned off and will not appear.
5. **Alarm Tolerance:** Select between the following ranges:
- a. +/- 1 LU
 - b. +/- 2 LU
 - c. +/- 3 LU
 - d. +/- 4 LU
 - e. +/- 5 LU
 - f. +/- 6 LU
6. **Loudness Window:** Select between:
- a. **Momentary:** Loudness is measured on a momentary basis which, as defined by the loudness standards, is 400 mS.
 - b. **Short Term:** Loudness is measured on a short term basis which, as defined by the loudness standards, is 3 seconds.
 - c. **Custom:** A selection is available for a **Custom Loudness Window**, a selection of 22 values ranging from one second to two hours. When **Custom** is selected, a pull down box appears to allow a choice to be made.
7. **Mode:** Select between:
- a. **Manual:** This allows measurement of specific, manually timed intervals of time. The **Start** and **Stop** buttons on the **Loudness Meter Screen** of the iAM-AUDIO are used to control this timing.
 - b. **Continuous:** Loudness calculations will run continuously, except when paused by the **Pause** button on the **Loudness Meter Screen** of the iAM-AUDIO

Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

Hardware Configuration

The Hardware Configuration tab is as shown in Figure 4-13. It allows you to set the Analog I/O Reference Level that is used for the audio metering. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

Figure 4-13: Hardware Configuration Tab



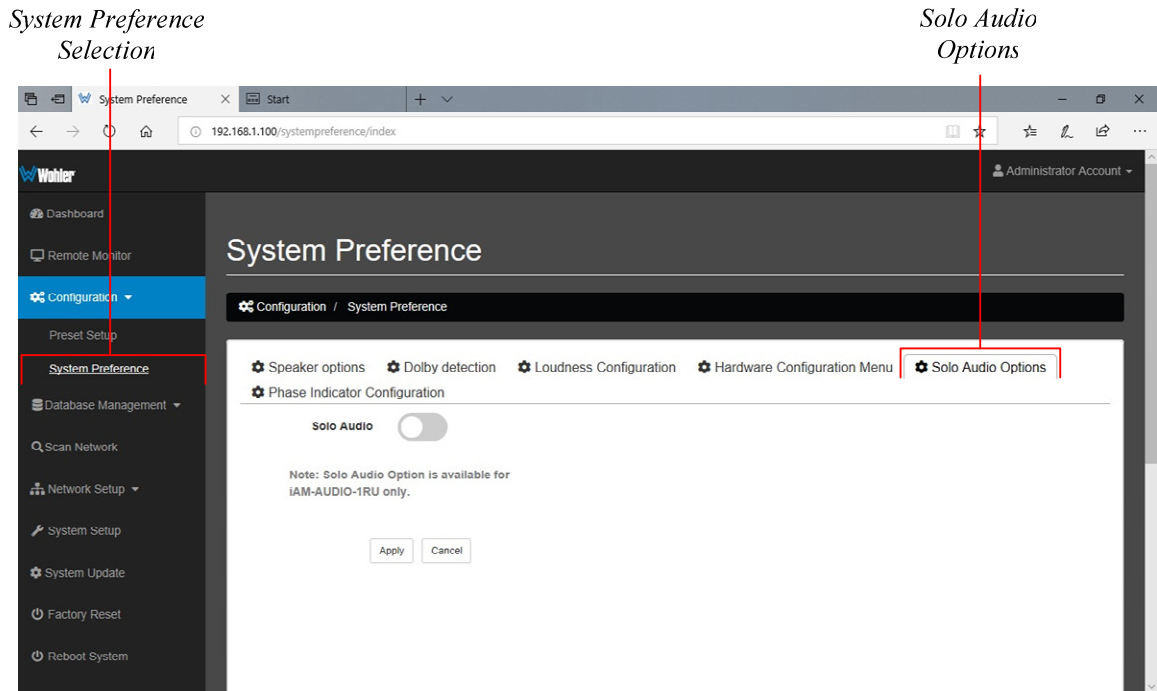
1. **Analog I/O Reference Level:** Select from the available reference levels:

- a. -16 dBFS = +4 dBu
- b. -18 dBFS = +4 dBu
- c. -18 dBFS = 0 dBu
- d. -20 dBFS = +4 dBu
- e. -20 dBFS = +8 dBu
- f. -20 dBFS = 0 dBu
- g. -22 dBFS = +4 dBu

Solo Audio Options

The **Solo Audio Options** tab is as shown in Figure 4-14. It allows you enable an additional audio control screen in the iAM-AUDIO. This screen is shown in Figure 2-24. To enable or disable this screen, simply click the **Solo Audio** switch on the **Solo Audio Options** tab to the on or off position. Then click **Apply** to incorporate this change or **Cancel** to discard it. When turned on, the **Audio Options** screen will appear on the iAM-AUDIO within seconds.

Figure 4-14: Solo Audio Options Tab

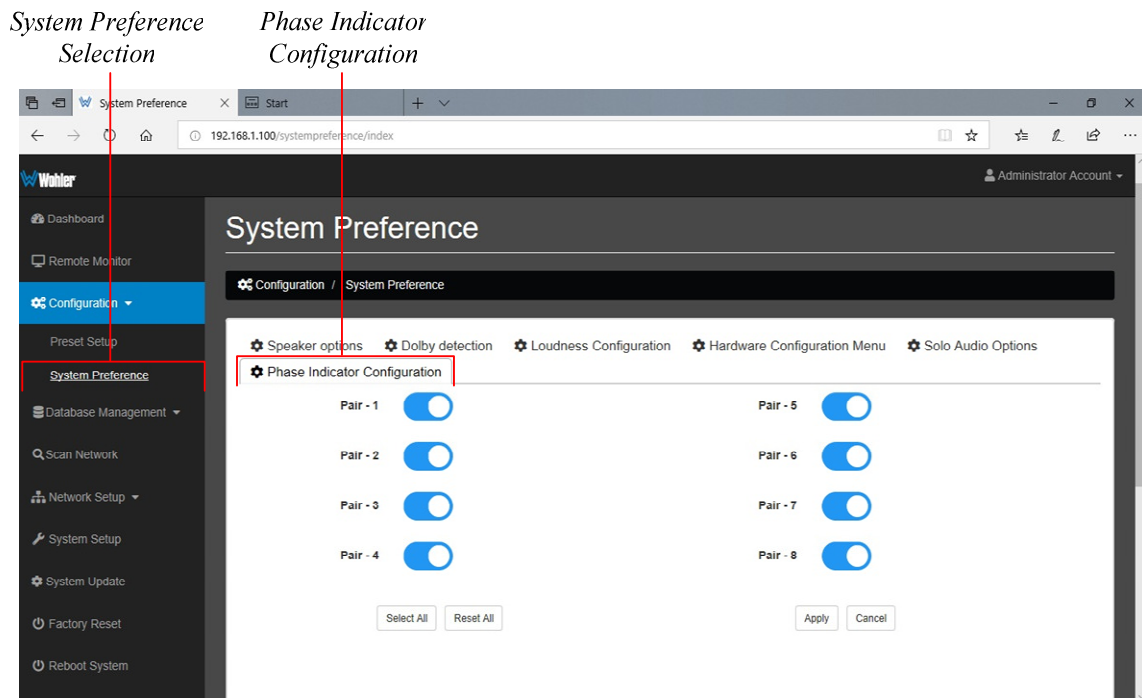


Phase Indicator Configuration

The **Phase Indicator Configuration** tab is as shown in Figure 4-15. It allows you to select which channel pairs by default will receive a phase meter on the **Metering Screen**. Generally, it is useful to monitor the relative phase of stereo pairs. However, sometimes each channel of a pair is unrelated to each other. This can be because the channels are used to convey two independent monophonic signals or that one channel may be a Center channel and the other may be a Low Frequency Effects channel. In these instances, the Phase Indicator would almost always indicate an out of phase condition. Because this would be a needless distraction to the operator, switches are provided on the **Phase Indicator Configuration** tab to individually turn phase monitoring for each channel pair on or off. Simply click each switch to the desired on or off position. **Select All** and **Reset All** buttons are also provided. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

Note that the default settings made on this tab can be overridden on a Preset by Preset basis on the **Phase Indicator** tab of the **Preset Setup** page.

Figure 4-15: Phase Indicator Configuration Tab

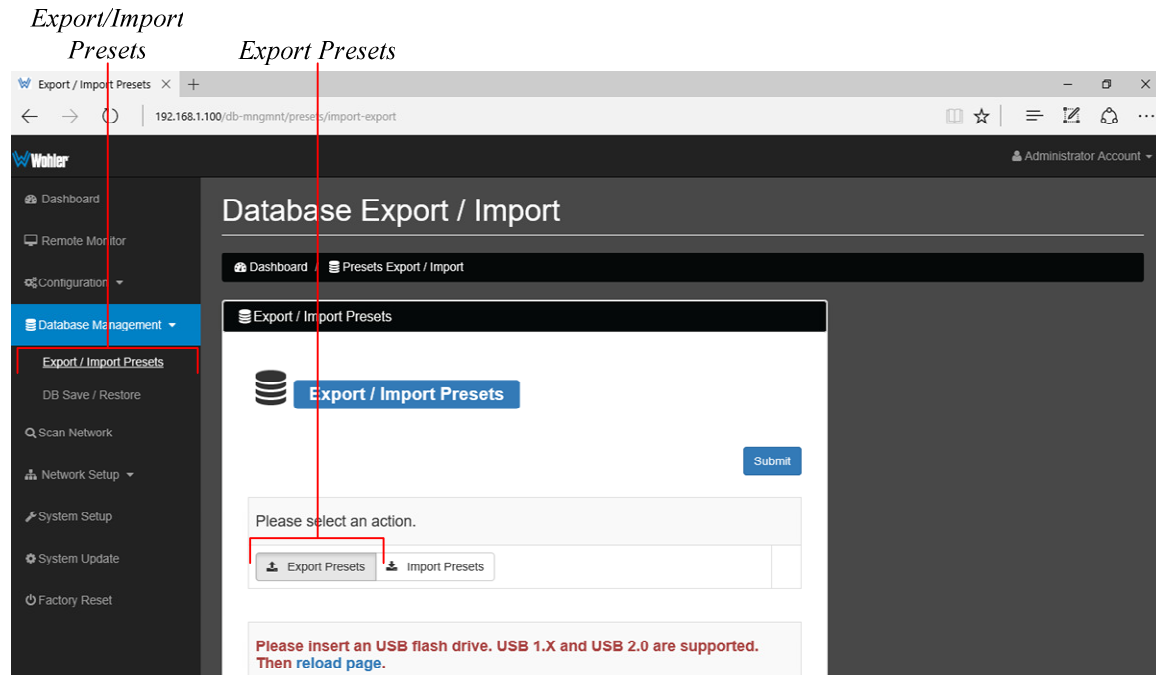


Database Management

Export Configuration

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

Figure 4–16: Database Export



Use the following steps:

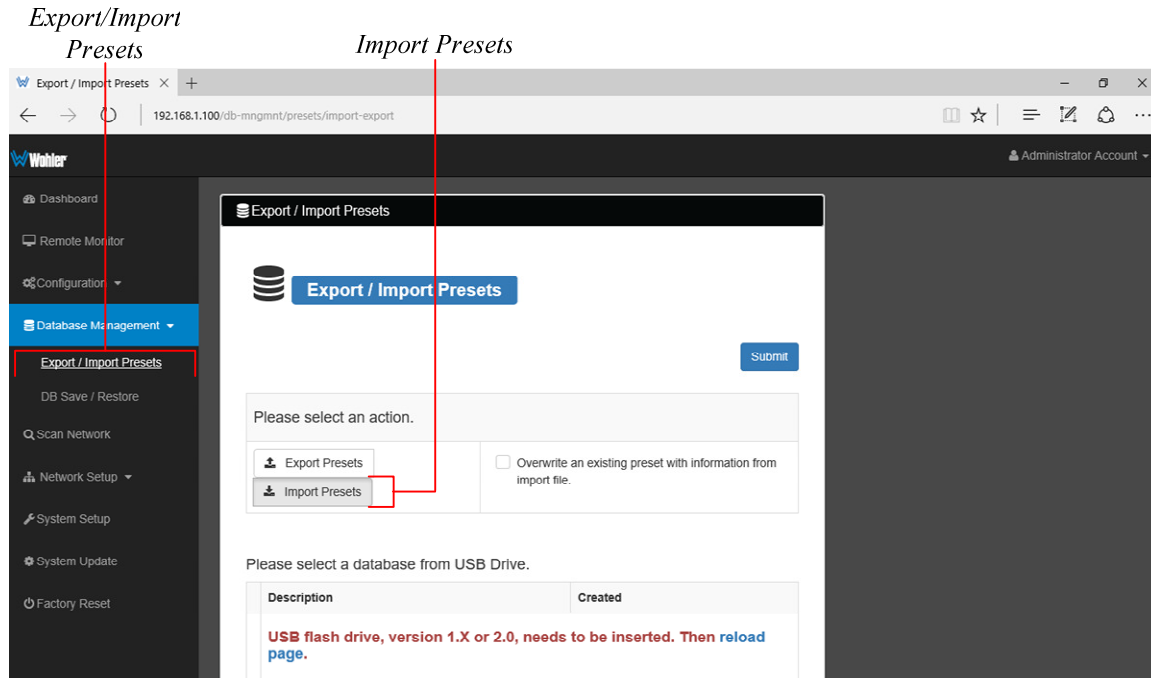
1. Click the **Export Presets** button on the **Database Management - Export / Import Presets** page.
2. Insert a flash drive in the front panel USB jack on the iAM-AUDIO you want to back up.
3. Click the blue **reload page** link at the bottom of the page. The Preset data will be written onto the flash 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 the **Import Presets** selection 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 4–17: Database Import



Use the following steps:

1. Click the **Import Presets** button on the **Database Management - Export / Import Presets** 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. If you want to allow existing presets to be overwritten with imported presets of the same name, check the **Overwrite** box.
5. 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.

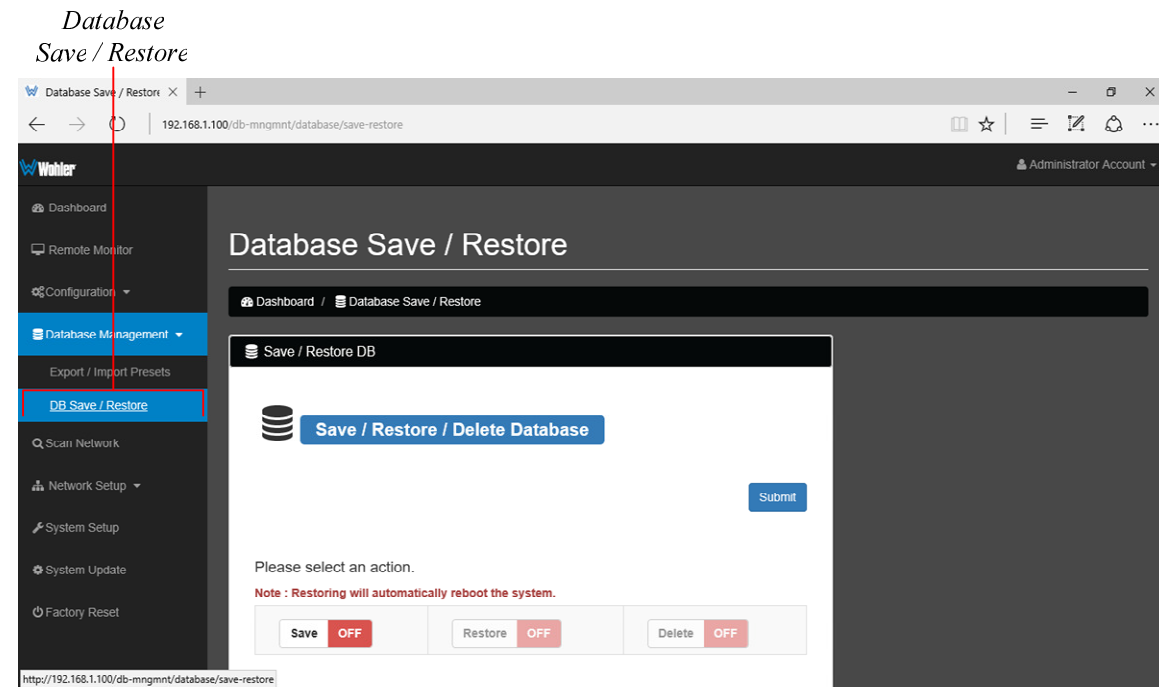
These instructions are summarized on the **Database Management - Database Export / Import** page.

Database (DB) Save / Restore

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

The backup is made within the iAM-AUDIO 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 4–18: Save / Restore Database



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

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

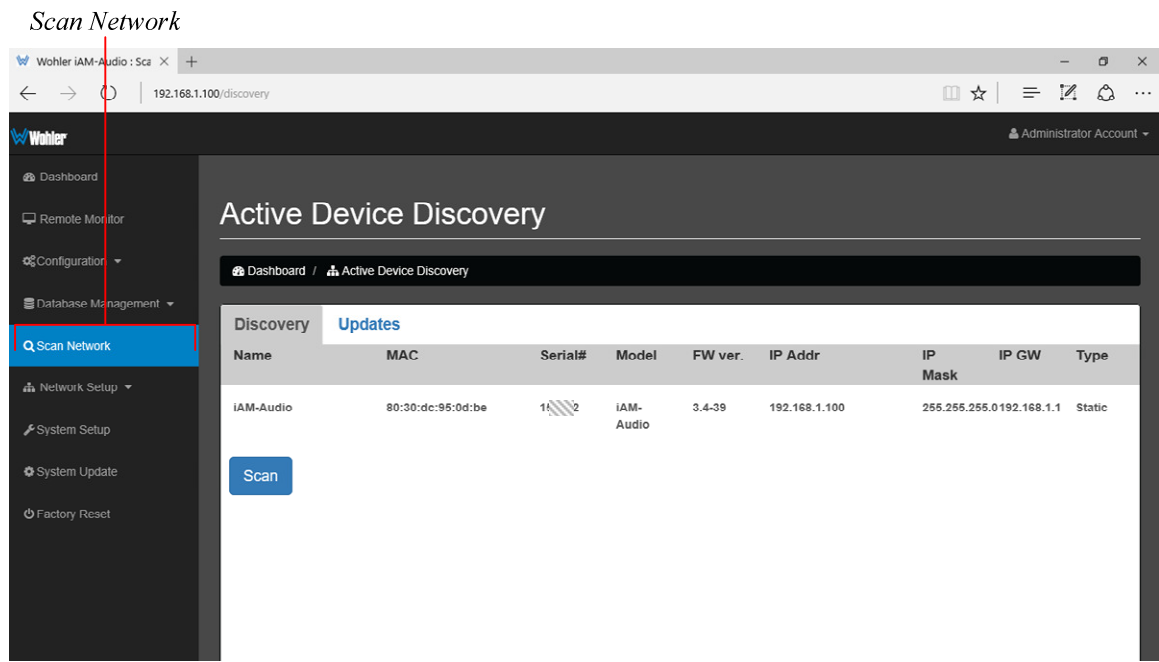
Use **Restore** to reverse database corruption if you notice or suspect the presets are not appearing correctly.

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.

Scan Network - Discovery

This page will scan the network for Wohler iAM monitors installed on the network and display information about the devices it finds. Information about the **Updates** tab is in [Installing Software on Networked iAM-AUDIOS](#).

Figure 4–19: Active Device Discovery



Network Setup

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

Figure 4–20: Set IP Addresses

Set IP Addresses

Wohler iAM-Audio : Ne x +

192.168.1.100/net-setup

Administrator Account

Dashboard

Remote Monitor

Configuration

Database Management

Scan Network

Network Setup

Set IP Addresses

System Setup

System Update

Factory Reset

Network Setup

Dashboard / Network Setup

Set Mgmt IP Address

Enter IP Information

Use DHCP ? ☐

IP Address

IP Mask

Gateway Address

Dns-nameserver

Apply

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.

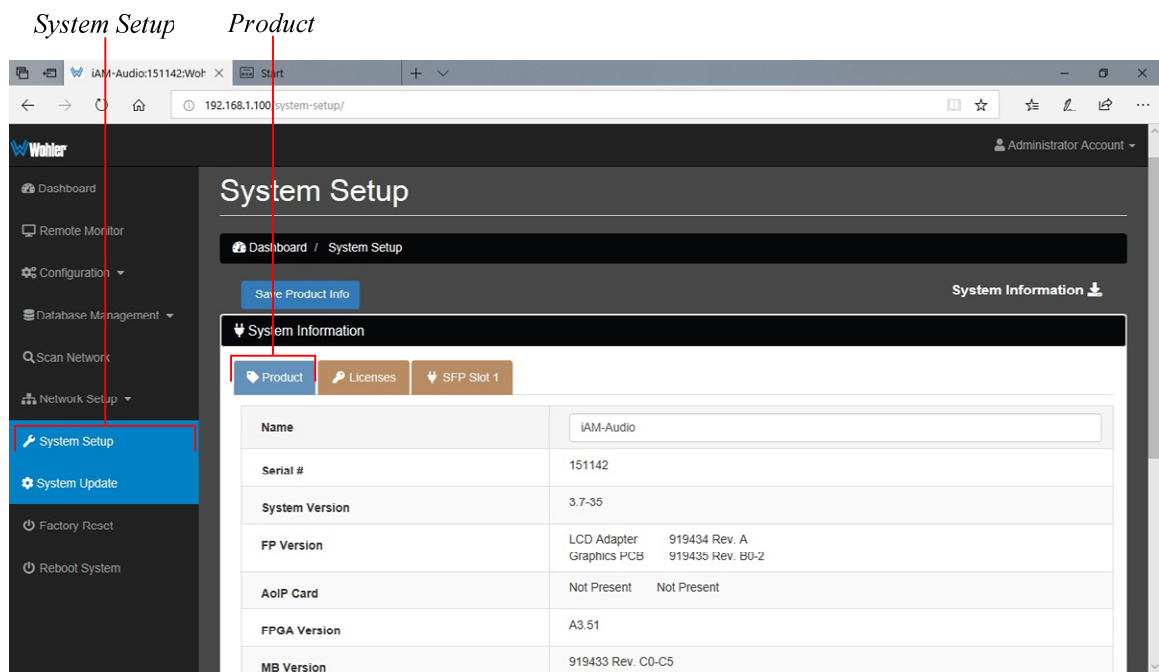
System Setup

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. It consists of three tabs, each of which is explained in the sections which follow:

Product

The **System Setup | Product** tab provides basic information for this iAM-AUDIO. It is shown in Figure 4-21.

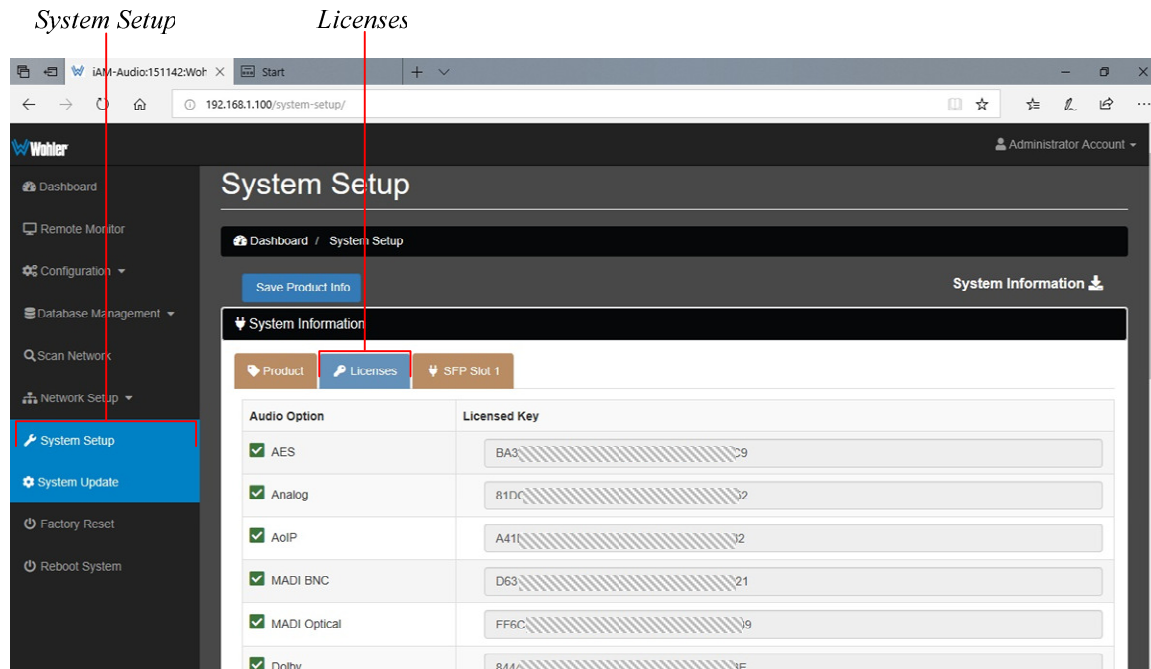
Figure 4–21: System Setup: Product



Licenses

The **System Setup | Licenses** tab shows the license keys for each of the optional features installed in this iAM-AUDIO. You may also use this tab to enter new license keys. This tab is shown in Figure 4-22.

Figure 4-22: System Setup: Licenses



The example above shows an iAM-AUDIO with license keys for inputs and license keys for SFP 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 box that appears.
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.

SFP Slot

For certain I/O modules, the **System Setup** page will also display the **Hardware/Vitals** status for each module. The example in Figures 4-23 and 4-24, shows the status of the module in SFP Slot 1. The actual information listed in each of these tabs depends upon the module itself.

Figure 4-23: System Setup: Module Hardware Status

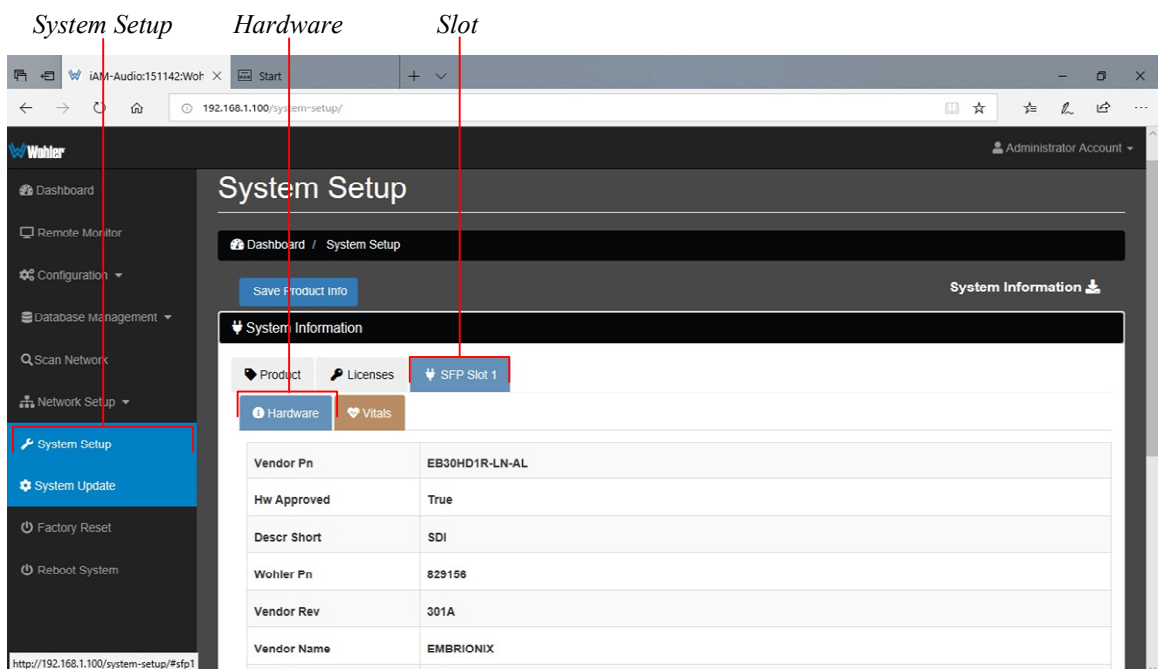
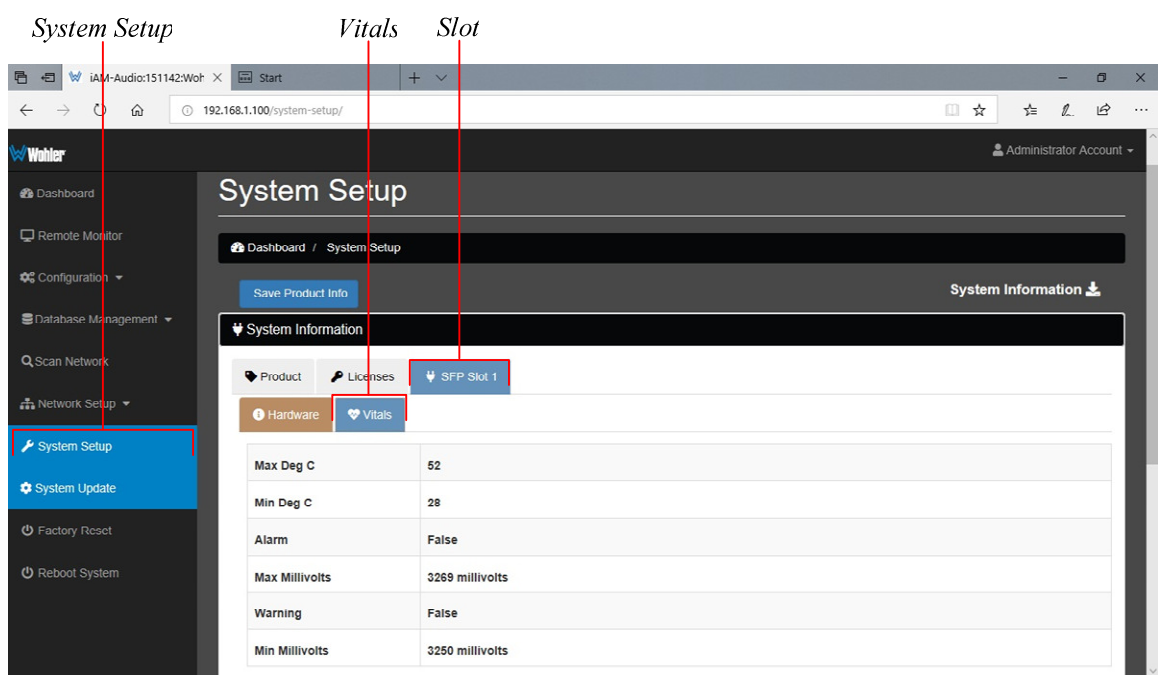


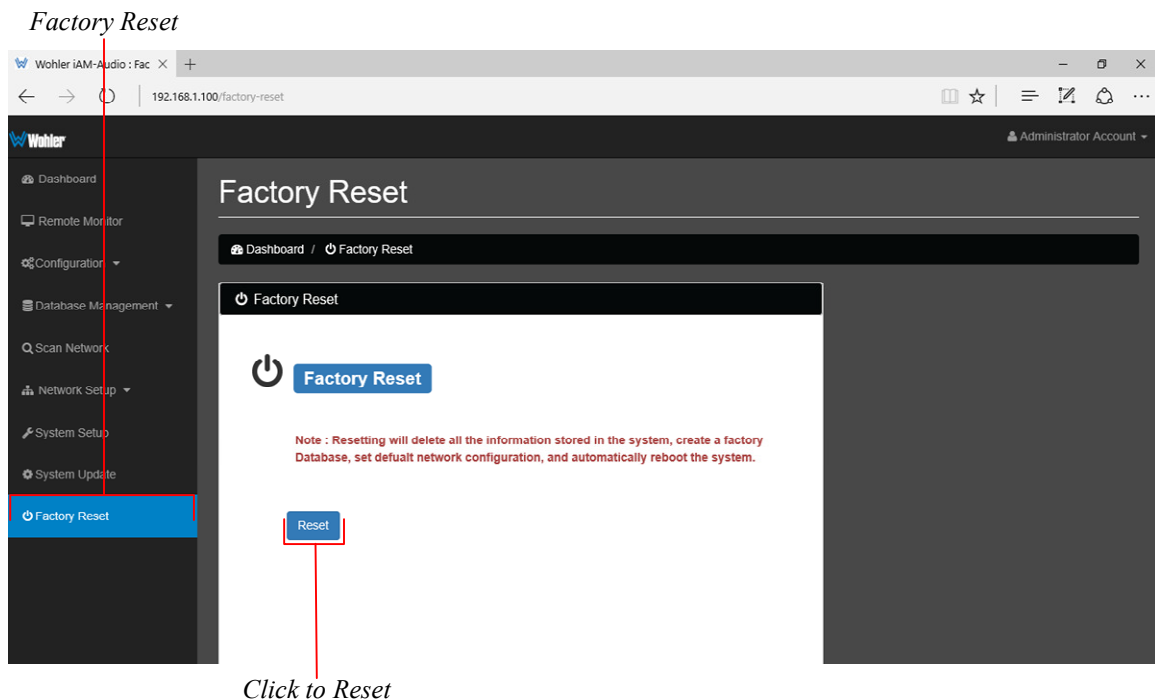
Figure 4-24: System Setup: Module Vitals Status



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 4–25: 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.

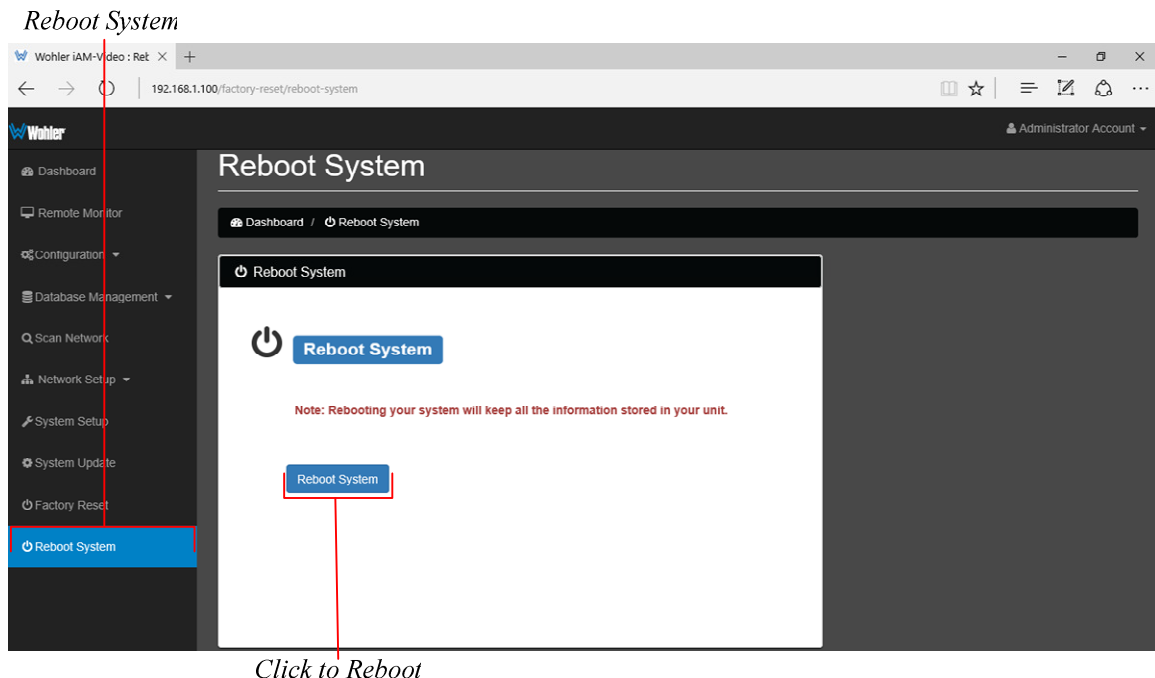
Note: **Factory Reset** will reset your IP address to the default one (Static IP: 192.168.1.100/Gateway: 192.168.1.1/Netmask: 255.255.255.0) and clear the database of Presets.

Reboot System

The **Reboot System** page allows you to reboot an iAM-AUDIO remotely. The **Reboot System** page is shown in Figure 4-26. This function is normally only used upon request from Wohler Technical Service to troubleshoot or correct an issue.

The **Reboot System** function should be used with a bit of caution. It puts the iAM-AUDIO out of service for several minutes while it is rebooting, and this may unexpectedly interfere with the use of the product by the remote operator.

Figure 4-26: Reboot System



Click to Reboot

If you have any doubt as to whether you should reboot the remote iAM-AUDIO, do not click the **Reboot System** button. Contact Wohler Technical Service for advice.

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.

Depending upon the update method chosen, you may need to copy the update file(s) to a USB flash drive. 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 of the FAT32 file type, and does not need to be empty.

Update Methods

There are several software update methods. Select one of them, depending upon your needs:

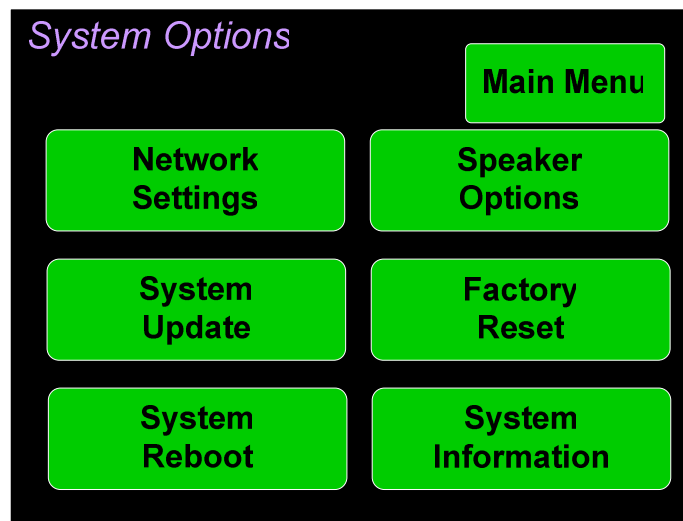
1. Local update from the front panel of the iAM-AUDIO: This straightforward method does not require the use of the Web GUI. A flash drive containing the update is plugged into the front panel USB socket and the update is then accomplished using the self-contained menu system. If this method seems most suitable, then refer to the **Local Update from the Front Panel** section of this chapter.
2. Remote update using the Web GUI with a flash drive connected to the iAM-AUDIO: It may be more convenient to update the product using a flash drive plugged into its front panel USB socket, but controlled remotely via the Web GUI. To update the product this way, refer to the **Updating via the Web GUI** section of this chapter.
3. Remote update without a flash drive: This method allows you to update a networked iAM-AUDIO without plugging a flash drive into its front panel USB socket. To update the product this way, refer to the **Updating an iAM-AUDIO Remotely** section of this chapter.
4. Update multiple units remotely at once: This method allows you to update multiple networked iAM-AUDIO units at once, without plugging flash drives into their front panel USB sockets. To update products this way, refer to the **Updating Multiple iAM-AUDIO Units** section of this chapter.

Local Update from the Front Panel

If the iAM-AUDIO is not networked to a computer containing the Web GUI and if local access to the unit is possible, then this update procedure is best:

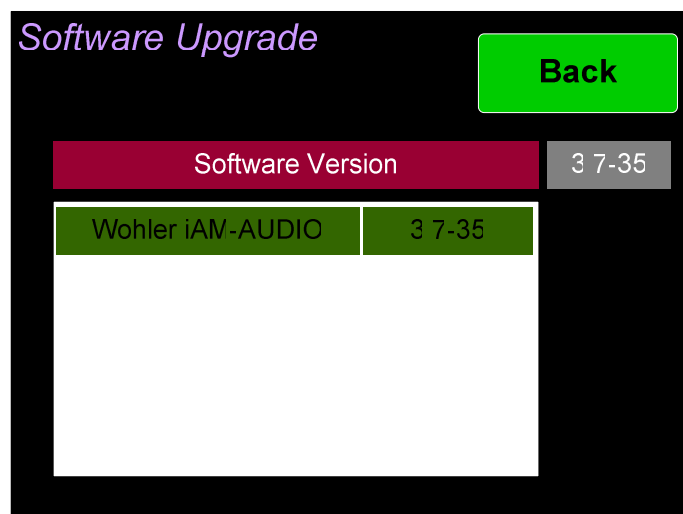
1. Insert the USB flash drive with iAM-AUDIO update package(s) into the front panel USB jack. Refer to the [Download the Software](#) section of this chapter for the specifics of download and file transfer to the USB flash drive.
2. From the **Main Menu** screen, touch **System Options**. The screen shown in Figure A-1 will appear.

Figure A-1 - System Options Screen



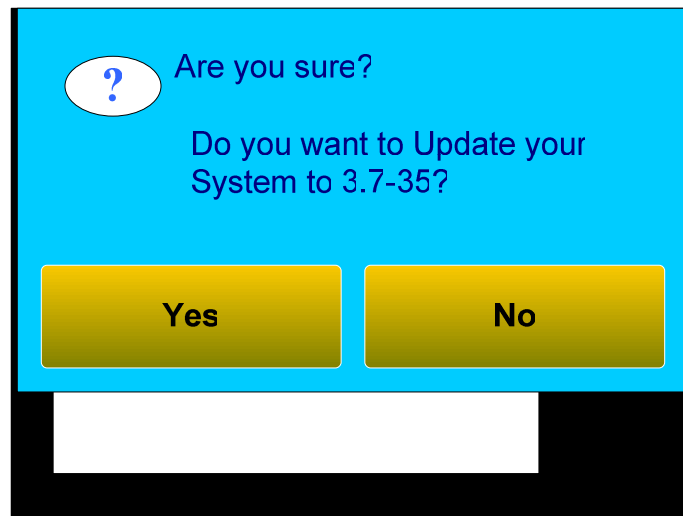
3. Insert the flash drive containing the system update into the USB socket on the front panel.
4. In the **System Options** menu, touch **System Update**. The **Software Upgrade** screen will appear, as shown in Figure A-2.

Figure A-2 - Software Upgrade Screen



5. The new software version that is in the flash drive will be shown in the **Software Version** screen. To cancel the upgrade at this point for any reason, touch **Back**. To proceed, touch the software version entry in the **Software Version** screen. A screen will appear, as shown in Figure A-3.

Figure A-3 - Upgrade Verify



6. To proceed, touch **Yes**. To back out, touch **No**. After you touch **Yes**, the screens will change, as shown in Figure A-4.

Figure A-4 - Upgrading System



7. The text on the left screen will change periodically to indicate the progression of the upgrade. The upgrade will take several minutes, after which the iAM-AUDIO will restart. After the system has completed its restart cycle and is once again operational, you may then remove the flash drive.

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.

Updating Via the Web GUI

Important:

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

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-5: System Update

System Update

Wohler iAM-Audio : Sys x +

192.168.1.100/upload

Administrator Account

Dashboard / System Update

System Update

USB System Update

Please Select the package you want to update :

Description	Version
USB flash drive does not contain any Wohler Update Packages for your system.	

System Information

Software Version :

Description	Version
Wohler iAM-Audio monitor	3.4-39
FPGA	A3.32

Hardware Version :

Description	Version
Main Board	04.03 (919433 Rev. C0-3)

System Update

Please Upload the package you want to update :

Drop Wohler package here

+ Add files... Start upload Cancel upload

http://192.168.1.100/upload

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

8. 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.
9. 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.
10. Click the **Start Upload** 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.

11. The Web GUI will indicate progress of the software installation and results.
12. The iAM-AUDIO will display a message when the upgrade is complete and then reboot.
13. Remove the USB drive any time after upgrade is complete.
14. 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.
15. 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.

Updating an iAM-AUDIO Remotely

Important:

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

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. You may download an update file from the Wohler Web Site (www.Wohler.com) and access the downloaded file directly from the Web GUI.

Use the following steps to remotely upgrade an iAM-Audio unit:

1. Download the update file into the computer containing the Web GUI. Refer to the [Download the Software](#) section of this chapter.

2. Connect to the iAM-AUDIO to be updated using the Web GUI.
3. Click on the **System Update** tab and locate the **System Update** box at the bottom of the screen. Refer to Figure A-5.
4. You click the **Add Files** button to locate and select the downloaded update file or, on Versions 3.4-19 or above, you may drag and drop the update file you downloaded into the "Drop Wohler Package Here" box.
5. Before proceeding, note that the iAM-AUDIO that is being upgraded will no longer be operational for the duration of the update. **If there may be other personnel who may using or need to use this iAM-AUDIO unit, 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 **Start Upload** button. The update will proceed automatically and the iAM-AUDIO will restart at the end of the update.
7. Should you decide to stop the update, click the **Cancel Upload** button.
8. After the iAM-AUDIO unit reboots, either **Refresh** the browser by clicking on the Wohler logo, or close and reopen the browser for normal operation of the Web GUI.

Updating Multiple iAM-AUDIO Units

Important:

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

Remote upgrading is available for any networked iAM-AUDIO that is currently at version 3.2-0 or higher. This feature is useful if multiple units are to be upgraded and it is inconvenient to visit each one with a Flash Drive. The **Scan Network** 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.

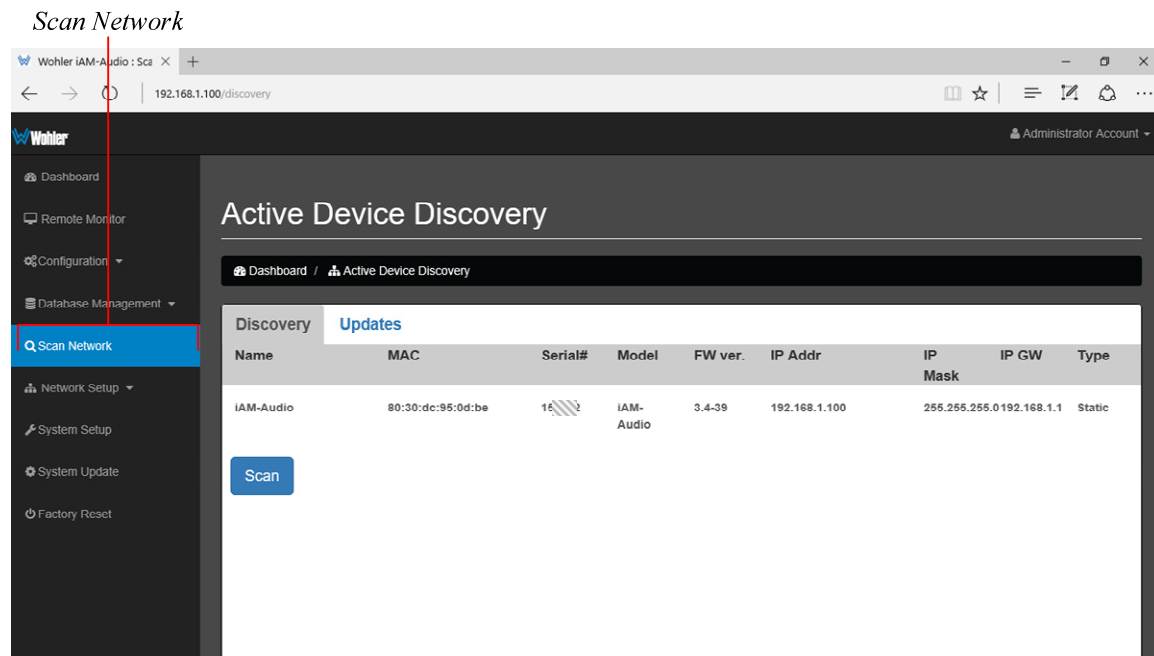
The following requirements apply:

1. All of the iAM-AUDIO units must be networked on the same IP subnet.
2. 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.
3. Each iAM-AUDIO unit must be of the same type. For example, an iAM-MIX cannot be updated by an iAM-AUDIO.

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

1. Download the update file into the computer containing the Web GUI. Refer to the [Download the Software](#) section of this chapter.
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. Refer to Figure A-6. You may use the **Scan** button to rescan if you need to.

Figure A-6: Active Device Discovery



3. Click the **Updates** tab. Two boxes will show. The **Available Updates** window will show the available options for upgrade. If the update file you want is in the list, select it and proceed to Step 5 of this procedure. To add a new update file, click **Add File** and select the new update file. This file may be located on a flash drive inserted into the Web GUI PC, or it may be elsewhere within the file system of the Web GUI PC.
4. After the file has loaded, the network will be rescanned for **Target** units. Click the **Updates** tab. In the **Available Updates** section, select the needed the update file that you have just added.
5. 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.
6. Before proceeding, note that each iAM-AUDIO **Target** that is being upgraded will be inoperative for the duration of the update. **If there may be other personnel who may using or 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.**

7. 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.

8. When the update is complete, each updated **Target** unit will restart and again be ready for use.
9. If you have also updated the unit to which the Web GUI is connected, 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

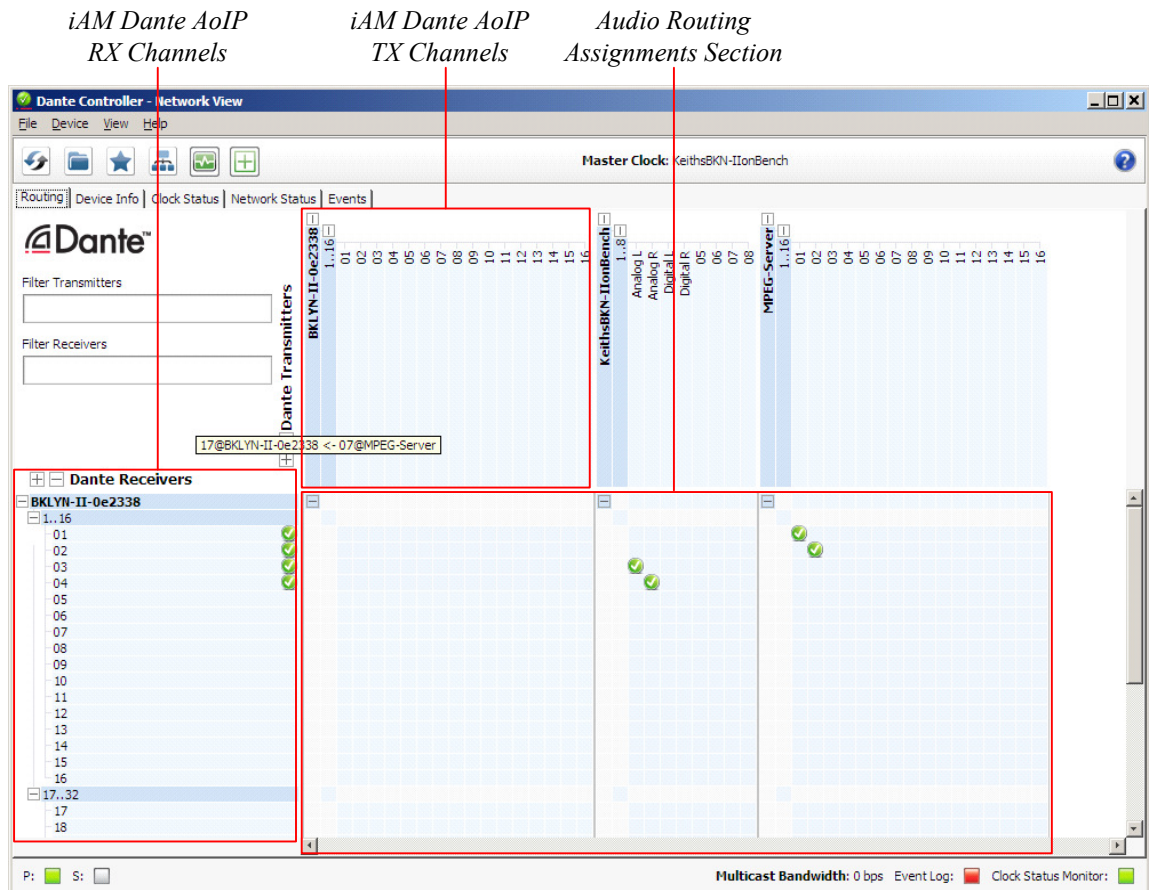
Introduction

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

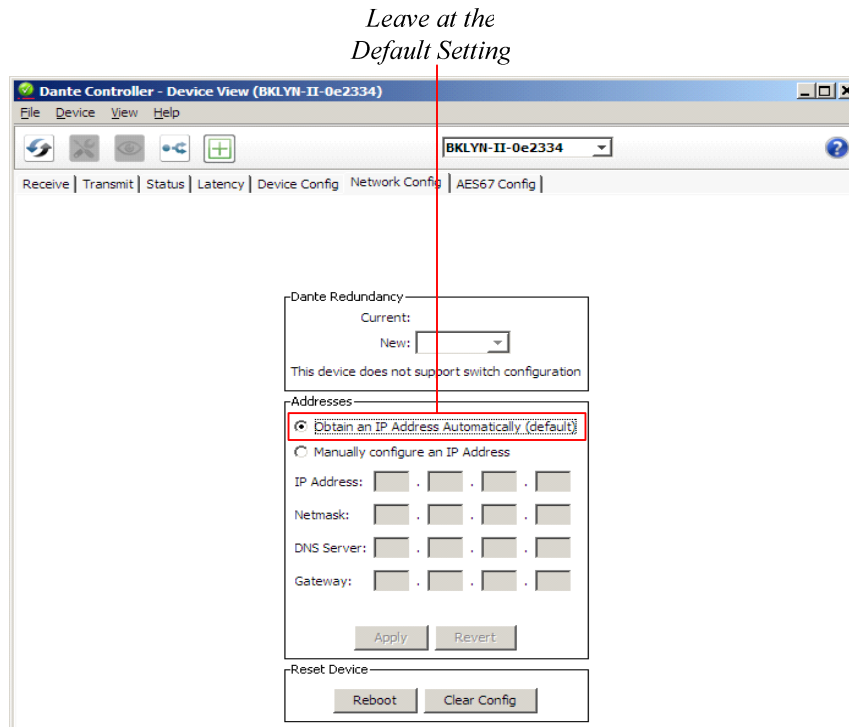


Please refer to the **Dante Controller User Guide** or other control device documentation for specific network and device setup information.

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.

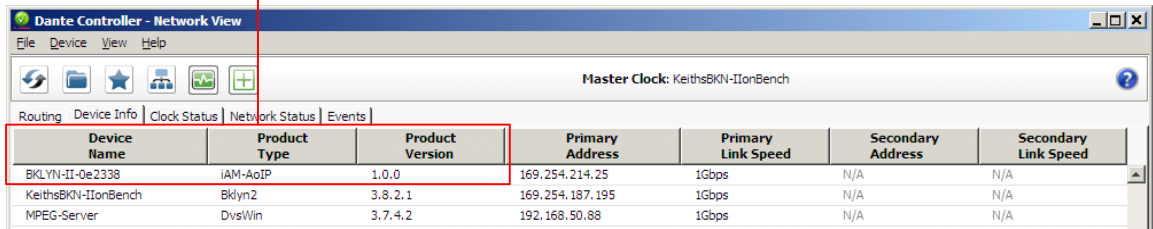
Sample rate selection is left up to the Dante™ Controller device or software. *All devices connected to each other through a Dante network must be set to the same sample rate.* Slight ticking may be heard in the iAM-AUDIO monitor when monitoring different input types at different sample rates or if sources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

Dante Device Name

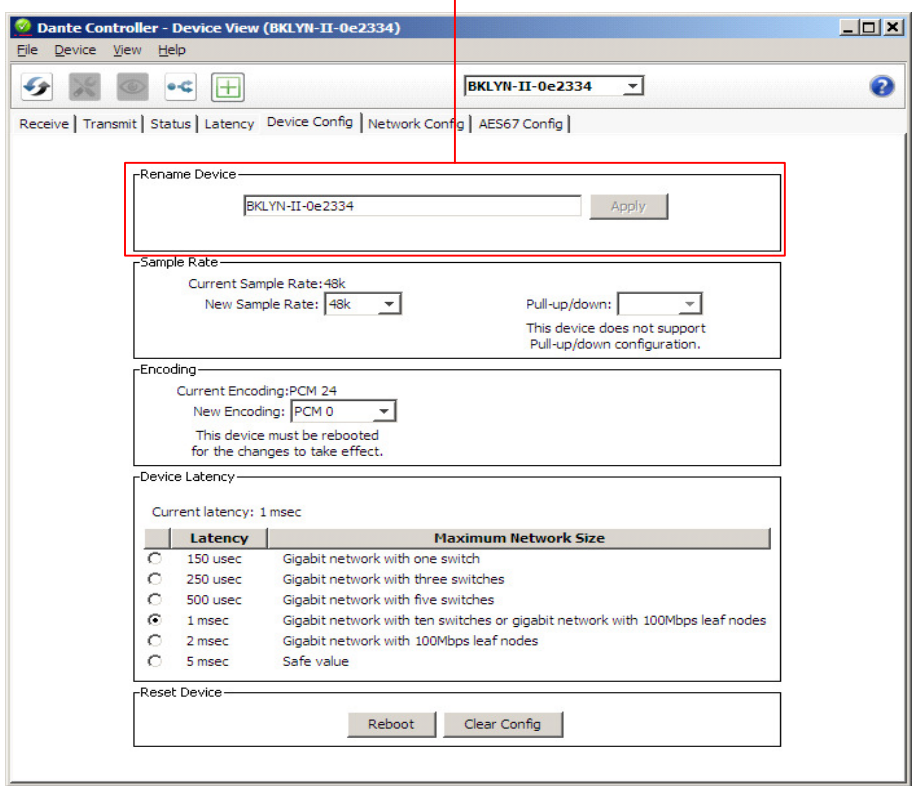


Device Name	Product Type	Product Version	Primary Address	Primary Link Speed	Secondary Address	Secondary Link Speed
BKLYN-II-0e2338	iAM-AoIP	1.0.0	169.254.214.25	1Gbps	N/A	N/A
KeithsBKN-IIonBench	Bklyn2	3.8.2.1	169.254.187.195	1Gbps	N/A	N/A
MPEG-Server	DvsWin	3.7.4.2	192.168.50.88	1Gbps	N/A	N/A

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

Change the iAM AoIP Name



Dante Controller - Device View (BKLYN-II-0e2334)

Receive | Transmit | Status | Latency | Device Config | Network Config | AES67 Config

Rename Device

BKLYN-II-0e2334

Sample Rate

Current Sample Rate: 48k
New Sample Rate: 48k

Encoding

Current Encoding: PCM 24
New Encoding: PCM 0

Device Latency

Current latency: 1 msec

Latency	Maximum Network Size
<input type="radio"/> 150 usec	Gigabit network with one switch
<input type="radio"/> 250 usec	Gigabit network with three switches
<input type="radio"/> 500 usec	Gigabit network with five switches
<input checked="" type="radio"/> 1 msec	Gigabit network with ten switches or gigabit network with 100Mbps leaf nodes
<input type="radio"/> 2 msec	Gigabit network with 100Mbps leaf nodes
<input type="radio"/> 5 msec	Safe value

Reset Device

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:

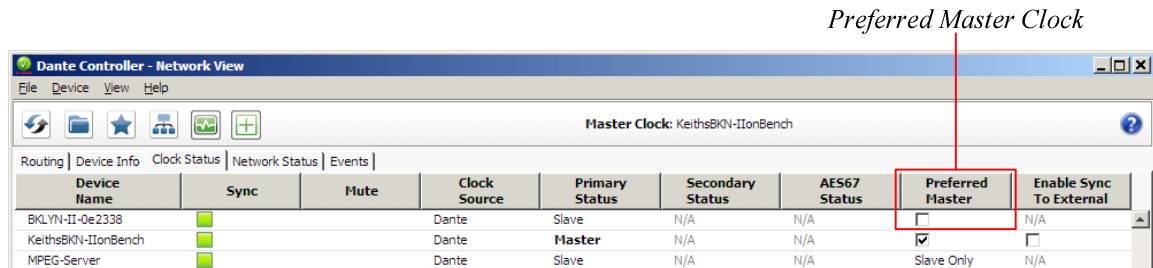
Only 44.1 kHz and 48 kHz audio sample rates are currently supported by the iAM-AUDIO. The Brooklyn II card would accept a Dante Controller command to operate at other rates, without giving an indication it will not be implemented.

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

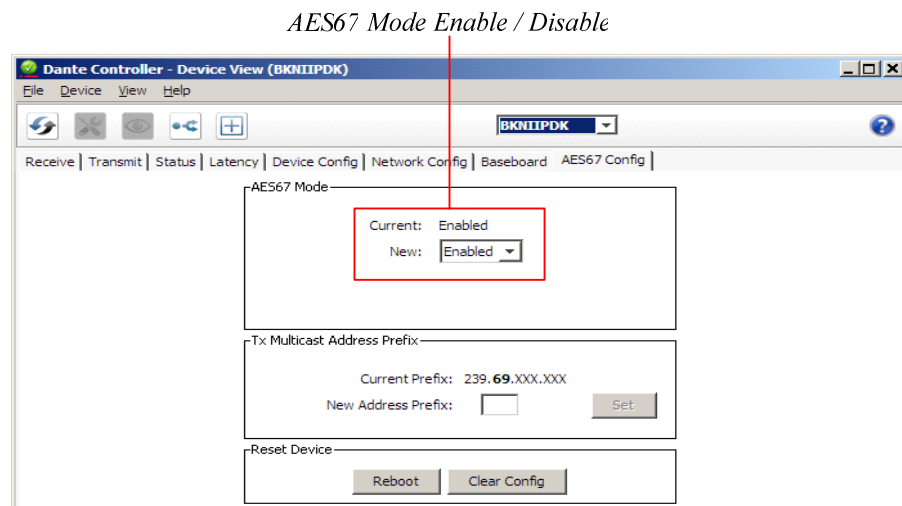
The iAM-AUDIO Brooklyn II can be configured for AES67 operation. AES67 operation with Dante is limited to eight or less receive and transmit channels at 48 kHz sample rates.

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 screenshot shows the 'Dante Controller - Device View (BKNIIPDK)' window. The 'Network Config' tab is selected. The window contains the following sections:

- Dante Redundancy:** A 'Current:' label and a 'New:' dropdown menu. Below them is the text 'Retrieving model information - please wait..'
- Addresses:** Two radio buttons: 'Obtain an IP Address Automatically (default)' and 'Manually configure an IP Address'. Below these are input fields for 'IP Address:', 'Netmask:', 'DNS Server:', and 'Gateway:', each followed by four small input boxes for individual digits.
- Buttons:** 'Apply' and 'Revert' buttons are located below the address fields.
- Reset Device:** 'Reboot' and 'Factory Reset' buttons are located at the bottom of the window.

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

Figure B-8: Multicast

The screenshot shows the 'Create Multicast Flow' window. It contains the following information:

- Header: 'BKNIIPDK supports up to 8 channels per flow.'
- Instruction: 'Select one or more transmit channels to be placed in multicast flows.'
- Table:

Channel Name	Add to New Flow
Analog L	<input type="checkbox"/>
Analog R	<input type="checkbox"/>
Digital L	<input type="checkbox"/>
Digital R	<input type="checkbox"/>
05	<input type="checkbox"/>
06	<input type="checkbox"/>
07	<input type="checkbox"/>
08	<input type="checkbox"/>

At the bottom of the window are 'Create' and 'Cancel' buttons.

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 (Coveloz) Setup

Introduction

Installing the iAM-AUDIO into an existing and functioning Ravenna network using the Coveloz Bach board 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 be configured using its own configuration tool. The menus in this configuration tool are shown in this Appendix.

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:

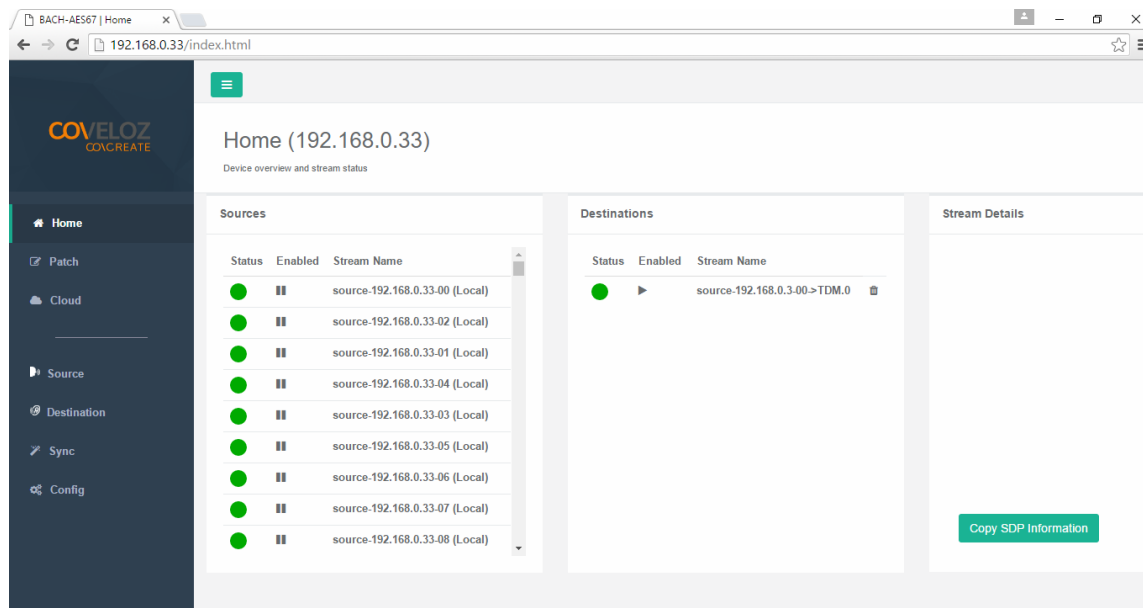
- 1) a stream "source" refers to this device's source
- 2) One can change context to another device by selecting it on the **Cloud** Page.

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: The Ravenna card requires knowledge of its IP address in order for you to use its Web Client for further configuration.

Note: If you change the default IP address (192.27.2.30) to another Static address, make sure you document this change by writing down the new IP address and affixing it to the rear panel for your future reference. If you forget the new IP address, it can be very difficult to find it again.

Important: Setting the card into DHCP mode should be done only if the user has a convenient way to discover the newly assigned dynamic address. At minimum, we suggest setting the card to a Static address for initial testing. Ideally, all cards on the network should be visible to a Ravenna/AES67 network manager where dynamic IP addresses are readily knowable. The Web Client Cloud menu section may suffice as the network manager.

If you lose track of 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 or equivalent to discover its IP address.

Figure C-2: BACH Controller Device Configuration

The screenshot shows the BACH Controller Device Configuration web interface in a browser. The address bar shows the URL 192.168.0.33/bachstage.html. The interface has a dark blue sidebar on the left with the COVELOZ CONCRETE logo and navigation links: Home, Patch, Cloud, Source, Destination, Sync, and Config (which is highlighted). The main content area is titled 'Device Configuration (192.168.0.33)' and contains three main sections: Settings, Configuration management, and Firmware. The Settings section has a 'View Device Settings' button and two dropdown menus: 'Channel Sampling Frequency' set to '48KHz' and 'Packet Time' set to '1ms', with an 'Update Global' button below. The Configuration management section has three buttons: 'Save Running to startup', 'Restore to Default Startup', and 'Reset to Factory Defaults'. Below this is a table titled 'IP Addresses' with columns for Name, Ip, MAC, Link, and Mode. The table contains two rows: eth0 with Ip 192.168.11.1 and MAC 70-83-05-04-20-60, and eth1 with Ip 192.168.0.33 and MAC 70-83-05-04-20-61. The Link column shows a red dot for eth0 and a green dot for eth1, and the Mode column shows 'static' for both. The Firmware section has a 'Reboot Device' button and an 'Update Firmware' button, with firmware details below: Firmware Version: v2.0.2-b0, Firmware Date: Fri Sep 30 17:49:22 EDT 2016, and Chipid Version: v1.0.0-b19.

Name	Ip	MAC	Link	Mode
eth0	192.168.11.1	70-83-05-04-20-60	●	static
eth1	192.168.0.33	70-83-05-04-20-61	●	static

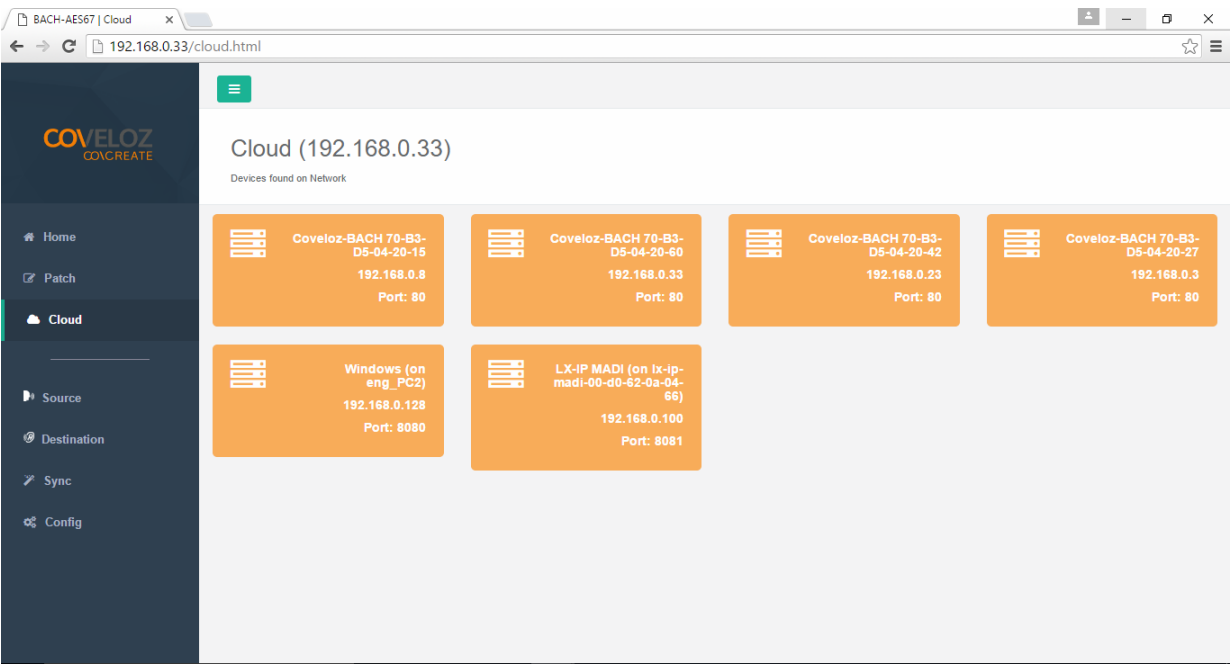
Controller Cloud

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

The screenshot displays the BACH Controller Sync Page in a web browser. The page title is "Sync (192.168.0.131)". The left sidebar contains navigation links: Home, Patch, Cloud, Source, Destination, Sync (selected), and Config. The main content area is divided into three sections: Configuration, Status, and Advanced.

Configuration:

- Domain: 0
- Priority1: 126
- Apply Configuration button
- ETH port: ETH1
- Sync Interval: 1 s
- Announce interval: 2 s
- Announce Receipt timeout: 2
- Apply ETH1 button

Status:

Grandmaster ID	70 B3 D5 FF FE 04 20 49
Grandmaster Priority1	126
Offset from master	0ns
Mean Path delay	0ns
Clock Accuracy	33ns
ETH port	ETH1
Local ID	70 B3 D5 FF FE 04 20 49 1
State	Master
Delay Mechanism	E2E
Sync Interval	0 (1 pkts/s)
Announce interval	1 (0.5 pkts/s)
Announce Receipt timeout	2 pkts

Advanced:

Sync Source:

Operation Mode: AUTO - PTP BASED (Update button)

PTP Advanced configuration:

Profile: (Update button)

System Clock Status:

Description	Status
System Status	LOCKED
Interface Status	LOCKED
Current Reference	INTERNAL OSCILLATOR

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 least one source must 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

The screenshot displays the 'Source (192.168.0.33)' web page. The left sidebar contains navigation links: Home, Patch, Cloud, Source (selected), Destination, Sync, and Config. The main content area is titled 'Source (192.168.0.33)' and includes a sub-header 'Source gives you in-depth information on your Source devices.' Below this is a table of sources. The table has columns for Name, Status, On / Off, #Ch, Audio Format, and Delete. There are seven rows of sources, all with a green status indicator and 'ON' toggle. The right sidebar, labeled 'Advanced', contains fields for Source Name, Starting Channel, # of Channels, Codec, Transport IP Address, UDP, DSCP, and TTL. An 'Add Source' button is at the bottom right of the main content area.

Name	Status	On / Off	#Ch	Audio Format	Delete
source-192.168.0.33-00	●	ON	8	L24	
source-192.168.0.33-01	●	ON	8	L24	
source-192.168.0.33-02	●	ON	8	L24	
source-192.168.0.33-03	●	ON	8	L24	
source-192.168.0.33-04	●	ON	8	L24	
source-192.168.0.33-05	●	ON	8	L24	
source-192.168.0.33-06	●	OFF	8	L24	
source-192.168.0.33-07	●	OFF	8	L24	

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

The screenshot shows the BACH Controller interface. The sidebar on the left contains the COVELOZ logo and navigation links: Home, Patch, Cloud, Source, Destination (highlighted), Sync, and Config. The main panel is titled 'Destination (192.168.0.33)' and includes a sub-header 'Destinations' with a plus icon. Below this is a table with the following data:

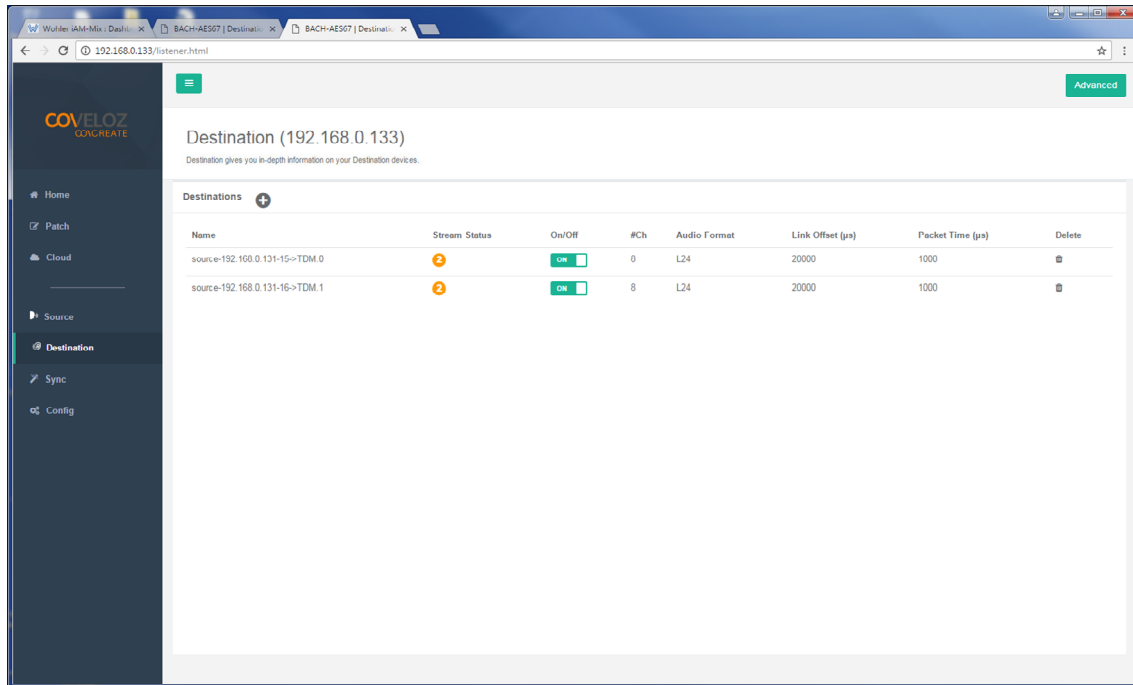
Name	Stream Status	On/Off	#Ch	Audio Format	Link Offset (µs)	Packet Time (µs)	Delete
source-192.168.0.3-00->TDM.0	●	<input checked="" type="checkbox"/>	8	L24	20000	1000	

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.

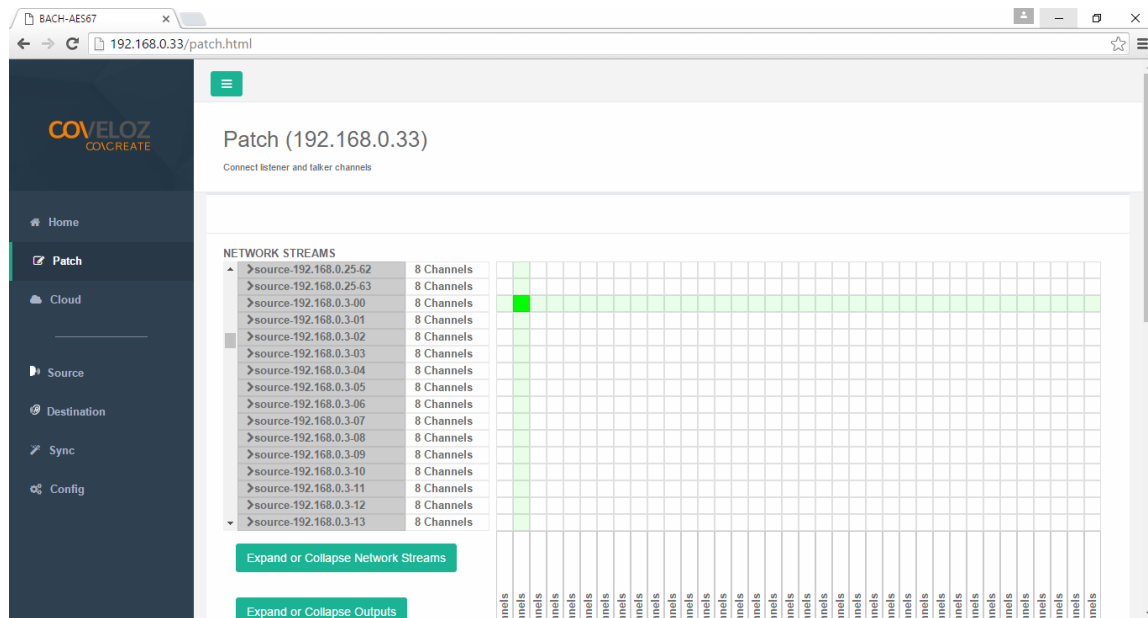
Figure C-7: Deleting Stream Destinations



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.

APPENDIX D: Ravenna (ZMAN) Setup

Introduction

Installing the iAM-AUDIO into an existing and functioning Ravenna network using the Merging ZMAN Card 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 Merging ZMAN Card needs to be configured using its own configuration tool. The menus in this configuration tool are shown in this Appendix.

What is in the iAM-AUDIO for Ravenna

The AES67 enabled Merging ZMAN Card 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

Configuring the AOIP Merging Option Card

This appendix provides basic information about configuring the Merging ZMAN card by invoking the card's internal configuration application. The Merging card can be configured through a connection to the Ethernet AOIP Port using a browser on the Ravenna network and by using the Merging Aneman Windows application. Aneman is available for free download at:

<https://www.merging.com/support/downloads#aneman>

The iAM-AUDIO can be configured using its Front Panel controls or its web interface through its Management port. Details specific to the iAM-AUDIO can be found in Chapters 2 and 4 of this manual.

For a Quick Start, set the Source Select menu item on the Front Panel to AOIP to configure iAM-AUDIO to receive/source a Ravenna Stream over its AOIP port. The Source Select Menu control also allows selection of a range of channels in groups of 16 channels 1-16 ... 49-64. More details including definition of Presets and individual channel parameters are available by reference to other chapters of this manual.

The Merging Ravenna card runs specific firmware from Merging and augmented by Wohler for use within the iAM-AUDIO. The card will not function correctly if the user downloads and installs firmware from any source besides Wohler. The Wohler augmentation includes the ability to support 64 channels.

The Merging card is pre-configured to DHCP mode to obtain its IP address automatically from the Ravenna network. The Ravenna network should be a separate address space from the iAM-AUDIO Management port. For example, the iAM-AUDIO might be connected to a 10.11.11 subnet and the Ravenna network devices connected together on a 10.15.15 subnet. Aneman and a suitable browser must be resident on a host workstation on the same Ravenna subnet to access the Merging card. For this Appendix, the Ravenna network address will be referred to as <Ravenna subnet>. The Merging card address will then be <Ravenna subnet>.x where x is the specific address of the card on the subnet.

Power the iAM-AUDIO and verify the Ethernet connector LEDs are lit and/or blinking. It may take a few minutes for the card to be fully recognized on the Ravenna network after powering the iAM-AUDIO.

For Aneman access, the card parameters including its IP address should appear in a panel at the bottom of the screen. In Aneman, make sure Devices under Menu item View is enabled. Do not proceed until the card shows on Aneman. Right click

on that line and select Web Services: Advanced (or Ravenna) to bring up the Merging Ravenna configuration page. Also, the ICON of the card will appear in the main part of the Aneman screen. Double Clicking on the ICON also will load the Configuration screen.

For browser access, the URL is <Ravenna subnet>.x/advanced/index.html. This brings up the Merging Ravenna configuration page. Each tab is explained in the following sections.

Getting Started | General Settings

This tab is shown in the following figure.

Figure D-1: Getting Started | General Settings

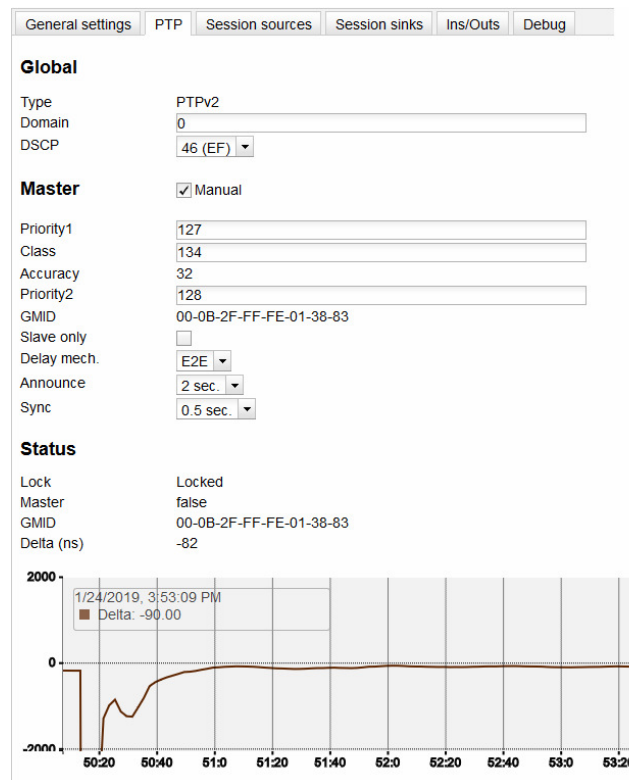
The elements of this tab are as follows:

1. **Device Name:** Enter a useful Device Name for the card, which will show up on other Ravenna devices on the subnet.
2. **Sample Rate:** (44100-48000- 88200-96000-176400-192000-352800-384000)
3. **Frame size (@1Fs):** current frame size (64 - AES67/48 - 32 -16 - 12 -6).
4. **Safety Playout Delay (@1Fs):** The value is described at 1Fs (44.1-48 kHz) in samples. For example, if the value is 10, the additional playout delay will be 20 at 2Fs (88.2-96 kHz), 40 at 4Fs (176.4-192 kHz)
5. **SSM Source-Specific Multicast:** If needed, configure the network switch for IGMP V3.
6. **Network Interface:** Note the address of the card and its type (Zeroconf, DHCP, Static). (If necessary, the address can be changed to another type such as a Static address which must include a Network Mask and Gateway.)

Getting Started | PTP

This tab is shown in the following figure. This configuration page refers to how your Ravenna network is synchronized to clocks.

Figure D-2: Getting Started | PTP



The elements of this tab are as follows:

1. **Global Settings:** The default value for PTP
 - a. **Domain:** For the Merging Ravenna card this value is 0.
 - b. **DSCP:** 46 for PTP AES67 or 48 for PTP Ravenna.
2. **Master:** To modify the PTP setting, you must first check the "Manual" checkbox.
 - a. **Priority:** 1 is the main priority value.
 - b. **Class:** This is the Device class. This value should not be modified.
 - c. **Accuracy:** This field cannot be modified.
 - d. **Priority 2:** This is only used if the other parameters do not allow electing a PTP master.
 - e. **GMID:** This is the current GrandMasterID (PTP Master)
 - f. **Slave only:** This forces the Merging device to always be PTP slave.
 - g. **Delay Mech.:** This is PTP Profile related - E2E or P2P
 - h. **Announce:** This is PTP Profile related - PTP announcement interval (1 - 2 - 4 - 8 -16 seconds)
 - i. **Sync:** This is PTP Profile related (0.0625 - 0.125 - 0.25 - 0.5 seconds)

3. Status:

- a. **Lock:** This shows if the device is locked to PTP (Locked -Locking - Unlocked)
 - b. **Master:** This is true or false for the current device.
 - c. **GMID:** This is the current GrandMasterID (PTP Master)
 - d. **Delta (ns):** This is the time delta between the device and the PTP master.
4. **Graph:** The graph is only active for slave devices and shows the device delta against Master PTP clock.
5. **PTP Priority Value:**
- a. 1 is the highest priority, 255 the lowest one.
 - b. Merging card is by default using Priority 127 when set as PTP Master and 255 when PTP slave.

Getting Started | Session Sources

This tab defines which Streams are to be Sourced from this card. It is shown in the following figure.

Figure D-3: Getting Started | Session Sources

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Configuration

IO: AES 1

Name: Stream, 200007, AES 1

Advertise: ☒

Auto-unicast: ☐ retrieve unicast address+port from sink (RTSP)

Address: 239.1.66.25 ☐ user defined

TTL: 15

Payload Type: 98

Codec: L24

Frame size (samples): 64

DSCP: 34 (AF41)

RefCik PTP traceable: ☐

Channels: 8

Channel count: 1 - 8

The URL of the SDP of this session is <http://.../by-id/12>

The elements of this tab are as follows:

1. **Create session button:** Create a new session sources by clicking on left ICON.
2. **IO:** Select the physical input (when applicable).
3. **Name:** This is the Source name.
4. **Advertise:** Check to enable source advertising on the network.
5. **Auto-unicast - (RTSP):** Check to automatically retrieve the sink (listener) IP address:port for unicast connection.
6. **Address:** This the stream's multicast address. Note that the user defined checkbox is activated automatically when entering a multicast address manually.
7. **TTL:** Time to Live (also called Hop Limit) - This value should not be modified.

8. **Payload type:** RTP Payload type - This value should not be modified.
9. **Codec:** The possible bit rate values are L24, L16, DSD64, DSD64_32, DSD128, DSD128_32, and DSD256. Note that these values are sampling rate dependent.
10. **Frame size (samples):** This the frame size of the current source.
11. **DSCP:** The audio DSCP should be set to 34 for RTP AES67 or 46 for RTP Ravenna.
12. **RefClk PTP traceable:** This feature is useful when you want to connect a stream through Internet (for example with two PTP Masters (GPS) at each location). This allows making connections with devices locked to different traceable PTP Masters. Refer also to Ignore RefClk GMID - accept source locked to any PTP master, on the Session Sinks tab.
13. **Channels:** This is the number of channels in the stream. The drop-down menu allows selection of specific channel range if the number of channels is less than 8.
14. **The URL of the SDP of this session:** This allows saving of the Session Description into a file, which is useful for specific third party devices if a manual SDP has to be provided.

Getting Started | Session Sinks

This tab defines streams which are sinked in this card. It is shown in the following figure.

Figure D-4: Getting Started | Session Sinks

The screenshot displays the 'Session Sinks' configuration window. On the left, a list of session sinks is shown, each with a green checkmark icon and a close button. The right pane is divided into two sections: 'Configuration' and 'Session Info'. The 'Configuration' section includes fields for 'IO' (ASIO), 'Label', 'Source', 'Delay (samples)', 'Ignore refclk GMID' (checked), 'Channels' (Channel count: 8, Count adapted: checked, Range: 1 - 8), and 'Manual' (unchecked). The 'Session Info' section shows 'RTP status' (0x10: receiving RTP packets), 'RTSP Host' (169.254.170.20), 'Session name' (ASIO), 'Clock domain' (PTPV2 0), 'Payload' (98 L24/48000/8), and a link to 'SDP'.

The elements of this tab are as follows:

1. **Create session button:** Create new session sinks by clicking on left ICON.
2. **IO:** Select the physical output (when applicable).
3. **Label:** This is the Sink name.
4. **Source:** This is a drop down menu to select a source (both sap and bonjour advertised sources are automatically listed).

5. **Manual:** This allows manual entry of an SDP.
6. **Delay (samples):** This sets the playback delay. 0 is automatic delay.
7. **Ignore RefClk GMID - accept source locked to any PTP master:** This feature is useful when you want to connect a stream through Internet (for example with two PTP Masters (GPS) at each location. This allows making of connections with devices locked to different traceable PTP Masters. See RefClk PTP traceable on the Session Sources tab.
8. **Channels:** Channel count: The drop-down menu allows selection of specific channel range if the number of channels is smaller than 8.

Getting Started | Session Info

1. **RTP Status:** The following bit positions indicate the connection status:

0x10: receiving RTP packets (OK)

0x01: wrong RTP sequence id

0x02: wrong RTP SSRC

0x04: wrong RTP payload type

0x08: wrong RTP SAC

0x20 stream has been muted

0x40: Horus implementation - an incoming stream is muted

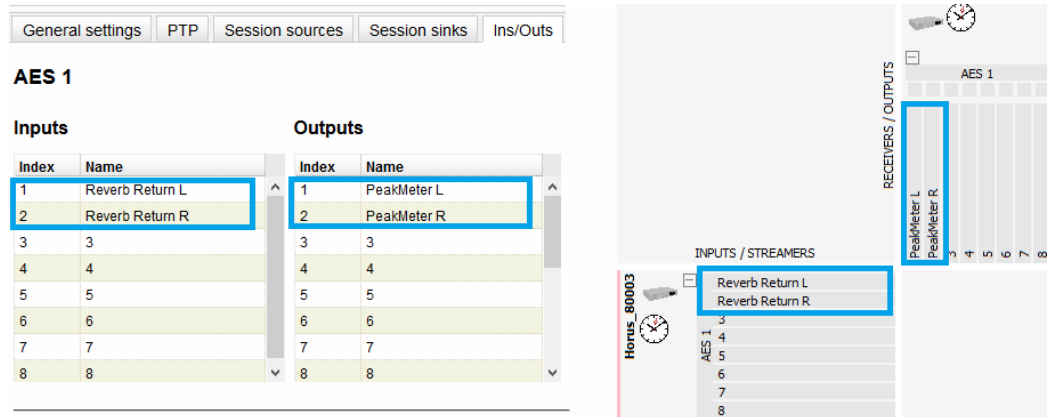
Important Note: The above error numbers are summed. For example, Stream Muted and Wrong Payload together are indicated by 0x24.

2. **Playout Delay:** This is the current playout delay on the selected sink in samples and ms.
3. **RTSP Host:** This is the connected source IP Session name: defined in SDP (usually the same as the source name)
4. **Clock Domain:** This is the PTP clock type and domain
5. **Payload:** Selections are Payload / Codec / Sampling Rate / Number of Channels
6. **SDP:** This displays detailed SDP information on the current stream.

Getting Started | Ins/Outs

This tab allows you to change the name of the specific Inputs and/or Outputs.

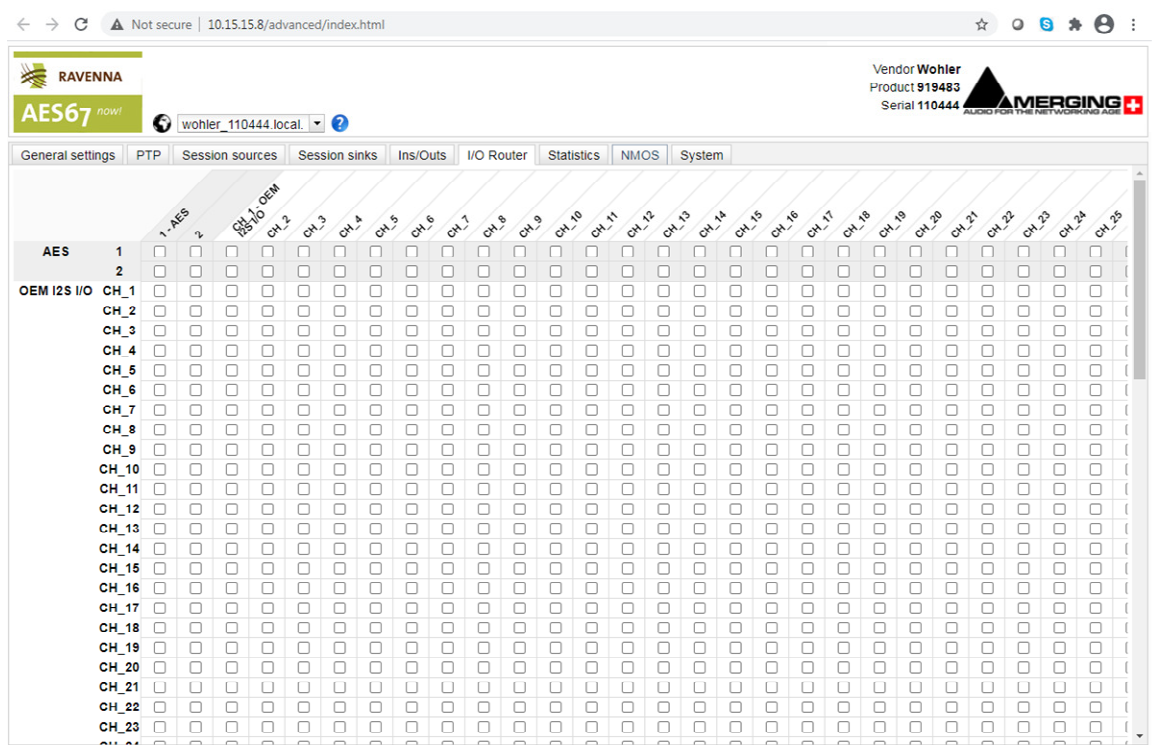
Figure D-5: Getting Started | Ins/Outs



Getting Started | I/O Router

This page allows remapping of incoming channels to different internal channel assignments. For example, Stream channel 1 can be remapped to Merging card Channel 0, and so on.

Figure D-6: Getting Started | I/O Router



Operation:

Connecting Remote Source to Local Sink

This instruction assumes another Ravenna device is active on the network and sourcing a multicast stream. The Merging Configuration section for Session Sink controls how to configure the card to receive the stream and provide it to the IAM interface for display on meters and speakers, etc. The iAM-AUDIO must be set to receive AOIP from the Source Select Front Panel menu or a browser iAM-AUDIO GUI.

Ravenna Streams can contain up to 8 channels of information. The collections of channels in a specific Stream are termed Flows. For example, to source an SDI 16 channel signal might be accomplished by two Flows, each consisting of 8 channels. A stereo AES Flow consists of one Flow of two channels.

ZMAN Session Sinks

This assumes that 1 or more sources are present on the AOIP Ravenna network. Right Select Advanced on the entry for the Merging ZMAN device in Aneman. This brings up the browser page with tab set to General configuration GUI for the ZMAN card. This is shown in Figure D-1.

Use the following procedure:

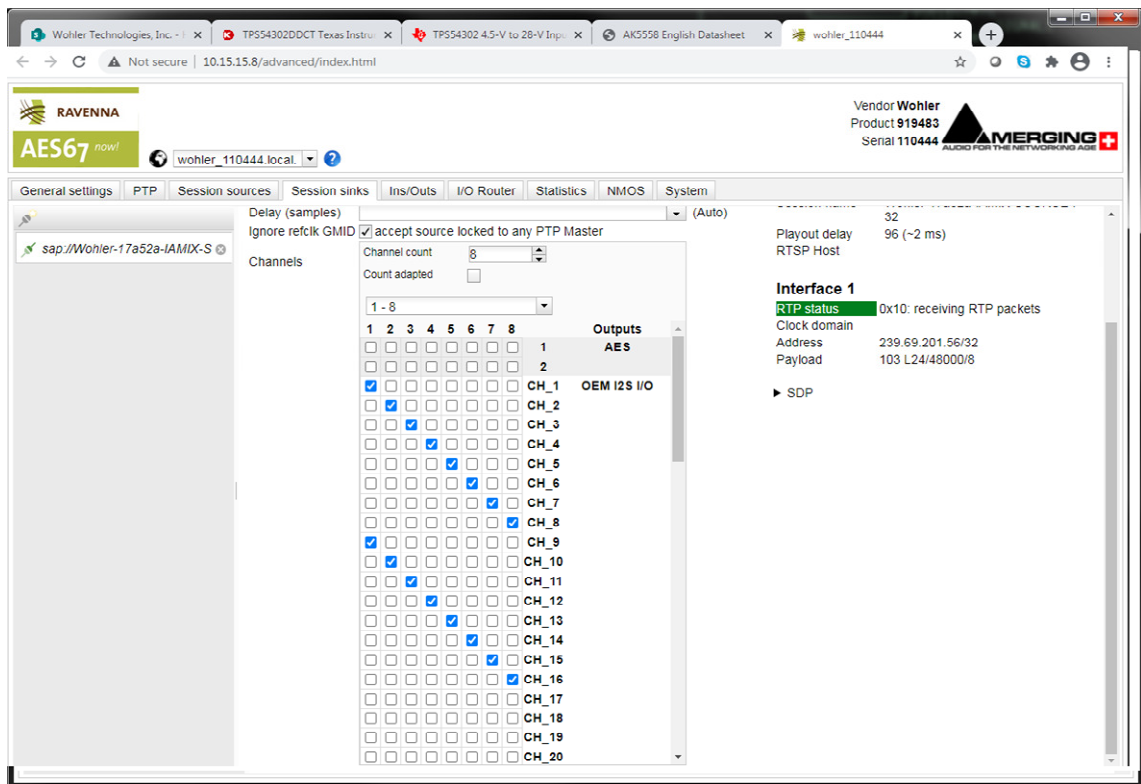
1. Select the **Session Sinks** tab and use the **Create Session Sinks** icon (in the upper left corner) to see the available source Flows.
2. Create an entry on the left panel for each source Flow to be configured.
3. Select the desired Flow and set the number of channels in the Flow. Select the desired range to direct the Flow to the internal channels of the iAM-Audio.
4. Click the matrix, as shown in Figure D-7, to direct the incoming channels to the desired iAM-Audio channels.

For example, a 16 channel SDI source consists of two 8 channel Flows. One could be mapped to channels 1-8 and the other could be mapped to 9-16.

Notice that the Tab I/O Router duplicates the Session Sinks matrix and can be used to map channels from input source assignments to iAM-Audio channels also.

Input channels can be mapped to more than one iAM-Audio channel by selecting additional matrix elements to map input channels 1-8 to both 1-8 and 9-16.

Figure D-7: Session Sinks Tab



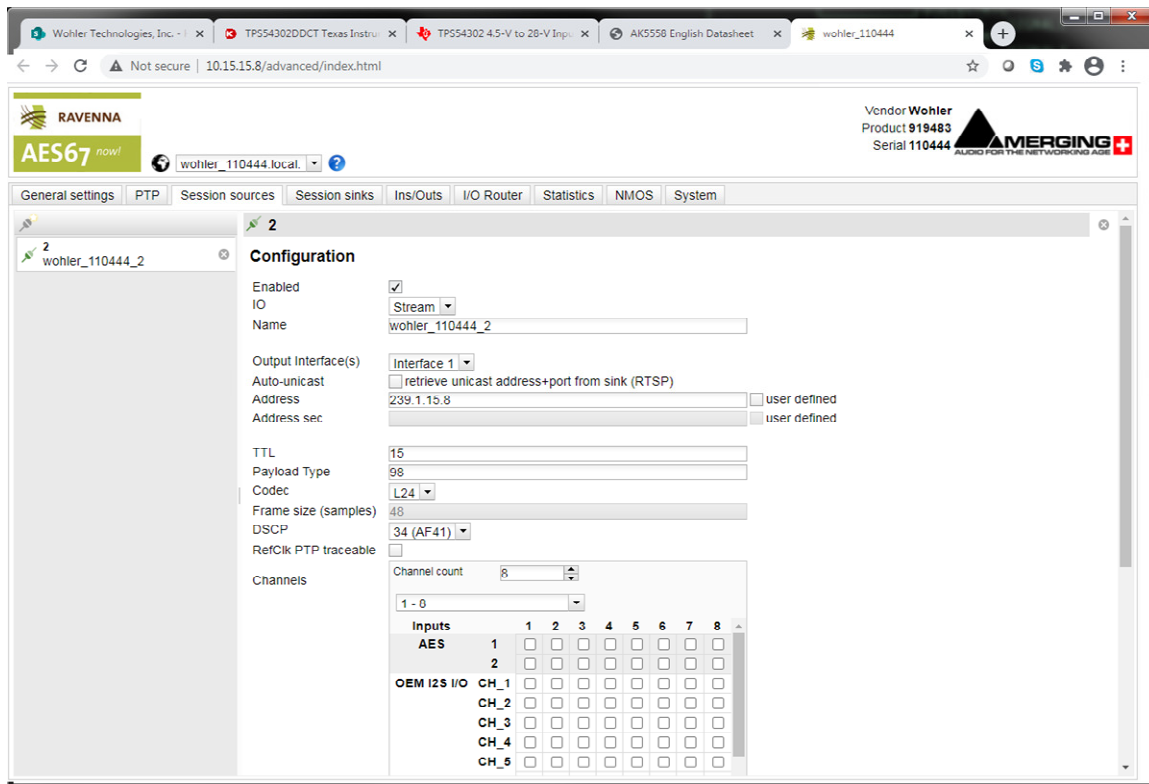
To avoid confusion if monitoring more than one Flow, especially if the various source Flows have overlapping channel numbers, use the matrix to direct Flows to higher channel ranges. For example, for monitoring 2 SDI sources (four 8 channel Flows), assign two flows to 1-8 and 9-16 and the next SDI signal to 17-24 and 25-32. Touch the iAM-AUDIO AOIP selection menu to select the proper range to monitor, up to 57-64.

Select **Apply** to enable the Sink process, which results in the meters and audio becoming available on the iAM-AUDIO.

ZMAN Session Sources

If the ZMAN card is to Source Flows, use the **Session Sources** tab. Refer to Figure D-8. The procedure is similar to defining Sinks with the additional step to provide the Flow a name to appear on other units in the network. Select the channel range with a maximum of 8 channels per Flow.

Figure D-8: Session Sources Tab



ZMAN Updating

The Zman card is pre-initialized with the correct Wohler firmware load. In case of future upgrades, use the following steps:

1. In Aneman, right click the ZMAN entry on the bottom Devices section, and select Maintenance Mode. This brings up a web page which prompts for the location of the Wohler provided upgrade file. The file should resemble the following:

firmware_1.1.7b43263_18Jun20.wohler

2. Select this file and click Open. On the web, select Update to install the firmware.
3. After successful completion, select Reboot to reboot the ZMAN card.
4. Close the web pages and return to Aneman to set up Sources and Sinks.

APPENDIX E: API Documentation

Introduction

This appendix discusses ways to use the Application Program Interface (API) to allow third party equipment to remotely access options and settings of the iAM-AUDIO. It includes specific code examples for commonly used requests. The API uses JavaScript Object Notation (JSON) as its communication language.

Follow the instructions in the **First Time IP Assignments** section of Chapter 4 to achieve the required network connection.

API: Presets

Get available presets

Method: GET

URL: /api/cf/presets

Response JSON Object

• string	unit_name:	Product Name ("iAM-KTVSPORT")
• string	model:	Product model ("iAM-Audio")
• string	serial_number:	Product serial number
• float	version:	ReST API version
• string	result:	List of Presets without configuration data.

Status Codes:

• 200	OK	
• 400	Bad Request	Invalid URL
• 404	Data Not Found	Invalid HTTP method request
• 500	Server Error	Internal Server Error

Example request:

GET /api/cf/presets

Example response:

```
{
  "unit_name": "iAM-KTVSPORT",
  "model": "iAM-Audio",
  "serial_number": "123456",
  "version": 2,
  "result": [
    {
      "Id": 1,
      "Name": "AES 1",
    },
    {
      "Id": 2,
      "Name": "AES 2"
    },
  ],
}
```

```

{
  "Id": 3,
  "Name": "AES 3"
},
...
...
...
{
  "Id": 15,
  "Name": "SDI-2 1"
},
{
  "Id": 16,
  "Name": "Analog 1"
},
{
  "Id": 17,
  "Name": "Analog 2"
},
{
  "Id": 18,
  "Name": "AOIP"
}
]
}

```

Get preset information

Method: GET

URL: /api/cf/presets/<int:preset ID>

URL parameters:

- **preset ID** -- preset ID (Number greater than zero)

Response JSON Object

On Success

• string	unit_name:	Product Name ("iAM-KTVSPORT")
• string	model:	Product model ("iAM-Audio")
• string	serial_number:	Product serial number
• float	version:	ReST API version
• string	result:	List of Presets without configuration data.

On Failure

• int	status:	HTTP status code.
• string	action:	Help message
• string	message:	Error message.
• float	version:	ReST API version

Status Codes:

• 200	OK	
• 400	Bad Request	Invalid URL
• 404	Data Not Found	Invalid HTTP method request
• 500	Server Error	Internal Server Error

Example request:

```
GET /api/cf/presets/4
```

Example response:

A. On Success:

```
{
  "unit_name": "Audio-1RU",
  "unit_name": "iAM-KTVSPORT",
  "model": "iAM-Audio",
  "serial_number": "123456",
  "version": 2,
  "result": {
    "program": {
      "Id": "",
      "Name": "NoProgram"
    },
    "group": {
      "Id": "",
      "Name": "NoGroup"
    },
    "preset": {
      "Data": {
        "PresetConf": {
          "Cat1100Source": {
            "Pair": 0,
            "Type": "None"
          },
          "MeterSet": {
            "1": {
              "VolumeDb": 0,
              "Source": {
                "Type": "Madi",
                "Channel": 1
              },
              "DelayMs": 0,
              "Speaker": "Left"
            },
            "2": {
              "VolumeDb": 0,
              "Source": {
                "Type": "Madi",
                "Channel": 2
              },
              "DelayMs": 0,
              "Speaker": "Right"
            },
            "3": {
              "VolumeDb": 0,
              "Source": {
                "Type": "Madi",
                "Channel": 3
              },
              "DelayMs": 0,
              "Speaker": "Left"
            },
            "4": {
              "VolumeDb": 0,
              "Source": {
                "Type": "Madi",
                "Channel": 4
              },
              "DelayMs": 0,
            }
          }
        }
      }
    }
  }
}
```

```

        "Speaker": "Right"
    },
    "5": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 5
        },
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "6": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 6
        },
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "7": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 7
        },
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "8": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 8
        },
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "9": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 9
        },
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "10": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 10
        },
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "11": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 11
        },
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "12": {
        "VolumeDb": 0,
        "Source": {
            "Type": "Madi",
            "Channel": 12
        },

```



```

    },
    "DelayMs": 0,
    "Speaker": "Right"
  },
  "13": {
    "VolumeDb": 0,
    "Source": {
      "Type": "Madi",
      "Channel": 13
    },
    "DelayMs": 0,
    "Speaker": "Left"
  },
  "14": {
    "VolumeDb": 0,
    "Source": {
      "Type": "Madi",
      "Channel": 14
    },
    "DelayMs": 0,
    "Speaker": "Right"
  },
  "15": {
    "VolumeDb": 0,
    "Source": {
      "Type": "Madi",
      "Channel": 15
    },
    "DelayMs": 0,
    "Speaker": "Left"
  },
  "16": {
    "VolumeDb": 0,
    "Source": {
      "Type": "Madi",
      "Channel": 16
    },
    "DelayMs": 0,
    "Speaker": "Right"
  }
},
"MadiExpectedType": "Coax",
"VideoSource": {},
"DolbySetup": {
  "VsyncMute": "Disable",
  "VideoSyncSource": "None",
  "Dd+LatencyMode": "2Frames",
  "StreamMutes": {
    "Dd+": "Decode",
    "Dd": "Decode",
    "De": "Decode",
    "Pcm": "Pass"
  },
  "DeOnAirMode": "Enable",
  "Type": "None",
  "EmulationModeMainOut": "LineMode",
  "FrameSync": "Disable",
  "EmulationModeDownmixOut": "LineMode",
  "DeProgramSelect": 1,
  "Pair": 0,
  "DownmixOutputMixMode": "Auto",
  "VsyncAlign": "Disable",
  "Dd+MixMode": "Mixed",
  "ConfidenceDecode": "Disable",
  "CrcErrorCount": "Enable"
},
"SystemClockSource": {
  "Pair": 0,
  "Type": "Internal"
},

```

```

"SpeakerOptions": {
  "AlwaysOn": false,
  "LowCutOn": true,
  "DelayMs": 0,
  "TrebleDb": 0,
  "BassDb": 0
},
"Clusters": [
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": true,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #1",
    "FirstMeter": 1
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": false,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #2",
    "FirstMeter": 3
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": true,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #3",
    "FirstMeter": 5
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": true,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #4",
    "FirstMeter": 7
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": false,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #5",
    "FirstMeter": 9
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": true,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #6",
    "FirstMeter": 11
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": true,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #7",
    "FirstMeter": 13
  },
  {
    "NumberOfMeters": 2,
    "MuteOnPresetRecall": false,
    "Type": "Stereo",
    "Name": "Stereo 2.0 #8",
    "FirstMeter": 15
  }
],
"DolbyDetection": {
  "NonAudio": "Enabled",
  "PaHeader": "Enabled"
},
"Name": {

```

```

        "Preset": "MADI 1-16",
        "Program": "NoProgram",
        "Group": "NoGroup"
    },
    "InputSrcList": {
        "inputClockRefPair": 1,
        "meters": {
            "1": {
                "parentInput": "MADI"
            },
            "2": {
                "parentInput": "MADI"
            },
            "3": {
                "parentInput": "MADI"
            },
            "4": {
                "parentInput": "MADI"
            },
            "5": {
                "parentInput": "MADI"
            },
            "6": {
                "parentInput": "MADI"
            },
            "7": {
                "parentInput": "MADI"
            },
            "8": {
                "parentInput": "MADI"
            },
            "9": {
                "parentInput": "MADI"
            },
            "10": {
                "parentInput": "MADI"
            },
            "11": {
                "parentInput": "MADI"
            },
            "12": {
                "parentInput": "MADI"
            },
            "13": {
                "parentInput": "MADI"
            },
            "14": {
                "parentInput": "MADI"
            },
            "15": {
                "parentInput": "MADI"
            },
            "16": {
                "parentInput": "MADI"
            }
        },
        "Dolby": {
            "VideoSyncSource": "None",
            "DolbyChannelsSource": "None"
        },
        "inputClockRef": "Internal"
    },
    "Id": 2,
    "Name": "MADI 1-16"
}
}
}

```

B. On Failure:

```
{
  "status": 400,
  "action": " For more information please see API document",
  "version": 2,
  "message": " Bad request"
}
```

Get current active preset

Method: GET

URL: /api/cf/presets/current

Response JSON Object

• string	unit_name:	Product Name ("iAM-KTVSPORT")
• string	model:	Product model ("iAM-Audio")
• string	serial_number:	Product serial number
• float	version:	ReST API version
• string	result:	Preset information without configuration data.

Status Codes:

• 200	OK	
• 400	Bad Request	Invalid URL
• 404	Data Not Found	Invalid HTTP method request
• 500	Server Error	Internal Server Error

Example request:

GET /api/cf/presets/current

Example response:

```
{
  "unit_name": "iAM-KTVSPORT",
  "model": "iAM-Audio",
  "serial_number": "123456",
  "version": 2,
  "result": {
    "preset": {
      "Id": 15,
      "Name": "SDI-2 1"
    }
  }
}
```

Preset Activation

Method: PATCH

URL: /api/cf/presets/<int:preset ID>/activate

URL parameters:

- **preset ID** -- preset ID (Number greater than zero)

Response JSON Object

• string	status:	HTTP status code
• string	Message	Message

Status Codes:

• 200	OK	Request accepted for processing
• 400	Bad Request	Invalid URL
• 404	Data Not Found	Invalid HTTP method request
• 500	Server Error	Internal Server Error

Example request:

```
PATCH /api/cf/presets/2/activate
```

Example response:

```
{
  "status": 200,
  "unit_name": "iAM-KTVSPORT",
  "model": "iAM-Audio",
  "version": 2,
  "warning": "",
  "serial_number": "123456",
  "message": "Preset 2:MADI 1-16 is set for recall"
}
```

Setting Mute/Unmute Clusters

Method: PATCH

URL: /api/op/presets/<int:preset ID>/mute-clusters

URL parameters:

- **preset ID** -- preset ID (Number greater than zero)
- **data** Data in JSON format.

Request

• Headers	Accept:	application/json
	Content-Type:	application/json

Response JSON Object

• string	status:	HTTP status code
• string	action:	Help Message
• string	Message	message

Status Codes:

• 200	OK	Request accepted for processing
• 400	Bad Request	Invalid URL
• 405	Method is not allow	Invalid HTTP method request
• 422	Unprocessable Entity	For missing or invalid parameters

Example request:

```
PATCH /api/op/presets/5/mute-clusters file_data.json
```

file_data.json content:

```
{
  "clusters": [
    {"name": "MADI 1", "mute": "N"},
    {"name": "MADI 2", "mute": "N"},
    {"name": "MADI 3", "mute": "Y"}
  ]
}
```

```

        {"name": "MADI 4", "mute": "Y"}
    ]
}

```

Example responses:

A. All valid clusters in preset:

```

{
  "status": 200,
  "message": "Muting clusters have been applied successfully."
}

```

B. All cluster names were not found in preset:

```

{
  "status": 404,
  "action": "For more information about valid preset ids, please see API document.",
  "message": "Clusters not found in preset : 5"
}

```

C. Some Cluster names were not found in preset:

```

{
  "status": 200,
  "message": "Cluster names found in preset 5 were applied successfully.",
  "result": [
    {
      "applied": [
        "MADI 1",
        "MADI 2"
      ]
    },
    {
      "not_applied": [
        "MADI 33",
        "MADI 44"
      ]
    }
  ]
}

```

D. Missing parameter:

```

{
  "status": 422,
  "action": "For more information about valid preset ids, please see API document.",
  "message": {
    "clusters": {
      "0": {
        "name": [
          "Missing data for required field."
        ]
      },
      "1": {
        "mute": [
          "Missing data for required field."
        ]
      }
    }
  }
}

```

Setting Solo Cluster

Method: PATCH

URL: /api/op/presets/<int:preset ID>/solo-cluster

URL parameters:

- **preset ID** -- preset ID (Number greater than zero)
- **data** Data in JSON format.

Request

- **Headers**
 - Accept:** application/json
 - Content-Type:** application/json

Response JSON Object

- **string** **status:** HTTP status code
- **string** **action:** Help Message
- **string** **message** Message

Status Codes:

- **200** **OK** Request accepted for processing
- **400** **Bad Request** Invalid URL
- **405** **Method is not allow** Invalid HTTP method request
- **422** **Unprocessable Entity** For missing or invalid parameters

Example request:

```
PATCH /api/op/presets/5/solo-cluster file_data.json
```

file_data.json content:

```
{
  "cluster_name": "MADI 6"
}
```

Example responses:

A. Valid cluster name in preset:

```
{
  "status": 200,
  "message": "Solo cluster: MADI 6 has been applied successfully."
}
```

B. Cluster name was not found in preset:

```
{
  "status": 404,
  "action": "For more information about valid preset ids, please see API document.",
  "message": "Cluster 'MADI 66' was not found in preset : 5"
}
```

C. Missing parameter:

```
{
  "status": 422,
  "action": "For more information about valid preset ids, please see API document.",
  "message": {
    "cluster_name": [
      "Missing data for required field."
    ]
  }
}
```

```
}
```

Setting Solo Channel

Method: PATCH

URL: /api/op/presets/solo-channel

URL parameters:

- **data** Data in JSON format.

Request

- **Headers**
 - Accept:** application/json
 - Content-Type:** application/json

Response JSON Object

- **string** **status:** HTTP status code
- **string** **action:** Help Message
- **string** **message:** Message

Status Codes:

- **200** **OK** Request accepted for processing
- **400** **Bad Request** Invalid URL
- **405** **Method is not allow** Invalid HTTP method request
- **422** **Unprocessable Entity** For missing or invalid parameters

Example request:

```
PATCH /api/op/presets/solo-channel file_data.json
```

file_data.json content:

```
{
  "channel_number": 15
}
```

Example responses:

A. All valid clusters in preset:

```
{
  "status": 200,
  "message": "Solo channel : 15 has been applied successfully."
}
```

B. Cluster name was not found in preset:

```
{
  "status": 422,
  "action": "For more information about valid preset ids, please see API
document.",
  "message": {
    "channel_number": ["Must be between 1 and 16."]
  }
}
```

C. Missing parameter:

```
{
  "status": 422,
  "action": "For more information about valid preset ids, please see API
document.",
  "message": {
    "channel_number": [
      "Missing data for required field."
    ]
  }
}
```



```
}  
}  
}
```

Source Select

Method: POST

URL: /api/op/sourceselect

URL parameters:

- **data** Data in JSON format.

Request

- **Headers**
 - Accept:** application/json
 - Content-Type:** application/json

1. Body content for SDI/SMPTE-2022-6/ SMPTE-2110

```
{  
    "SourceType": <String: SDI Input Source>  
}
```

Note: Allowed SDI input sources are :

```
"Sfp-1.Sdi",  
"Sfp-2.Sdi",  
"Sfp-1.Smp22",  
"Sfp-2. Smp22",  
"Sfp-1. Smp2110" and  
"Sfp-2. Smp2110".
```

2. Body content for MADI

```
{  
    "SourceType": <String: MADI Input Source>,  
    "ChannelGroup": <Int: 1-4>  
}
```

Note: Allowed SDI input sources are

```
"Madi.Coax" and  
"Madi.Optical" .  
ChannelGroup 1 => Channels 1-16 and  
ChannelGroup 2 => Channels 17-32 and so on .
```

3. Body content for Analog

```
{  
    "SourceType": "Analog"  
}
```

4. Body content for Aes

```
{  
    "SourceType": "Aes"  
}
```

5. Body content for Aoip

```
{  
    "SourceType": "Aoip",  
    "ChannelGroup": <Int: 1-16>  
}
```

Note: ChannelGroup 1 => Channels 1-16 and ChannelGroup 2 => Channels 17-32 and so on

Response JSON Object

On Success

• string	unit_name:	Product Name ("iAM-KTVSPORT")
• string	model:	Product model ("iAM-Audio")
• string	serial_number:	Product serial number
• float	version:	ReST API version
• string	result:	Information applied on the input including Cluster and Meter configuration.

On Failure

• int	status:	HTTP status code.
• string	action:	Help message
• string	message:	Error message.
• float	version:	ReST API version

Status Codes:

• 200	OK	
• 400	Bad Request	Invalid URL
• 404	Method is not allow	Invalid HTTP method request
• 422	Unprocessable Entity	For missing or invalid parameters
• 500	Server Error	Internal server error

Example request:

```
POST /api/op/sourceselect file_data.json
```

file_data.json content:

```
{
  "SourceType": "MadiOptical"
  "ChannelGroup": 1
}
```

Example response:

A. On Success:

```
{
  "unit_name": "Audio-1RU",
  "unit_name": "iAM-KTVSPORT",
  "model": "iAM-Audio",
  "serial_number": "123456",
  "version": 2,
  "result": {
    "ChannelGroup": 1,
    "SourceType": "Madi.Optical"
  }
}
```

B. On Failure:

```
{
  "status": 422,
  "action": " For more information please see API document",
  "version": 2,
}
```

```
}    "message": "Unprocessable Entity"
```

HTTP Routing Table

GET /api/cf/presets/

GET /api/cf/presets/(int:config_id)

GET /api/cf/presets/current

PATCH /api/cf/presets/(int:config_id)/activate

PATCH /api/op/presets/(int:preset_number)/mute-clusters

PATCH /api/op/presets/(int:preset_number)/solo-cluster

PATCH /api/op/presets/solo-channel

POST /api/op/sourceselect

Status Codes

200	OK	
400	Bad Request	Invalid URL
404	Method is not allow	Invalid HTTP method request
422	Unprocessable Entity	For missing or invalid parameters
500	Server Error	Internal server error
505	HTTP version not supported	This API has been deprecated. It will be removed at some point in the future.