*i*VAM2-ST2110

Hitless ST-2110 Single/Multimode Audio/Video Monitor with OOB NMOS Control

User Guide

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CHAPTER 1: Installation

Introduction

Overview

The iVAM2-ST2110 is a 2RU multichannel multi-source audio/video monitor with ST2110 HDR Video and multi-channel Audio. It accepts single mode as well as multimode SFP's for hitless ST2110 over a pair of 10G SFP slots and provides an SDI Output for the selected video and audio. It provides the ability to apply in-band NMOS (via SFP's) and Out Of Band NMOS control via a separate RJ45 network interface. Optionally, it also has a GPIO feature for control. Options for hitless AoIP monitoring for Dante and Ravenna are also available.

The iVAM2-ST2110 can monitor video and up to 16 audio channels. It optionally allows decoding, monitoring, and metering of Dolby® E, DD+, D, and Dolby ATMOS from SMPTE 2110 and SMPTE 2022-6. Loudness of programs can be monitored using the ITU-R BS.1770-3 standard, and over/under visual loudness alarms can be set.

The iVAM2-ST2110 contains an interface for the powerful Wohler Multichannel Audio and Video Remote Indication and Control (MAVRIC) feature.

The iVAM2-ST2110 is compact and simple to operate. It has touch screen LCD displays providing high resolution meters, menus and basic monitoring controls. Any channel (or group of up to 16 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 and the powerful sound output and audio reproduction that Wohler is well known for.

Setups are created and configured using a web browser over a network connection to the integral web server of the iVAM2-ST2110. Level and Loudness metering and even ST2110 analytics may also be monitored using the integral web server.

Each iVAM2-ST2110 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.

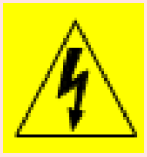
6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

Important: By design, 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.

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.

LCD Display Care & Safety

Be gentle with the LCD screen. Do not let hard objects strike it or touch it.

- If the display screen should crack or break, causing the internal organic substance to leak out, do not inhale it or let it touch any part of your body.
- If the internal organic substance should touch your skin or clothing, immediately wash it off using soap and plenty of water.

LCD Display Cleaning

Do not use the following to clean the display screen. They may damage the polarizer.

- Water
- Ketone solvents (Ketone or acetone)

- Aromatic solvents (toluene or xylene)
- Ethyl alcohol
- Your breath

Wipe the screen with a very soft cloth or use Scotch 810 Magic Tape to adhere to the soiled surface of the LCD screen and then carefully peel it off along with the soil.

Mounting

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

Table 1-1: Clearance Recommendations

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

Heat Dissipation

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

Important

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

Sympathetic Vibration

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

Mechanical Bracing

Both the 1RU chassis and the 2RU chassis are securely attached to the front panel. In addition, the chassis has mounting tabs through which you attach it to the rack rail. This feature will reduce or eliminate rear bracing requirements in many

mobile/portable applications. The weight of internal components is distributed fairly evenly around the unit.

Electrical Interference

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

Power

The unit connects to an AC mains power source (100 to 240 VAC, 1.5A, 50/60Hz) using a supplied IEC power cord.

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

Compliance

FCC

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

ICES-003

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

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

CHAPTER 2: Local Operation

Startup

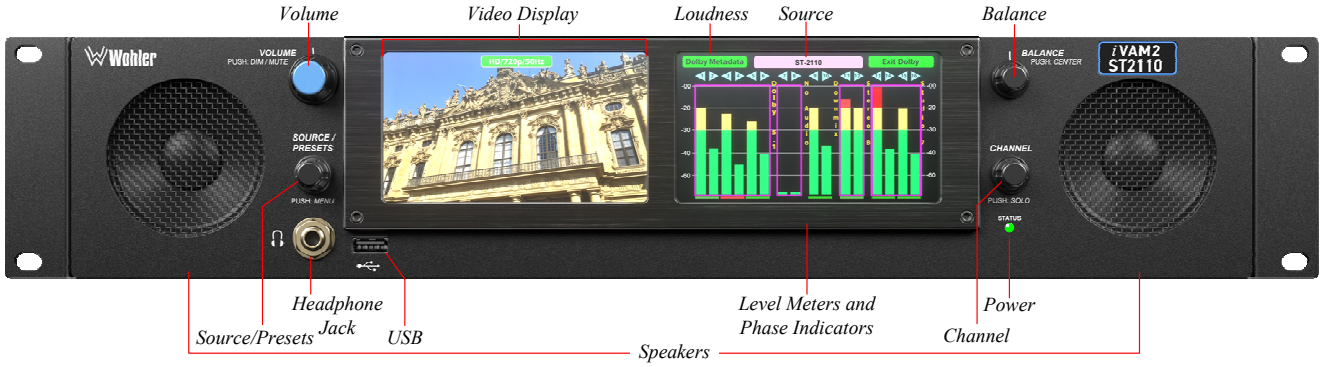
The iVAM2-ST2110 will begin its startup process when it is connected to power. There is no power switch. It is normal for the product to require about a minute to start up and be ready to use.

When the iVAM2-ST2110 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 touch the meter clusters on the screen to mute, unmute, or solo channel clusters as needed.

Front Panel

The front panel is shown in Figure 2-1.

Figure 2–1: iVAM2-ST2110 Front Panel



1. **Speakers**: Local near field audio monitoring is achieved through the use of class D amplifiers. There are two (left/right) full range speakers. The speaker response may be adjusted with tone controls. Refer to the **Speaker Options** section of this chapter.

2. **Video Display:** The selected ST2110 video signal is monitored on this screen.

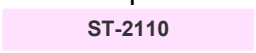
3. **Headphone Jack**: A 1/4″ jack for an optional headphone is provided on the front panel. Speaker audio optionally mutes when headphones are plugged in.

4. **Volume:** This controls the speaker and headphone output level for the entire mix. Pressing the knob alternately mutes and unmutes the speaker audio. As you rotate the knob, the Monitor Info box at the top center of the screen temporarily changes to an indicator of the Volume setting: 

The range is from 0 to 1023.

5. **Balance:** This controls left/right levels for the stereo mixes. By default, it controls loudspeaker and headphone output. As you rotate the knob, the Monitor Info box at

the top center of the screen temporarily changes to an indicator of the Balance setting: 

Source/Presets Knob: Turning this control right or left selects between the available licensed input sources. The selected Source input is displayed in the center of the Audio Meters Screen as follows: 

Pressing the **Source/Presets** control selects between displaying the video from the selected SDI source or displaying the Main Menu.

Alternatively, the **Source/Presets** control can be used to select from any Preset, or from any Favorite Preset. Refer to the **Source Knob Select** setting in the **Unit Config** menu. Regardless of this menu setting, when the Loudness Meter Screen is displayed, the **Source/Presets** knob selects which Loudness Cluster is to be measured and monitored.

6. **Channel Knob**: Turning this control right or left moves a white selection box from channel to channel on the metering screen. Pressing the **Channel** control solos the selected channel. If a muted channel is selected with this control, it is unmuted and soloed. Pressing the **Channel** control again or touching the meter area anywhere removes the channel solo. On units equipped with the Dolby Decode option, if the **Channel** control is used to select a Dolby stream and then pressed, the Wohler Zoom feature will activate and display the channels within the Dolby signal, as well as Dolby MetaData.

7. **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 iVAM2-ST2110 or to a PC. Software updates are accomplished from 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 can be grouped into clusters as specified in the Web GUI: mono clusters (1.0), pair clusters (2.0), or surround sound clusters. This screen will respond to touch control of audio Mute, Unmute and Solo. Access to the Menu screens is also available on this screen. The meter display is temporarily replaced when menu access is needed. These menus are used for setup and status display.

9. **Phase Indicators**: There is one Phase Indicator per channel pair. It is dark green when the channels are in phase and bright 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. **Loudness**: The Loudness of the selected channel cluster is displayed here. Use the **Source/Presets** knob to select the channel cluster to be monitored.

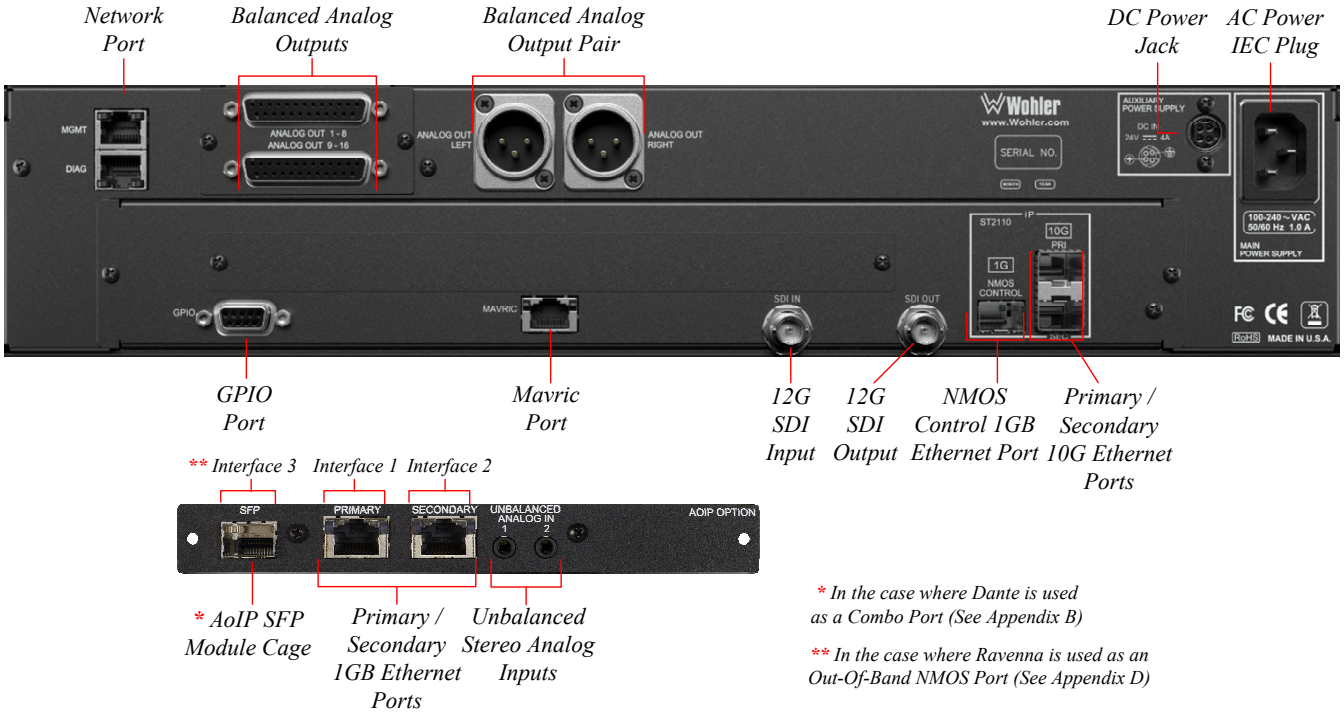
11. **Monitor Info**: Generally, the name of the current Input Source is displayed here. The input signal format, HDR detection, or other channel setup information may alternatively be displayed by pressing the **Source/Presets** knob.

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

Rear Panel

The rear panel is shown in Figure 2-2.

Figure 2-2: iVAM2-ST2110 Rear Panel Layout



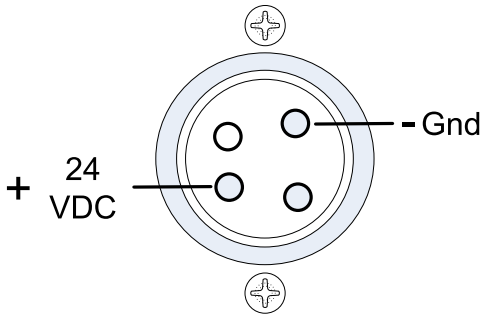
1. **AC Power IEC Plug**: The AC inlet is a standard IEC receptacle for 100 to 240 VAC ±10%, 50/60 Hz power connection. Four regional AC power cords, supplied according to shipping region, are available.

Important:

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

2. **DC Power Jack:** An additional DC power inlet is provided for backup power, if needed. This could be an external AC to 24V DC 4A power adaptor or a 24V battery. This connection is by means of a locking DC connector. This is a 4-pin connector, but only two pins are used. The pinout is shown on the back panel and in Figure 2-3.

Figure 2-3: Backup DC Power Jack Pinout



3. **Network Port**: The MGMT Ethernet port can connect to either a LAN or to a PC to let you customize the iVAM2-ST2110 configuration remotely. The Wohler Web GUI is described in Chapter 4 of this manual.

4. **12G/3G/HD/SD-SDI Inputs:** Two inputs are provided to interface to a range of video signal inputs up to UHD 4K resolution. The internal monitoring screen displays the video at 480 x 272 resolution.

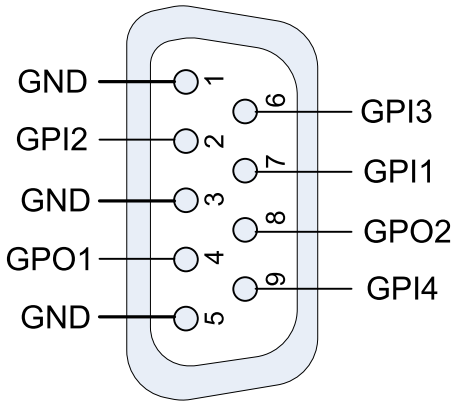
5. **12G/3G/HD/SD-SDI Output:** The 12G/3G/HD/SD-SDI input is reproduced on this output.

6. **MAVRIC Port:** This provides a network connection for the sophisticated MAVRIC remote monitoring and notification capability, which is an optional enhancement.

7. **GPIO Port:** This DB-9 female connector contains 4 General Purpose Inputs (GPI) and 2 General Purpose Outputs (GPO), as well as common ground connections. A software license must be installed for the GPIO port to function. Refer to the **System Setup** section in Chapter 4 to install software licenses. Refer to the **GPIO Port Actions** section of Chapter 4 for uses of this interface. Refer to Figure 2-7 for the pinout of this connector.

   Normally, each GPI is internally pulled to a high (5 VDC) level when not actuated. Pull a GPI to a low (ground) level to activate it. A dry contact closure can be used to achieve this, as can a 0 to 5 volt logic level. Do not exceed 5 VDC or less than 0 VDC if driven from a logic level to avoid possible damage to the GPI input.

Figure 2-4 – GPIO Port Pinout

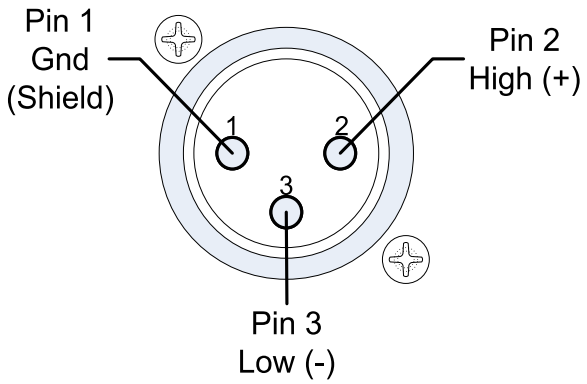


8. **Balanced Analog Output Pair:** These male XLR connectors provide two balanced analog outputs: Left and Right. The source of these signals is the mix of audio as monitored by the internal speakers. The **Balanced Analog Output Pair** is standard on the iVAM2-ST2110.

Note: PCM channels marked as data channels (such as those containing encoded Dolby streams) are automatically muted from being sent out to the external amplifier and speakers.

Note: When these outputs are used to connect to an external amplifier and speakers, the external amplifier should be muted whenever the iVAM2-ST2110 is being powered up or powered down.

Figure 2-5: Analog XLR Output Connections



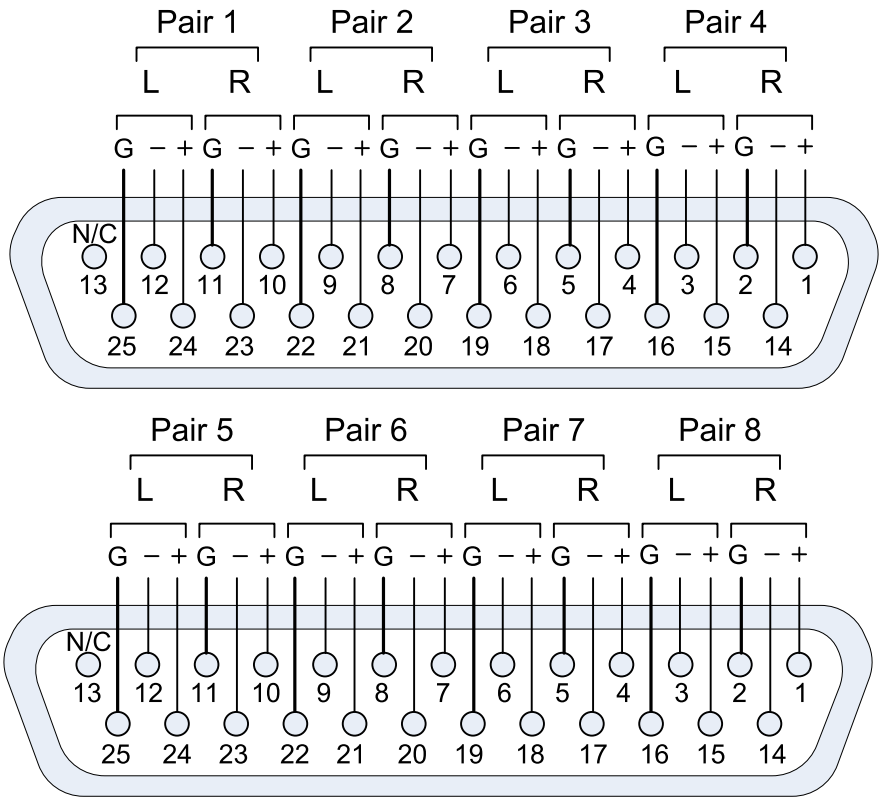
9. **Balanced Analog DB-25 Outputs**: These DB-25 female connectors output 16 channels of +10dBu broadcast level balanced audio. The source of these signals is the monitored audio channels as shown on meters 1 – 16. Tascam cables may be used, and can be purchased by contacting Wohler Sales. Refer to Figure 2-4 for the pinout of this pair of connectors. The **Balanced Analog DB-25 Outputs** are standard on the iVAM2-ST2110.

Note: PCM channels marked as data channels (such as those containing

encoded Dolby streams) are automatically muted from being sent out to the external amplifier and speakers.

Note: When these outputs are used to connect to an external amplifier and speakers, the external amplifier should be muted whenever the iVAM2-ST2110 is being powered up or powered down.

Figure 2-6: Analog DB25 Output Connections



10. **Primary / Secondary 10G Ethernet Ports**: The iVAM2-ST2110 accepts single mode as well as multimode SFP's for ST2110 via a pair of 10G SFP slots. and provides the ability to apply in-band NMOS (via SFP's) and Out Of Band NMOS control via a separate RJ45 network interface.

11. **NMOS Control 1GB Ethernet Port**: The iVAM2-ST2110 provides the ability to apply in-band NMOS (via SFP's) and Out Of Band NMOS control via a separate RJ45 network interface.

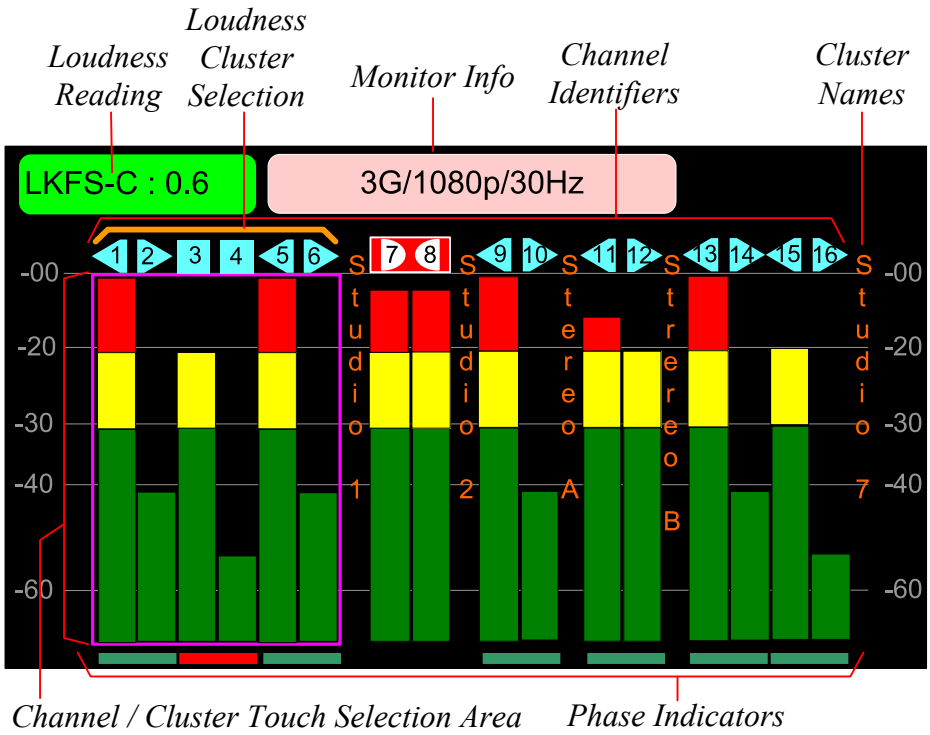
Channel Meters and Touch Operations

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

Important: The numbers for 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.

Audio meters are displayed on the touchscreen display in labeled clusters, as shown in Figure 2-8. The clusters of channels and other options relating to this are defined using the iVAM2-ST2110 Web GUI software as described in Chapter 4.

Figure 2-8: Audio Level Meter Screen



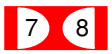
1. **Channel Identifiers**: Above the level meters are the Channel Identifiers. They indicate the following:

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

2 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.



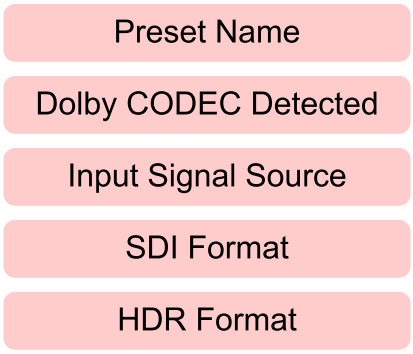
The symbol shown on channels 7 and 8 in Figure 2-8 indicate that this channel pair is a Dolby bitstream. Refer to the **Wohler Zoom** section of this chapter.



If these symbols appear on a channel pair, this means that a Dolby bitstream was detected but that a Dolby module or license is not present in the iVAM2-ST2110. Contact Wohler Technical Service to purchase a Dolby module or install software licenses.

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. **Monitor Info**: The name of the currently selected input signal source, Preset, or other data is typically shown here for your reference, although other information may be shown, such as **Volume** and **Balance** control positions as they are being adjusted. Pressing the **Source/Presets** knob will cause this display to show various pertinent data, such as:



3. **Cluster Names**: The descriptive names that you have given the channel clusters are displayed vertically for your reference.

4. **Channel / Cluster 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 iVAM2-ST2110 is first powered, 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 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 **Channel** control will move a white selection box from channel to channel. Press the **Channel** control to solo the selected channel. That channel alone will then be surrounded by a blue box and it will become the only channel being monitored. Press the **Channel** 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. While the channel is soloed, pressing the **Source/Presets** knob will cause the Monitor Info display to show the Channel Routing, for example:

BackSurroundLeft

d. **Channel Routing**: After soloing a channel, rotating the **Source/Presets** knob will allow you to reassign the Channel Routing for the soloed channel. The range of choices is shown in Table 2-1. Make this choice thoughtfully and carefully because it will change what you see and hear while monitoring the audio sources from now on, or until you change it again. It will also affect the measurement of Loudness for the cluster(s) containing the channel(s).

Table 2-1: Channel Identifiers

Channel Routing	Symbol
Left	
Right	
Center	
Low Frequency Effects	
Left Surround	
Right Surround	
Back Surround Left	
Back Surround Right	

After adjusting the Channel Routing, press the **Channel** control again or touch anywhere on the meters to save the change and resume monitoring the combination of monitored clusters as before you soloed the channel.

5. **Phase Indicators**: There is one Phase Indicator per channel pair. It is pale green when the channels are in phase and bright 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.

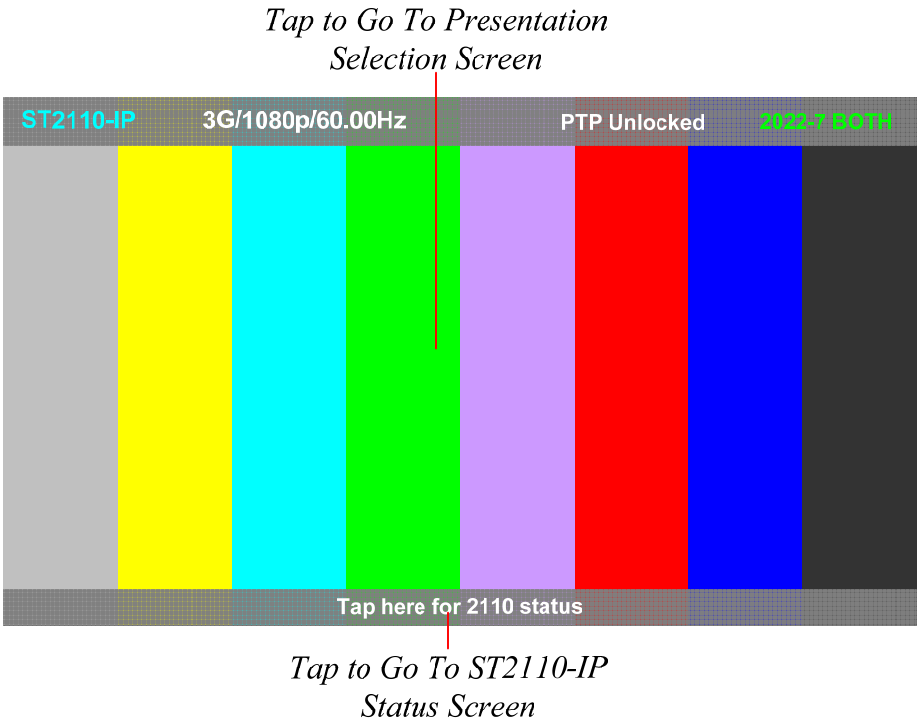
6. **Loudness Reading**: The Loudness measurement readings can be viewed on the main **Meter Screen** in the upper left corner. It shows the loudness measurement calculated on the cluster denoted by the **Loudness Cluster Selection** bar. Loudness can also be viewed on a dedicated Loudness screen. Refer to the **Loudness Screen** section and to Figure 2-23 later in this chapter.

7. **Loudness Cluster Selection**: The **Loudness Cluster Selection** is a horizontal orange bracket which denotes which channel cluster is being measured for loudness. To make a different cluster selection, simply rotate the **Source/Presets** knob. The orange bracket will move from cluster to cluster as you turn the knob and the loudness measurement will be restarted on the newly selected cluster.

ST-2110 Status Screens

Many elements of ST2110 status may be viewed on the Video Monitoring screen. The Video Monitoring screen appears as follows:

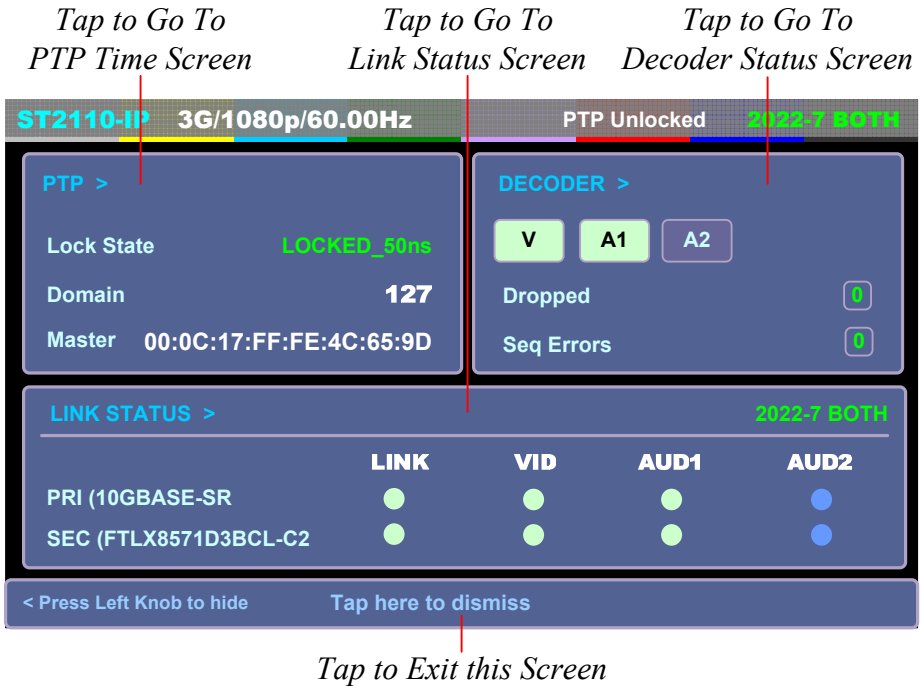
Figure 2-9: ST2110 Video Monitoring Screen



Rotate the Left Knob or tap the center of the screen to proceed to the **Presentation Selection** screen.

Tap at the bottom of the screen if you would like to proceed to the **ST2110-IP Decoder Status Screen**, as shown in the following figure:

Figure 2-10: ST2110 Decoder Status Screen



Tap the PTP, DECODER, or LINK STATUS sections to proceed to more detailed information screens. Tap at the bottom of the screen to return to the previous screen. The following figures show the more detailed PTP Time, Decoder Status, and Link Status screens:

Figure 2-11: ST2110 PTP Time Screen



Tap at the bottom of the screen to return to the previous screen.

Figure 2-12: ST2110 Decoder Status Screen



Tap at the bottom of the screen to return to the previous screen.

Figure 2-13: ST2110 Link Status Screen



Tap at the bottom of the screen to return to the previous screen.

Dolby Monitoring Screens

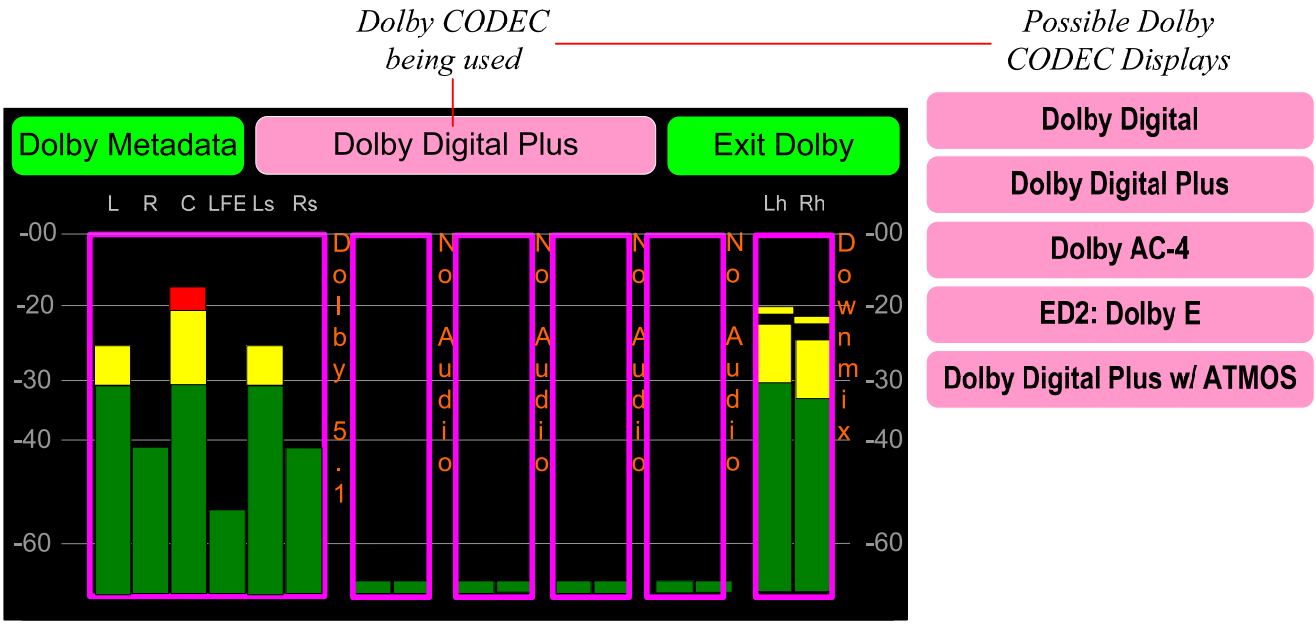
Wohler Zoom Screen

Wohler Zoom is a very powerful analysis tool. Much as a camera lens can "zoom" into a single subject of interest out of many, the **Wohler Zoom** feature lets you quickly "zoom" into a single Dolby bitstream, out of multiple encoded Dolby streams and other channels. Simply rotate the **Channel** control until the Dolby bitstream, as identified by the Dolby icon (shown here at right), is highlighted and then press the **Channel** control. 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 2-8.



As shown in Figure 2-14, the Dolby CODEC being used to decode the monitored signal is shown in the information display at the center top of the Wohler Zoom screen.

Figure 2-14: Wohler Zoom Screen



Wohler Zoom meters are customized to show Dolby related information. The clustering in Wohler Zoom is automatically selected based on the speaker configuration that the user selects in the Decoder configuration. Refer to the Dolby Settings section of Chapter 4. When the **Wohler Zoom** screen appears, the speakers will be muted. You may then select the Downmix audio or any other clusters of channels. You may solo or mute the individual channels for troubleshooting or other purposes.

The Loudness parameters and values are shown on the right side of the meters. Rotate the **Source/Presets** knob to cycle through the various loudness parameters. The Dolby integration provides various values that depend on the Loudness settings defined above.

Note that above the channel meters are designations for each channel. These designations vary depending upon the Dolby speaker configuration. The various channel labels that may appear over the meters are shown in Table 2-2.

Table 2-2: Speaker Configuration versus Channel Labels

Speaker Config.	Channel															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2.0	L	R	-	-	-	-	-	-	-	-	-	-	-	-	Lh	Rh
5.1	L	R	C	Lfe	Ls	Rs	-	-	-	-	-	-	-	-	Lh	Rh
7.1	L	R	C	Lfe	Ls	Rs	Lrs	Rrs	-	-	-	-	-	-	Lh	Rh
5.1.2	L	R	C	Lfe	Ls	Rs	-	-	-	-	Ltm	Rtm	-	-	Lh	Rh
5.1.4	L	R	C	Lfe	Ls	Rs	-	-	Ltf	Rtf	-	-	Ltr	Rtr	Lh	Rh
7.1.4	L	R	C	Lfe	Ls	Rs	Lrs	Rrs	Ltf	Rtf	-	-	Ltr	Rtr	Lh	Rh

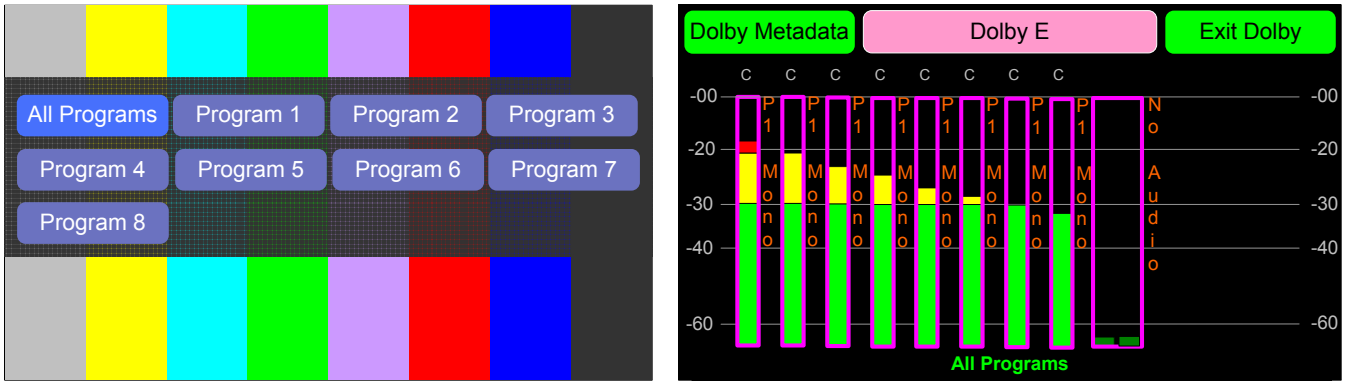
The speaker name abbreviations shown in Table 2-2 are explained in Table 2-3.

Table 2-3: Speaker Name Abbreviations

Abbreviation	Speaker Name
L	Left
R	Right
C	Center
LFE	Low Frequency Effects
Ls	Left Surround
Rs	Right Surround
Lrs	Left Rear Surround
Rrs	Right Rear Surround
Ltf	Left Top Front
Rtf	Right Top Front
Ltm	Left Top Middle
Rtm	Right Top Middle
Ltr	Left Top Rear
Rtr	Right Top Rear

Various Programs in a Generic Dolby E stream may be selected and monitored. By default all programs present in Dolby E signal are selected. The selected Presentation is shown at the bottom center of the screen, as seen in Figure 2-15. Press the **Source/Presets** knob to change between Programs or touch your choice on the left screen.

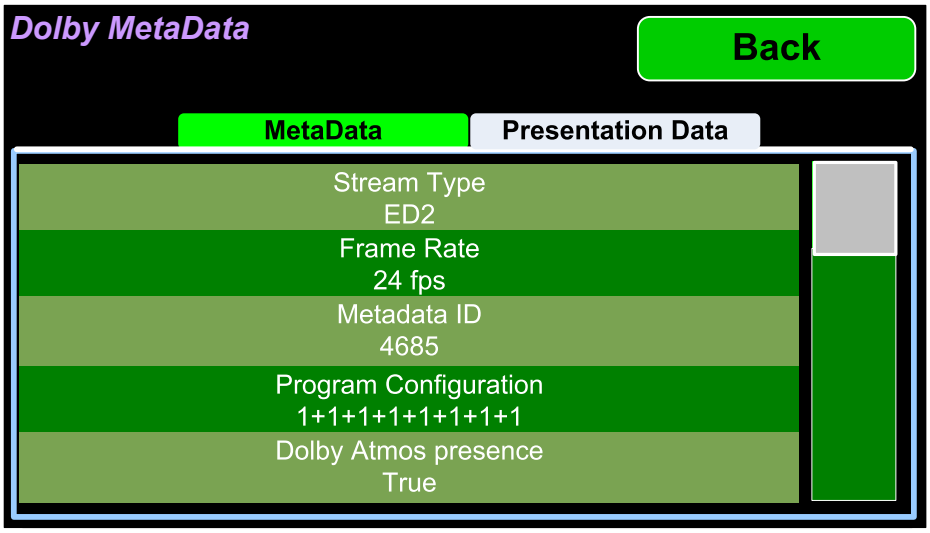
Figure 2-15: Dolby E Programs



Dolby MetaData

Touching the **Dolby MetaData** button proceeds to the **Dolby MetaData Screen**, shown in Figure 2-16.

Figure 2-16: Dolby MetaData Screen



Touching and moving the scroll bar at the right will let you review the list of Dolby MetaData. Rotating the **Channel** knob will also let you scroll through the list. Touch the **Back** button to return to the Wohler Zoom screen from which you came.

A wide range of Metadata is available, which can help you diagnose possible problems. It will vary according to the type of Dolby signal. For example, for checking Guard Band, the iVAM2-ST2110 will display the Line Position of each Dolby E bitstream of the Dolby signal.

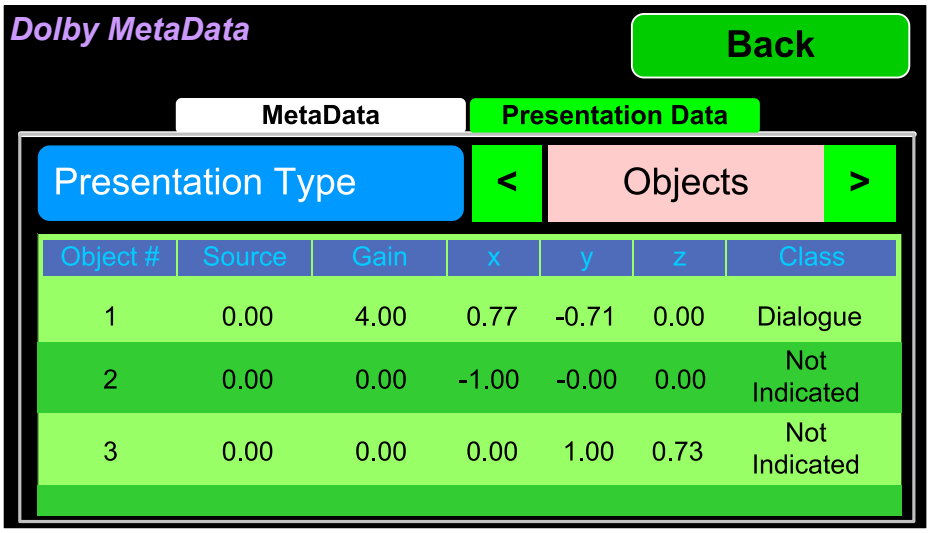
Also, the Dolby Metadata screen displays Dolby CRC (Cyclic Redundancy Check)

Errors, which are automatically totaled. 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.

Dolby Presentation Data

Touching the **Presentation Data tab** on the **Dolby Metadata Screen** proceeds to the screen shown in Figure 2-17.

Figure 2-17: Dolby Presentation Data Screen



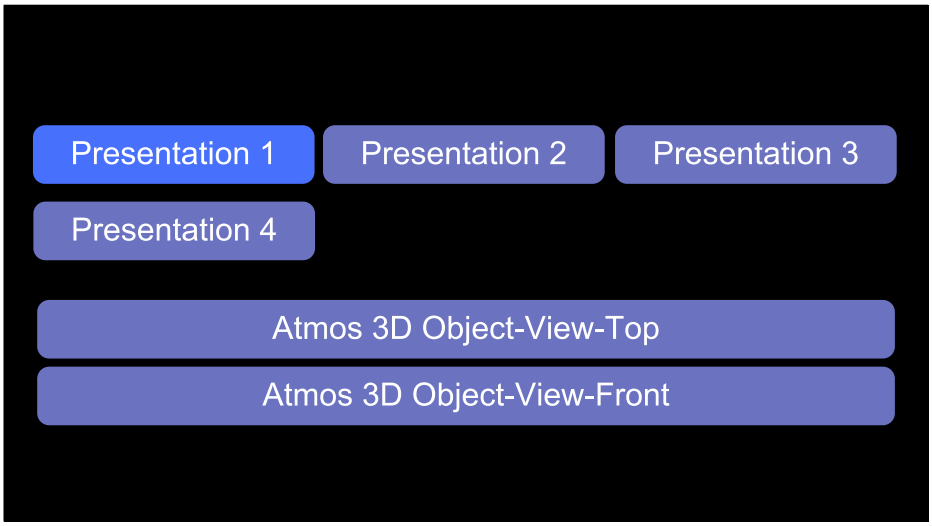
Object #	Source	Gain	x	y	z	Class
1	0.00	4.00	0.77	-0.71	0.00	Dialogue
2	0.00	0.00	-1.00	-0.00	0.00	Not Indicated
3	0.00	0.00	0.00	1.00	0.73	Not Indicated

Rotating the **Channel** knob will let you scroll through the list of Dolby Presentation Data. Touch the **Back** button to return to the screen from which you came.

ED2 Presentation Selection

After rotating the Left Knob or tapping the center of the video screen, a choice of Presentations will be made available, as shown in Figure 2-18.

Figure 2-18: Presentation Choices



The Dolby ATMOS 3D Object View Screens are shown in the following **Dolby 3D Visualizer Screens** section.

Dolby ATMOS 3D Visualizer Screens

Dolby® ATMOS decoding is an optional feature requiring the OPT-DOLBY ATMOS module. It allows decoding of Dolby® ATMOS content, along with the familiar Dolby® D, Dolby® D+, and Dolby® E content. Because of the increased number of channels, up to 7.1.4, Dolby® ATMOS creates an amazing experience over speakers and over headphones, with breathtaking, moving audio that flows above and around you. Wohler's Dolby® ATMOS option allows broadcasters to confidence monitor the Dolby ATMOS® signal on the speakers and headphone output, view meters, access Wohler's proprietary Wohler Zoom functionality, review related MetaData, and route the audio externally to SDI or analog outputs on the rear panel.

To complement this feature, the iAM-12G-SDI contains screens which can help you visualize the location of each audio bed or dynamic channel, both actual and dynamic channels. The audio bed is the arrangement of speakers in the listening room. The sounds produced by the audio bed accurately simulate the locations of the dynamic objects, which are heard as sound sources from any location in the listening room. The Dolby® ATMOS Visualizer Screen is available whenever Wohler Zoom is selected and is depicted in Figure 2.19.

Note: The **ATMOS Decode** setting in the Dolby Settings screen must be set to **ON** for the Dolby® ATMOS Visualizer screen to be available in the Dolby MetaData screen.

Figure 2-19a: Dolby ATMOS Visualizer Screen Front View

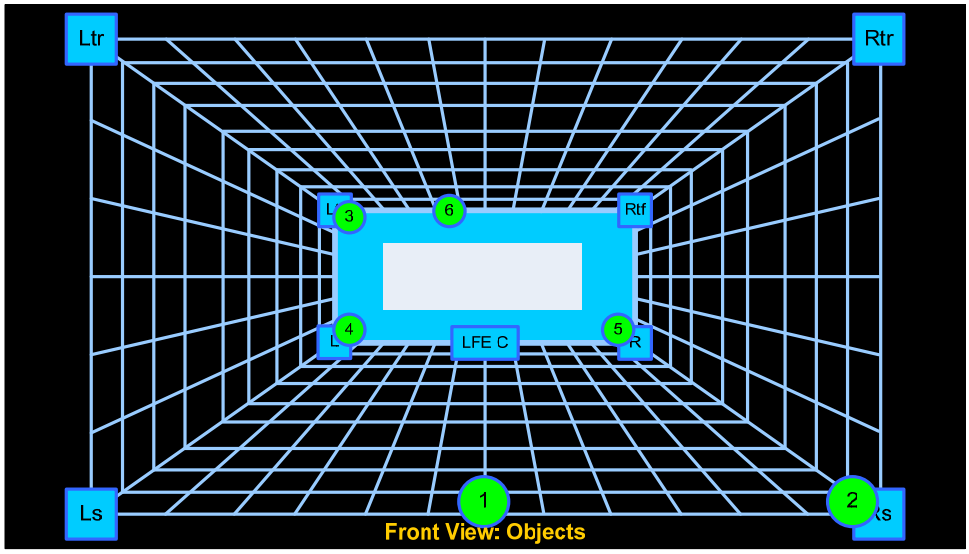


Figure 2-19a shows the listening room with a 3D front view, with a representation of the video program screen location shown in the center as a white rectangle. The various objects are shown as named audio bed objects (in blue boxes) or as numbered dynamic objects (in green circles). Dynamic objects may move around through the 3D screen as they move in the program material. These objects appear according to what is present in the Dolby® ATMOS bitstream. A maximum number of 16 objects of any type may be displayed.

Figure 2-19b: Dolby ATMOS Visualizer Screen Top View

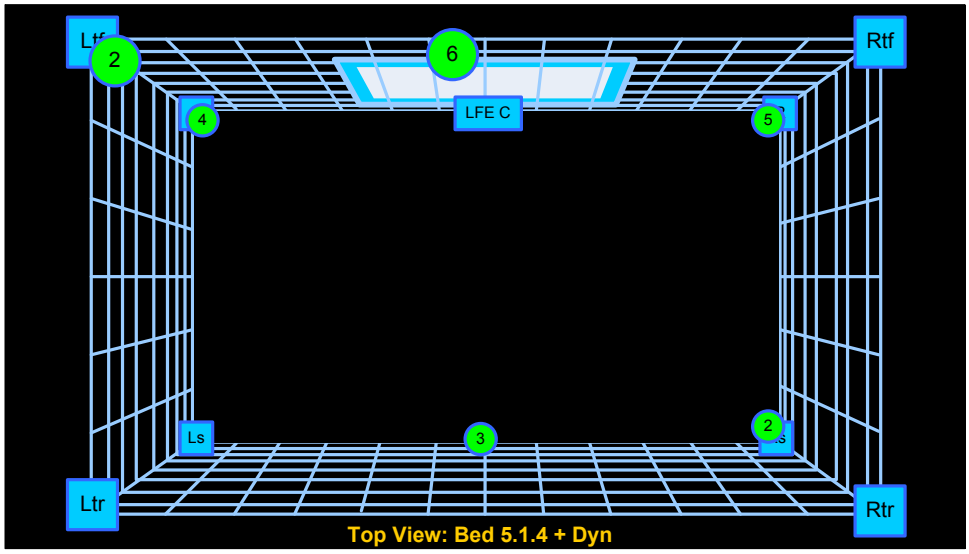
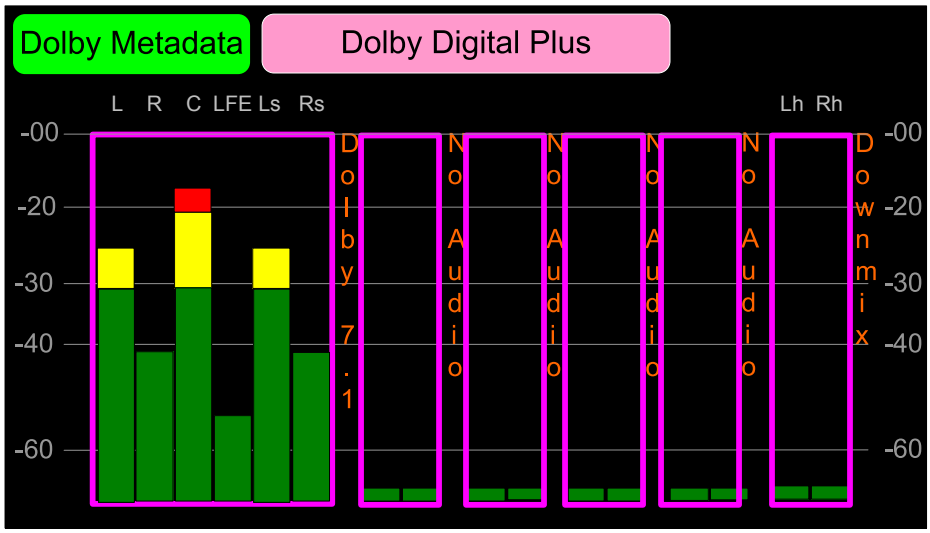


Figure 2-19b shows the listening room with a 3D top view, looking down into it with a representation of the video program screen location shown in the center top (front wall) as a white rectangle. Although Figure 2-19b is showing only audio bed objects, which are in fixed positions as speakers in the listening room, any objects can be shown, as contained in the Dolby® ATMOS stream.

Dolby Preset Monitoring Screen

When a Dolby Preset is being monitored, the Dolby codec currently being used can be displayed, as shown in Figure 2-20, at the center top of the screen.

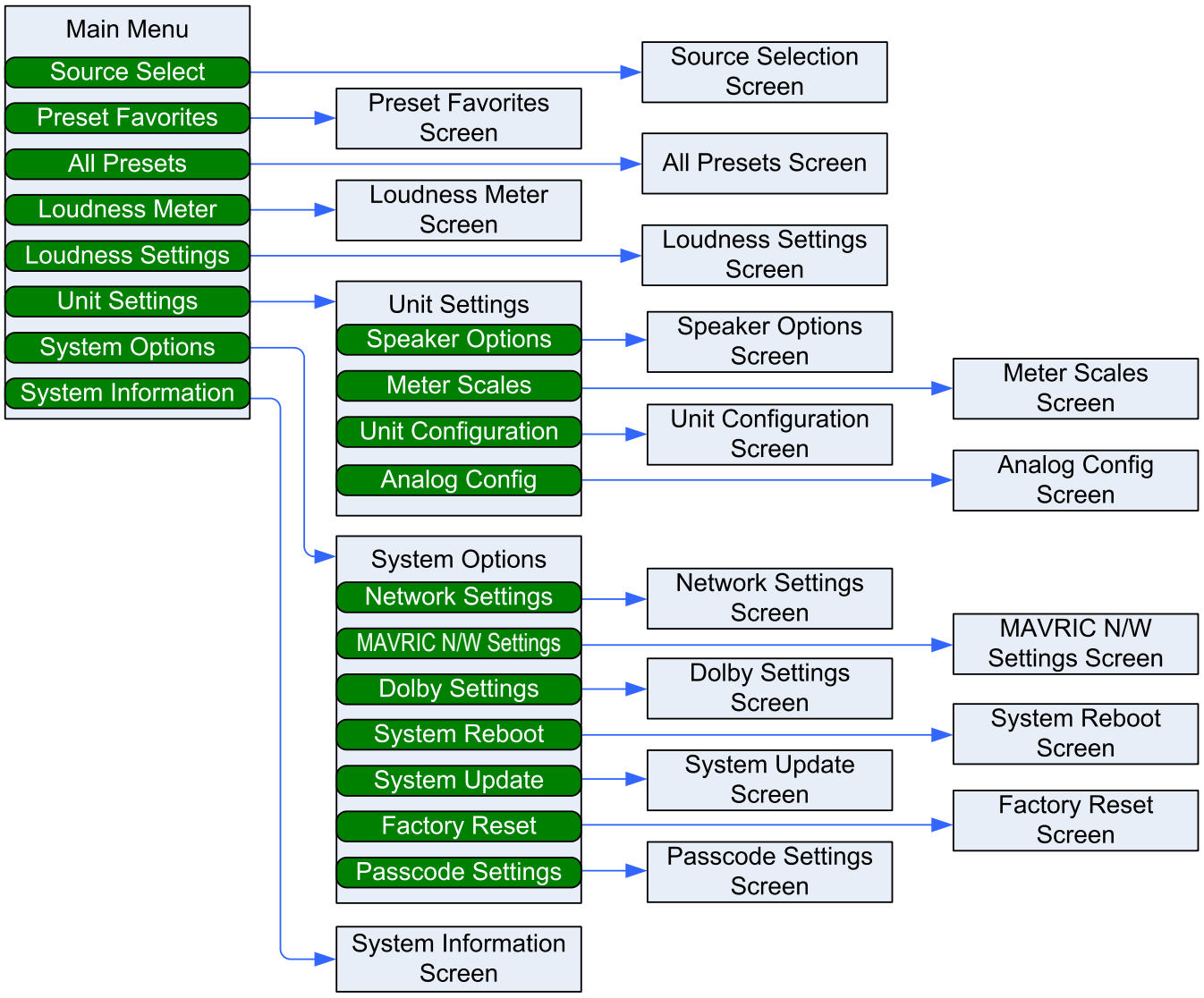
Figure 2-20: Dolby Preset Monitoring Screen



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 iVAM2-ST2110 using the **Menu** which will appear on the left screen after pressing the **Source/Presets** button. Figure 2-21 is a diagram of the menu arrangement, a tree showing how to reach any screen or menu from the **Menu**. The descriptions in this chapter follow the organization shown in the diagram, starting with Figure 2-22, which shows the **Menu**.

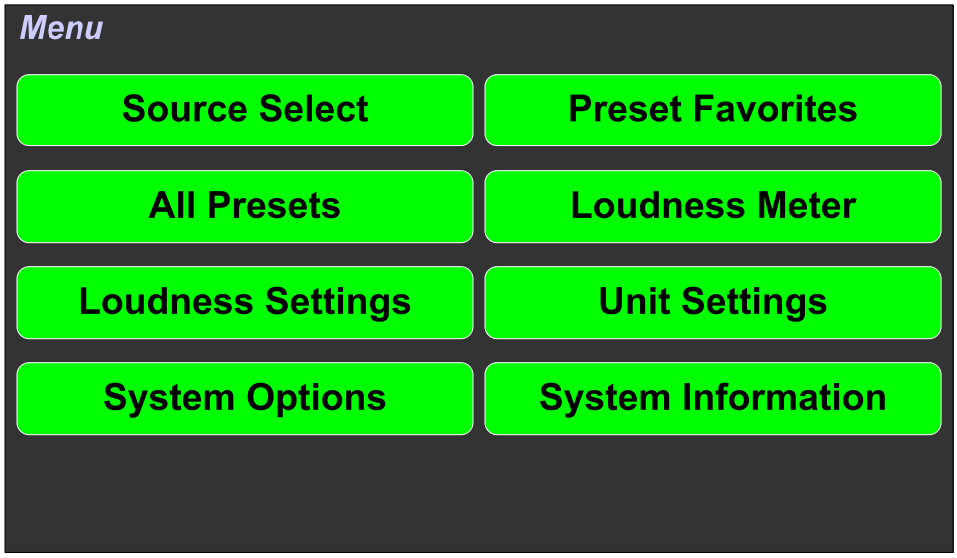
Figure 2-21: Menu Tree



Menu

To access the submenus, touch one of the selector buttons presented on the screen, as shown in Figure 2-22. To return to the **Audio Meters** display, touch the **Audio Meter** selector button.

Figure 2-22: Menu

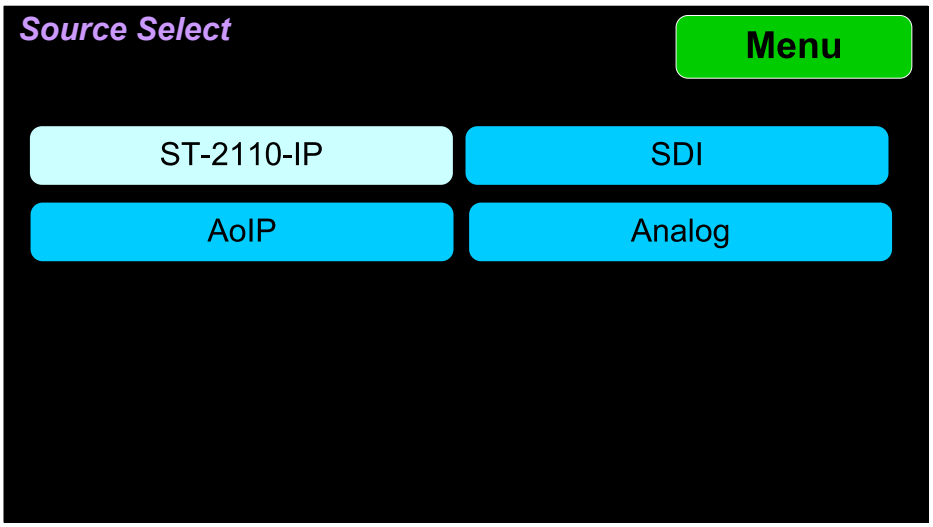


The function of each of these selector buttons is described in the following sections.

Source Select

Touch the **Source Select** button to display the **Source Select** screen as shown in Figure 2-23.

Figure 2-23: Source Select Screens

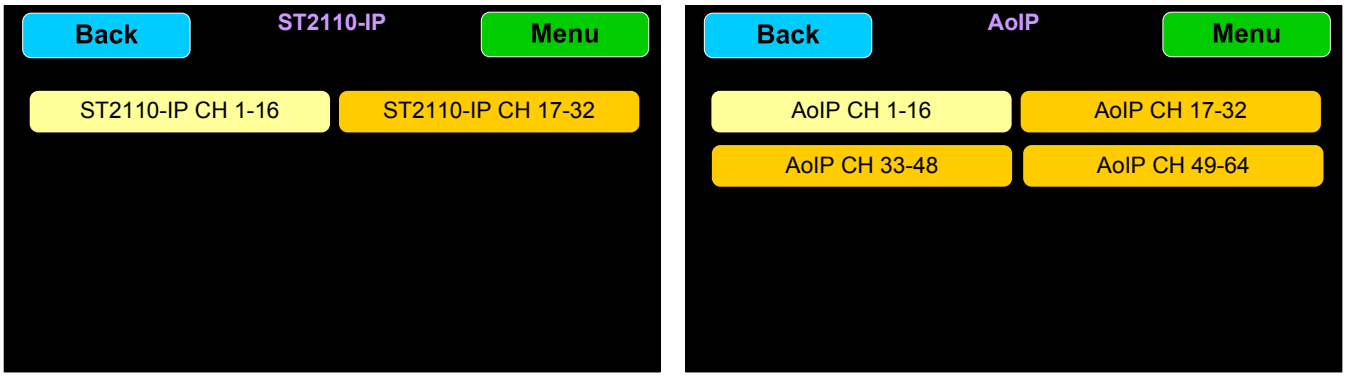


Using this screen, the installer can quickly determine that the sources are correctly connected and are ready for use. It allows you to directly monitor each selected source.

1. The most recently selected source is shown in light blue.
2. Sources that the iVAM2-ST2110 is equipped to monitor are shown in blue.

To select a source, simply touch the associated button(s). If you touch ST2110-IP or AoIP, an additional selection screen will be shown, asking you select which 16 ST2110-IP or AoIP channels to monitor. An example of these screens is shown in Figure 2-24.

Figure 2-24: Source Select Screens



After a quick 2-second delay, the metering screen will display the channels contained in that source. The channels will be muted. Touch the channels you would like to hear on the metering screen. To exit this menu and return to the **Menu**, touch the **Menu** button.

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

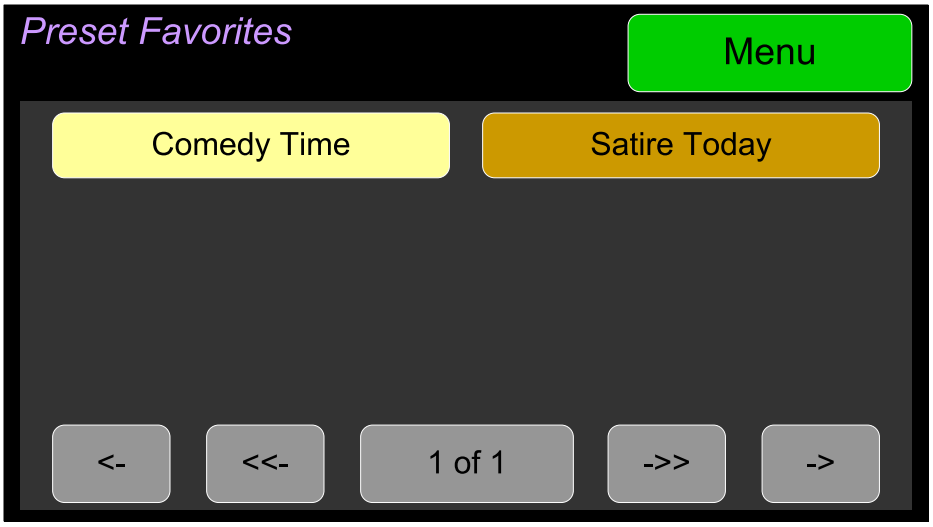
Presets

Presets are pre-arranged input and monitoring setups that can be used to monitor a variety of combinations of inputs. They may be set up to allow quick and easy selection of monitoring configurations for various productions and situations. If you have not set up any Presets, use the **Configure Presets** page in the Web GUI to do so. Refer to Chapter 4. Or, if you prefer not to set up any Presets, simply monitor the sources directly using the **Source Select** button in the **Menu**.

Preset Favorites

Touch the **Preset Favorites** button to display the **Preset Favorites** screen. This shows the Presets that you have designated as Favorites. Refer to the Dashboard section of Chapter 4. Generally, these are frequently used Presets that you want to separate out from the possibly many other Presets in the system. The **Preset Favorites** screen is shown in Figure 2-25.

Figure 2-25: Preset Favorites Screen



In this screen, the currently selected Preset is shown in bright yellow.

Touch any Preset to select it. To exit this screen without making a selection, touch **Menu**.

If no Favorite Presets have been designated, this screen will appear as shown in Figure 2-26.

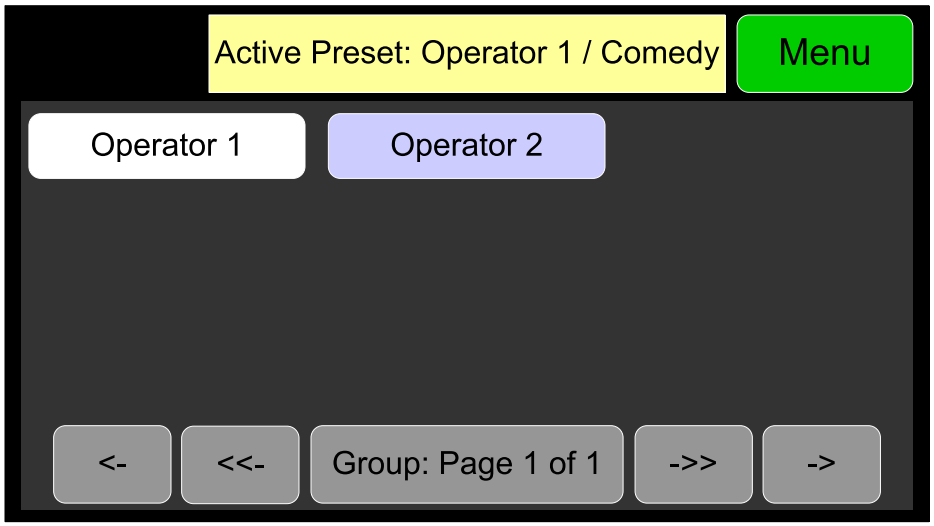
Figure 2-26: Preset Favorites Screen – No Favorites



All Presets

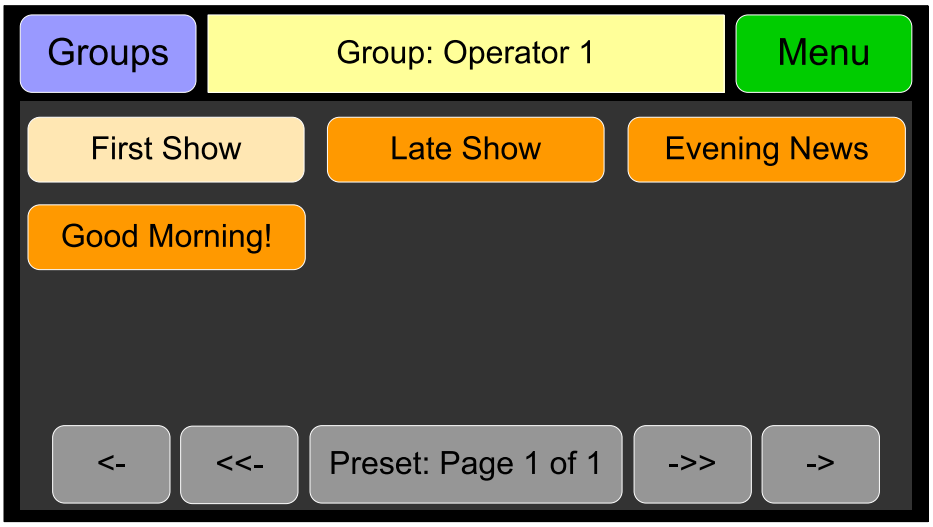
Touch the **All Presets** button to display the **All Presets Group Selection** screen as shown in Figure 2-27. If no Presets have been created, the screen in Figure 2-29 appears instead.

Figure 2-27: All Presets Screen – Group Selection



The Presets are normally arranged into Groups. Use this screen to select which Preset-containing Group to examine. After selecting one of the Groups, the **Preset Selection** screen shown in Figure 2-28 is shown.

Figure 2-28: All Presets Screen – Preset Selection



To select a Preset, touch the associated button. After a quick 2-second delay, the metering screen will display the channels contained in that source.

To return to the **All Presets Group Selection** screen instead, touch the **Groups** button. To return to the **Menu** without making a selection, touch the **Menu** button.

Figure 2-29: All Presets Screen – No Presets

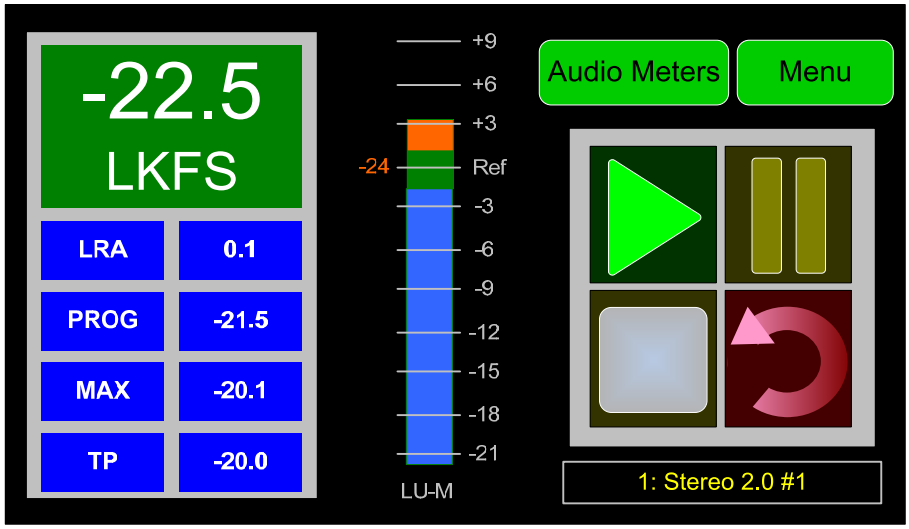


To return to the **Menu** from this screen, touch the **Menu** button.

Loudness Meter

Touch the **Loudness Meter** button to reach the **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 2-30.

Figure 2-30: 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:

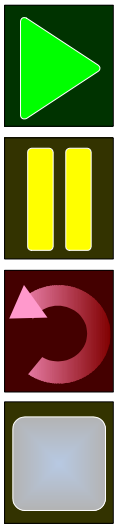
1. The Loudness Range (LRA) is the measure of variation between the calculated loudest and softest passage over the program period (shown as LRA -0.1 above).
2. The Average Loudness is the average of all calculated loudness measurements made over the Program period (shown in gold as PROG -20.8 above).
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).

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:

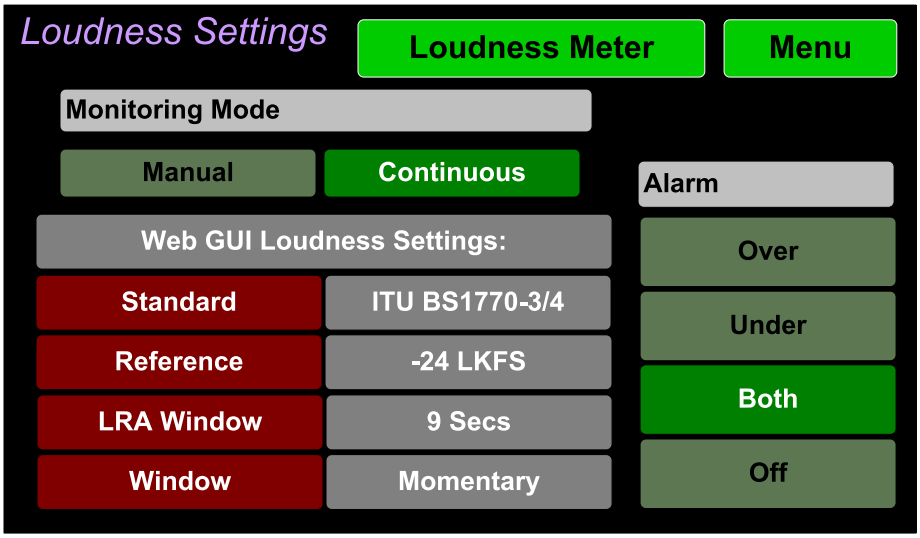
1. **Cluster Select**: Rotate the **Source/Presets** knob to select any monitored channel cluster. Changing clusters with this control will reset the loudness readings and start a new calculation on the newly selected cluster.
2. **Start**: When **Manual Mode** is selected in the Loudness Settings screen, 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.
3. **Pause**: The **Pause** button will temporarily stop or continue gathering loudness data. Data will not be reset using this control.
4. **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.
5. **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.
6. **Back**: Touching the **Back** button to go to the Loudness Menu.
7. **Audio Meters**: Touching the **Audio Meters** button will proceed to the Audio Meters screen.



Loudness Settings

Touch the **Loudness Settings** button to display the **Loudness Settings** screen. This 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 2-31.

Figure 2-31: 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 set point 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.

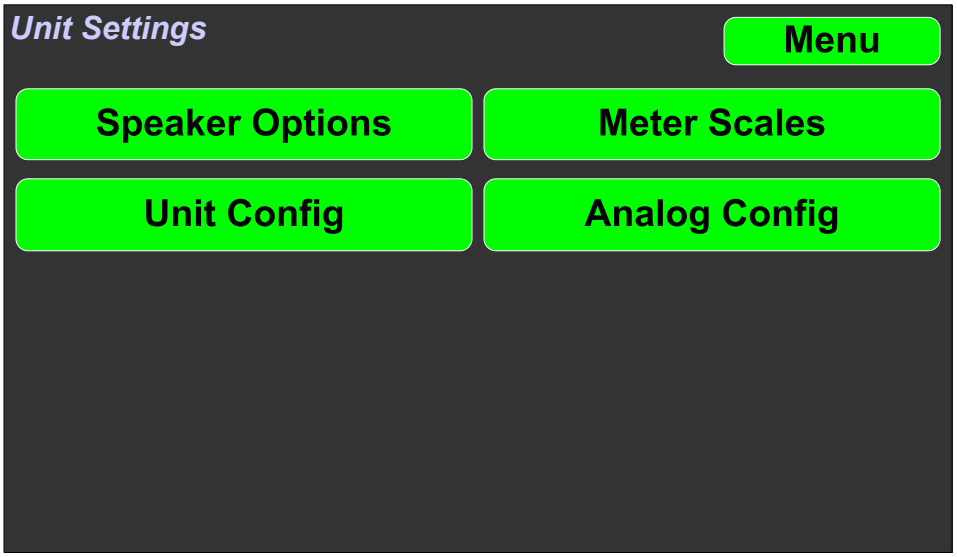
Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

When you have completed reviewing or changing the settings, touch the **Loudness Meters** button to go the **Loudness Meters** screen, or touch the **Back** button to return to the **Loudness** menu

Unit Settings

Touch the Unit Settings button in the Menu to display the Unit Settings Menu. These are settings that are pertinent to the local iVAM2-ST2110. This menu is shown in Figure 2-32.

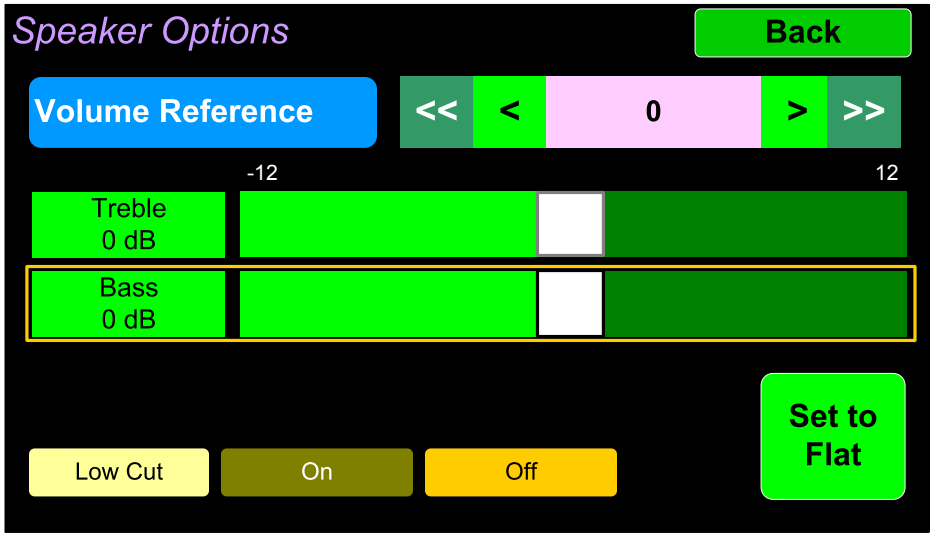
Figure 2-32: Unit Settings Menu



Speaker Options

Touching the **Speaker Options** button on the **System Options Menu** displays the **Speaker Options** screen as shown in Figure 2-33. The controls on this screen affect various characteristics of the monitored audio as heard on the iVAM2-ST2110.

Figure 2-33: Speaker Options



The controls function as follows:

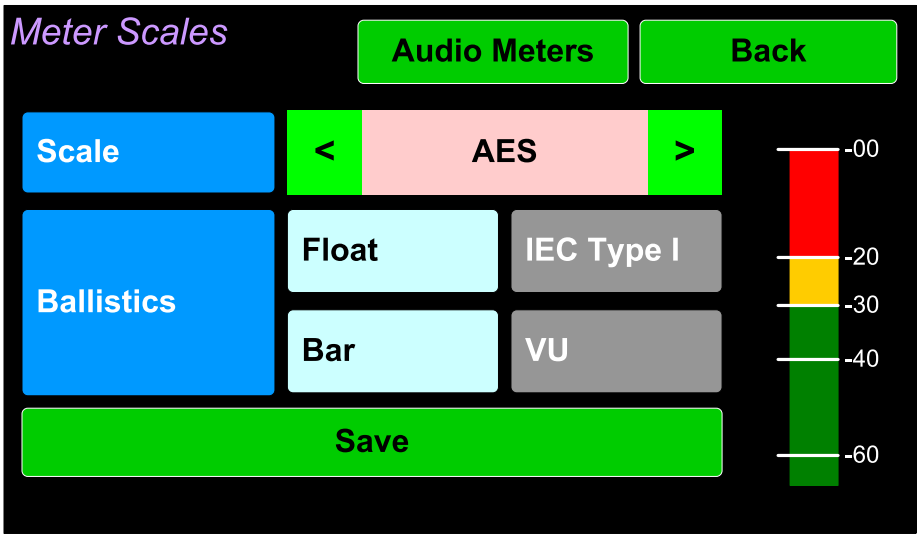
1. **Volume Reference:** The **Volume Reference** setting controls the attenuation level of the internal speakers. The value ranges from 0 to -255 dB. 0 results in full volume and -255 causes the speakers to be muted.
2. **Low Cut**: **Low Cut** is provided for cases where unusually deep content produces 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 **Channel** 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 **Channel** 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.

Touch **Back** to exit this screen.

Meter Scales

Touching the **Meter Scales** button on the **System Options Menu** displays the **Meter Scales** screen as shown in Figure 2-34. The controls on this screen select the scale standards as well as the ballistics that will be applied to the audio meters.

Figure 2-34: Meter Scales Screen



The controls function as follows:

1. **Scale**: This meter scales standard to be used when displaying audio levels. A choice of seven scales is available. Use the left and right arrows to select the scale. A representation of the chosen scale will be shown at the right. The possible scales that can be used are shown in Figure 2-35.

Figure 2-35: Meter Scale Selection

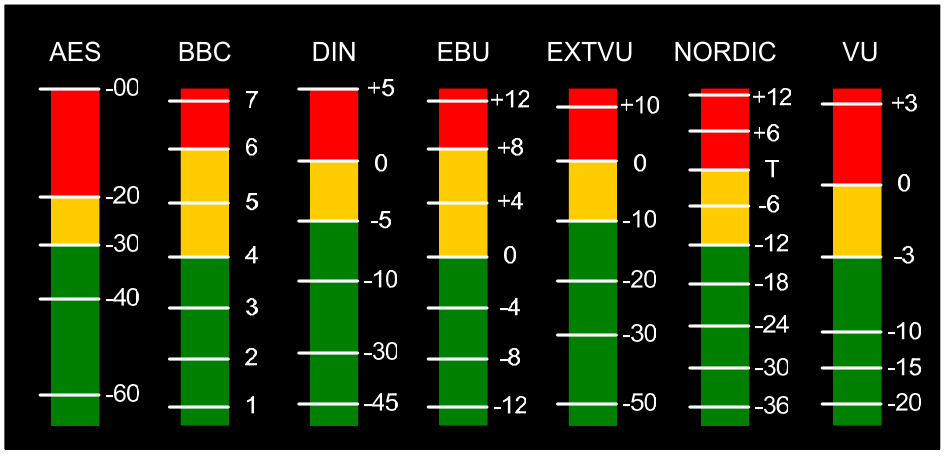


Table 2–4: Meter Limits and References

Scale	Bottom Limit	Top Limit	Default Reference	Default Color Bounds		Default Ballistics	
				Lower	Upper	Float	Bar
AES	-72 Dbfs	0.0 Dbfs	0 Dbfs = 0 Dbfs	-30 Dbfs	-20 Dbfs	IEC Type I	VU
BBC	-13.25 dBr	+13.0 dBr	-18 Dbfs = 0 dBr	0 dBr	8 dBr	—	IEC Type I
DIN	-53 dBr	+5.5 dBr	-15 Dbfs = 0 dBr	-5 dBr	0 dBr	—	IEC Type I
EBU	-13.25 dBr	+13.0 dBr	-18 Dbfs = 0 dBr	0 dBr	8 dBr	—	IEC Type I
EXTVU	-56 dBr	+16.0 dBr	-20 Dbfs = 0 dBr	-10 dBr	0 dBr	—	VU
NORDIC	-44 dBr	+12.5 dBr	-18 Dbfs = 0 dBr	-10 dBr	0 dBr	—	IEC Type I
VU	-45 dBr	+3.5 dBr	-20 Dbfs = 0 dBr	-3 dBr	0 dBr	—	VU

2. **Ballistics**: The Bar and Float ballistics associated with the selected meter scale are displayed. Refer to Table 2-5. Ballistic timings are valid only at 48 kHz.

Table 2–5: Meter Timings

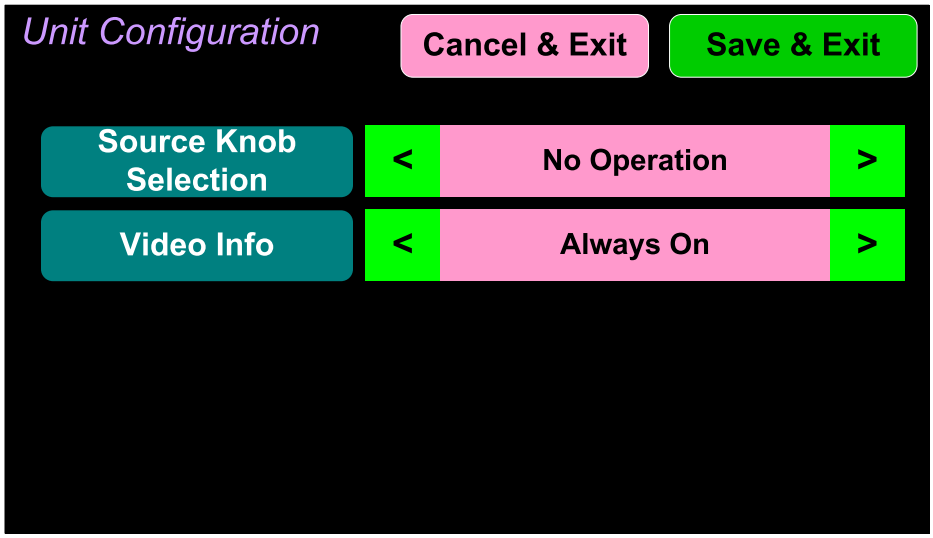
Ballistics	Rise	Fall	
		Level Change	Time
VU	Not Specified		
IEC Type I	5 ms to reach -2 Db of settled reading	-20 Db	1.7 sec.
IEC Type II	10 ms to reach -2 Db of settled reading	-24 Db	2.8 sec.
None	Bar or Floating Segment Not Displayed		

When you have made your choices, touch **Save** to retain them. Touch **Back** or **Audio Meters** to exit this screen.

Unit Config

The **Unit Config** menu sets up the function of the **Source/Presets** front panel control. This menu is shown in Figure 2-36.

Figure 2-36 – Unit Configuration Menu

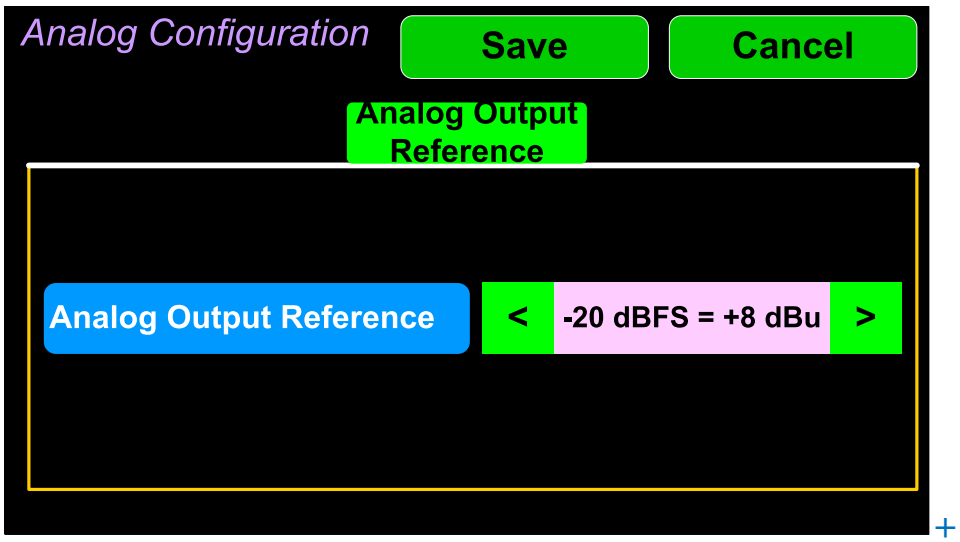


By default the **Source/Presets** knob selects the input source from which the video and audio signals will be monitored. Alternatively, the **Source/Presets** control can be used to select from any Preset, or from any Favorite Preset. However, regardless of this menu setting, when the Loudness Meter Screen is displayed, the **Source/Presets** knob selects which Loudness Cluster is to be measured and monitored.

Analog Configuration

Touching the **Analog Configuration** button in the **System Options Menu** displays the **Analog Configuration** screen. Contained in this menu is an **Analog Output Reference** as illustrated in Figure 2-37. The parameters set on this tab pertain to the DB25 and XLR connectors on the rear panel of the iVAM2-ST2110.

Figure 2-37: Analog Configuration



There is only one setting on the **Analog Output Reference** tab:

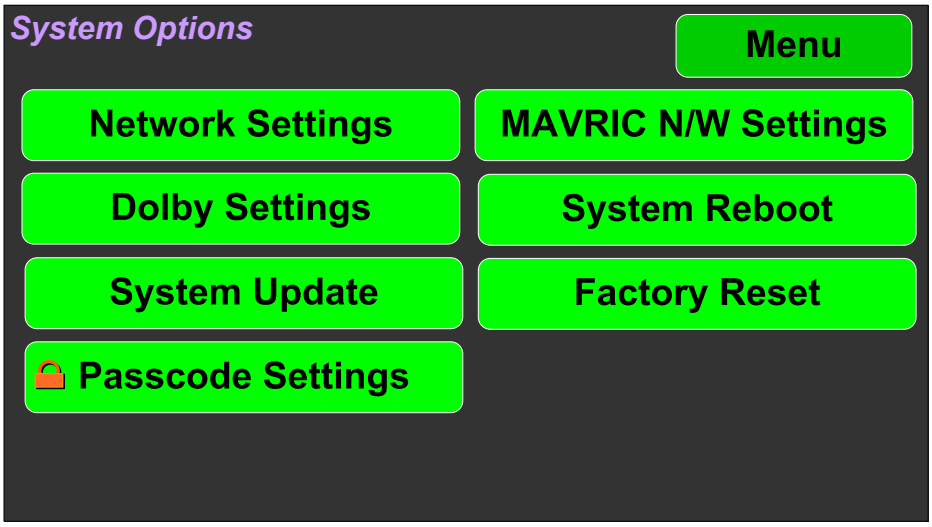
1. **Analog Output Reference**: This setting adjusts the relationship between the monitored digital signal level and the analog signal level that is output from both of the DB25 and both of the XLR connectors on the back panel. The default setting is -20 Dbfs = +8 dBu as shown in Figure 2-29. The range of possible settings is as follows:
    a. -22 Dbfs = +4 dBu
    b. -20 Dbfs = +4 dBu
    c. -18 Dbfs = +4 dBu
    d. -16 Dbfs = +4 dBu
    e. -20 Dbfs = +8 dBu
    f. -20 Dbfs = 0 dBu
    g. -18 Dbfs = 0 dBu
    h. -8 Dbfs = 0 dBu
    i. 0 Dbfs = +15 dBu

Touching **Save** will save any changes made, or touching **Cancel** will return you to the **System Options** menu without saving.

System Options

Touch the **System Options** button in the **Menu** to display the choices for setting some system options locally. The **System Options Menu** is shown in Figure 2-38.

Figure 2-38: System Options Menu



The options are:

1. Network Settings
2. MAVRIC N/W Settings
3. Dolby Settings
4. System Reboot
5. System Update
6. Factory Reset
7. Passcode Settings

The menus associated with these options are described in the following sections.

Network Settings, TSoIP Network, and MAVRIC Settings

Touch the **Network Settings**, **TSoIP Network Settings**, or **MAVRIC N/W Settings** buttons in the **System Options Menu** to display the associated menus, as shown in Figures 2-39a, b, & c. These screens operate similarly to let you view or change the product IP, the Net Mask, and the Gateway for these features. They also let you switch between a static (fixed) or a dynamic (DHCP) network address.

Figure 2-39a: Network Settings Menu

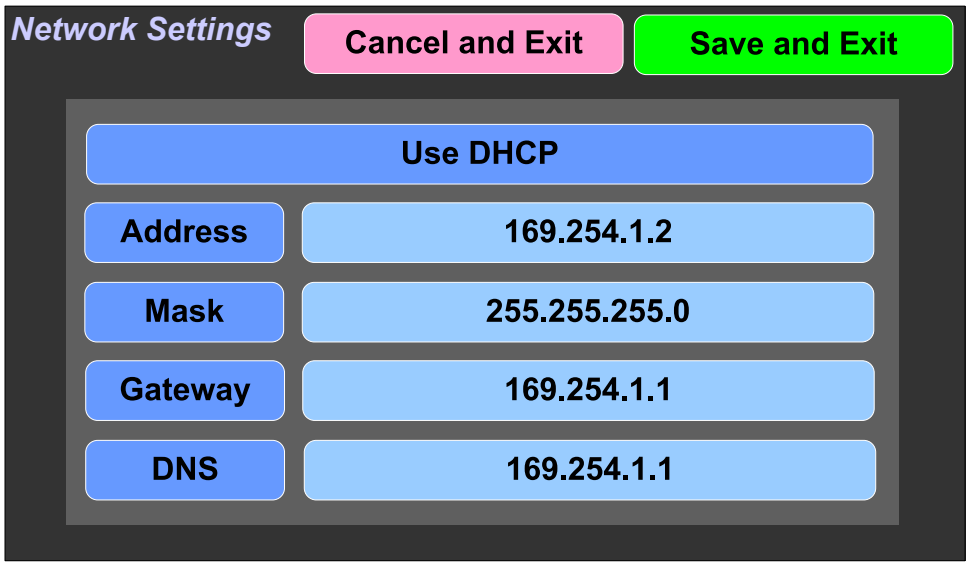


Figure 2-39b: TSoIP Network Config Menu

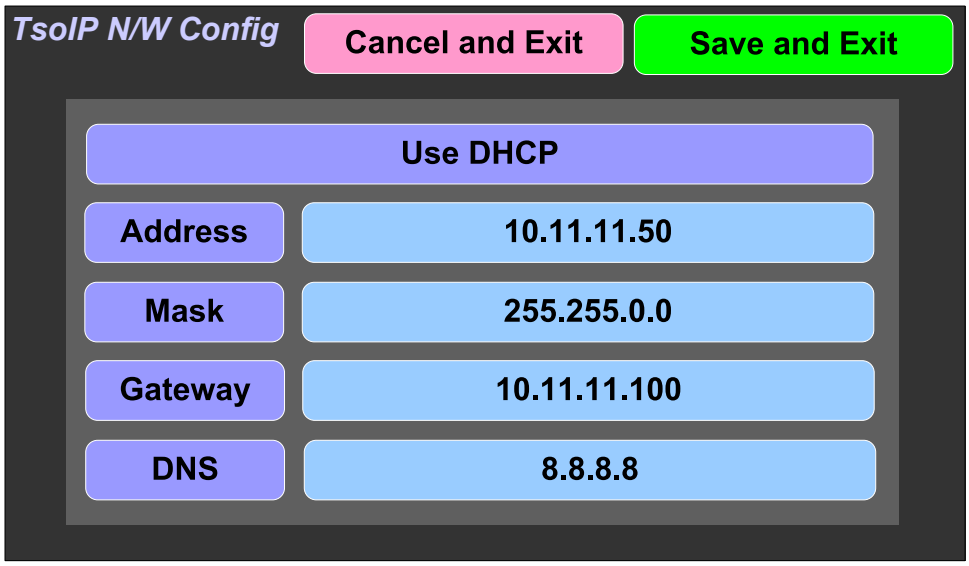
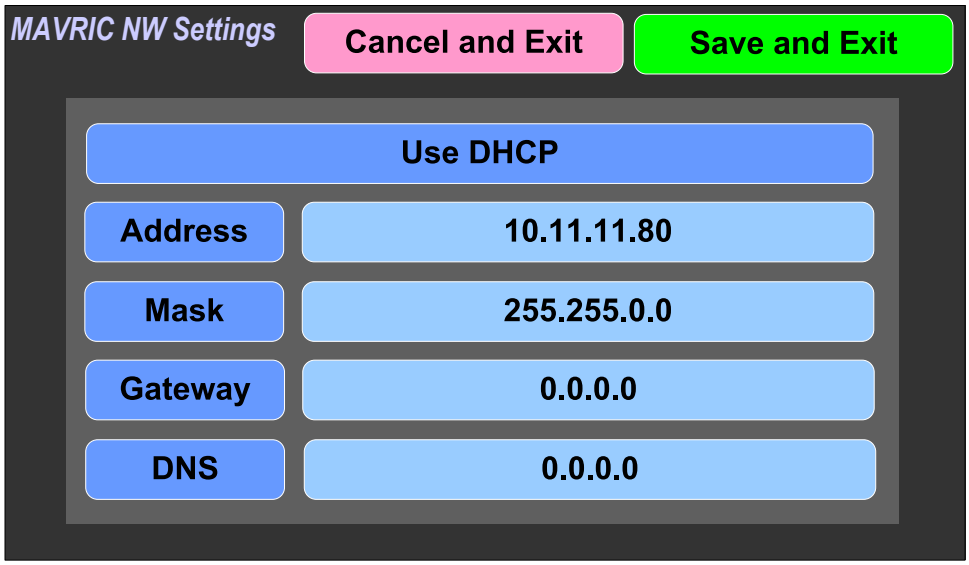


Figure 2-39c: MAVRIC Network Config Menu



1. To change the IP Address, Net Mask, Gateway, or DNS, tap the address you would like to change. A keypad will appear, as shown in Figure 2-40.

Figure 2-40: Network Settings: Address Change

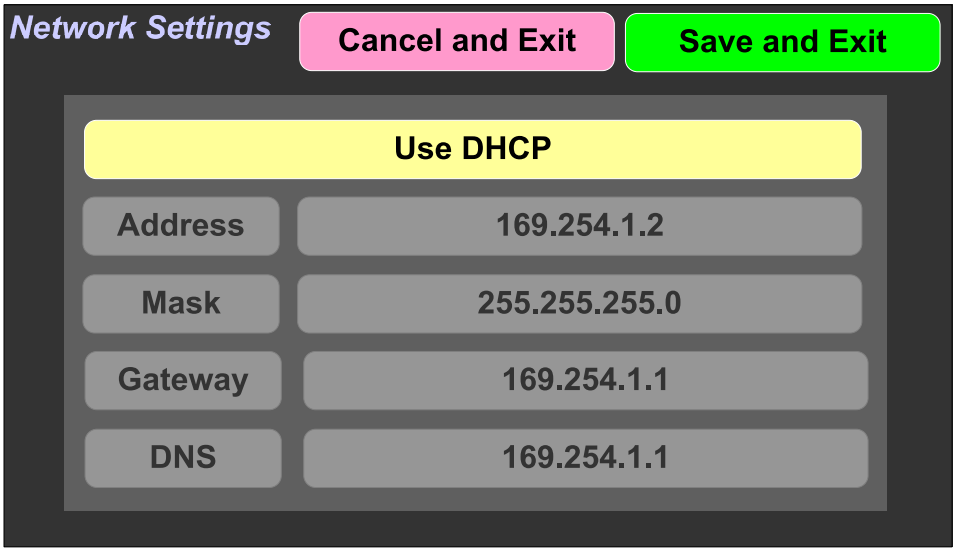


2. Touch the digits to be entered, including the decimal points. Touch **Clear** to erase the address so that you can type a new one. Touch the **Backspace** button to correct an individual mistyped digit. Touch the **Cancel** button to cancel the address change operation and return to the **Network Settings** screen.
3. When the address is typed, touch the **Enter** button. This will return to the **Network Settings** screen and the changed address can be seen.

To change from a static (fixed) to a dynamic (DHCP) network address, touch the **DHCP** button. The screen will change, as shown in Figure 2-41. To change back to

a static (fixed) network address, touch the **DHCP** button again. The screen depicted in Figure 2-39 will reappear.

Figure 2-41: Network Settings: DHCP



1. To complete the network addressing scheme change, touch the **Save and Exit** button. This will return to the **Menu**.
2. To abandon the changes you made, touch the **Cancel and Exit** button. This will return to the **Menu**.

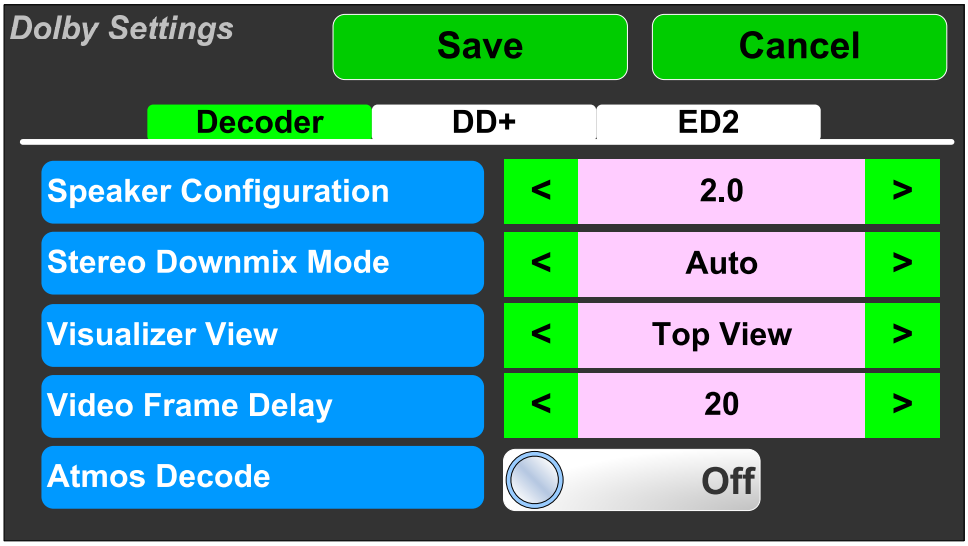
Dolby Settings

Touch the **Dolby Settings** button to proceed to the **Dolby Settings Screen**.

Dolby Settings Screen: Decoder Tab

Figure 2-42a shows the option settings on the **DD+** tab.

Figure 2-42a: Dolby Settings: Decoder Tab

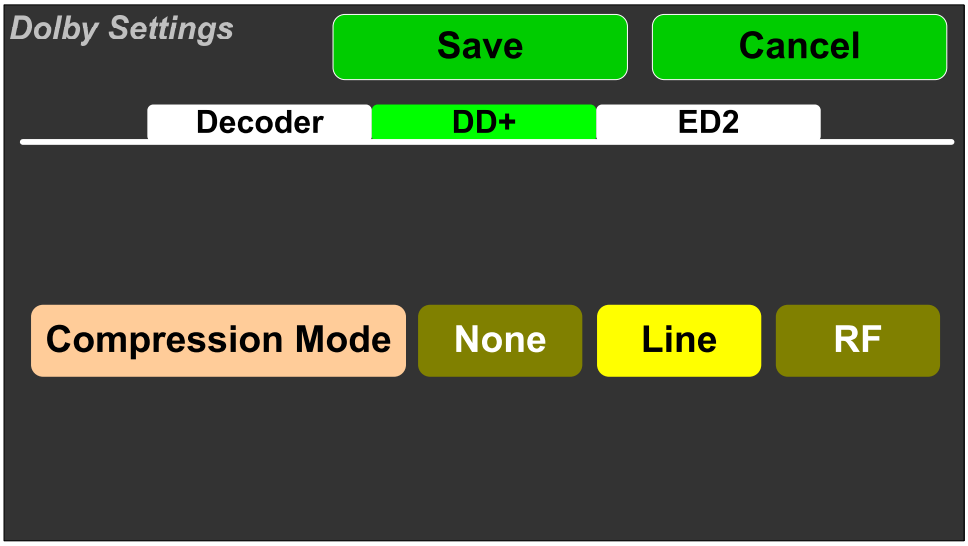


1. **Speaker Configuration**: This setting defines the output speaker configuration in a range from 2.0 to 7.1.4. This setting is reflected in channel descriptions of the audio level meters. Select an option from the list by touching the **Left** (**<**) and **Right** (**>**) buttons. Speakers that receive no content from the input source are silent.
2. **Stereo Downmix Mode**: This setting provides a choice between Auto, LtRt, or LoRo downmix modes. Select an option from the list by touching the **Left** (**<**) and **Right** (**>**) buttons.
3. **Visualizer View**: This provides the ability to view the various objects in a 3D space. There are two views available, a Top View or a Front View.
4. **Video Frame Delay**: A range of video frame delays is available.
5. **Atmos Decode**: This setting applies Dolby Digital Plus and ED2 (ED2: Dolby E + Evolution) bitstreams only. Set the **Dolby Atmos Decode** touch switch to **On** to enable Dolby Atmos content decoding. Set the touch switch to **Off** to disable Dolby Atmos content decoding. Dolby Digital Plus with Dolby Atmos content is then decoded as Dolby Digital Plus. When **Atmos Decode** is set to **Off**, then on the Dolby MetaData screen the **Atmos 3D** or **Show Video** buttons do not display.

Dolby Settings Screen: DD+ Tab

Figure 2-42b shows the option settings on the **DD+** tab.

Figure 2-42b: Dolby Settings: DD+ Tab

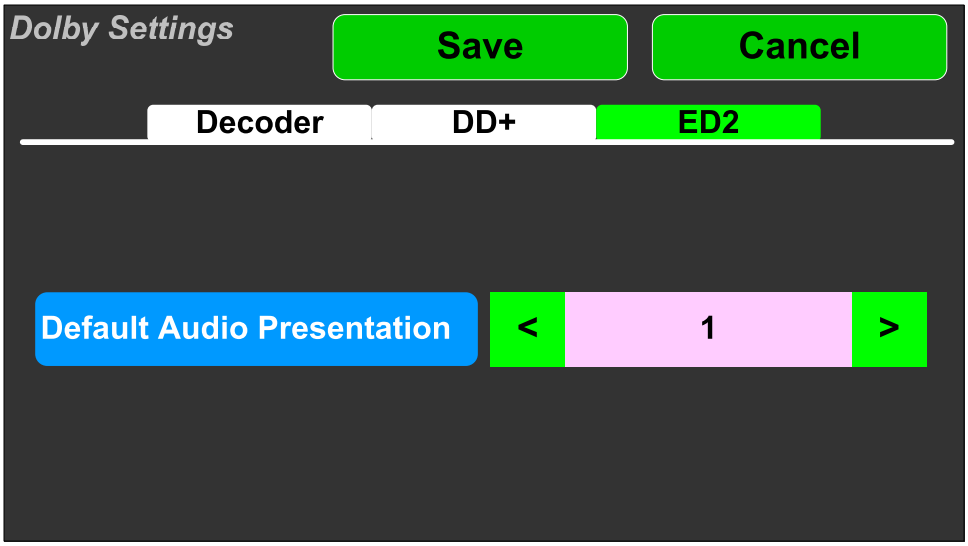


1. **Compression Mode**: Setting a compression mode is not required. If you do not need or want to set the mode, leave the default selection as **Line**. Otherwise, select the **Line** or **RF** mode as appropriate to your decoding requirements.

Dolby Settings Screen: ED2 Tab

Figure 2-42c shows the option settings on the **ED2** tab.

Figure 2-42c: Dolby Settings: ED2 Tab



1. **Audio Presentation**: This option is used only when the Dolby ED2 is present. ED2 supports multiple presentations. This screen allows you to determine which presentation is used as default when in Wohler Zoom mode. Set the **Audio Presentation** in the range of 1 to 16. If you select a presentation that does not exist in the stream, it will default to Presentation

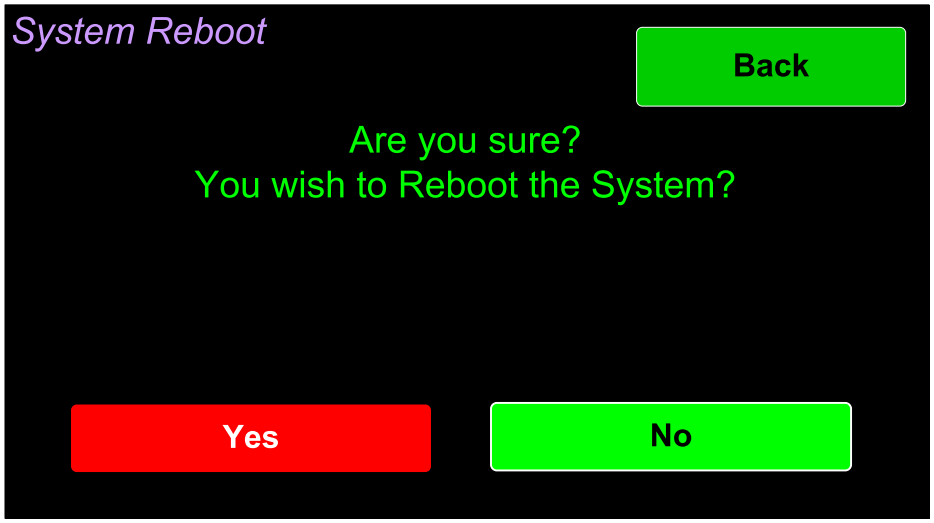
1. Select a program from the list by touching the **Left** (**<**) and **Right** (**>**) buttons. The default setting is 1.

System Reboot

Touching the **System Reboot** button in the **System Options Menu** displays the **System Reboot** screen as shown in Figure 2-43. 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 caution. It puts the system out of service for several minutes while it is rebooting.

Figure 2-43: System Reboot



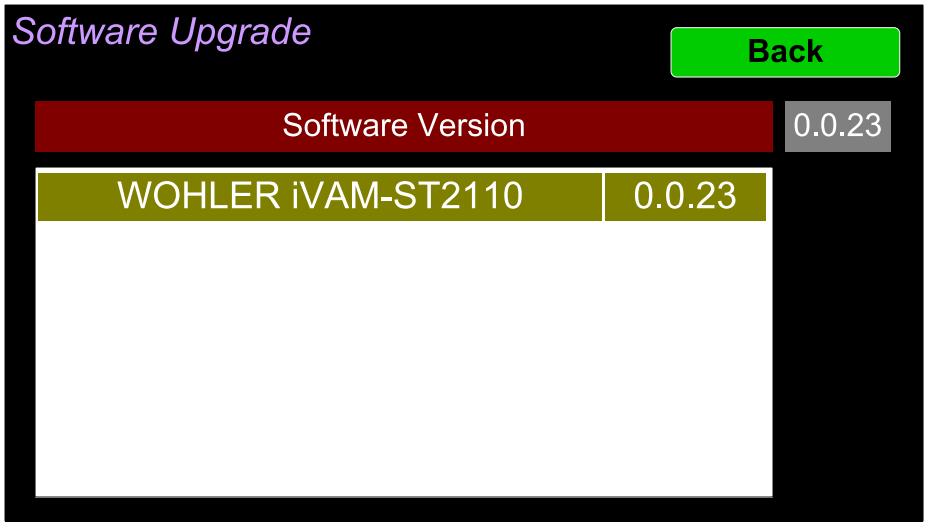
If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

System Software Update

Touching the **System Update** button in the **System Options Menu** displays the **Software Update** screen as shown in Figure 2-44. Refer to Appendix A for complete instructions to perform a software update.

The **System Update** function should be used with a bit of caution. It puts the system out of service for at least 5 minutes while it is updating and later rebooting.

Figure 2-44: Software Update



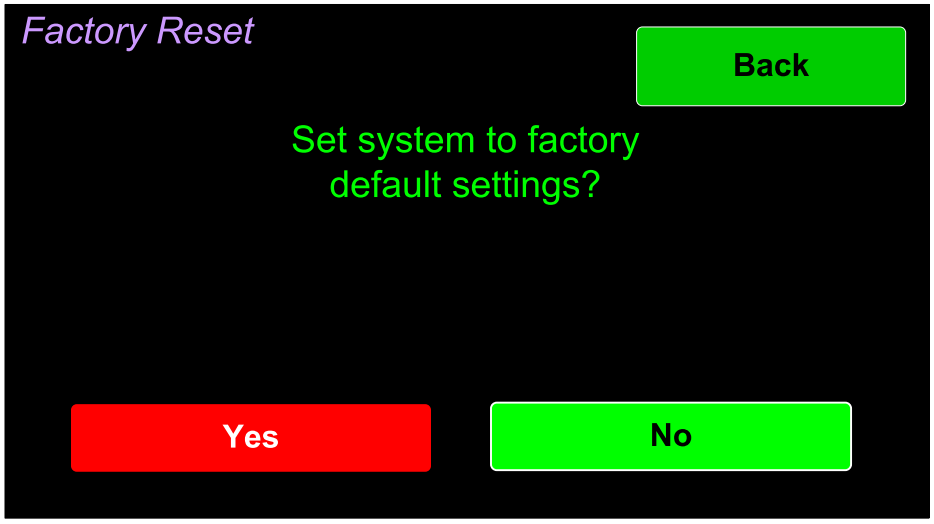
If you have any doubt as to whether you should press **Yes**, press **Back** instead, and contact Wohler Technical Service for advice. Pressing **Back** will return you to the **System Options** menu.

Factory Reset

Touching the **Factory Reset** button in the **System Options Menu** displays the **Factory Reset** screen as shown in Figure 2-45. 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.

Figure 2-45: Factory Reset



Note: **Factory Reset** will also reset your IP address to the default one.

After a Factory Reset, the IP Settings will need to be updated. The default IP address for the unit is determined based upon the Mac address. It is 169.254.1.xx where xx is the last octet of the management Mac address. For example, if the Mac address is b4:ed:54:d0:04:28 then the IP address would be 169.254.1.40 (40 is the decimal equivalent for the last octet of Mac address 28.)

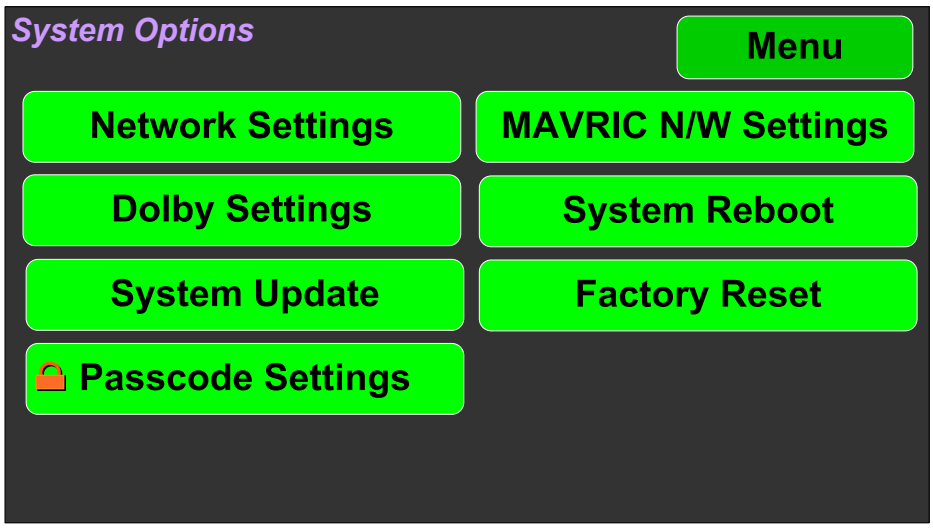
If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

Passcode Settings

To prevent accidental or unauthorized changing of critical settings in some of the menus, it is possible to block or restrict access to various menus. The Wohler Web GUI can be used to limit access to the menus of your choice. Refer to Chapter 4, the **Front Panel Configuration** tab of **System Preferences**.

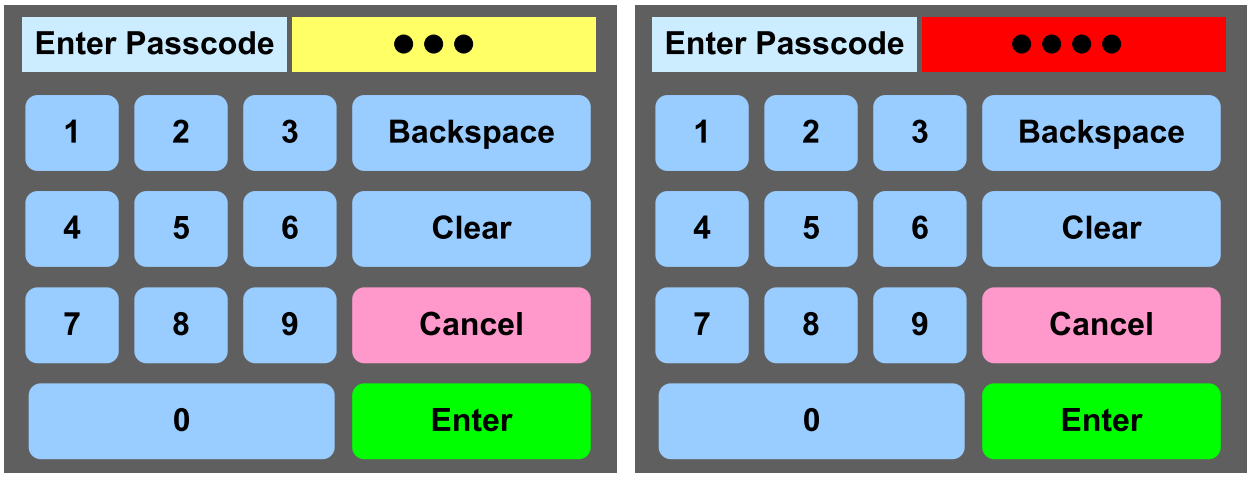
The iVAM2-ST2110 contains a **Passcode Settings** screen. Access to this screen is always protected by a unique Passcode, which you can set. Note that the protection of the **Passcode Settings** selection is indicated by an orange lock icon: The **Passcode Settings** button on the **System Options** screen contains this icon, as shown in Figure 2-46. The factory default Passcode is 0-0-0-0.

Figure 2-46: System Options – Passcode Settings Lock



Touching the **Passcode Settings** selection in the **System Options** menu proceeds to the **Passcode Entry** screen as shown in the left image of Figure 2-47.

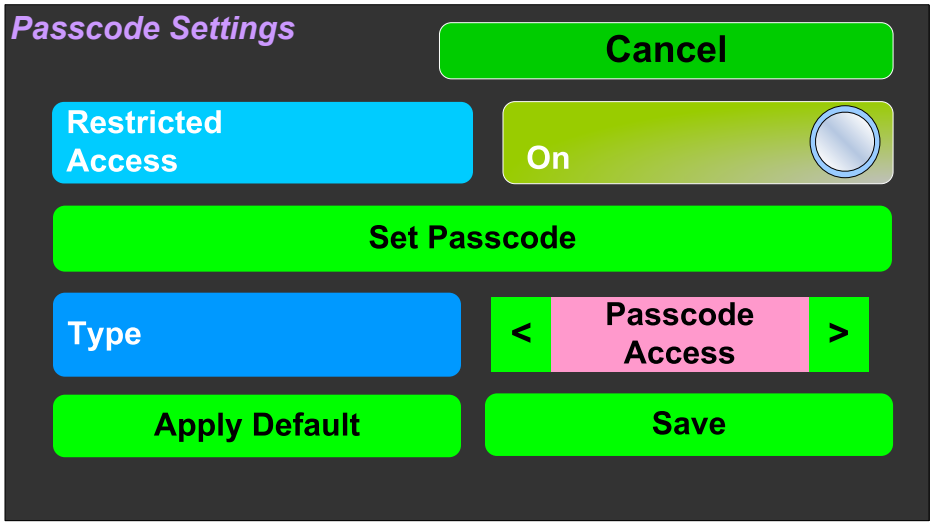
Figure 2-47: Passcode Entry Screen



Enter the Passcode on the keypad and touch **Enter**. The numbers will display as bullets in the field. If you enter the wrong Passcode, the entry field will turn red, as shown on the right image of Figure 2-40. Press **Clear** and try again.

When you have successfully entered the Passcode, the Passcode Settings screen will appear, as shown in Figure 2-48.

Figure 2-48: Passcode Settings Screen

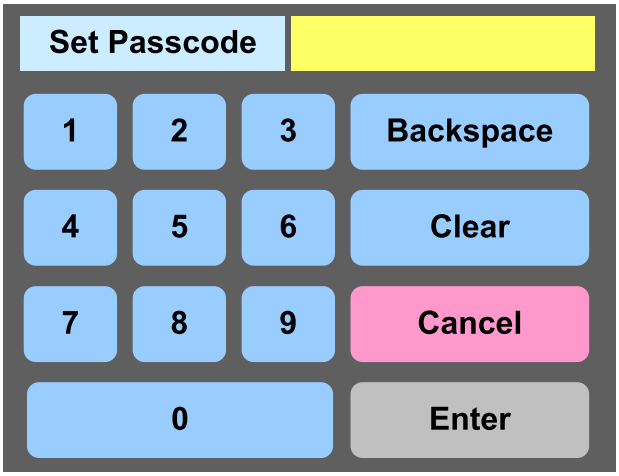


The functions on this screen are as follows:

Restricted Access: This switch will turn ON or OFF protection or blocking of any menus, except for the Passcode Settings menu, which is always Passcode protected.

Set Passcode: Touching this button proceeds to a keypad which allows you to enter a new Passcode. The screen shown in Figure 2-49 will appear. The Passcode can be any 4-digit number. Touch **Enter** to save the new Passcode or touch **Cancel** to keep the previous Passcode. Be sure to save the Passcode in a safe place for future reference.

Figure 2-49: Set Passcode Screen

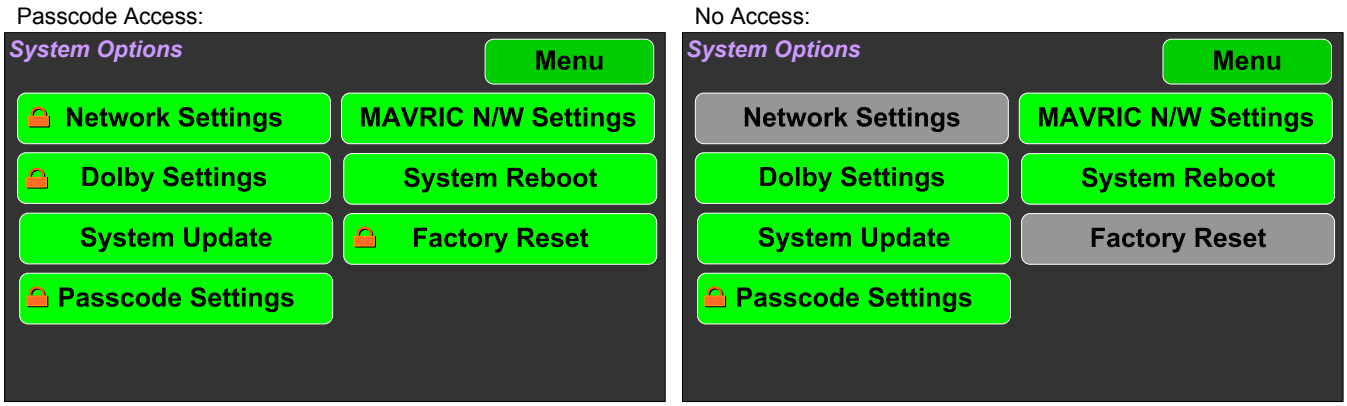


Type: Select the type of disabled button appearance using the **Type** button. The choices are:

Passcode Access: The Passcode protected function buttons include a small orange padlock icon within the buttons. This is shown in the left image of Figure 2-50. Touching these buttons will cause a Passcode entry screen to appear, as shown in the left image of Figure 2-47. The correct Passcode must be entered to proceed.

No Access: If the function buttons are protected by No Access, the buttons are grayed out and non-functional, as shown in the right image of Figure 2-50. These buttons cannot be accessed at all unless the restricted protection is removed by switching OFF the **Restricted Access** setting in this menu.

Figure 2-50: Examples of Menu Protection



Apply Default: Touching this button returns the settings in this screen to the factory default values. The Passcode becomes 0-0-0-0.

Save: Touching this button saves the settings made in this screen and returns to the **System Options** screen.

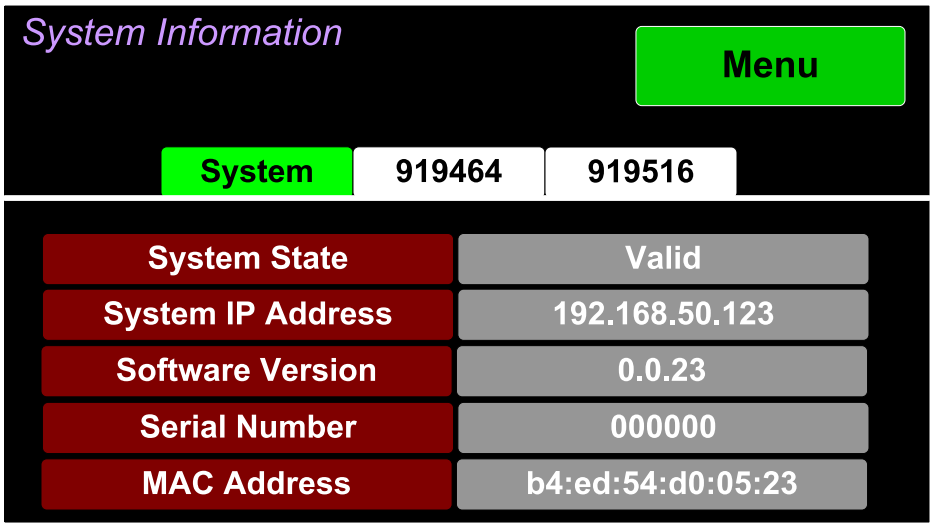
Forgotten Passcode

Although the Passcode should be remembered or securely noted somewhere, it can happen that it is forgotten. This can be remedied by performing a Factory Reset from the Wohler Web GUI. Unfortunately, this will also erase all of the menu settings. You may also contact Wohler Technical Service for help.

System Information

Touching the **System Information** button in the **Menu** displays the **System Information** screen as shown in Figure 2-51. This is a tabbed screen that will let you view various system data, as well as data for any options that are part of the system. The information shown on these screens is read only and cannot be changed.

Figure 2-51: System Information Screen – System Tab



Additional data shown on other tabs is shown in Figures 2-52, 2-53 and 2-54. Simply touch a tab to show its data. The number of tabs will vary according to how the product is equipped with options and features. Touch the **Menu** button return to the **Menu**.

Figure 2-52: System Information Screen – 919469 Tab

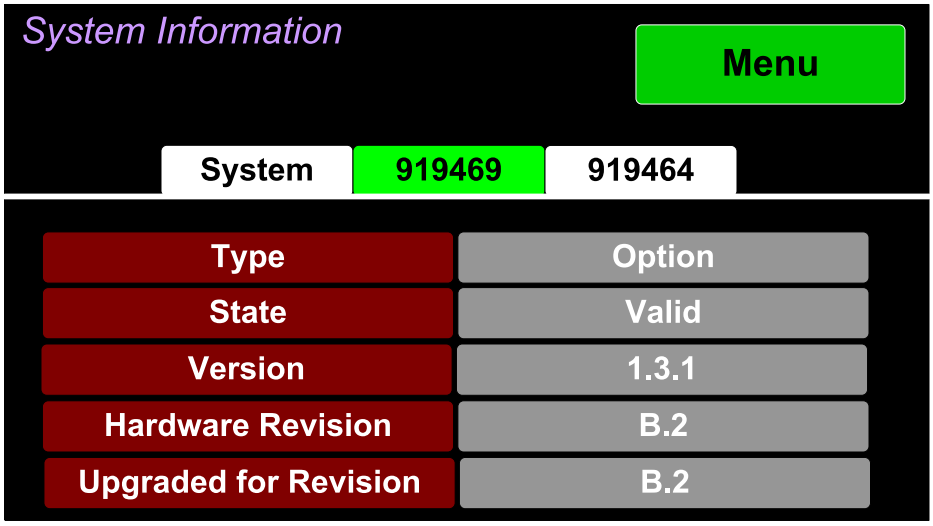


Figure 2-53: System Information Screen – 919464 Tab

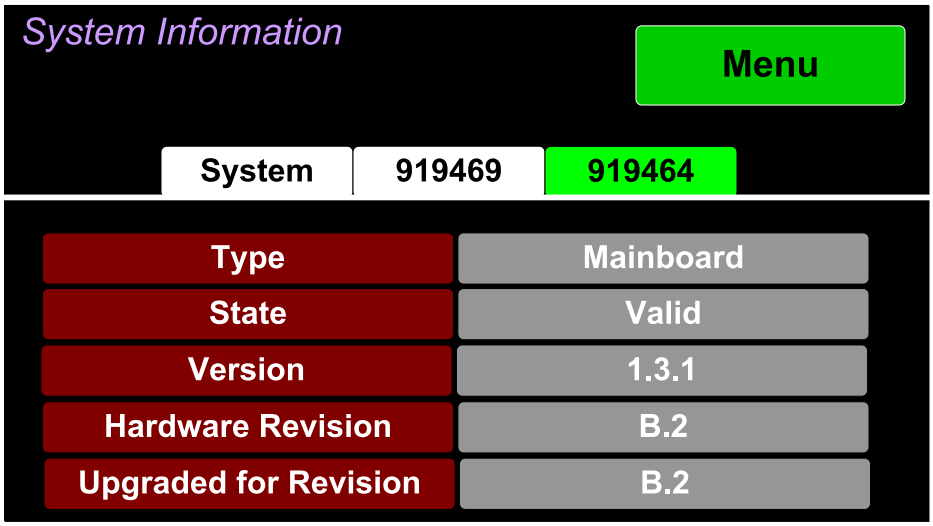
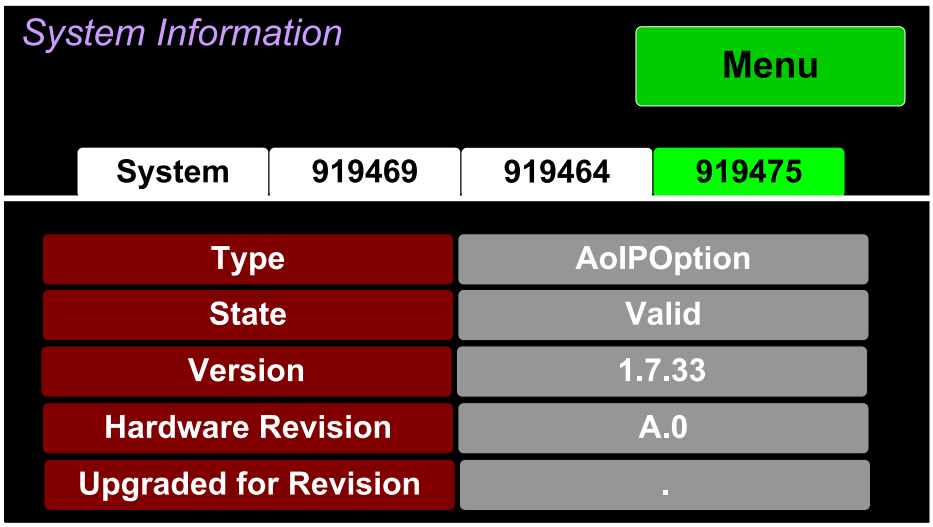


Figure 2-54: System Information Screen – 919475 Tab



CHAPTER 3: Technical Info

Table 3–1: iVAM2-ST2110 Specifications

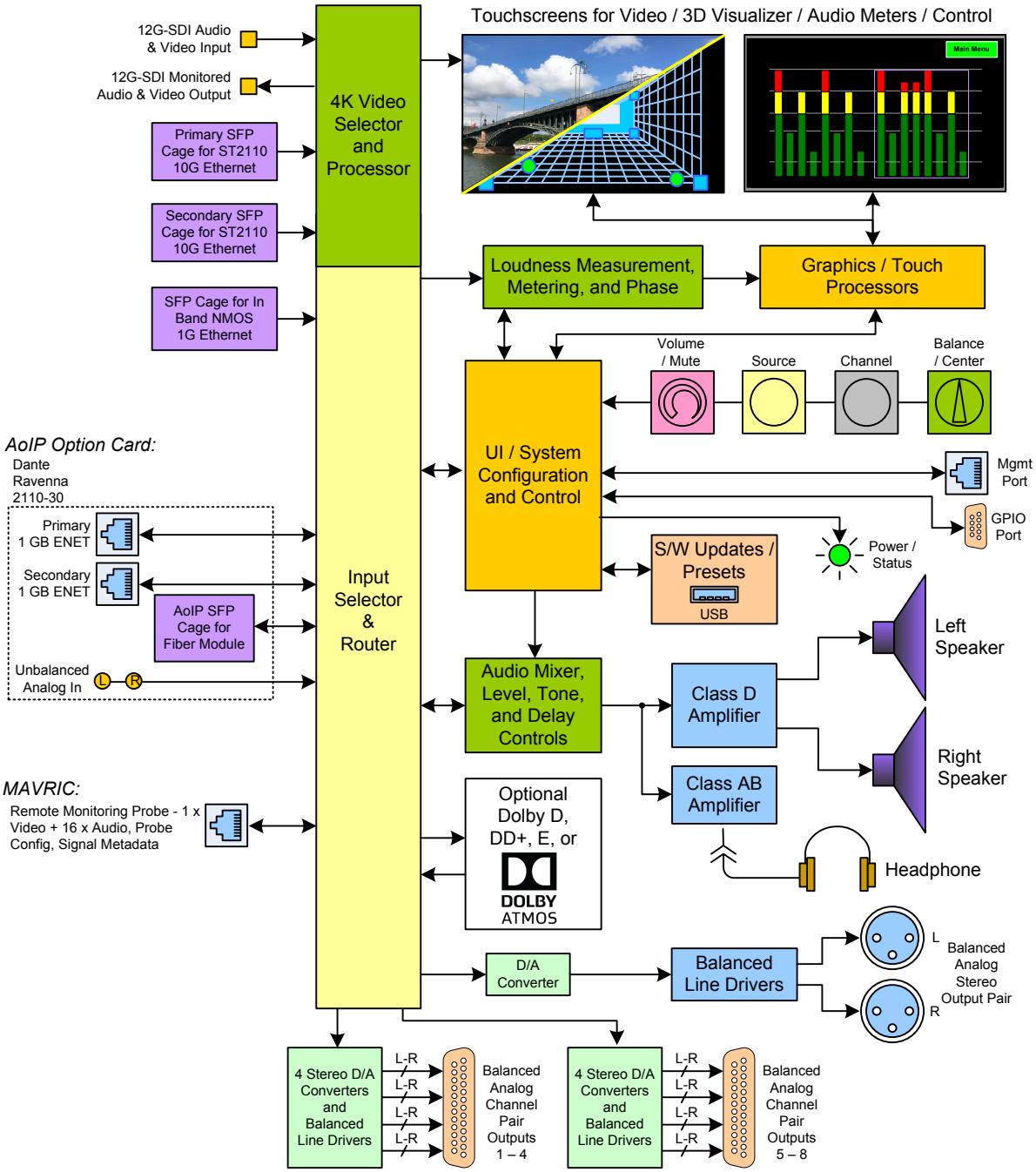
Specification	Values/Domains
Power Requirements	100 VAC to 240 V AC ± 10%, 50/60Hz
DC Power Backup	18 VDC
Power Consumption	40 Watts
Dimensions (2RU) (H x W x D)	3.5” x 19” x 9.5” (88mm x 483mm x 242mm), standard 19” rack mounting
Weight	11 lbs. (5 kg)
Supplied Accessories	AC Power Cord
Display Type	4.3” (109mm) LCD touchscreen, 24-bit RGB
Number of Displays	2
Screen Resolution	480H x 272V
Level Meters	Simultaneous Average (VU like) & PPM
Level Meter Scale	Digital Scale
Sample Rate	48kHz
De-Multiplexing	16 channels from 12G/3G/HD/SD-SDI
SDI Input	One 12G/3G/HD/SD-SDI Input
SDI Output	One 12G/3G/HD/SD-SDI Output of the monitored SDI input
Cable/Fiber Length (max)	COAX (such as Belden 1694A): > 150 m
	Multi-mode fiber: 1 km
	Single-mode fiber: 10 km

Specification	Values/Domains
Video Formats	Ultra HD (4K): 2160p23.98/24/25/29.97/30/50/59.94/60
Audio Formats	Dolby E / D / DD+ (E-AC4) Up to 48 kHz audio
Analog Outputs	16 balanced (8 L/R channels) on 2 x DB25F 2 balanced (1 L/R channel) on 2 x XLR-F +24 dBu max
Analog Output Frequency Response Response	40 Hz to 20 kHz (± 1Db)
Analog Output Distortion	<0.01% THD+N
Analog Output Dynamic	> 100 Db
Analog Output Reference Level	-20 dBfs = +4 ± 1.0 dBu
Internal Speakers	Stereo, 80mm, Full Range
Peak Acoustic Output	104 dBa SPL (@ 2 feet)
Hum and Noise	Better than -75 Db below full output
Power Output	15 Watts RMS, 30 Watts peak (each side)
Acoustic Frequency Response	60 Hz to 16 kHz (± 5 Db) (-10 Db @ 50 Hz, 20 kHz)
Headphone Output	Stereo, 40 Hz to 20 kHz (± 1 Db)
Headphone Load	8Ω to 150Ω

Table 3–2: iVAM2-ST2110 Options

Option	Part #	Description
OPT-DANTE (w/Analog Inputs)	829171-3	Enable monitoring from up to 64ch Dante™ input streams, including primary and secondary RJ-45 for hitless/2022-7 support (for Dante and 2110-30 signals) and a Gigabit SFP cage allowing multi-mode and single-mode network SFPs for AoIP signals. Includes 2 x unbalanced Analog Inputs. Hardware card with activation key
OPT-RAVENNA 64 (w/ Analog Inputs)	829171-6	Enable monitoring from up to 64ch Ravenna™ input streams, including primary and secondary RJ-45 for hitless/2022-7 support (for Dante and 2110-30 signals) and a Gigabit SFP cage allowing multi-mode and single-mode network SFPs for AoIP signals. Includes 2 x unbalanced Analog Inputs. Hardware card with activation key
OPT-DOLBY	829167	Enable monitoring of Dolby D, DD+ or E streams over 2110. Software activation key
OPT-DOLBY-ATMOS	829163	Enables monitoring of Dolby Atmos®, D, DD+ or E and ED2 streams over 2110. Software activation key
OPT-GPIO	829198	Enables 4 GPIs and 2 GPOs. Software activation key
OPT-ANALOG	829170-1	Enables 16 channels of analog output from selected source or mix. Software activation key
OPT-DANTE OPT-RAVENNA	829171	AoIP option card to enable decoding and monitoring of up to 64 ch of DanteTM OR Ravenna™ / AES67/ 2110-30 Input streams with NMOS Support. Provides 2 x RJ-45 ports for 2022-7 support + SFP cage allowing MM and SM SFPs as an alternate primary for AoIP Signals.

Figure 3–1: iVAM2-ST2110 Block Diagram



CHAPTER 4: The iVAM2-ST2110 Web GUI

The self-contained iVAM2-ST2110 Web GUI allows you to customize the configuration of the iVAM2-ST2110 to suit your needs. If the default configuration of the iVAM2-ST2110 suits your needs and you prefer to use it that way, then you do not need to use the iVAM2-ST2110 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 iVAM2-ST2110 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

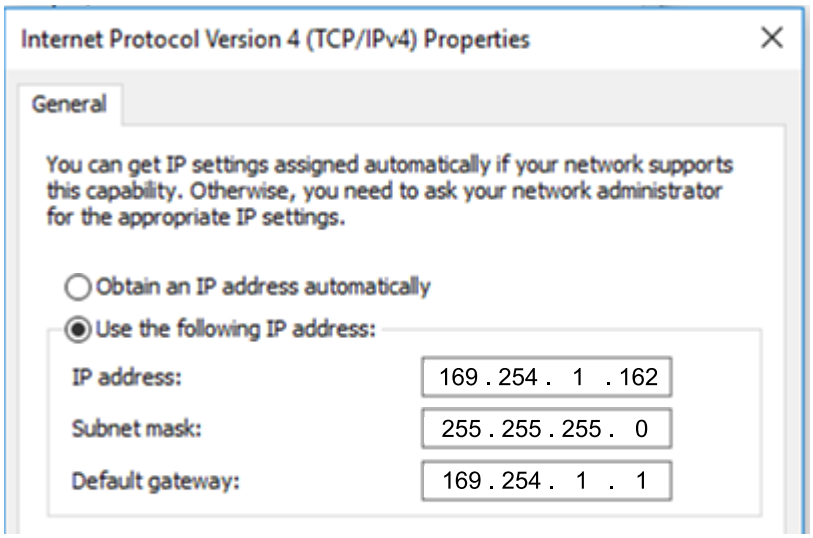
The iVAM2-ST2110 can operate with a static (fixed) or dynamic (DHCP) IPv4 address. When received from the factory the default address will be **169.254.1.xx** where xx is the last octet of the management Mac address. For example, if the Mac address is b4:ed:54:d0:04:28 then the IP address would be 169.254.1.40 (40 is the decimal equivalent for the last octet of Mac address 28.) There two basic types of connections that may be used to connect the iVAM2-ST2110 to a web browser, a **Peer-to-Peer Connection** or a **Network Connection**.

Peer-to-Peer Connection

The most straightforward way to connect the iVAM2-ST2110 to a web browser, free of possible network conflicts, is to establish a static peer-to-peer connection between the setup computer and the iVAM2-ST2110. 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

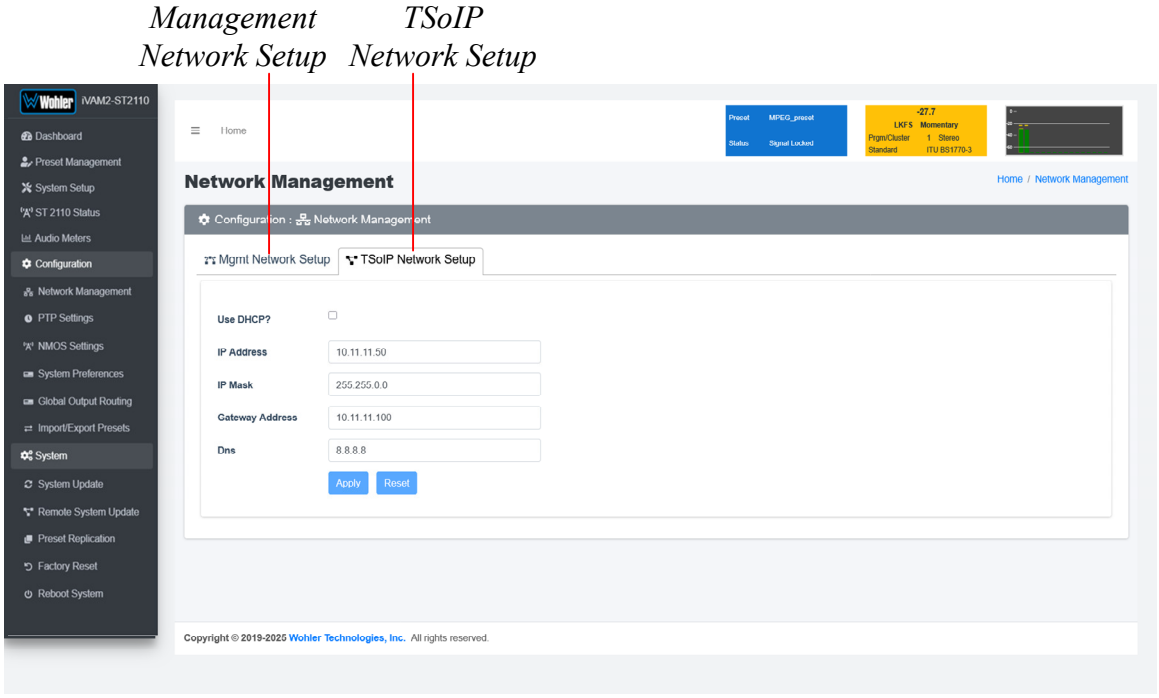


Close the control panel and reboot the host computer after making an IP address change to be sure the change takes effect. Either reconnect to the installed network or continue with this direct connection to access the iVAM2-ST2110 Web GUI.

Network Management

The Network Management screen is shown in Figure 4-2. There are two tabs, the Management Network Setup and the TSoIP Network Setup.

Figure 4–2: Network Management Screens



The Management Network Setup pertains to the Network Management Port on the back panel of the product. This port must be set up to communicate with the Wohler Web GUI or MAVRIC. The TSoIP Network Setup pertains to the TSoIP Network jack on the back panel and it must be set up to allow connection to the MPEG material to be monitored. The setup procedure, as follows, is essentially the same for both.

When connected to a network, the iVAM2-ST2110 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 iVAM2-ST2110's address. Make the corresponding address, mask and gateway changes in the iVAM2-ST2110 **Network Setup** page. Refer to the **Network Setup** section of this chapter.

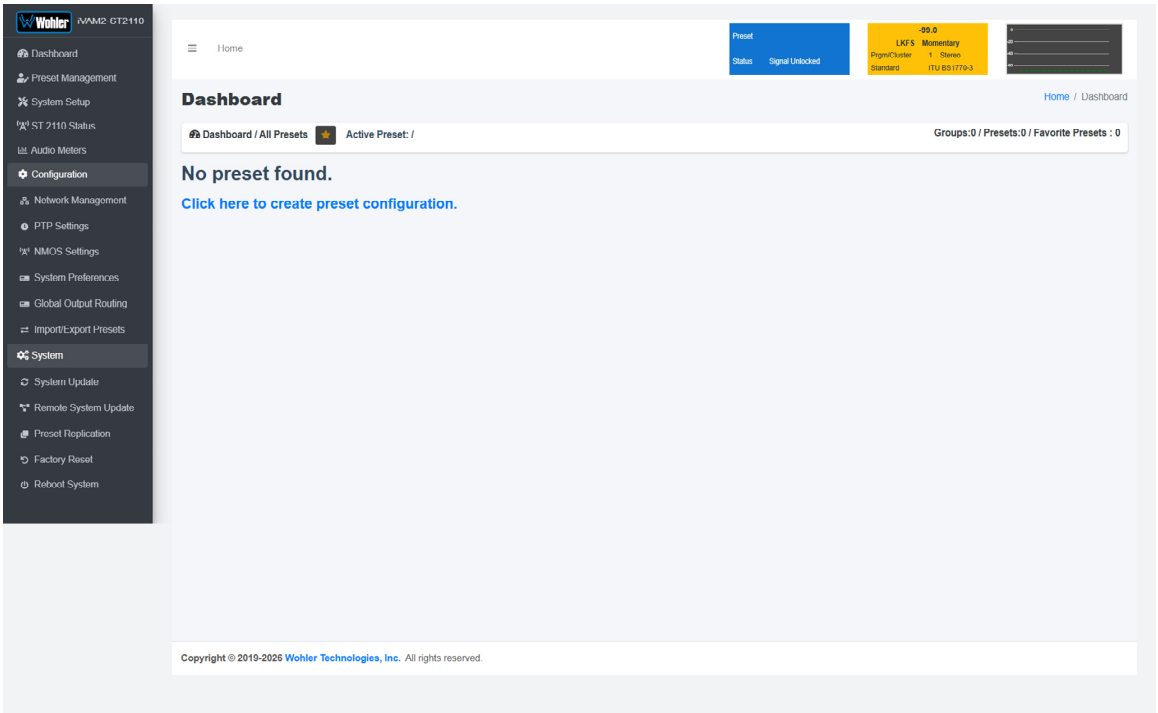
Otherwise set the iVAM2-ST2110 to DHCP address mode by checking the box for 'Use DHCP?' in Network Setup and have your IT administrator assign rights and settings for operation on the network. Allow enough time for your network's DHCP server to recognize a new network device and assign an address after booting.

The iVAM2-ST2110 uses link local addressing for its internal network, so no accommodation for this need be made in the network.

Dashboard

Throughout the Web GUI, pages are a click or two away using the list of selections on the left side. The **Dashboard** page shows all of the available Preset configurations at a glance. The iVAM2-ST2110 allows you to assign Presets to particular groups. In Figure 4-3, this page is shown as it would look before any Presets are defined.

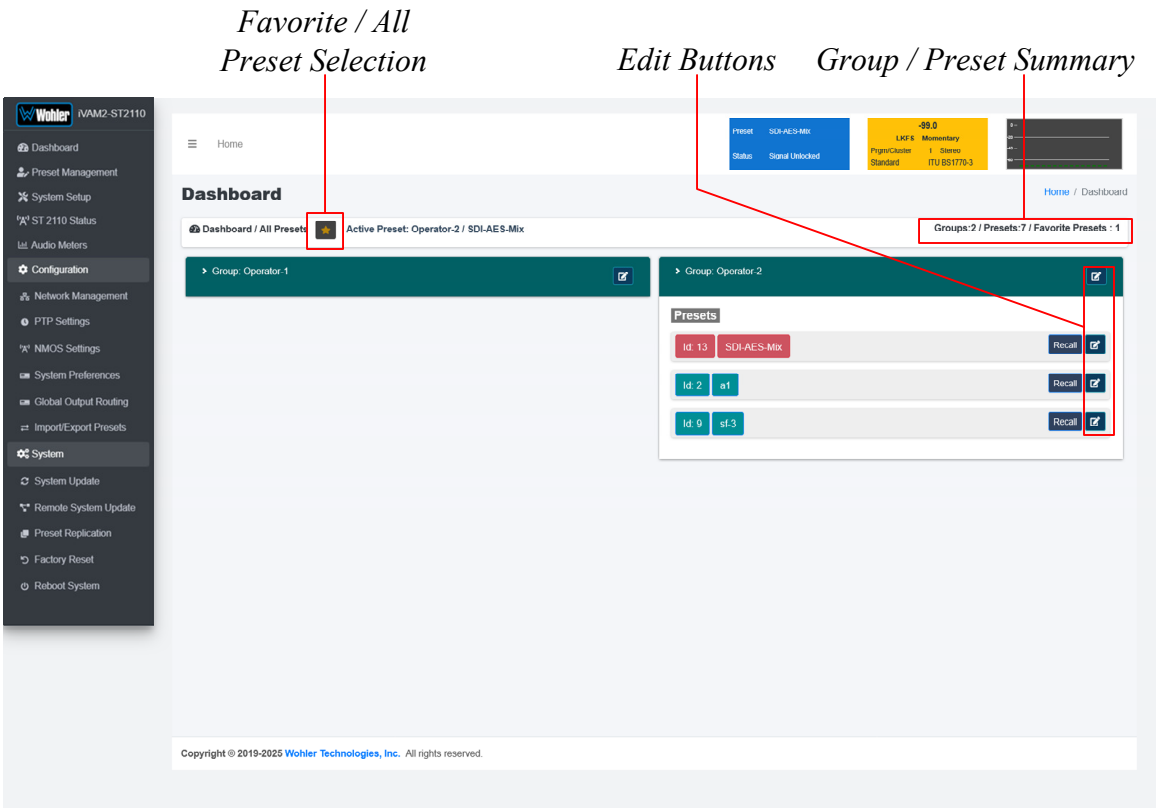
Figure 4–3: Dashboard Preset Overview



To view all of the Presets within a group, click on that group.

In Figure 4-4, it can be seen that there are three Presets in the Operator-1 group and only one Preset in the Operator-2 group. The currently selected active Preset for local operation is shown in red. In Figure 4-4, this is the Preset named SDI-AES-Mix.

Figure 4–4: Dashboard Preset Recall / Edit



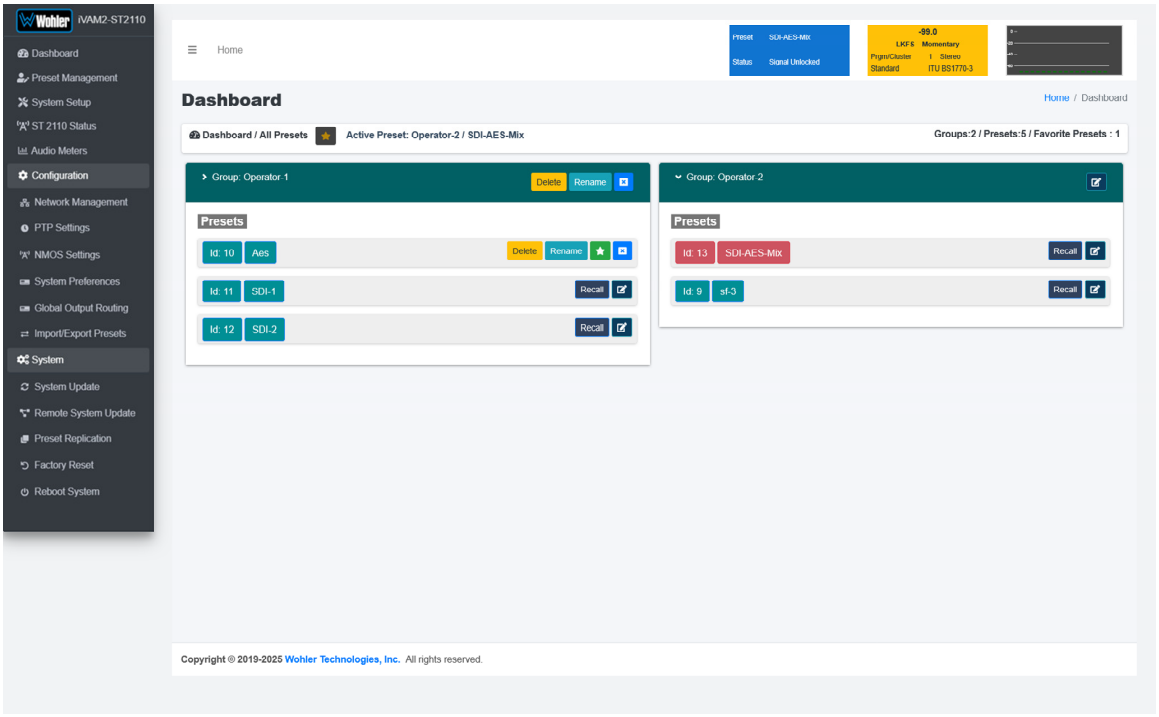
A Group / Preset Summary is shown in the upper right of the screen. This enables you to see the total number of Groups, Presets and Favorite Presets in the iVAM2-ST2110.

Use the  button, as shown in Figure 4-4, to toggle between Favorite Presets or All Presets.

Click the **Recall** button to recall a Preset. To Edit a Preset, click the **Edit** icon, as shown in Figure 4-4, to the right of the associated **Recall** button.

After clicking the **Preset Edit** or **Group Edit** button, a screen similar to that shown in Figure 4-5 will appear.

Figure 4–5: Dashboard Preset Edit



The Edit options for a **Preset** are:

1. Delete: Remove the Preset from the system. Do Not delete the currently active Preset.
2. Rename: Rename the Preset, but keep all of its other characteristics.
3. Make Favorite: Make this Preset a favorite. This can be done for frequently used Presets.

The Edit options for a **Group** are as follows:

1. Delete: Delete the Group and all of the Presets it contains.
2. Rename: Rename the Group, but keep all of its other characteristics.

Preset Management

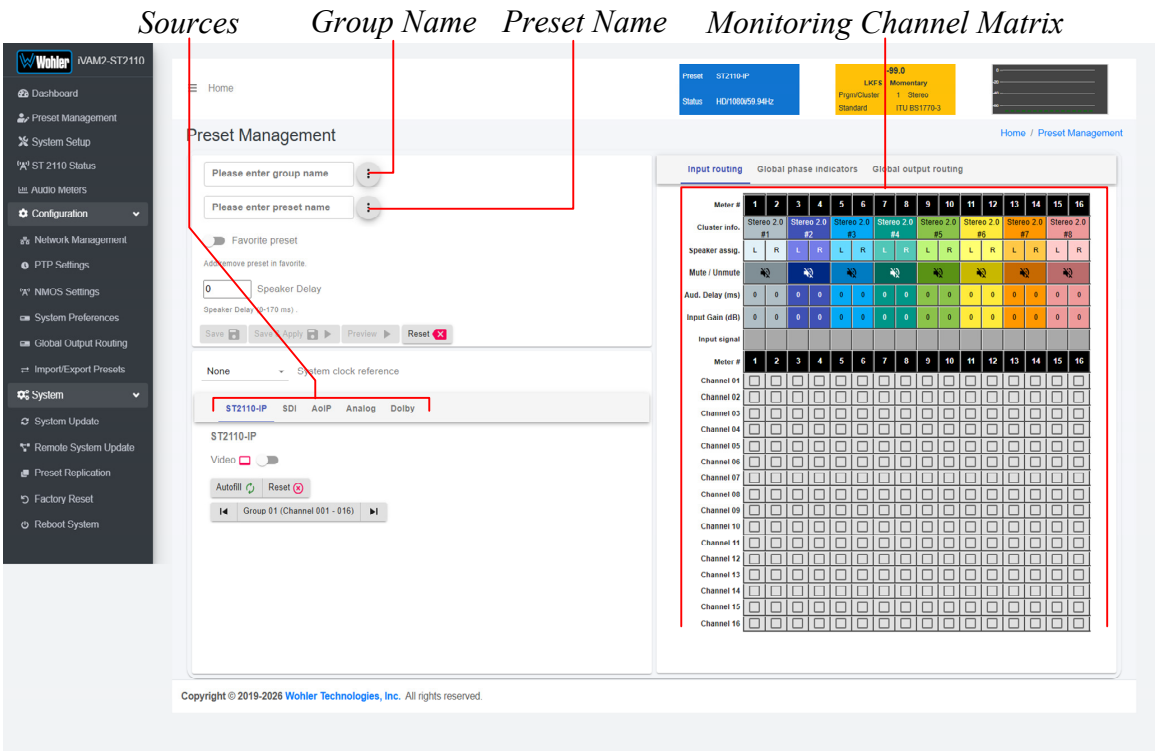
Although the **Source Select** function, as described in the Source Select section of Chapter 2, can be used to choose which input sources to monitor, often a more customized input monitoring scheme will better meet your needs. Inputs from multiple sources can be arranged in logical metering and monitoring configurations using Presets. Almost any number of Presets can be created, saved, and identified with unique names of your choosing. Using these names, Presets can be recalled immediately from the iVAM2-ST2110 front panel.

Preset Input Routing

The **Configuration - Preset Management - Preset Input Routing** tab is where the routing of input source signals to the meters and the speakers can be defined in virtually any arrangement.

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 Management** 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: Preset Management Screen

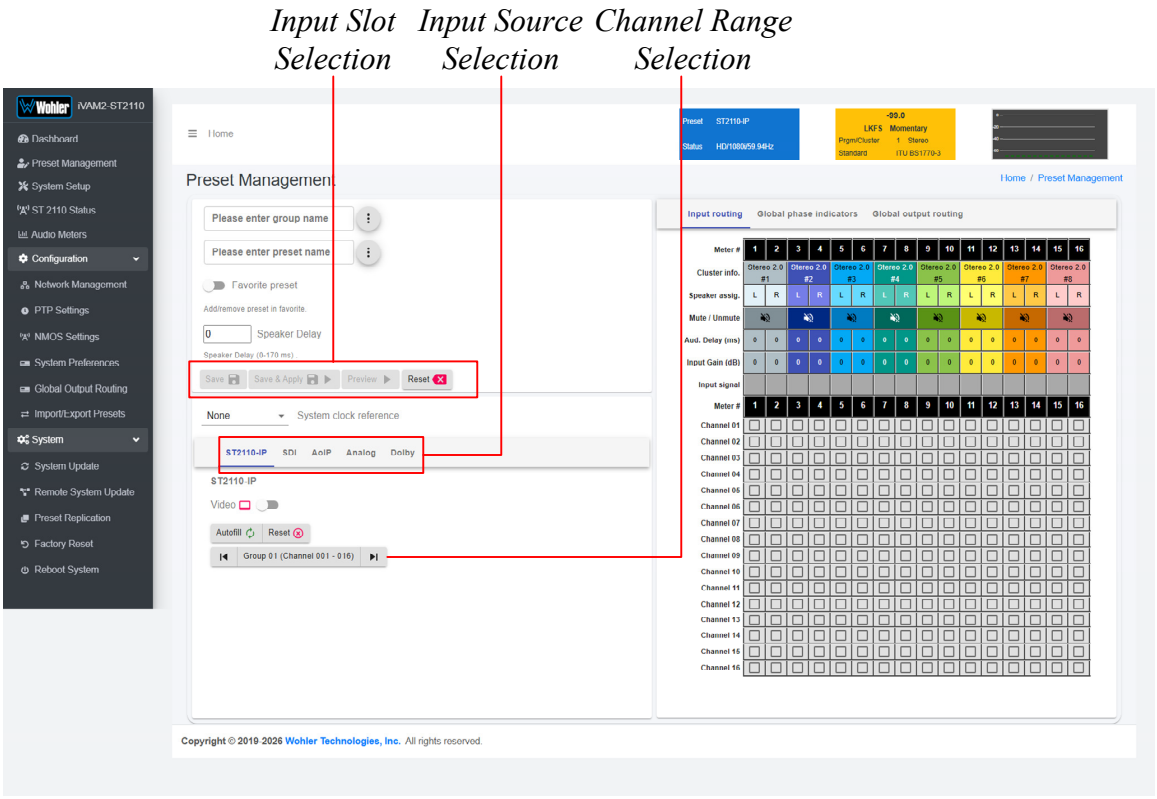


1. **Preset Configuration**: You may create a new Preset, adjust an existing Preset, or create a new Preset from an existing Preset. Refer to Figure 4-7:
    - **To create a new Preset**, first either select a Group from the pull down list or type the name of a new Group in the Group Name field

provided. Then enter a name for the new Preset in the Preset Name field. Then make all of the settings needed and save it.

- **To make changes to an existing Preset**, select the Group and Preset from the pull down lists, make the needed changes and save it.
- **To create a new Preset starting with an existing Preset**, first select the Group and the existing Preset from the pull down lists. Next, enter the name for the new Preset and save it. Then make the needed changes and save it again.

Figure 4–7: Create / Adjust Preset



2. **Input Selection**: Audio from any of the input sources in a given Input Slot (option module) 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. If you select MPEG, you will need to set the data required in the MPEG section including the video and audio PIDs and so forth. 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 Channel Range of 16 can also be selected from the box in the lower left of the screen.
3. **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.

4. **System Clock Reference:** For reliable operation, it is imperative that an appropriate clock reference selection be made. This is done in a pull down menu. Refer to Figure 4-8. The lack of an appropriate clock reference may result in erratic monitoring or no ability to monitor at all.

Figure 4-8: System Clock Reference

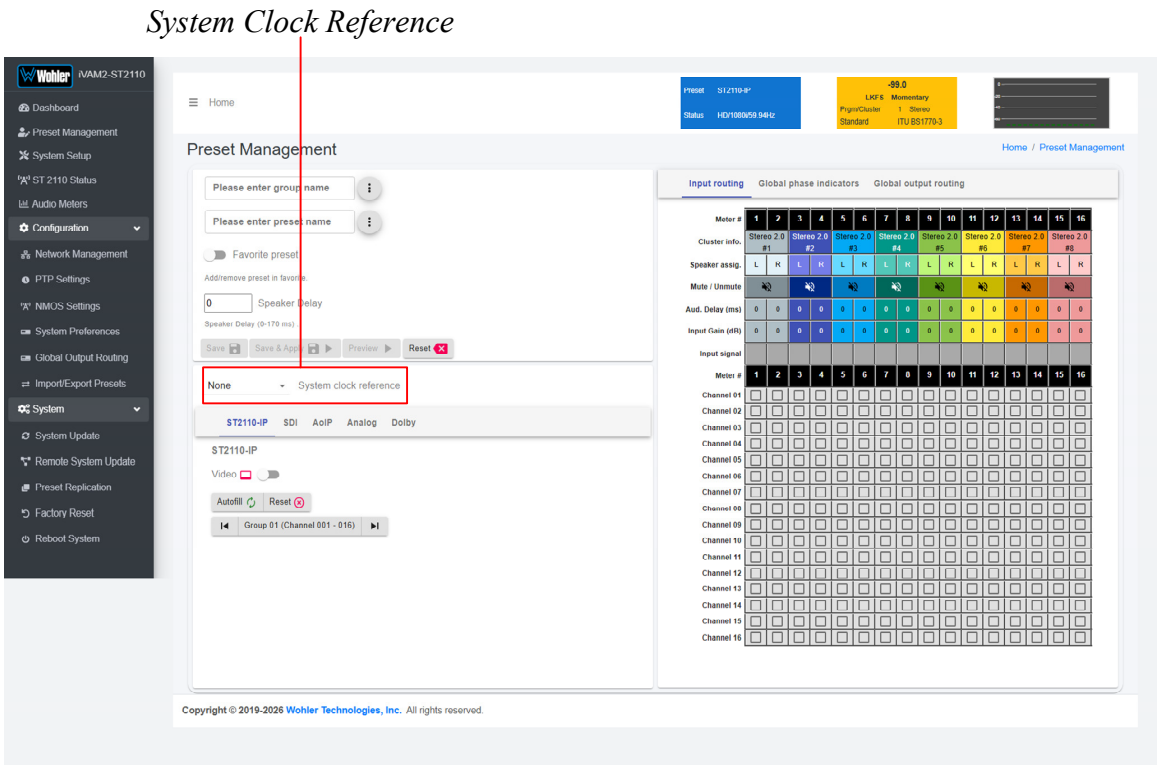
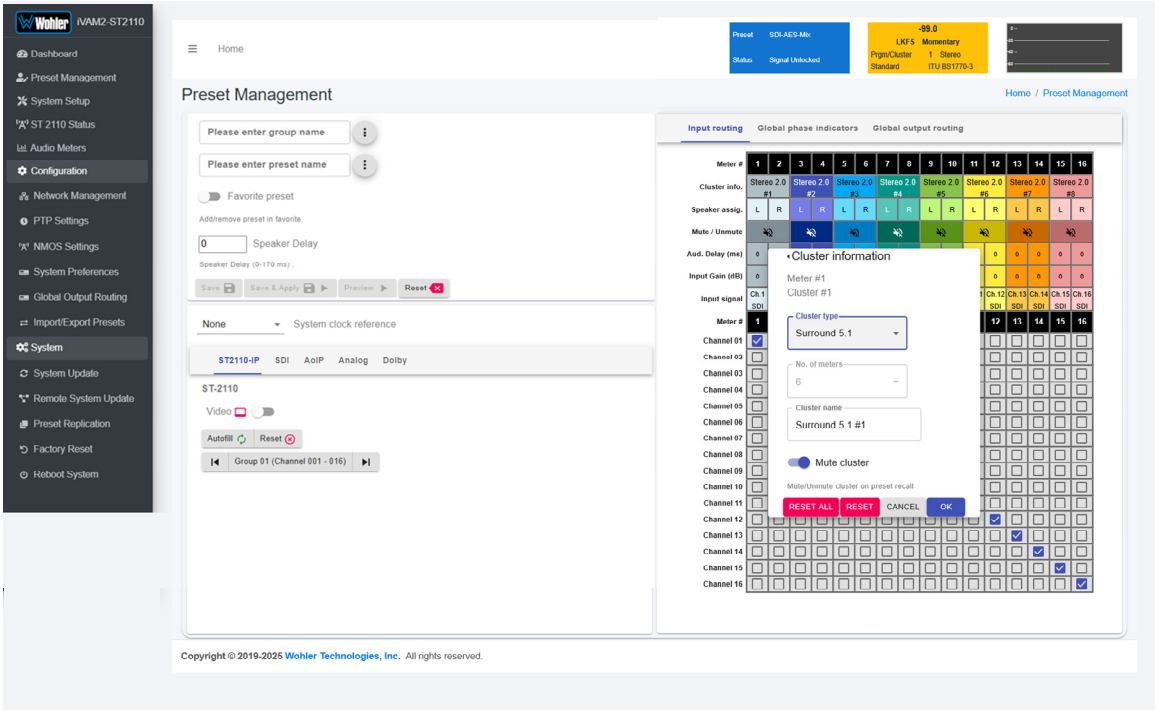


Figure 4–9: Cluster Assignment



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.

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.

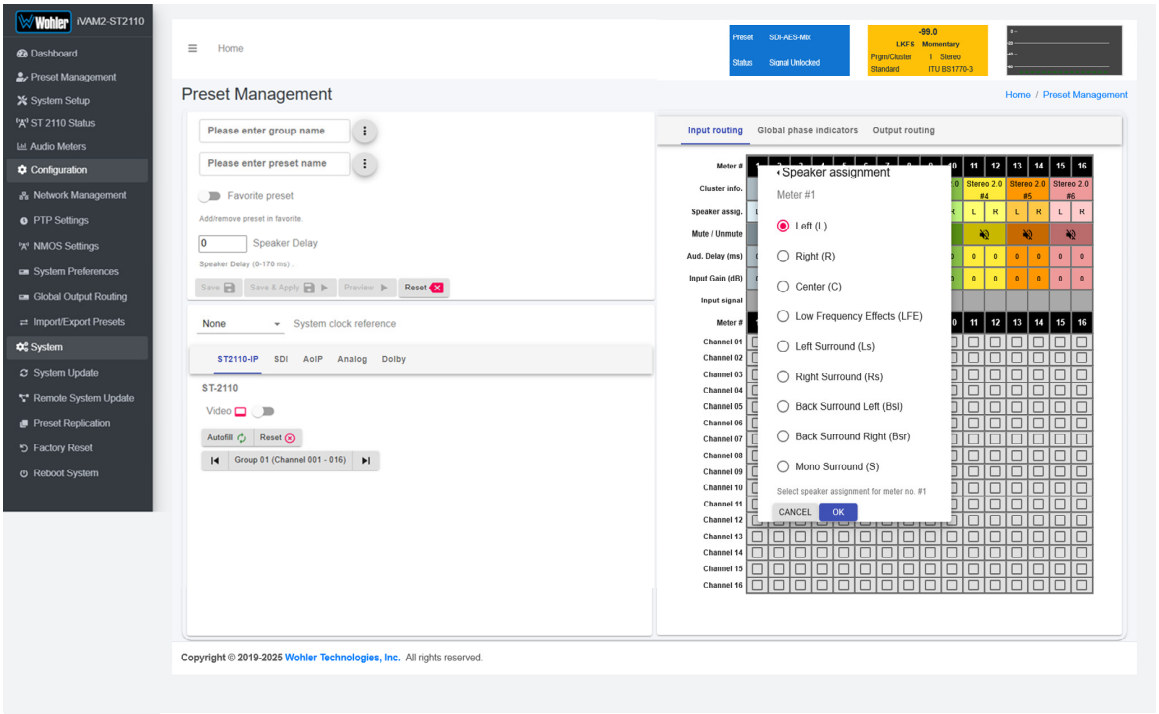
A default name will be chosen and it will appear on the metering screen. You may name the Cluster anything you want by simply changing the words within the **Cluster Name** field.

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.

5. **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 **OK** or **Cancel** to close the box. Refer to Figure 4-10.

Figure 4–10: Speaker Assignment



6. **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.

7. **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.

   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 to install software licenses.

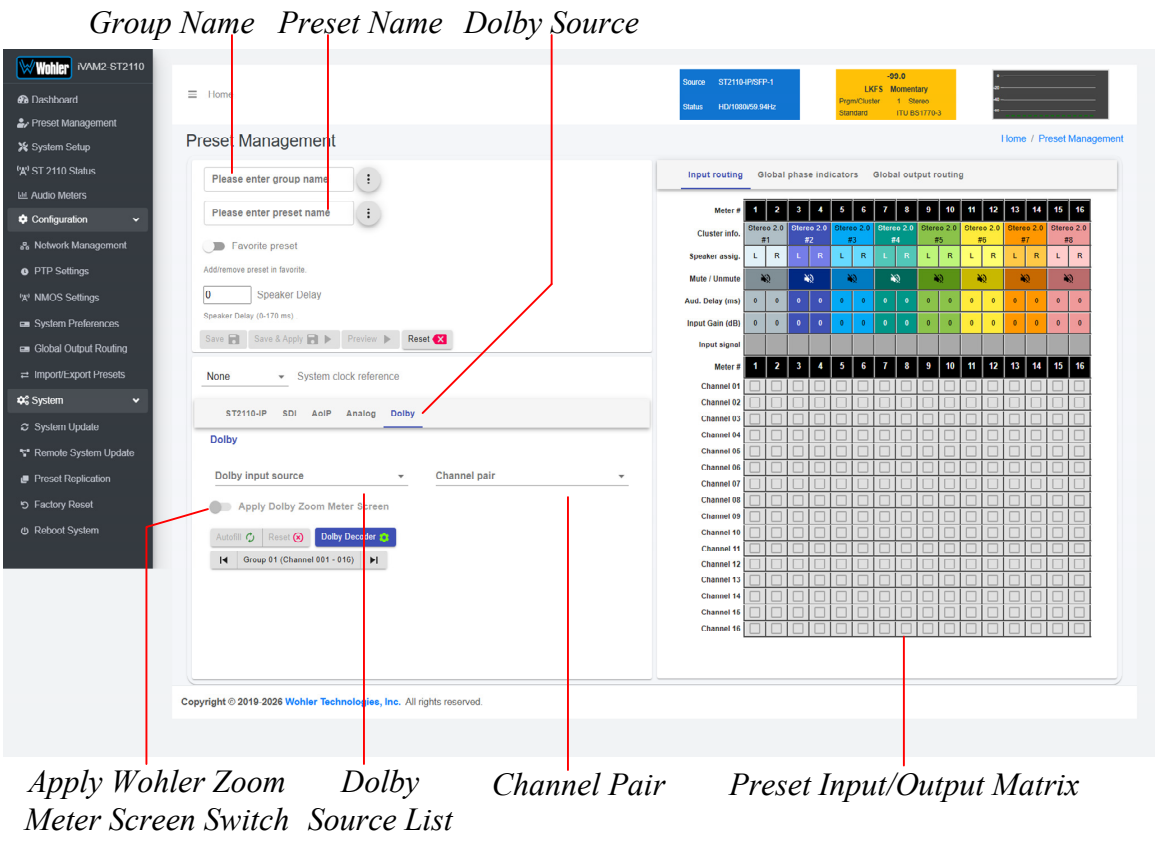
8. When you have finished creating a Preset or making changes to a Preset, either click the **Save** button to save the Preset, click the **Save & Apply** button to save the Preset and make it the current Preset, or click the **Reset** button to discard the changes just made.

Dolby Presets

Dolby Presets are useful for customers who want to simultaneously monitor both Dolby decoded channels and other inputs or want to have an auto-zoom to monitor a certain pair that is known to be carrying Dolby encoded audio.

Creating a Dolby Preset is in many ways very similar to creating any other Preset. Refer to the **Preset Input Routing** section of this chapter. Figure 4-11 shows a Dolby Preset being created.

Figure 4-11: Creating a Dolby Preset



After clicking **Preset Management** in the list on the left, and selecting or creating a Group name and Preset name, as shown in Figure 4-12, use the following steps to set up a Dolby Preset:

1. Click the **Dolby Input Source**, as indicated in Figure 4-11. A list of all of your physical inputs will display. Select the one containing the Dolby signal that you are interested in monitoring.
2. Click the **Channel Pair**. A list of all of the channel pairs in your selected source appears. Select the one that contains the Dolby signal to be monitored.
3. Using the **Preset Input/Output Matrix**, select which decoded Dolby channels should appear on which meters. To automatically fill out this matrix, mapping channels 1 - 16 to meters 1 - 16, simply click the **Autofill** button. Note that by default, channels 15 and 16 are a downmix of the decoded Dolby channels.
4. Moving the **Apply Wohler Zoom Meter Screen Switch** to the **ON** position

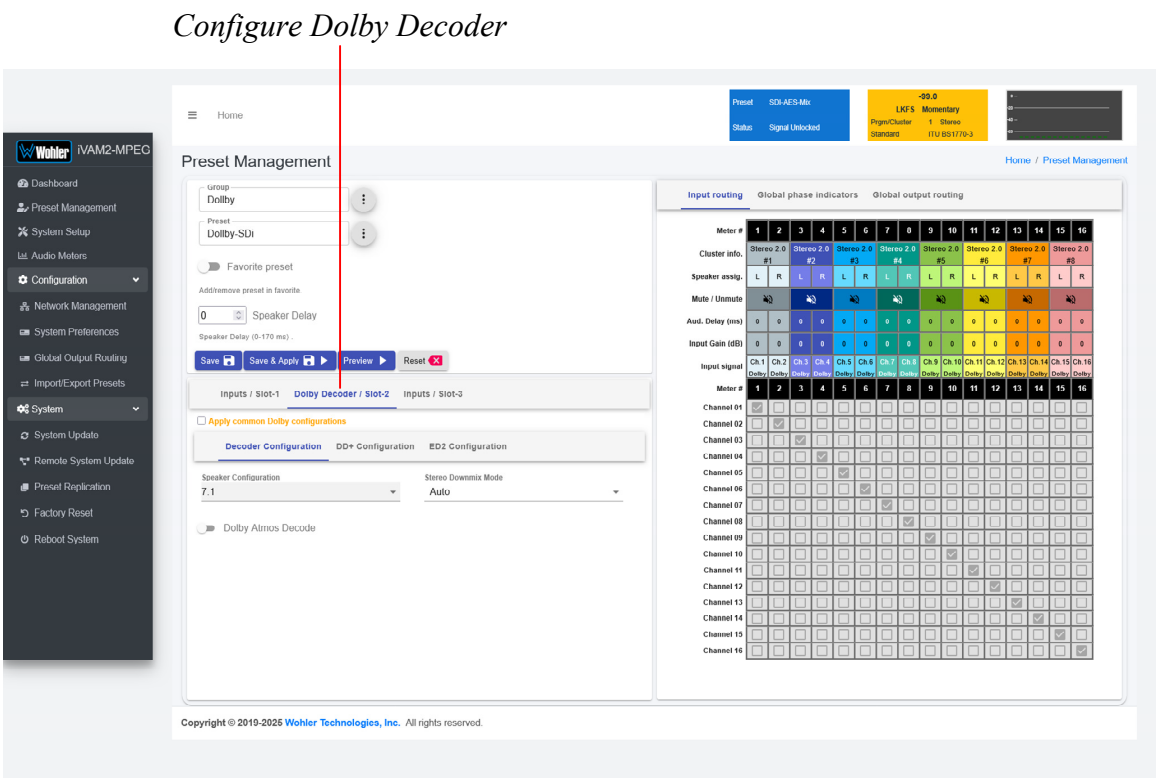
(to the right) allows you to view the Dolby Preset in a similar way as the **Wohler Zoom Screen** is seen. When this is done, the **Wohler Zoom Screen** will have the **Exit Dolby** button replaced by a **Menu** button.

Note: If the **Apply Wohler Zoom Meter Screen** option is turned on and if **Apply Common Dolby Configurations** is selected while creating a Dolby preset, the channel clustering shown on the screen follows the **Speaker Configuration** as set in the **Dolby Configuration**. Otherwise, the channel clustering shown on the screen follows the speaker configuration selected while creating a Dolby preset.

Note: The **Loudness** calculations are always done on the Dolby channels, even if the Preset has other mixed channels.

Refer to Figure 4-12 to configure the Dolby decoder for this Preset.

Figure 4-12: Dolby Decoder Configuration



Click the **Dolby Decoder** tab, as indicated in the above figure. You may then select from the tabs below it to choose the following:

1. Decoder Configuration
2. DD+ Configuration

Each of these tabs contains one or more settings that you can set up to customize the decoder behavior. Select each one to set them according to your preferences, to be used in this Dolby Preset only.

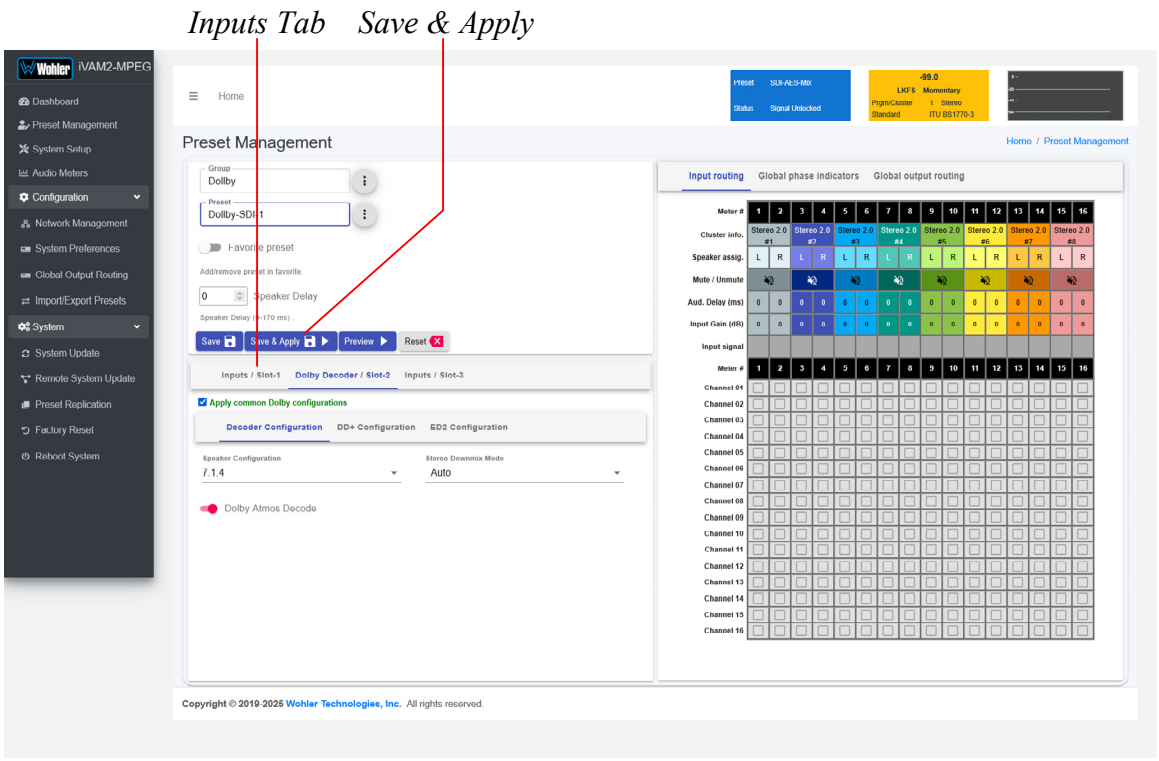
Alternatively, if you would rather set up the Dolby Decoder to operate as is set in the Common Dolby configuration of this unit, simply click the **Apply Common Dolby Configurations** checkbox. The **Dolby Settings** section of this chapter explains the **Common Dolby Configurations**. The screen will then appear as is shown in Figure 4-13.

Note: You may also replace some of the decoded channels with un-encoded input source channels so that they can all be monitored on the same meter screen. To do this, use the following steps:

1. In the **Preset Input/Output Matrix**, uncheck the Dolby channels that will be replaced from the numbered meter positions.
2. Click the **Inputs** tab shown in Figure 4-13.
3. In the row of tabs below the **Inputs** tab, click the tab for the source for the channels you want to replace some of the decoded Dolby channels. After you do this, the unchecked columns in the **Preset Input/Output Matrix** are highlighted and can now be checked for the source channels that you want to monitor, routing them to the meters you choose.

Note: If you combine decoded Dolby channels with other channels on the same metering screen and if they do not have the same clock source, then audio glitches can appear.

Figure 4-13: Apply Common Dolby Configurations

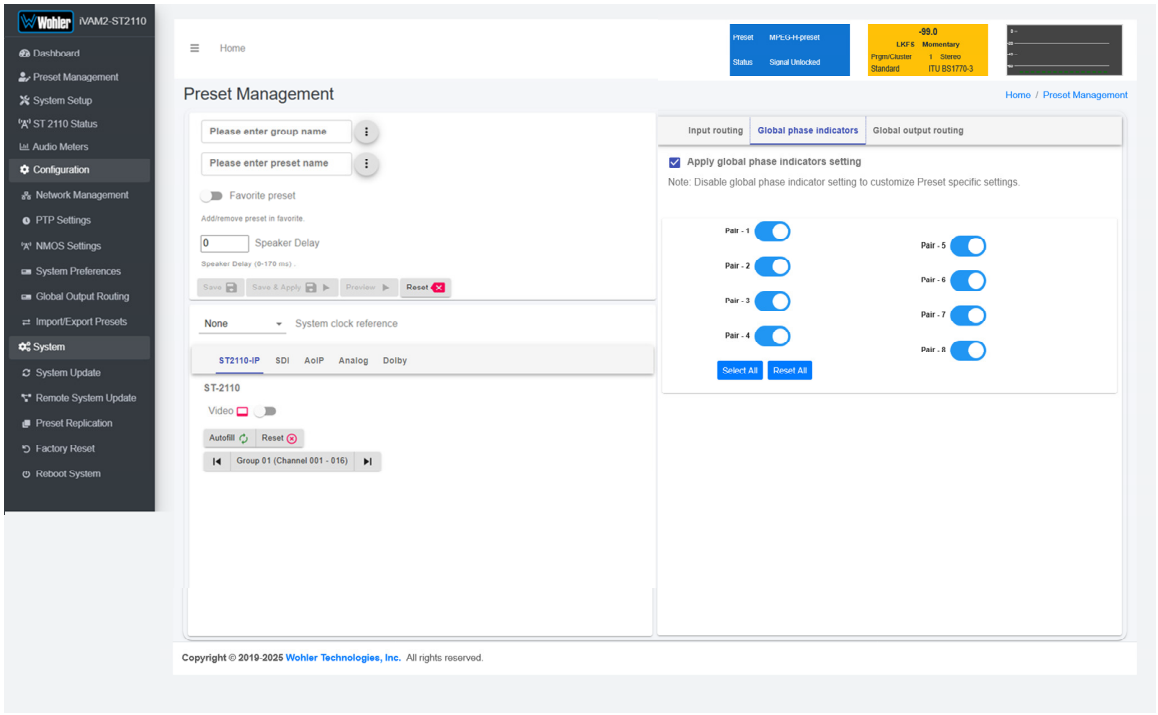


When you have finished making all of the settings for this Dolby Preset, click **Save & Apply**.

Phase Indicators by Preset

The **Configuration - Preset Management - Phase Indicator** tab is where the Phase Indicators can be enabled to show on the Audio Meters screen or whether they shouldn't according to each Preset. Generally speaking, the Phase Indicators should be shown, but if the channels of any pair contain dissimilar material, then the Phase Indicator for that channel pair should be disabled. This is to keep the operator from seeing the Phase Indicator frequently but needlessly light. An example of this situation would be when the Center channel and the LFE channel are on the same pair in a 5.1 configuration.

Figure 4–14: Preset Management - Phase Indicator



Follow these steps to create a unique Phase Indicator setup for a Preset:

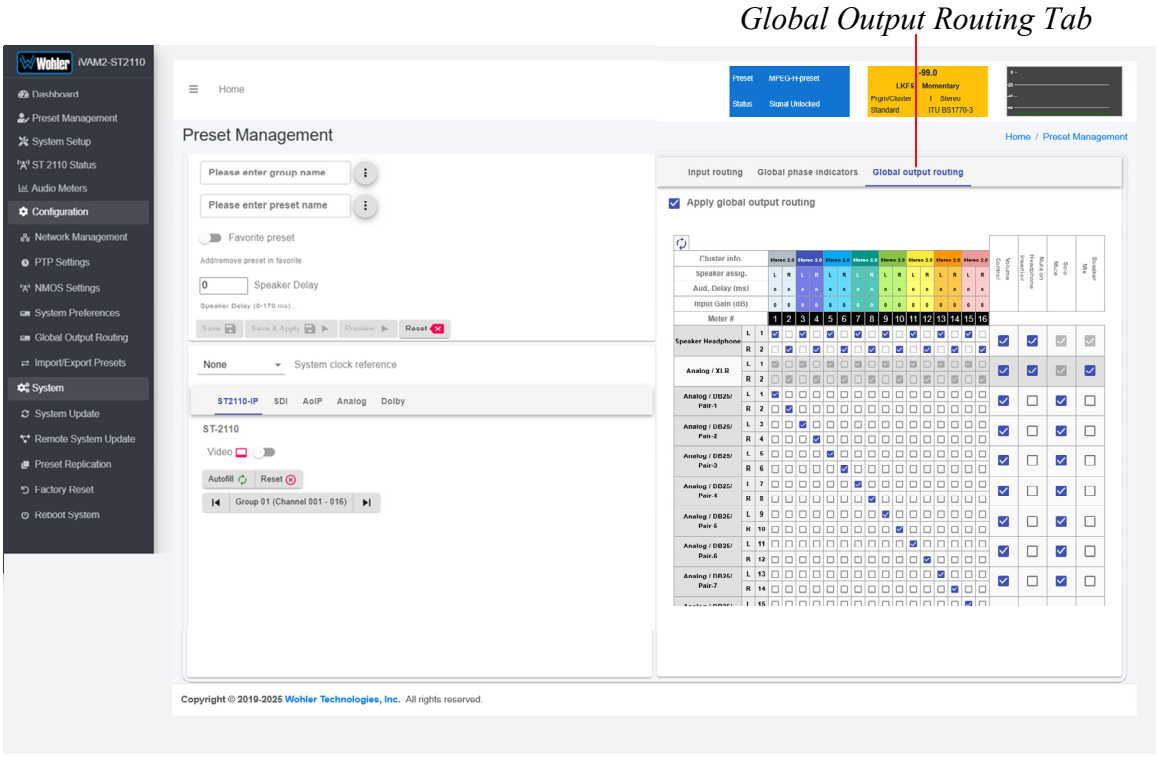
1. If the Phase Indicator setting in this Preset is to be different from the Common Phase Indicator setting, then uncheck the Apply Common Phase Indicator Settings box.
2. Click on any channel pair switch(es) to enable or disable the Phase Indicator for that channel pair.
3. When you have finished creating 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.

Output Routing by Preset

The **Output Routing** tab allows you to determine exactly which input channels are routed to which outputs. It appears as shown in Figure 4-15. This very flexible capability allows you to route signals according to Preset or as a default for the whole system. Refer to the **Global Output Routing** section in this chapter to learn the function of each of the checkboxes and of the matrix in this tab.

To set up a different input to output routing scheme for the Preset you are creating, click the **Global Output Routing** tab and uncheck the **Apply Global Output Routing** checkbox. You may then adjust the output routing as you desire on this tab and it will only apply to this Preset.

Figure 4-15: Global Output Routing Preset Tab



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 the above figure.

Output Routing

The **Output Routing** feature (OPT-OUTPUT-ROUTING) allows channels to be routed or combined and routed in custom ways to various destination outputs. **Output Routing** is applied to:

1. Signals monitored using "Input Source select" from the Front Panel,

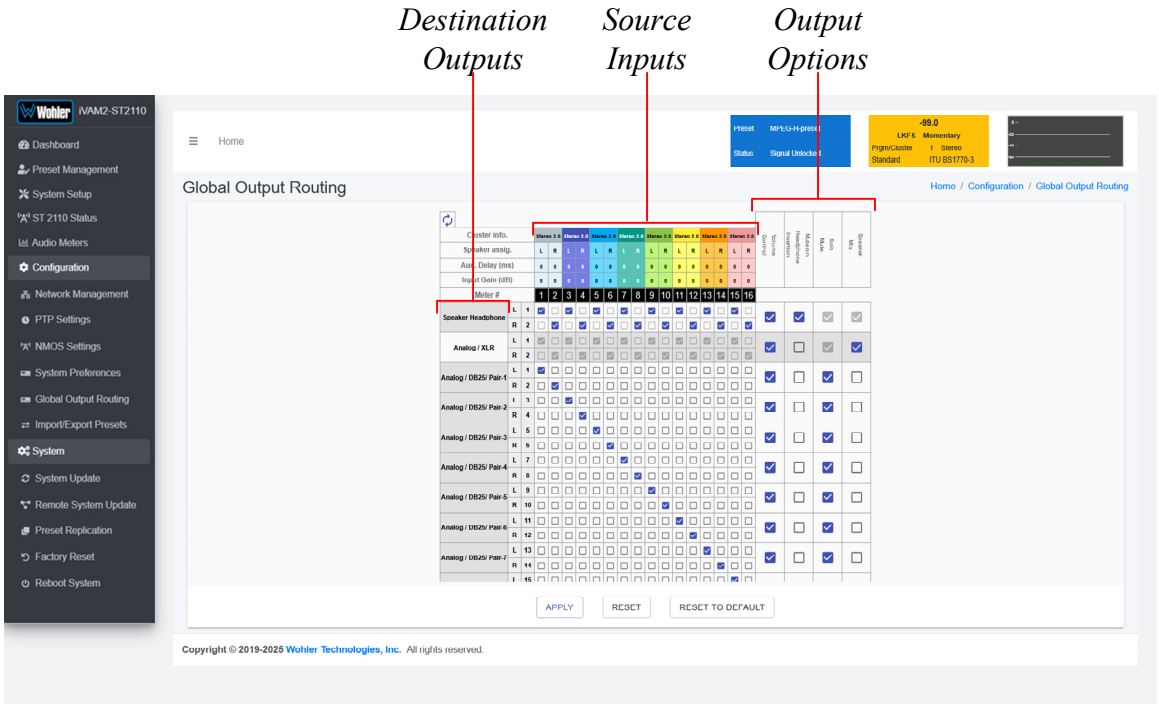
2. Presets that have been created to apply the Output Routing.

Any change to the routing will affect the Presets that have "Apply Output Routing" selected. For example, multiple channels of a 7.1 channel program can be combined and directed to the left or right internal speakers. Six or eight channels could be directed to the Balanced Analog Outputs, which could feed an external surround sound system.

By default, any of the inputs can be monitored in stereo or mono only through the internal speakers. The headphone jack and the analog XLR outputs will follow whatever is directed to the speakers. By default, all the outputs except for speakers are configured to not mute when the headphone is inserted into its jack. However, using the checkboxes in the Mute on Headphone Insertion column, you may change which outputs get muted.

To change the routing of inputs to outputs, select **Global Output Routing** under **Configuration** will display the **Global Output Routing** screen shown in Figure 4-16. This screen contains a matrix of checkboxes which are an easy way for you to set up the wide variety of input to output routing and mixing capabilities.

Figure 4-16: Global Output Routing Option



Destination Outputs

On the left of the **Global Output Routing** screen are listed the Destination Outputs. These are the outputs to which any input can be routed. They are as follows:

1. **Speaker/Headphone**: Selected inputs will be sent to the left and right speakers. The default routing is set as per the Speaker Assignment, left channels are sent to the left speaker and right channels are sent to the Right speaker.
2. **Analog XLR**: Selected inputs will be mixed to the left and right channels and played through the two Analog XLR Outputs. By default, these outputs will follow the speaker assignments. These outputs are not muted upon Headphone insertion.
3. **Analog DB-25 Outputs 1 to 16:** Selected inputs will be sent to the 16 channel outputs of the Analog DB-25 connector on the rear panel.

Source Inputs

The source inputs which may be routed are described in this section.

1. **Cluster Information**: Cluster information shows the type of cluster and the cluster name.
2. **Speaker Assignment**: Speaker assignment can be used to configure to which speakers the audio is routed to. The possible options are:

   L Left

   R Right

   C Center

   LFE Low Frequency Effects

   Ls Left Surround

   Rs Right Surround

   Bsl Back Surround Left

   Bsr Back Surround Right

   S Mono Surround
3. **Input/Output Matrix**: By checking the various boxes in this matrix, any input channels can be freely routed to any output channels. This flexible channel assignment is called a **Free Mix**. However, when the **Speaker Mix** box is checked in the **Output Options** section, the associated row within the matrix is automatically set to the speaker mix and the checkboxes are grayed out indicating that you may not change them with a **Free Mix** assignment.

Output Options

The optional settings in this section allow for customization.

1. **Speaker Mix**: This option selects whether an output has the **Speaker Mix** or a **Free Mix** as set in the Routing Input section. The Speaker/Headphone output is always in the **Speaker Mix**.
2. **Solo/Mute**: This setting determines whether or not the outputs are affected by solos and mutes. The Speaker/Headphone output is always affected by solos and mutes. Note also, that all outputs in **Speaker Mix** mode also are affected by solos and mutes.
3. **Mute on Headphone Insertion**: This option controls whether the outputs should be muted upon a headphone insertion. This setting can be adjusted even for outputs whether they are in **Speaker Mix** or **Free Mix** modes.
4. **Volume Control**: This setting determines whether each output pair is adjusted by the **Volume Control** knob. Speaker/Headphone outputs are always affected by the **Volume Control** knob, as are any outputs that are in **Speaker Mix** mode.

Typical Questions Regarding Output Routing

The questions and thoughts in this section are commonly asked by people when setting up the Output Routing capability.

What signal outputs can be controlled using the Output Routing feature?

All the outputs on the iVAM2-ST2110 can be controlled using the Output Routing feature. This includes – Internal Speakers, Analog XLR outputs, all 8 pairs of Analog DB25 outputs and 4 pairs of SDI SFP outputs.

How do the outputs behave in their factory default settings?

By default, the outputs are configured as follows:

1. **Speakers**: All monitored channels are always available on the internal speakers. The left and right speaker assignment is determined by the **Speaker Assignment**. Audio on the speakers is controlled by the **Volume** and **Balance** knobs and is muted whenever a headphone is inserted into the **Headphone** jack.
2. **Analog XLRs**: These outputs follow the same configuration as the internal speakers. They are controlled by the **Volume** and **Balance** knobs. These outputs also follow the solo/mute selections on the Audio Meter screen. The Analog XLR outputs by default do not mute with headphone insertion.
3. **Analog Pairs 1 through 8**: The 16 monitored channels will appear on these outputs in numeric order. By default, the audio levels on this output are controlled by the **Volume** and **Balance** knobs and also follow the solo/mutes from the Audio Meter screen.

What is the difference between Global Output Routing and Output Routing in Presets?

Both are used to configure the unit outputs. Global Output Routing is applied by default when you select a source or when creating presets and when you don't change the Output Routing to be unique to any Preset.

How do I route whatever is being monitored to the Analog XLR outputs?

Using **Global Output Routing**, you may route any signals using the Analog/XLR checkboxes.



As shown in the above example, signals appearing on Audio Meter channels 1 and 2 are routed to the Analog XLR outputs. This output is volume and balance controlled and will follow the Solo/Mutes on the Audio Meter screen.

How do I have a downmixed pre-fade output on Analog DB-25 Pair-1 combined with a post-fade output on the Analog XLRs?

To control whether a specific output is pre-faded or post-faded use the **Volume Control** setting on the Output Routing configuration page.



In the settings shown above, the Analog XLRs as well as the Analog DB-25 Pair-1 outputs will have a downmix of whatever is being monitored, however the XLR outputs will be post-fade and DB-25 Pair-1 output will be pre-fade.

How do I make the XLR outputs follow the Audio Meter screen Solos and Mutes while the Analog DB-25 Pair-1 does not?

When Make the settings shown in the **Solo / Mute** column:



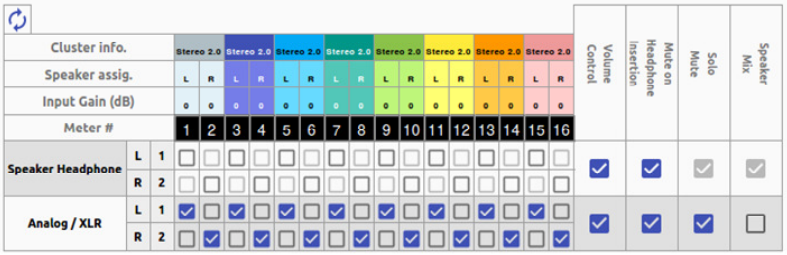
The setting shown above determines that outputs will follow the Audio Meter screen solos & mutes for the XLR outputs because the checkbox is checked. It is not checked for Analog DB25 Pair 1, so that will not be affected by the solo & mute choices.

The Global Output Routing feature works great. But what if we don't want to create any Presets and want to monitor audio only using Source Select? How would I configure different outputs for Source Select choices?

Use the **Global Output Routing** settings to determine how the outputs are configured for source select options.

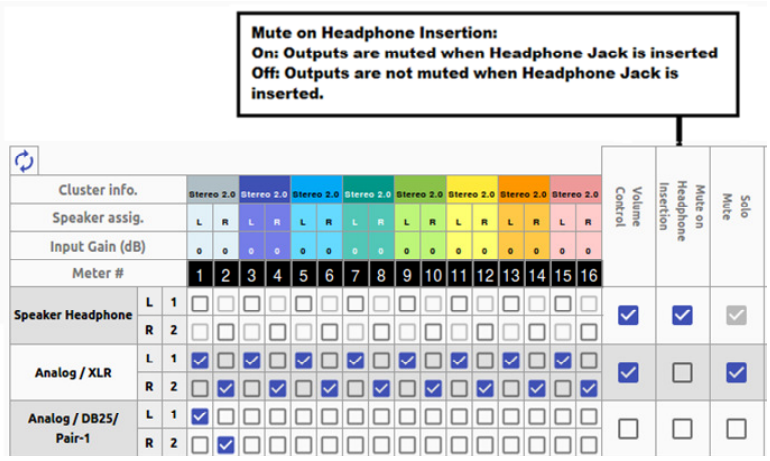
How do I keep the internal speakers muted and have audio only on the analog XLR outputs?

In the **Global Output Routing** configuration, do not select any **Speaker Headphone** checkboxes for any meter channels as shown below, and then select the desired meters for Analog XLR. In this way, the internal speakers will always be muted, but the audio will appear on the Analog XLR outputs (for amplified external speakers). Make sure that the **Speaker Mix** checkbox selection is unchecked for Analog/XLR.



How do I ensure that the outputs are automatically muted when the Headphone jack is inserted?

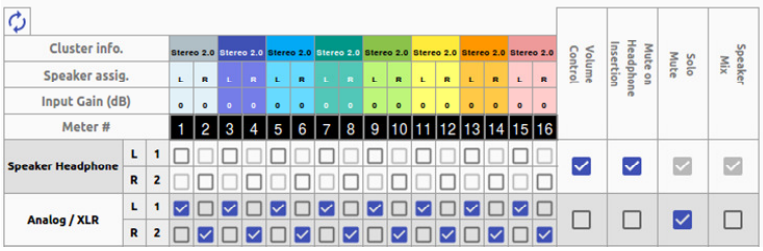
In the **Global Output Routing** configuration, if the **Mute on Headphone Insertion** checkbox is ON then the outputs get automatically muted when a headphone is inserted into the Headphone jack.



As shown above, if a headphone is inserted then the output on the internal speakers will be muted, while the audio on the Analog XLRs and Analog DB-25 Pair 1 will remain on.

How do I ensure that my outputs are pre-faded but follow the solo-mutes? This will allow us to monitor only the unmuted/solo Audio Meter channels on amplified stereo speakers connected to the Analog XLR's.

In the **Output Routing** setting, for the Analog XLR outputs, keep the **Volume Control** checkbox unchecked and the **Solo/Mute** checkbox checked. This ensures that the Volume Control is **not** applied to the outputs, while the Solos/Mutes **are**.

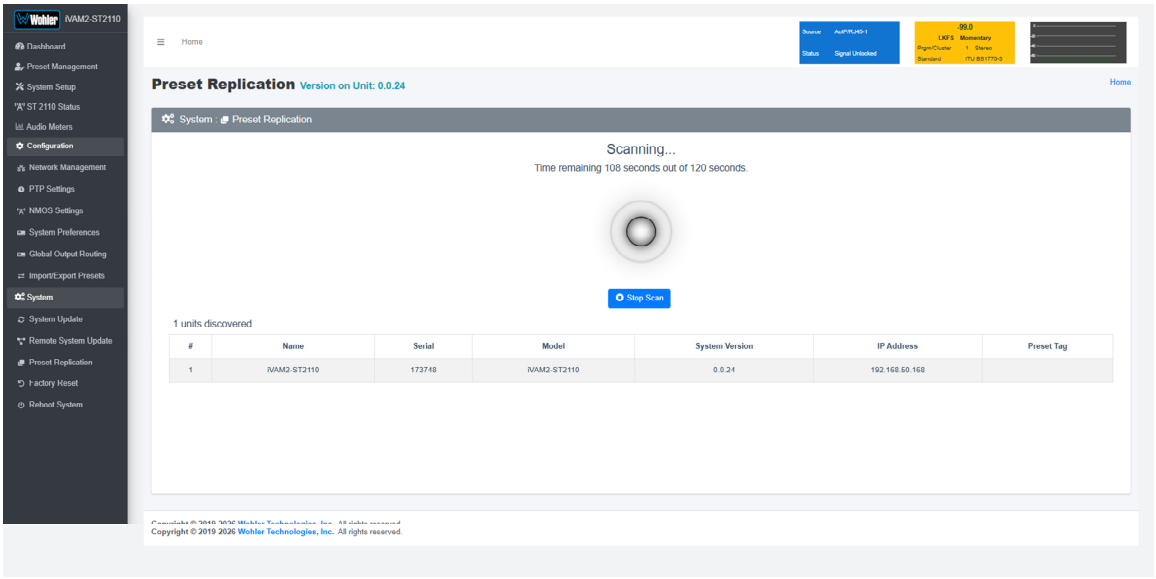


Preset Replication

Preset Replication allows you to copy presets from a master unit to multiple iVAM2-ST2110 units. This can save a lot of setup time if multiple units all need basically the same setup.

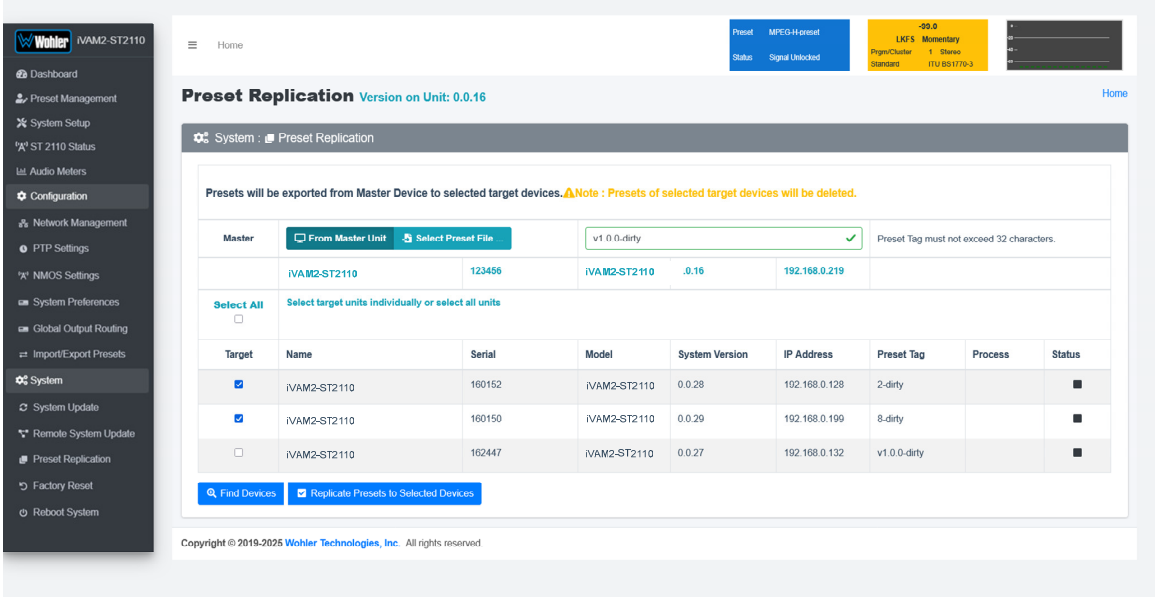
To start Preset Replication, click on the **Preset Replication** tab on the master unit. This will start the unit discovery process and will list all the iVAM2-ST2110 units that you currently have on your network. The discovery process will continue for a period of 2 minutes. However, you may stop the discovery process sooner if you believe all the units in the network have been discovered. Simply click the **Stop Scan** button.

Figure 4-17: Preset Replication Scanning Screen



Once all the units are discovered you may either copy the presets that are currently created on the Master unit or can use an external preset file that you want to copy to any or all of the Target units. **Note that any and all of the Presets that may already be contained in each Target unit will be erased by copying the new Presets.**

Figure 4-18: Preset Replication Target Selection Screen



Click either **From Master Unit** or **Select Preset File**. This determines the source of the Presets to be copied. Preset Files would be files that you have previously stored in the computer running the Web GUI.

You may add a descriptive name or version to the Presets being copied. This may aid in remembering what tag or version of the presets are available on the unit. The Preset name or version may be up to 10 characters in length.

Next, select the Target units from the list of units shown by checking or unchecking each of the **Target** boxes at the left. Alternatively, you may click **Select All** to select all of the units. Then select the **Replicate Presets to Selected Devices** button. The progress of the Preset replication for each unit, as the Presets are being copied, will be displayed in the **Process** column. When all of the Presets have been copied to each of the selected units, you may leave this screen.

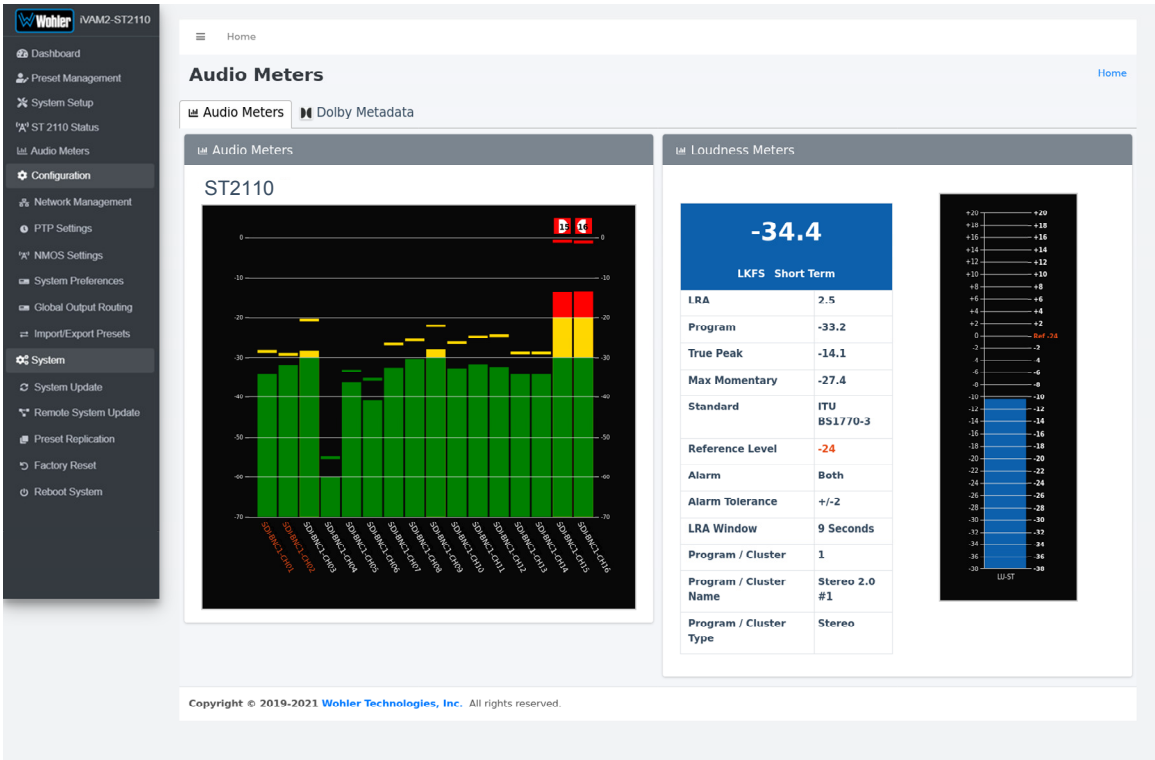
Remote Monitor

Click on the **Remote Monitor** page to provide a live view of the audio bar graph and Loudness meters for the current preset. There are two tabs, **Audio Meters** and **Dolby Metadata**.

Audio Meters

The following figure shows the **Audio Meters** tab.

Figure 4–19: Remote Monitor Audio Meters



The left side of the screen shows the level meters for the currently selected input source. If a meter pair is indicating a Dolby bitstream, the following symbol appears above the pair: 

The right side of the screen shows the Remote Loudness Meter. 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:

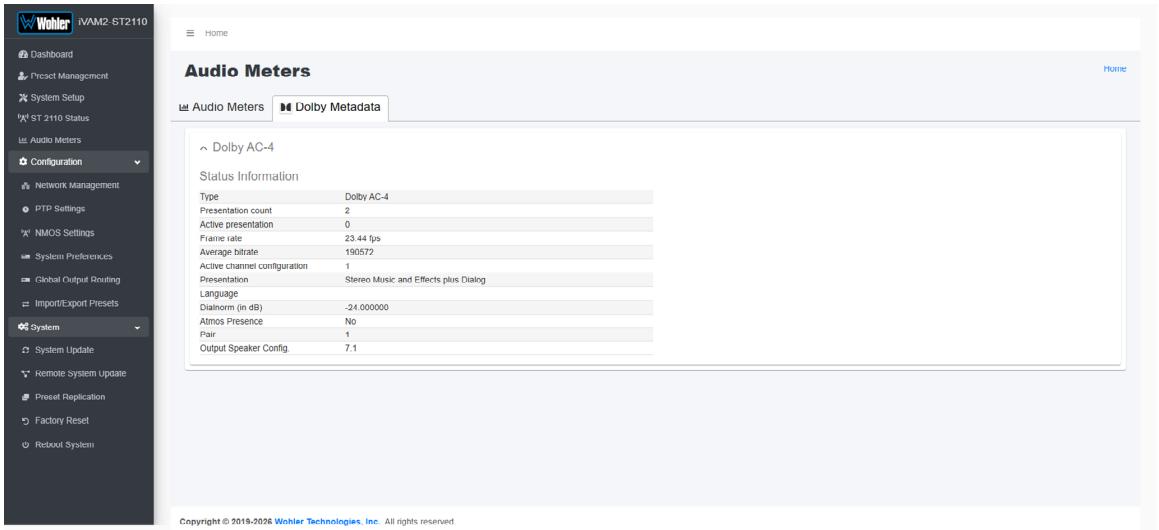
1. No Alarm: Green
2. Under Alarm: Blue
3. Over Alarm: Orange

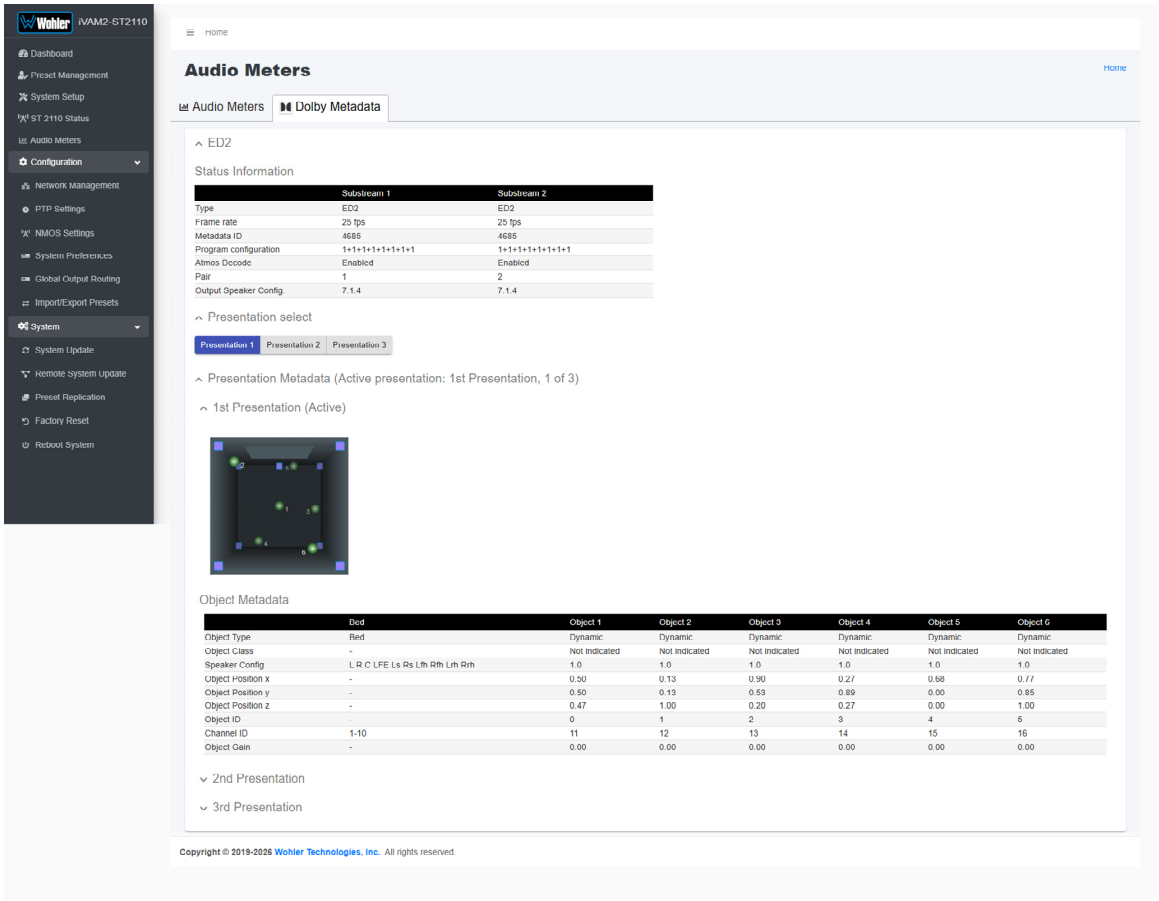
Included in the view of this meter is a summary of the Loudness settings currently in effect. These parameters can be adjusted in the **Configuration | System Preference | Loudness Configuration** tab of the Web GUI. Refer to the **System Information** section of this chapter.

Dolby Metadata

The following figure shows the **Dolby Metadata** tab, which provides a wealth of information about the Dolby signal being monitored. The amount of information presented will be dependent upon the type of Dolby signal being monitored.

Figure 4–20: Dolby Metadata

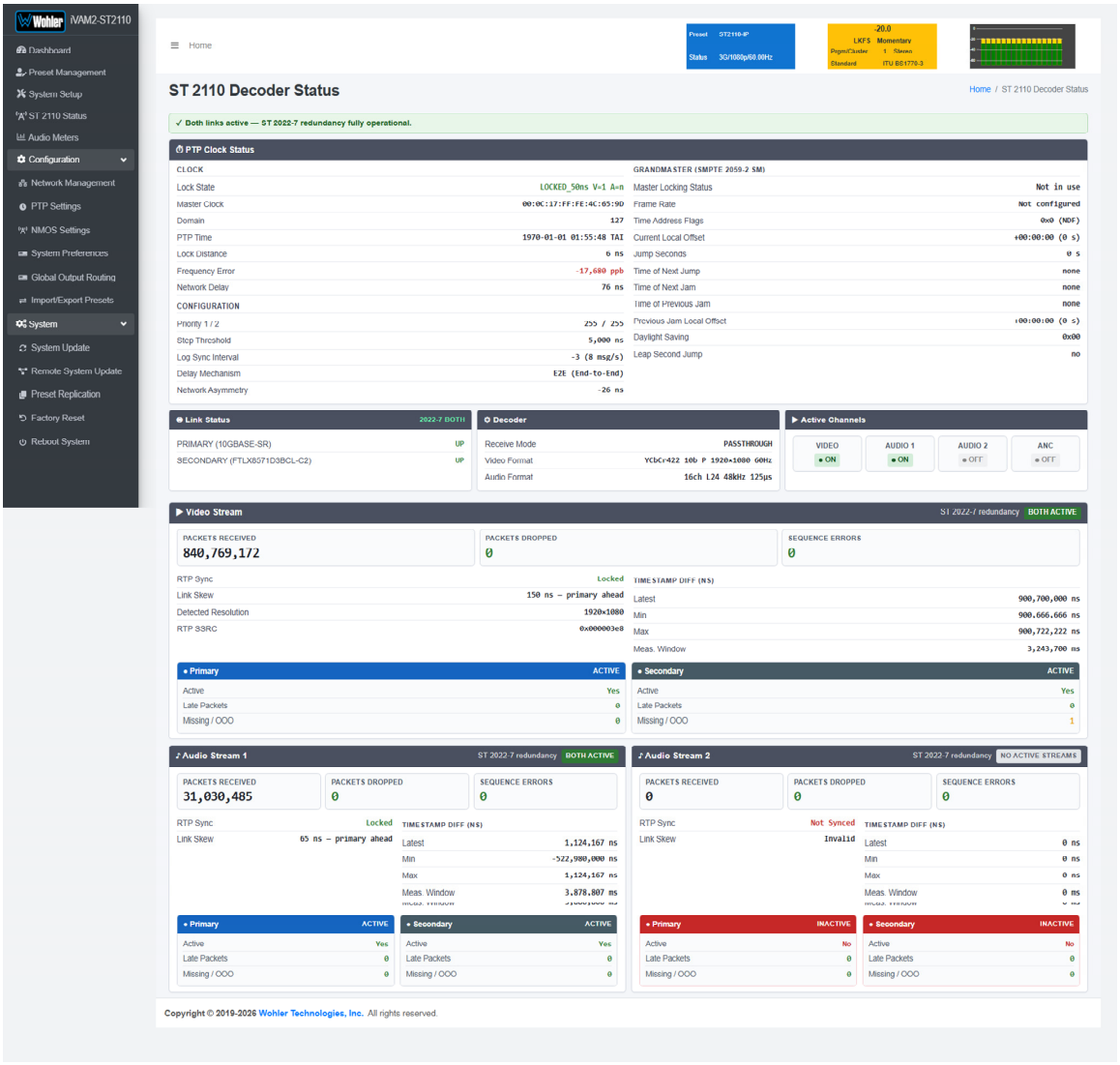




ST2110 Decoder Status

The ST2110 Decoder status page provides performance data on the ST2110 link. This is shown in figure 4-21.

Figure 4–21: ST2110 Decoder Status



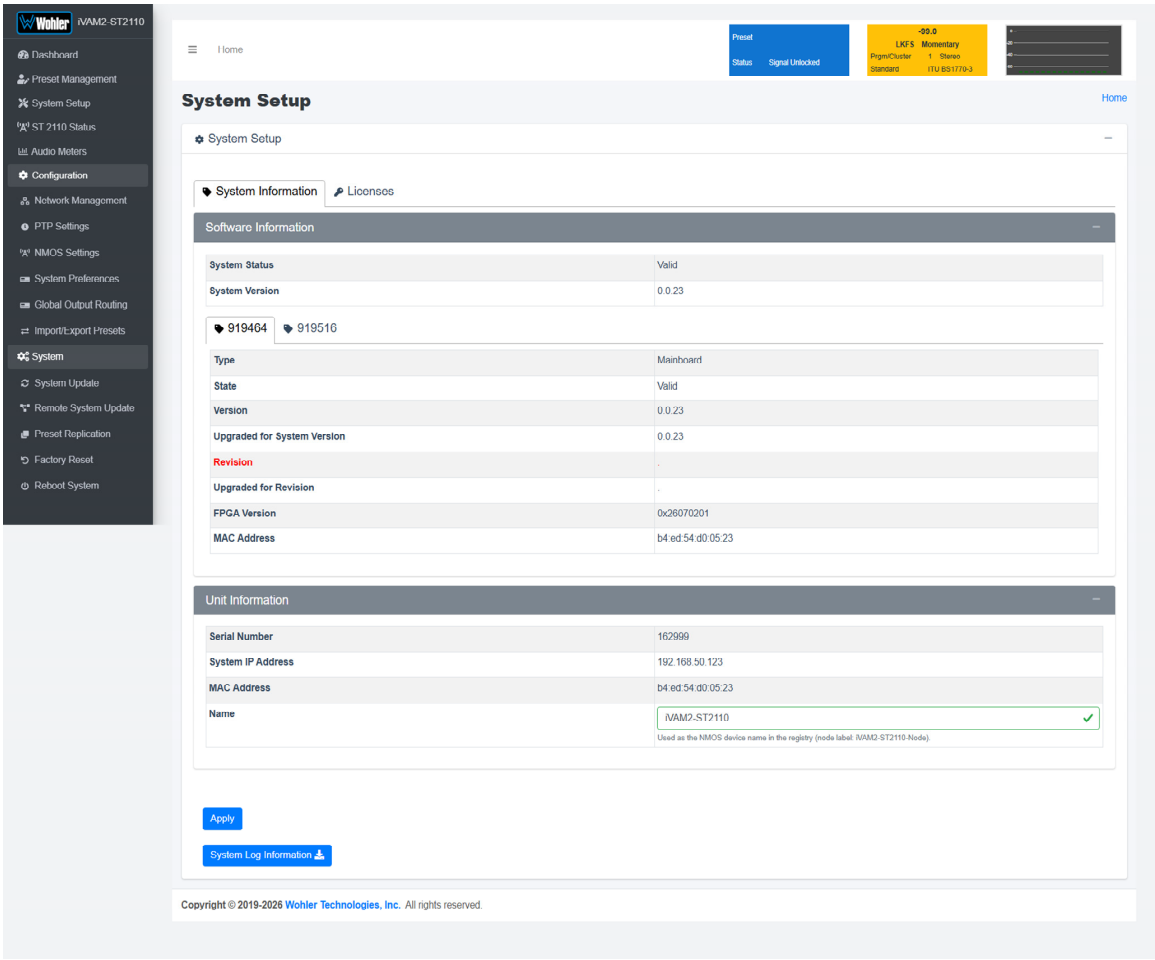
System Setup

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:

System Information

The **System Setup | System Information** tab provides basic information for this iVAM2-ST2110. It is shown in Figure 4-22.

Figure 4–22: System Setup: System Information



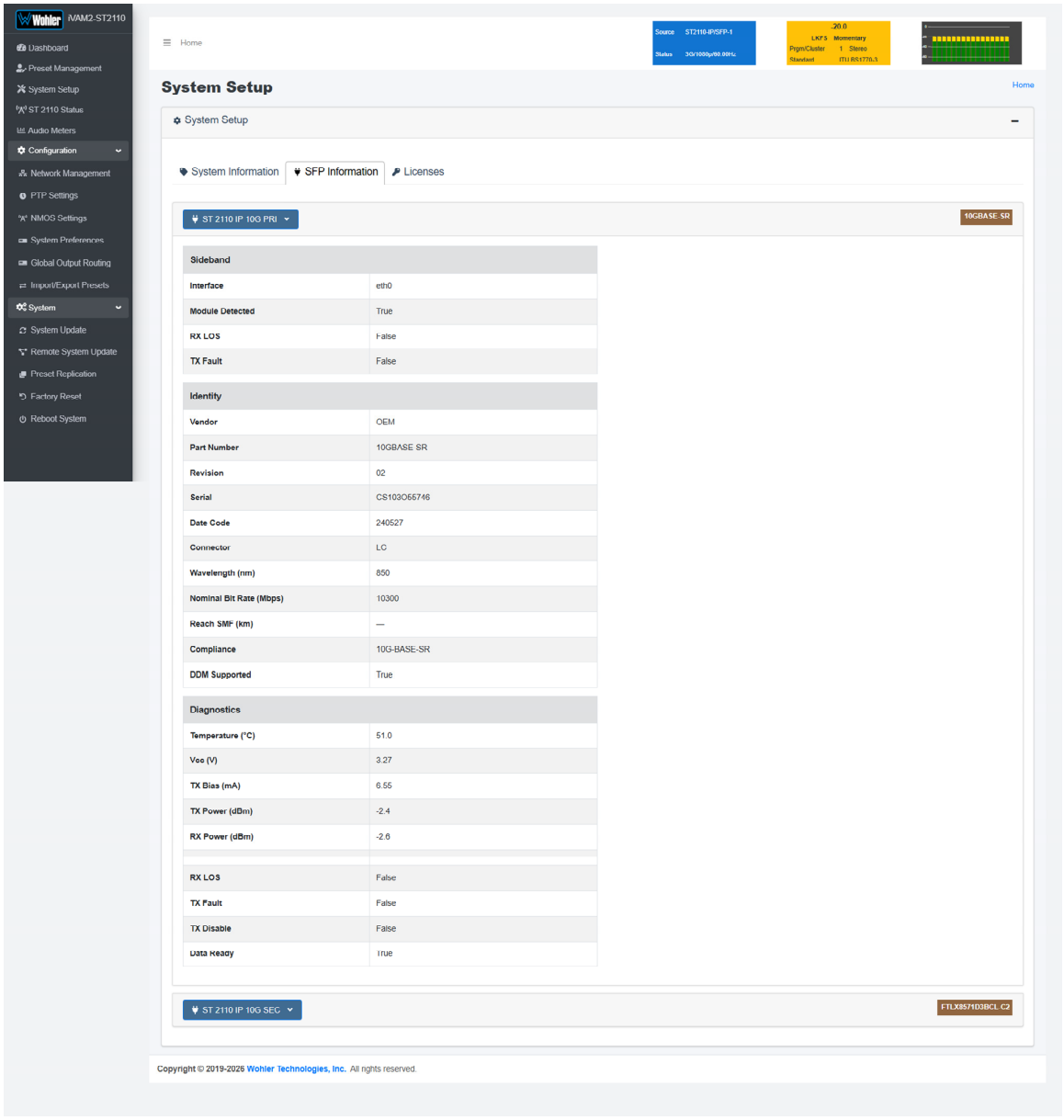
The name of this particular iVAM2-ST2110 is shown as the last item in the Unit Information section. It is changeable on this screen by clicking into its field and typing a new name and then click the **Apply** button. The name should be descriptive and perhaps refer to where the iVAM2-ST2110 is used in the facility. The name then appears on the browser tab.

The **System Log Information** button at the bottom of the screen may be clicked to download any information logged by the iVAM2-ST2110. This can mainly be used to help solve any issues that may occur, if requested by Wohler Technical Service.

SFP Information

The **System Setup | SFP Information** tab provides basic information for this iVAM2-ST2110. It is shown in Figure 4-23.

Figure 4–23: System Setup: SFP Information

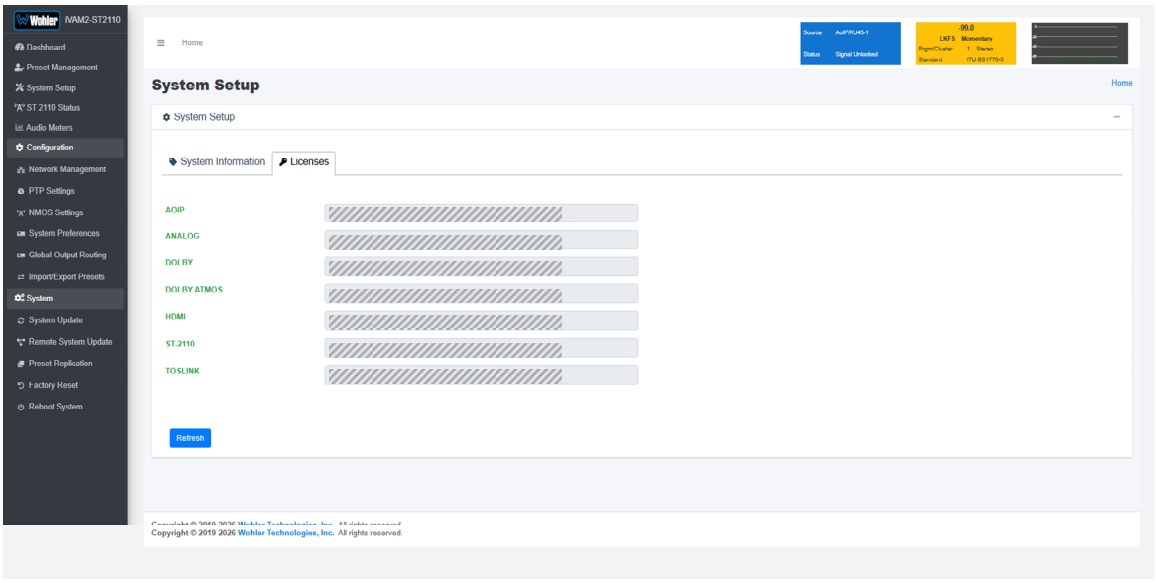


On this tab, you may view the ST2110 IP 10G PRI or ST2110 IP 10G SEC settings.

Licenses

The **System Setup | Licenses** tab shows the license keys for each of the optional features installed in this iVAM2-ST2110. You may also use this tab to enter new license keys, or enable some license keys. This tab is shown in Figure 4-24.

Figure 4–24: System Setup: Licenses



The example above shows an iVAM2-ST2110 with license keys for inputs and license keys for SFP modules installed. Licenses without keys will not have the box checked.

To enter 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 **Submit** button to save the information. Each new license will be immediately available for use.

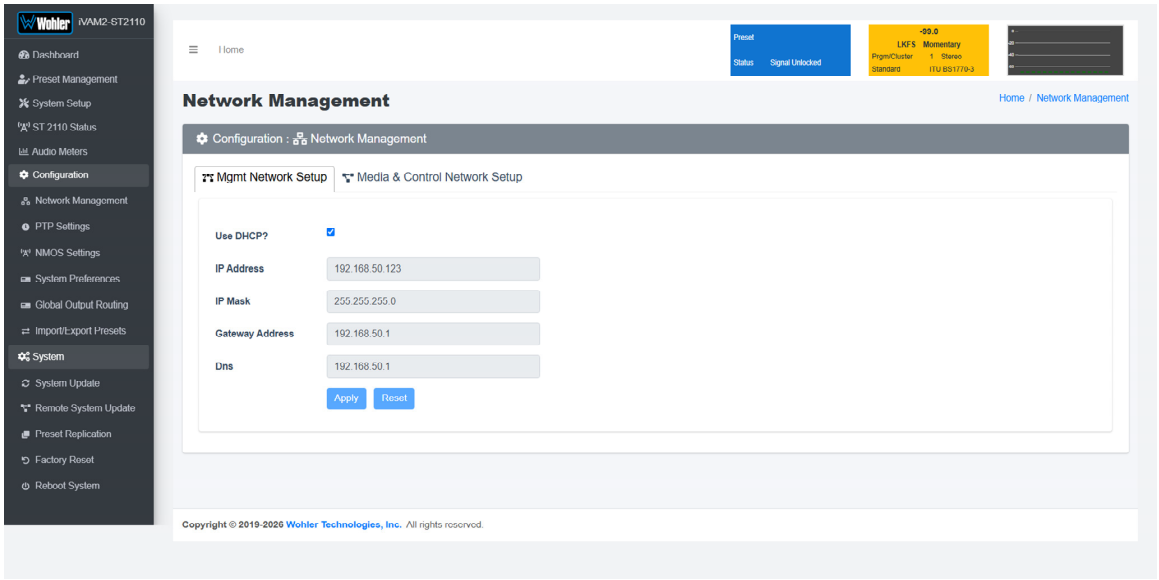
Configuration: Network Management

The Network Management screen contains two tabs: **Mgmt Network Setup** and **Media & Control Network Setup**. These tabs are described in the following two sections:

Mgmt Network Setup

This tab allows you to make network **IP Address** changes for **Management (MGMT) Port** of the local iVAM2-ST2110 on the screen shown in Figure 4-25. Note that after changing the IP address, the web interface should be loaded with the new IP address. If you select DHCP option, than the currently assigned IP address can be determined from the **Front Panel - System Information** screen on the iVAM2-ST2110.

Figure 4–25: Management Port IP Addresses



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

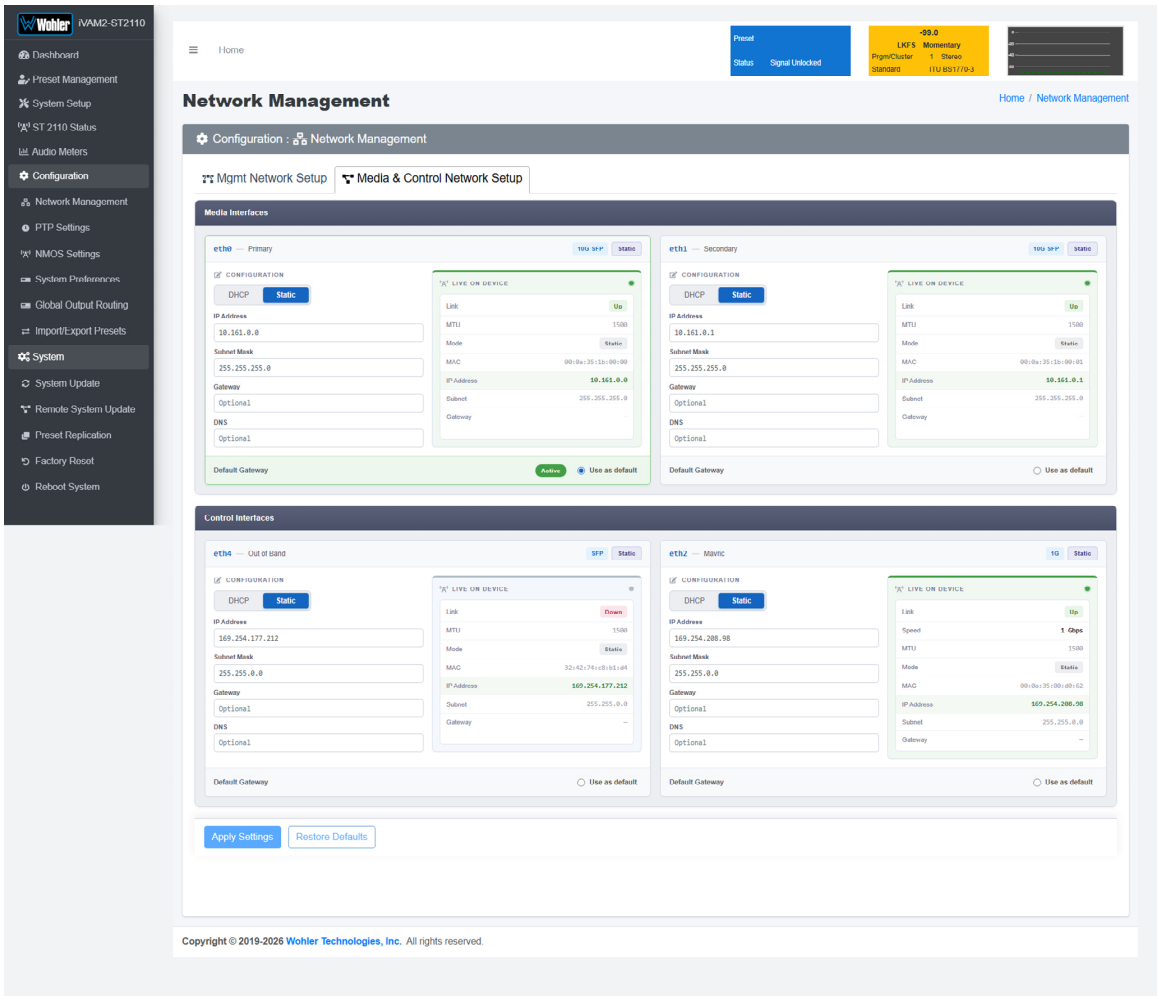
1. **Use DHCP?** Check this box if your network has a DHCP server and you want to use dynamic addressing. Otherwise, you must enter static IP address entries in the four fields which follow.
2. **IP Address**: Enter the network address. Leading zeroes are not required.
3. **IP Mask**: This should usually be 255.255.255.0 unless your network can work across multiple subnets.
4. **Gateway Address**: This should usually be the same domain and subnet address numbers as the IP Address, but with the last octet being .1.
5. **DNS**: 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. **Apply**: When you have made all of the necessary entries, press **Apply** to

apply the changes.

Media & Control Network Setup

This tab allows you to make network **IP Address** changes relative to the **Media & Control Network** of the ST2110 10G inputs. It is shown in Figure 4-26.

Figure 4–26: Media & Control Network Setup



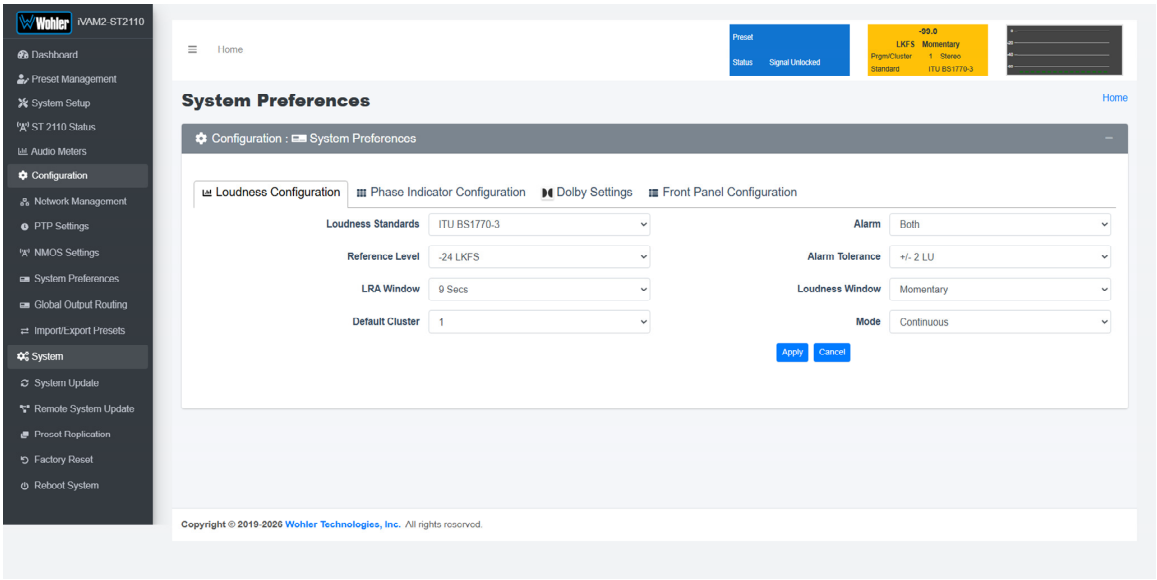
Configuration: System Preferences

The **System Preferences** selection contains the **Loudness Configuration**, **Phase Indicator Configuration**, **Dolby Settings**, and **Front Panel Configuration** tabs. They allow you to customize screens and measurements. They are explained in the following sections:

Loudness Configuration

The **Loudness Configuration** tab is shown in Figure 4-27.

Figure 4-27: 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. **Default Cluster**: Select which Cluster is selected for loudness measurement when the Main Metering Screen appears. Use the pull down list.
5. **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.

6. **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
7. **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.
8. **Custom Window Time**: Select a time from the pull down list.
9. **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** 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**.

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.

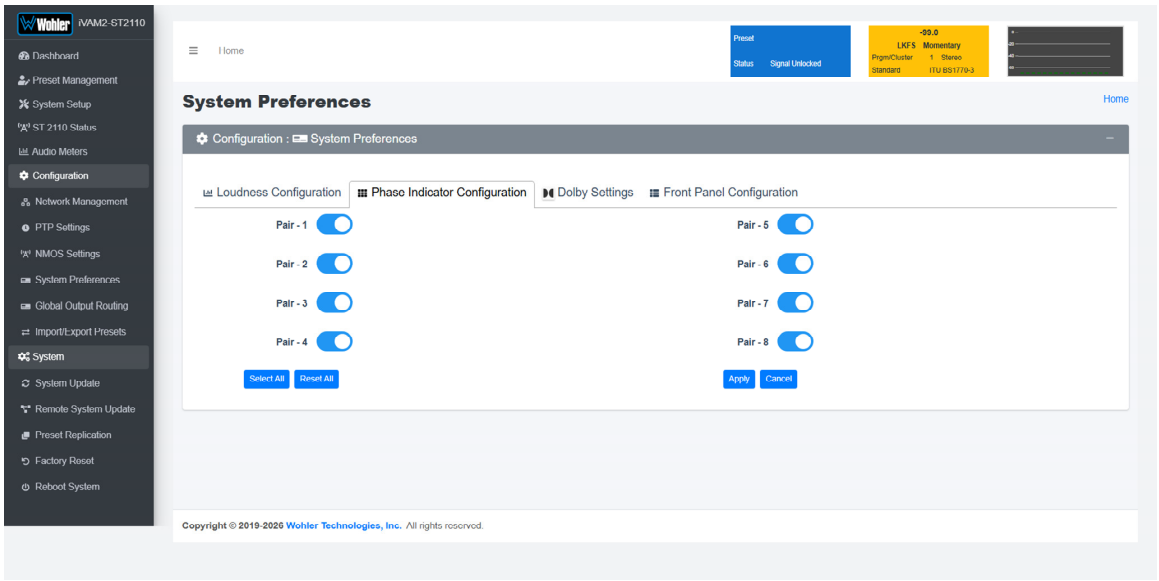
When you have made your selections, click the **Apply** button to put them into effect. Alternatively, click the **Cancel** button to undo any setting changes.

Phase Indicator Configuration

The **Phase Indicator Configuration** tab is as shown in Figure 4-28. 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 Management** page.

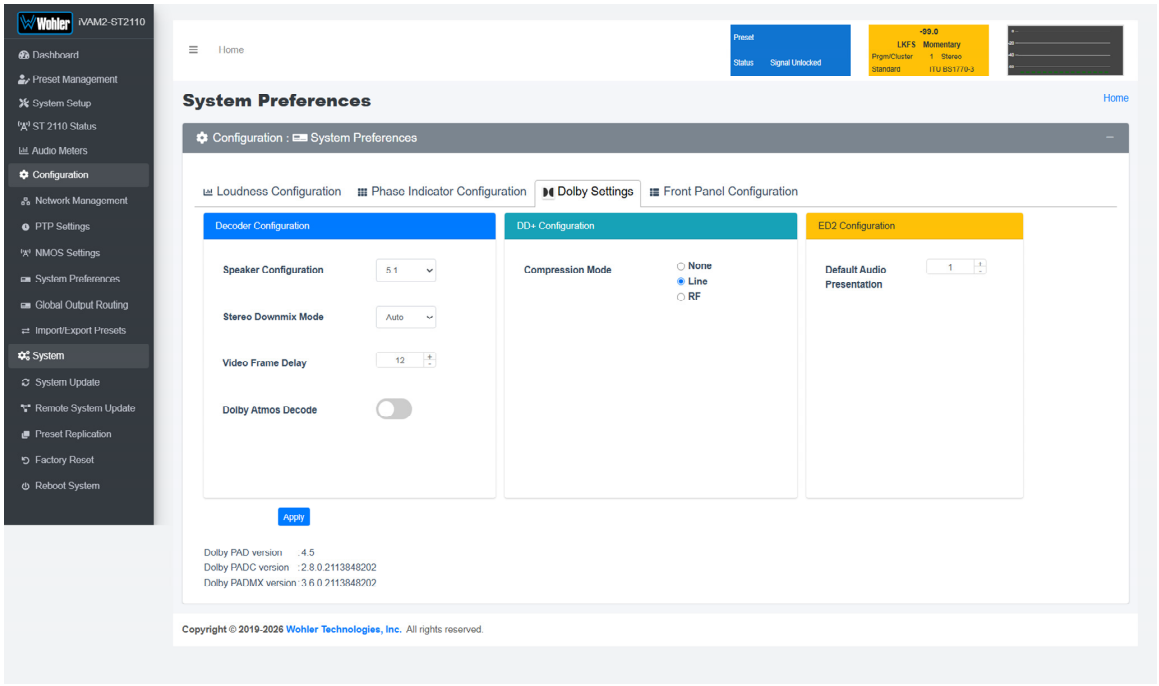
Figure 4–28: Phase Indicator Configuration Tab



Dolby Settings

The **Dolby Settings** tab is shown in Figure 4-29. There are four sections under the **Dolby Settings** tab: **Decoder Configuration**, **DD+ Configuration**, and **Loudness Setup**. The settings in these sections are explained following this figure.

Figure 4–29: Dolby Settings Tab



Decoder Configuration

1. **Speaker Configuration**: This setting defines the output speaker configuration in a range from 2.0 to 7.1.4. This setting is reflected in channel descriptions of the audio level meters. Select an option from the pull down list. Speakers that receive no content from the input source are silent.
2. **Stereo Downmix Mode**: This setting provides a choice between Auto, LtRt, or LoRo downmix modes. Select an option from the pull down list.

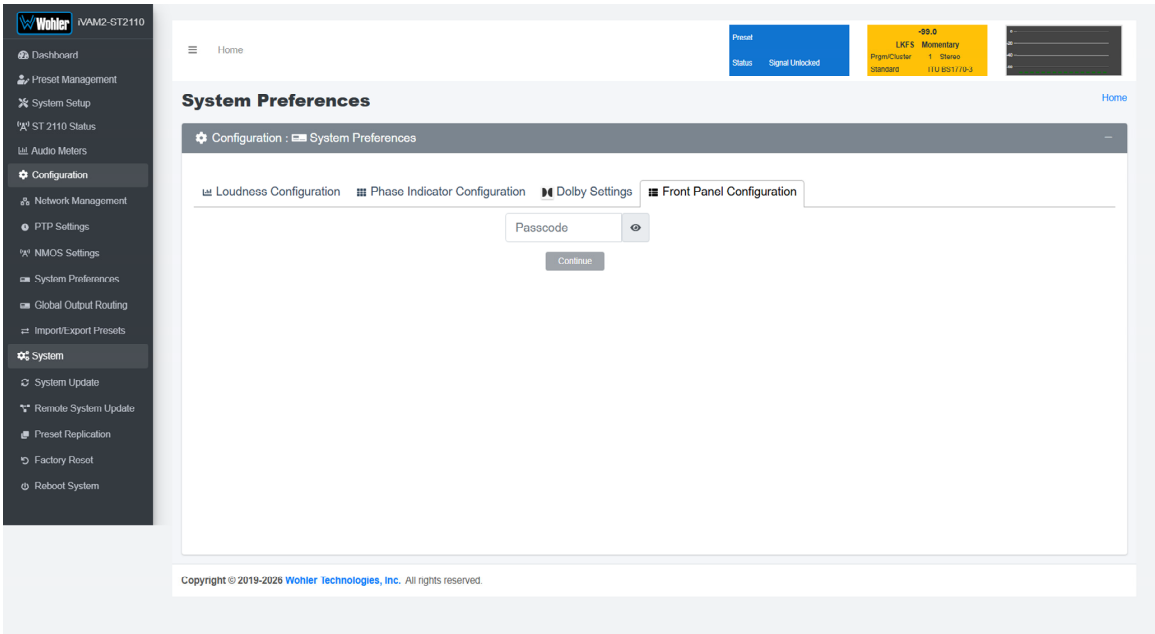
DD+ Configuration

1. **Compression Mode**: Setting a compression mode is not required. If you do not need or want to set the mode, leave the default selection as **Line**. Otherwise, select the **Line** or **RF** mode as appropriate to your decoding requirements.

Front Panel Configuration Tab

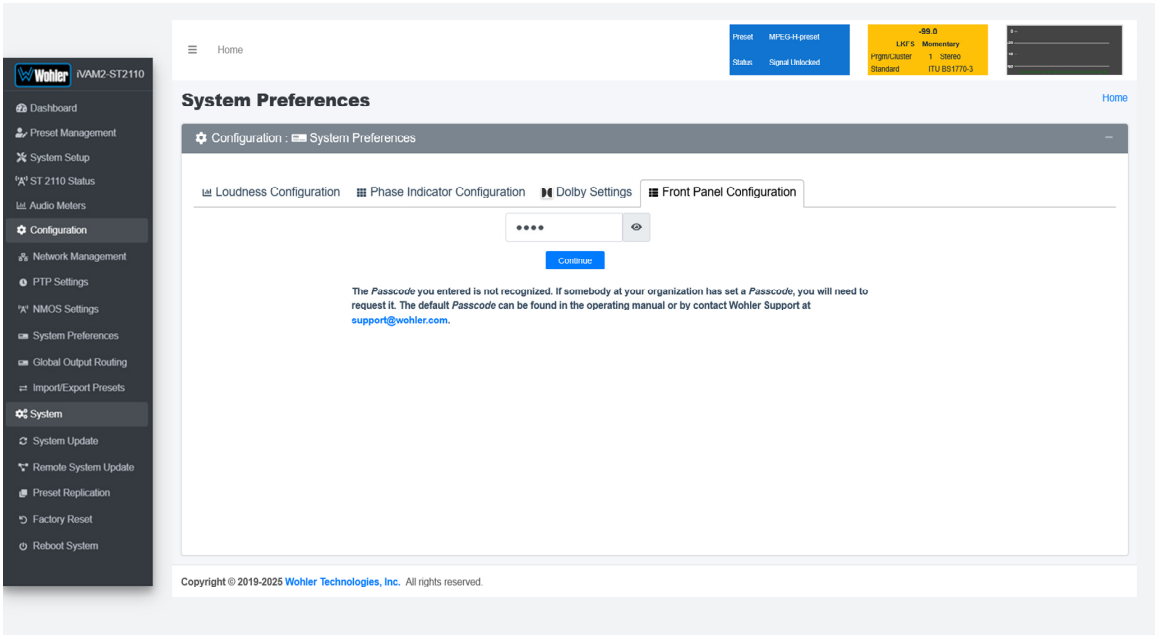
To prevent accidental or unauthorized changing of critical settings in the local product menus, it is possible to restrict access. The Front Panel Configuration Tab entry screen is shown in Figure 4-30. This provides an entryway to the Front Panel Configuration Tab shown in Figure 4-32. To proceed, you must enter the correct Passcode. If no Passcode has been set, the default Passcode is 0-0-0-0.

Figure 4-30: Front Panel Configuration Tab – Passcode Entry



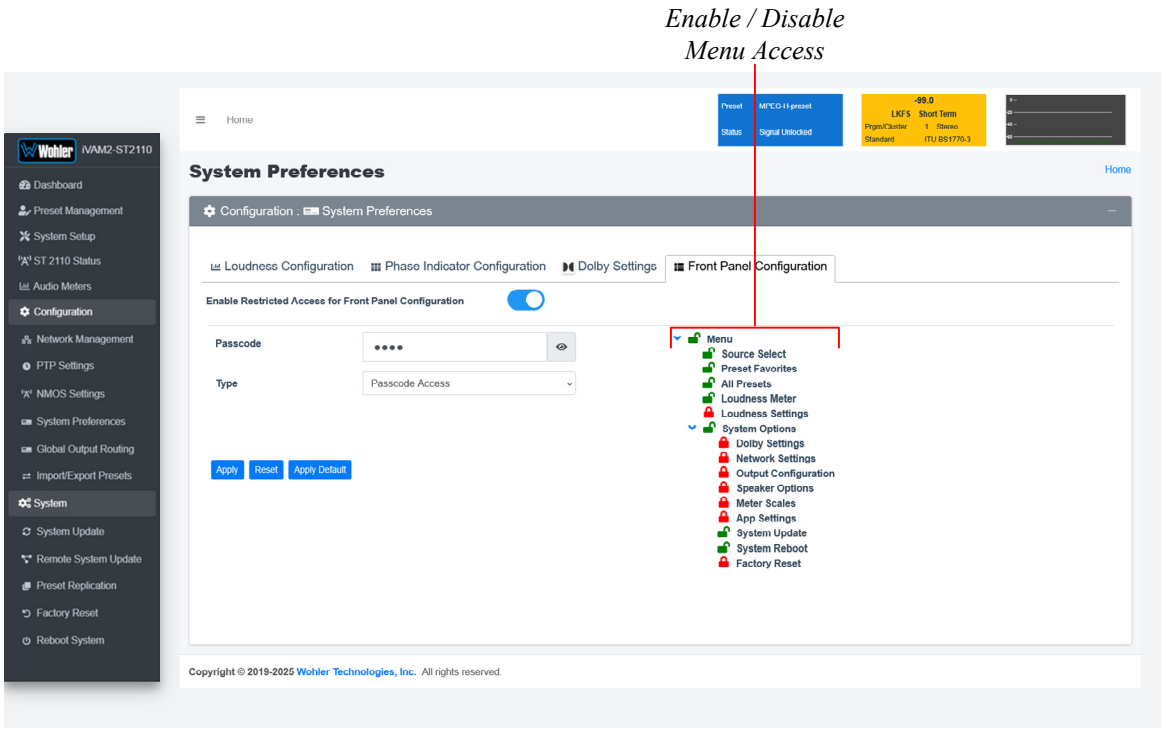
If an incorrect Passcode is entered, the screen shown in Figure 4-31 appears. Click the **Continue** button to try again. If you have forgotten the Passcode, this can be remedied by performing a Factory Reset. Unfortunately, this will also erase all of the menu settings. You may also contact Wohler Technical Service for help.

Figure 4-31: Unrecognized Passcode



When you have successfully entered the Passcode, the Passcode Settings screen will appear, as shown in Figure 4-32.

Figure 4-32: Front Panel Configuration Tab



The functions on this screen are as follows:

Enable Restricted Access for Front Panel Configuration: This switch will turn ON or OFF protection or blocking of any local product menus, except for the Passcode Settings menu, which is always Passcode protected.

Passcode: You may enter a new Passcode in this field. The Passcode can be any 4-digit number. Be sure to save the Passcode in a safe place for future reference.

Type: Select the type of disabled button appearance on the local product menus using the **Type** button. The choices are:

> **Passcode Access**: The Passcode protected function buttons include a small orange padlock icon within the buttons. This is shown in the left image of Figure 4-33. These buttons can only be accessed using the correct Passcode.
>
> **No Access**: If the function buttons are protected by No Access, the buttons are grayed out and non-functional, as shown in the right side of Figure 4-33. These buttons cannot be accessed.

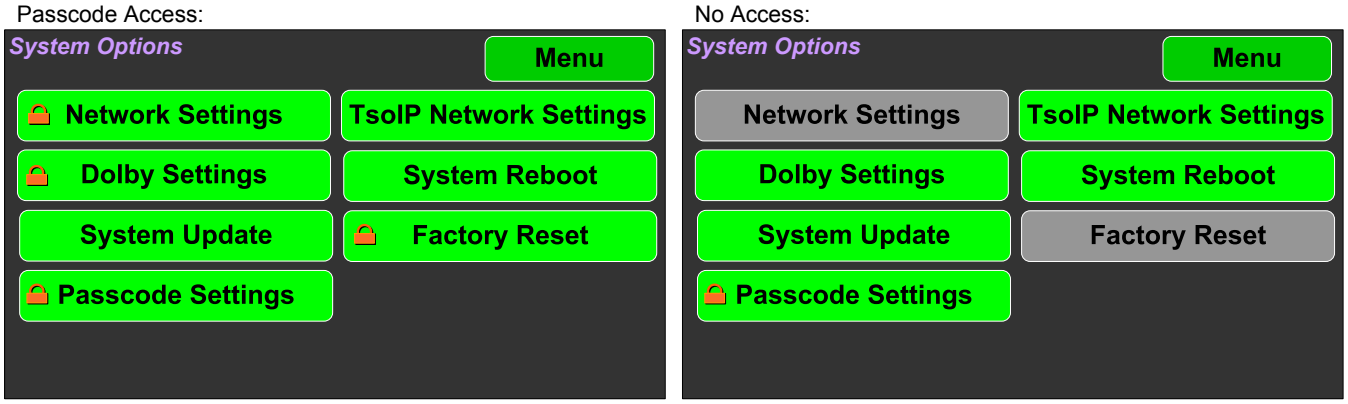
Apply Default: Clicking this button returns the settings in this screen to the factory default values. The Passcode becomes 0-0-0-0.

Reset: Clicking this button undoes any settings you have made on this tab.

Enable / Disable Menu Access: This section provides a nested chart of the local menus that exist in the product. You may set which menus are affected by restrictions. Click any menu shown to change it between affected (red icon) and unaffected (green icon).

Apply: When you have completed the desired settings in this tab, click **Apply** to put them into effect.

Figure 4-33: Examples of Local Menu Protection



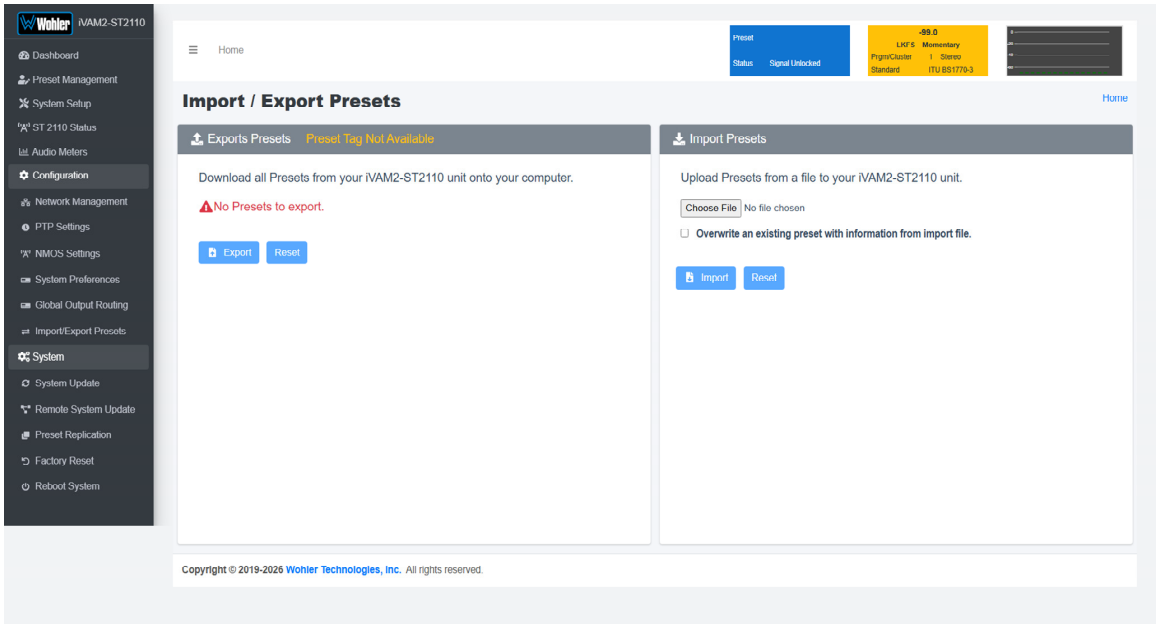
Configuration: Import/Export Presets

Use the **Import / Export Presets** page to manage the Preset database in the iVAM2-ST2110. You may export the Preset database onto the computer hard drive for security backup purposes or as a means to transfer it to another iVAM2-ST2110. Likewise, it can be used to import a Preset database from the computer hard drive into the iVAM2-ST2110. In this way, a Preset configuration may be only devised once and then duplicated into all of the iVAM2-ST2110 units in a system, saving significant effort.

The iVAM2-ST2110 will create Preset Tags for the each set of Presets. Refer to Figure 4-34. You may also change these Preset Tags, using the Preset Change Field. They allow you to quickly resolve questions about which Presets on various units are the most up to date. They will also allow you to determine whether Presets have been modified. If the Preset Tag displayed contains the suffix "-dirty" then at least one Preset has been changed in some way.

While exporting the file, the Preset Tag is appended to the filename, this allows you to store multiple Preset files with different file name. For example, if the Preset Tag is v1.0.0 then for iVAM2-ST2110 the default filename would be "wohler_presets_iVAM2-ST2110-v1.0.0.pdb" Do not change the file suffix and prefix (marked in red). However, you may change the Preset Tag to any number or text to suit your requirements.

Figure 4–34: Database Export



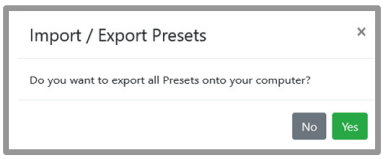
Export Configuration

Use the following steps to save the Preset configuration in the iVAM2-ST2110 to the computer hard drive:

1. If you need to, revise the Preset Tag name, observing the advice in the advice in the previous section.
2. Click the **Export** button on the **Import / Export Presets** page, as shown in

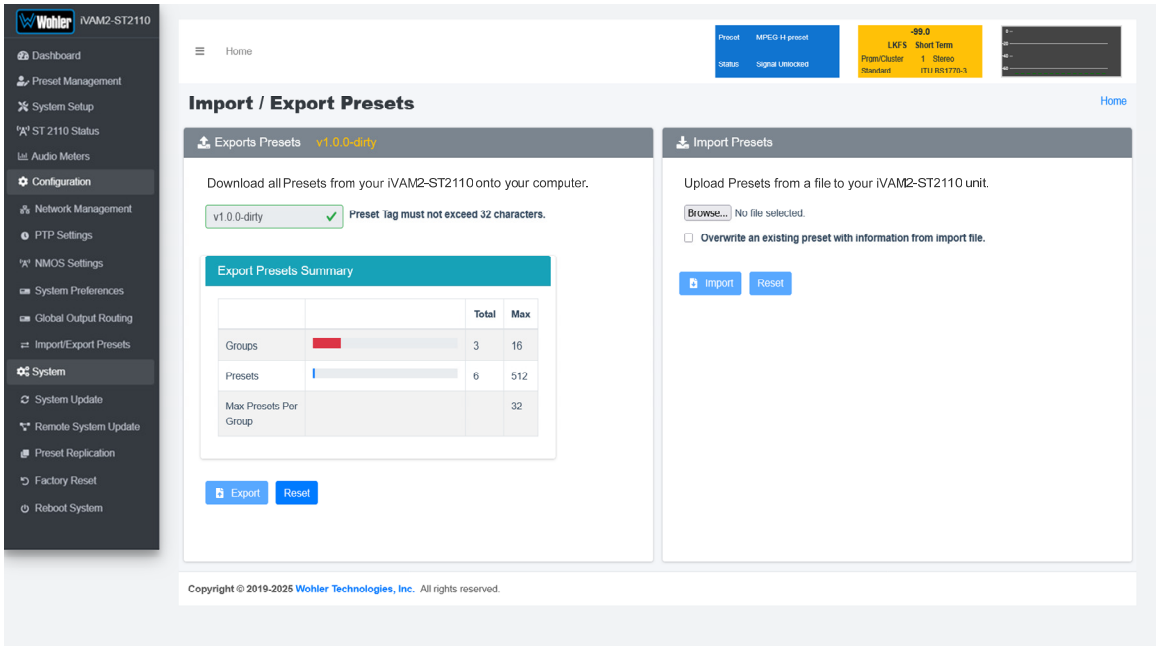
Figure 4-34.

3. A small **Verify** window will appear:



4. Click **Yes** to proceed with writing the Preset data to the hard drive. The copying will proceed. After the Preset data has been written, the screen in Figure 4-35 will appear, explaining what has been exported in an Export Presets Summary. It will also note whether there were any errors in the process. If there were any errors, repeat these steps to try again.

Figure 4–35: Database Export

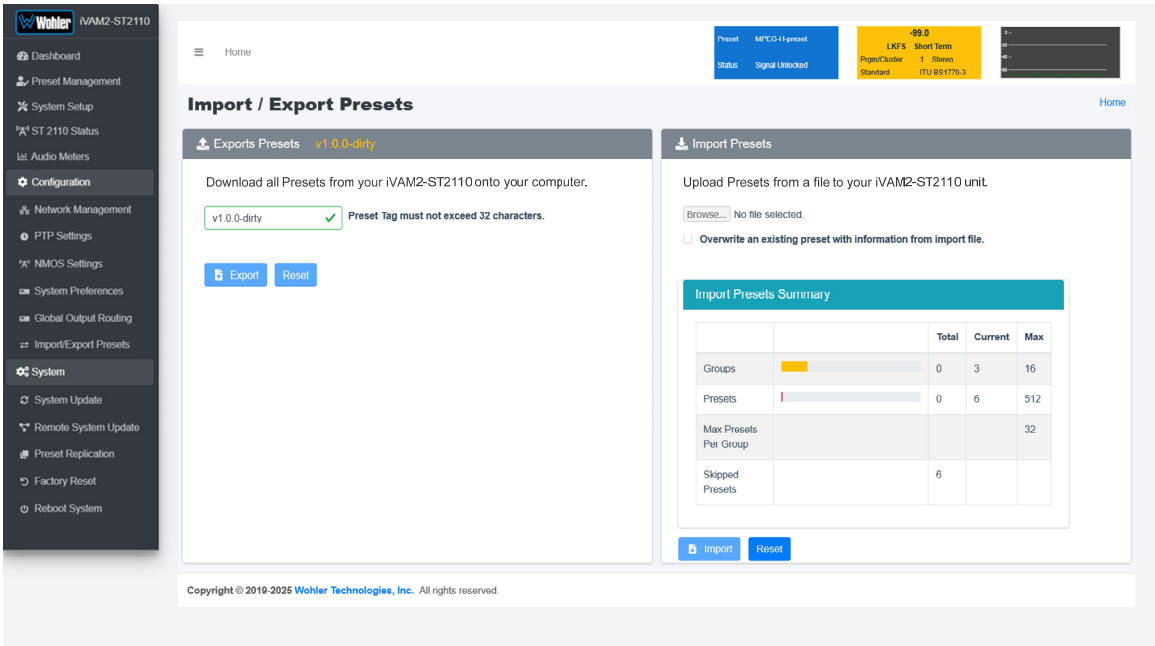


Import Configuration

Use the following steps to copy the Preset configuration into the iVAM2-ST2110:

1. Click the **Browse** button as shown in Figure 4-36 and select the Preset Tag you would like to import.
2. If you want to allow existing Presets to be overwritten with imported Presets of the same name, check the **Overwrite an existing Preset** box. It is a good idea to do this.
3. Click the **Import** button. The copying will proceed. When complete, the screen in Figure 4-36 will appear, explaining what has been imported in an Import Presets Summary. It will also note whether there were any errors in the process. If there were any errors, repeat these steps to try again.

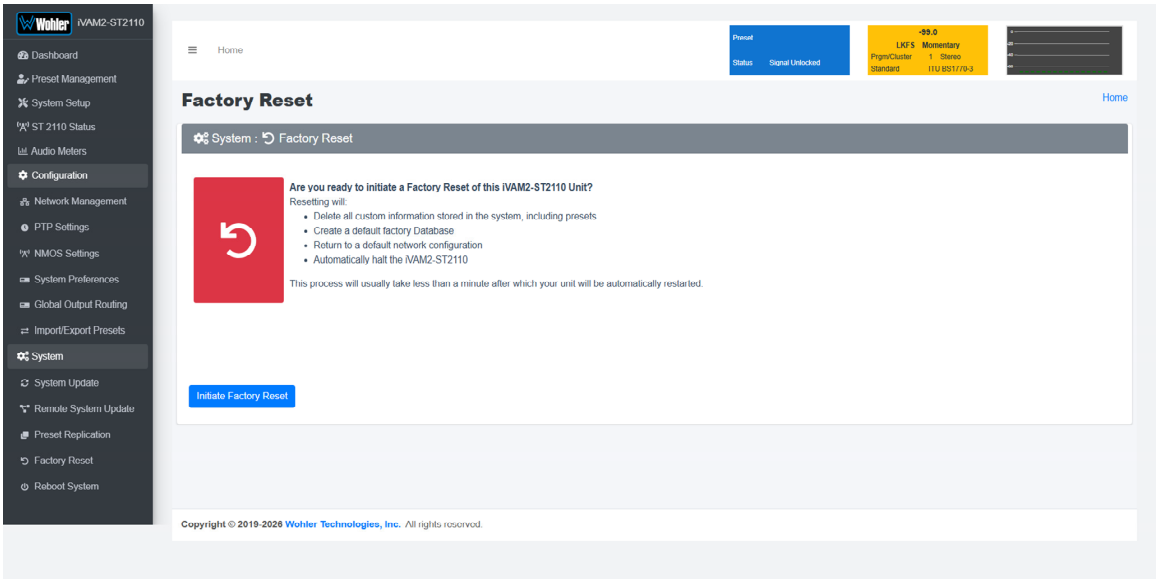
Figure 4–36: Database Import



System: 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 4–37: 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.

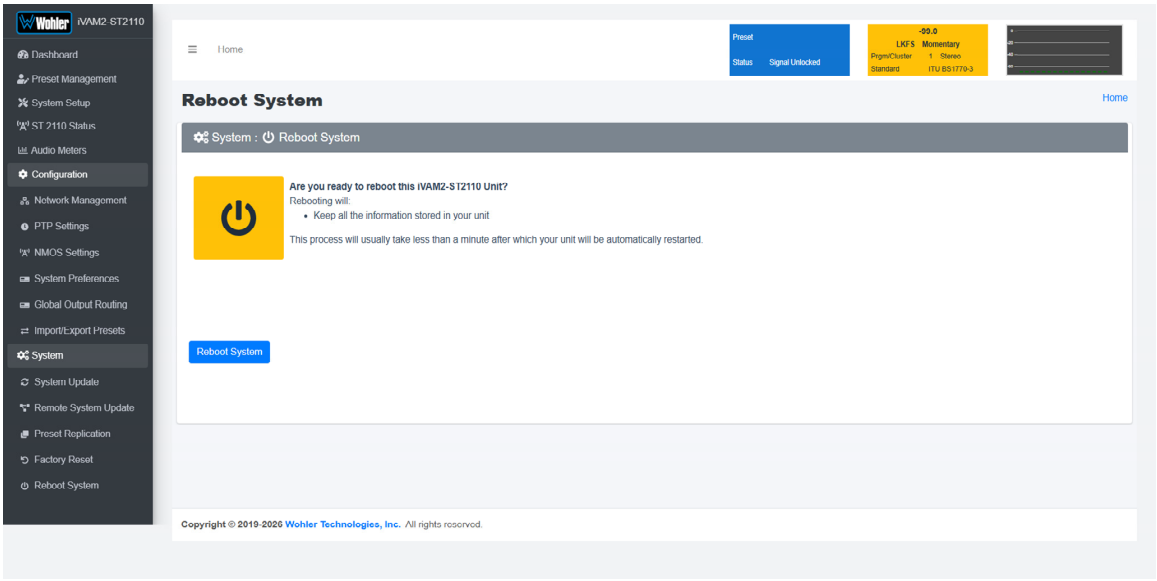
Note: Factory Reset will reset your IP address to the default one (Static IP: 192.168.1.162/Gateway: 192.168.1.1/Netmask: 255.255.255.0) and clear the database of Presets.

System: Reboot System

The **Reboot System** page allows you to reboot an iVAM2-ST2110 remotely. The **Reboot System** page is shown in Figure 4-38. 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 iVAM2-ST2110 out of service for a minute while it is rebooting, and this may unexpectedly interfere with the use of the product by the remote operator.

Figure 4–38: Reboot System



If you have any doubt as to whether you should reboot the remote iVAM2-ST2110, 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 iVAM2-ST2110.

Download the Software

The iVAM2-ST2110 software update can be found at http://www.wohler.com, under Product Downloads on the Products > iVAM2-ST2110 page, in Support > Downloads > Drivers & Software, or contact Wohler Customer Support for more information.

Unzip the downloaded update files to reveal two files. One will have a suffix of **.wx** and the other will have a suffix of **.md5sum**. Both files are needed for the upgrade.

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 iVAM2-ST2110: 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.

The following three methods can be used only if the iVAM2-ST2110 already contains Version 1.7.0 or higher. The version number can be checked by referring to the System tab on the System Information screen.

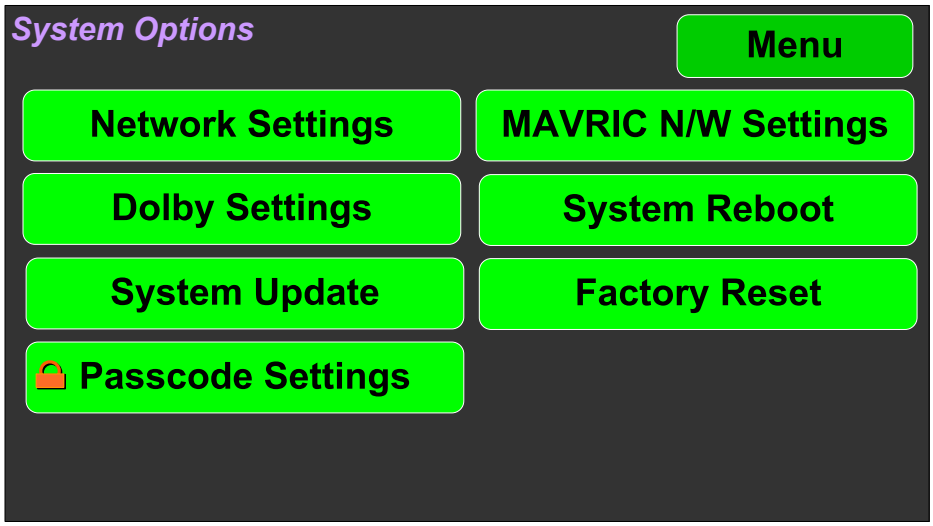
2. Remote update using the Web GUI with a flash drive connected to the iVAM2-ST2110: It may be more convenient to update the product using a flash drive plugged into its front panel USB socket, but controlled remotely via the Web GUI. To update the product this way, refer to the Updating via the Web GUI section of this chapter.
3. Remote update without a flash drive: This method allows you to update a networked iVAM2-ST2110 remotely without plugging a flash drive into its front panel USB socket. To update the product this way, refer to the Updating an iVAM2-ST2110 Remotely section of this chapter.
4. Update multiple units remotely at once: This method allows you to update multiple networked iVAM2-ST2110 units at once, without plugging flash drives into their front panel USB sockets. To update products this way, refer to the Updating Multiple iVAM2-ST2110 Units Remotely section of this chapter.

Local Update from the Front Panel

Use the following steps to update the iVAM2-ST2110 software:

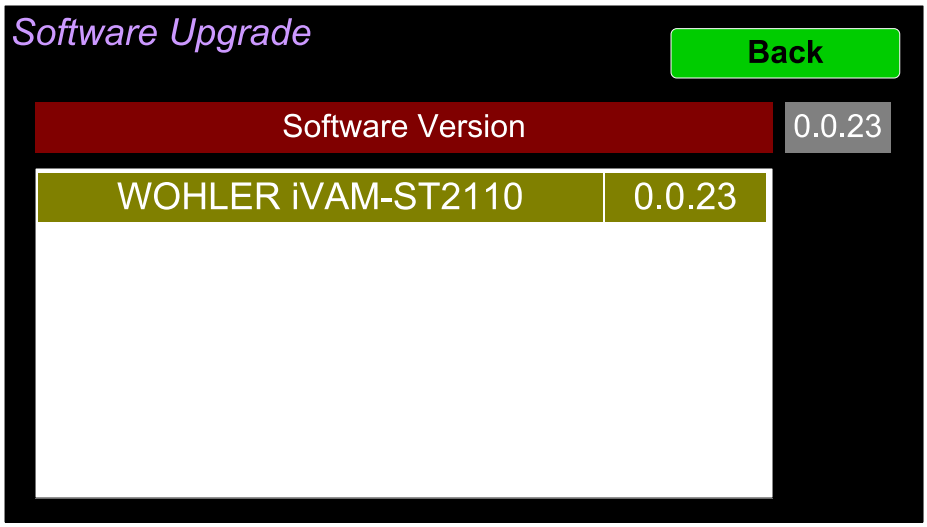
1. Copy the unzipped Wohler Update Package file(s) from your computer to the root directory (not inside of a folder) of a USB flash drive. It must be FAT32 file type, and does not need to be empty. Refer to the Download the Software section of this chapter for the specifics of download and file transfer to the USB flash drive.
2. Insert the USB flash drive with iVAM2-ST2110 update package(s) into the front panel USB jack.
3. From the **Menu** screen, touch **System Options**. The screen shown in Figure A-1 will appear.

Figure A-1 - System Options Screen



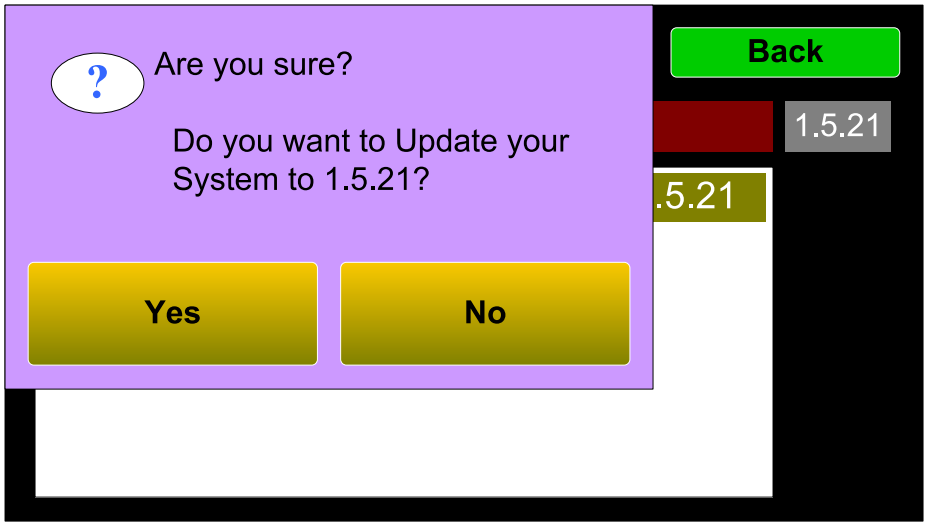
4. In the **System Options** menu, touch **System Update**. The **Software Upgrade** screen will appear, as shown in Figure A-2.

Figure A-2 - Software Upgrade Screen



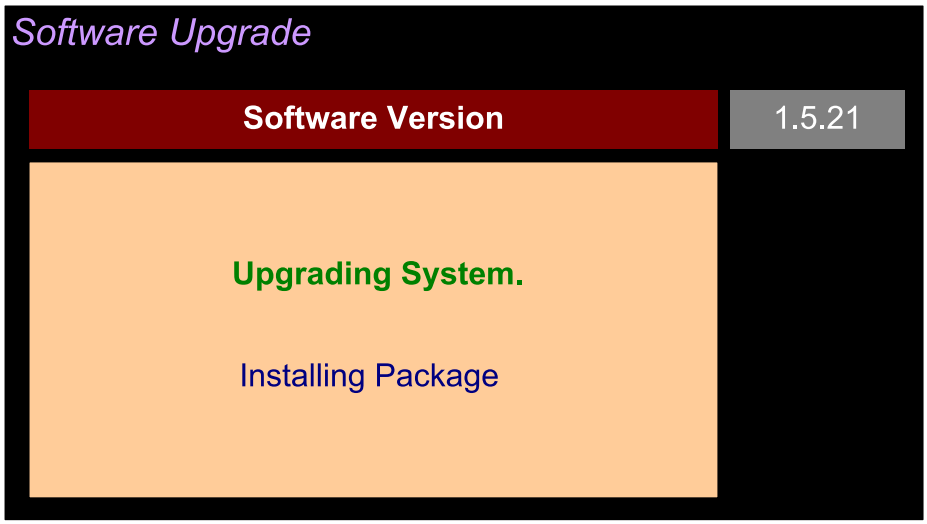
5. The new software version that is in the flash drive will be shown in the **Software Version** screen. To cancel the upgrade at this point for any reason, touch **Back**. To proceed, touch the software version entry in the **Software Version** screen. A screen will appear, as shown in Figure A-3.

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. The message on this screen will change as the upgrade progresses. The left screen will display, "Software Upgrade in Progress" until the upgrade is complete.

Figure A-4 - Upgrading System



7. After the software update starts, the text on the left screen will change periodically to indicate the progression of the upgrade. The upgrade will take 5 minutes or more, after which the iVAM2-ST2110 will restart. After the system has completed its restart cycle and is once again operational, you may then remove the flash drive.

Important:

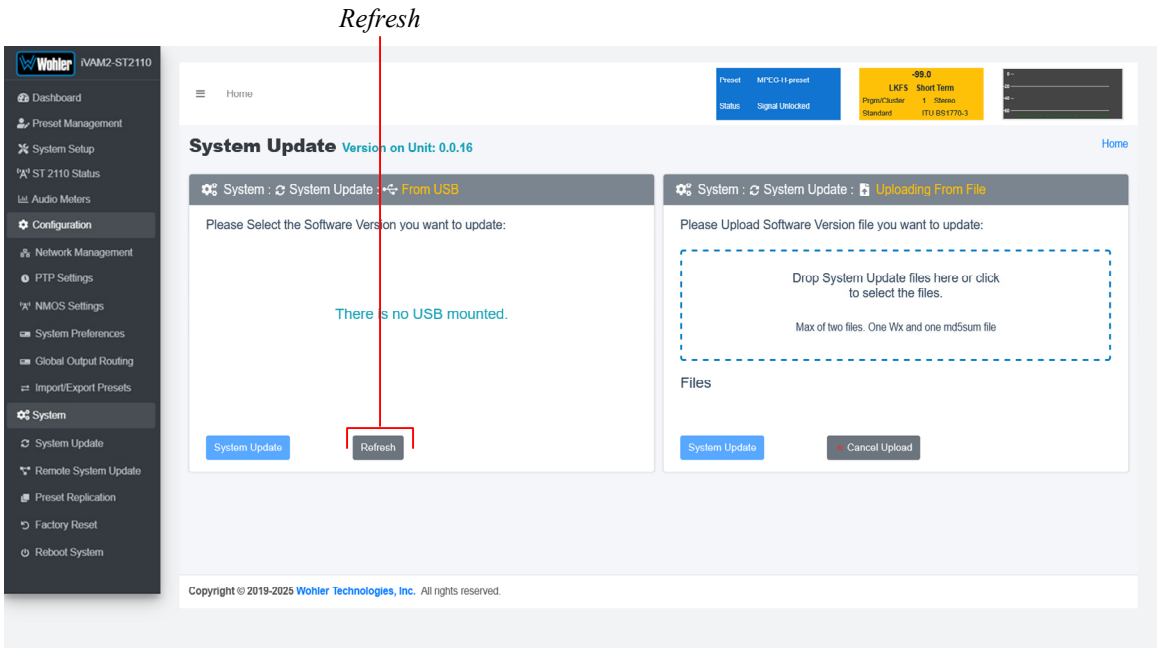
Do not interrupt or remove power to the iVAM2-ST2110, or remove the USB drive during the installation process. Doing so could crash the iVAM2-ST2110 software.

Updating via the Web GUI using a Flash Drive

Use the following steps to update the iVAM2-ST2110 software:

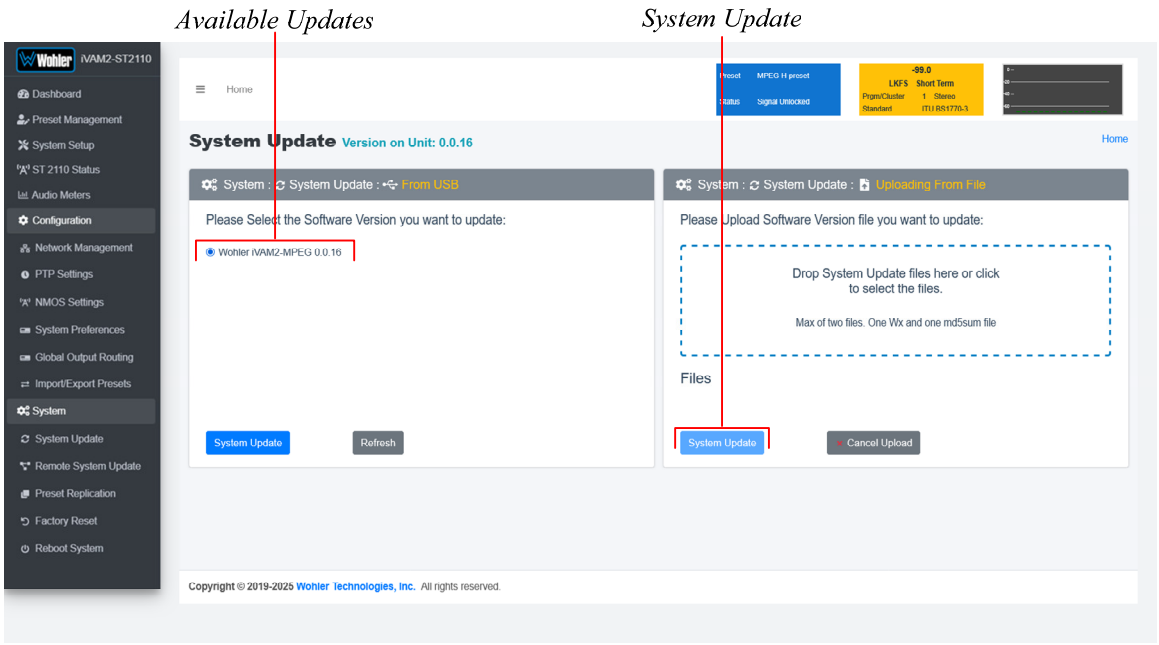
1. Copy the unzipped Wohler Update Package file(s) from your computer to the root directory (not inside of a folder) of a USB flash drive. It must be FAT32 file type, and does not need to be empty. Refer to the Download the Software section of this chapter for the specifics of download and file transfer to the USB flash drive.
2. Connect to the iVAM2-ST2110 with the Wohler Web GUI. Navigate to the **System | System Update** menu, as shown in Figure A-6. If the iVAM2-ST2110 has recently been powered and it contains the Dolby Decoder option, then a message may appear asking you to wait for a number of seconds so that the decoder will be operational.

Figure A-6 – System Update Menu



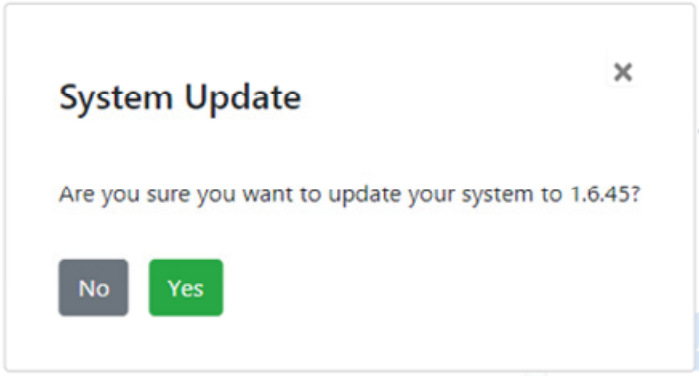
3. Click on the **Refresh** button.
4. Available software update(s) are shown as in Figure A-7. Click the one you want, followed by clicking the **System Update** button.

Figure A-7 – Available Software Updates



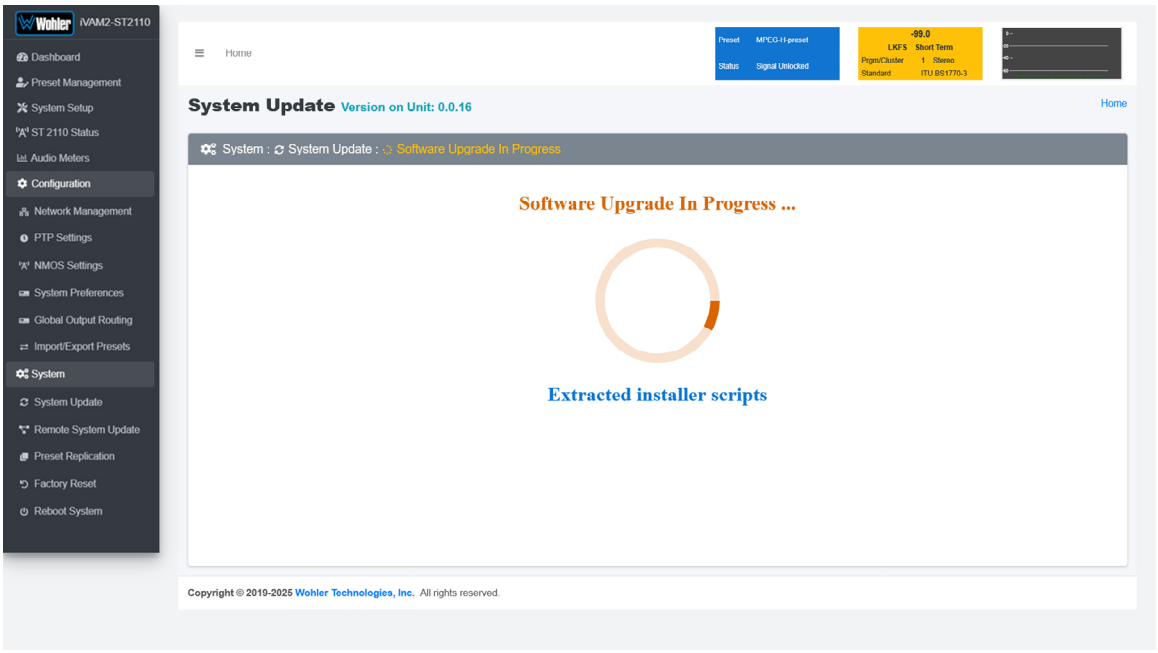
5. After clicking the System Update button, a verification screen displays as shown in Figure A-8. If you agree that the correct update version has been selected, click the **Yes** button.

Figure A-8 – System Update Verification



6. Next, the update begins, showing the screen in Figure A-9. The circle in the center of the screen, along with status messages below it, will indicate the progress of the update.

Figure A-9 – Software Upgrade in Progress



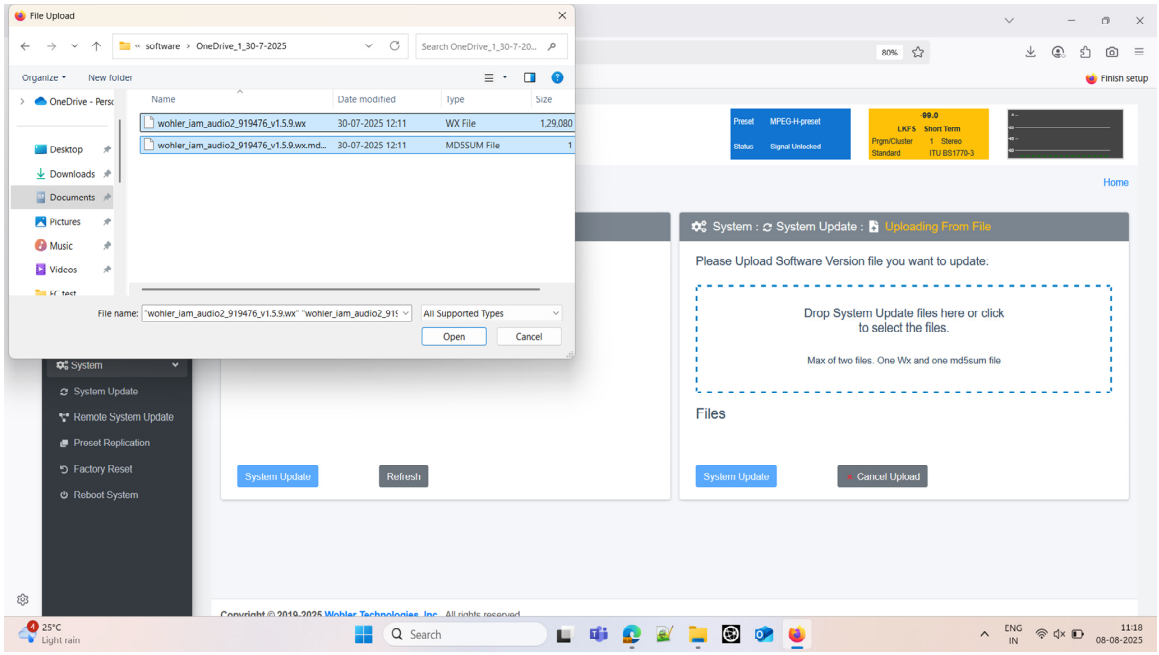
7. At this point, wait for the update to complete. It may take several minutes, but **it is critical not to disturb the iVAM2-ST2110 or the Web GUI** until the update process is complete. When it is complete, the iVAM2-ST2110 will restart.

Updating an iVAM2-ST2110 Remotely

Use the following steps to update the iVAM2-ST2110 software:

1. The Software Update files you downloaded earlier must be in the same computer that is running the Web GUI. Connect to the iVAM2-ST2110 with the Wohler Web GUI. Navigate to the **System | System Update** menu. Click within the large blue dotted line rectangle at the right of the screen. A file selection window will open, as shown in Figure A-10.

Figure A-10 – System Update Menu



2. Click the two update files. One will have a suffix of **.wx** and the other will have a suffix of **.md5sum**. If you make a mistake and click the wrong file(s), click the **Cancel Upload** button and try again. When the files have uploaded, the **System Update** button will be enabled. Click it. If there is a problem with the files as this point one of the screens shown in Figures A-11 or A-12 will appear. In that case follow the directions on the screen to retry. If there are no problems, the update will proceed and the screen shown in Figure A-9 will appear.

Figure A-11 – Invalid System File Version

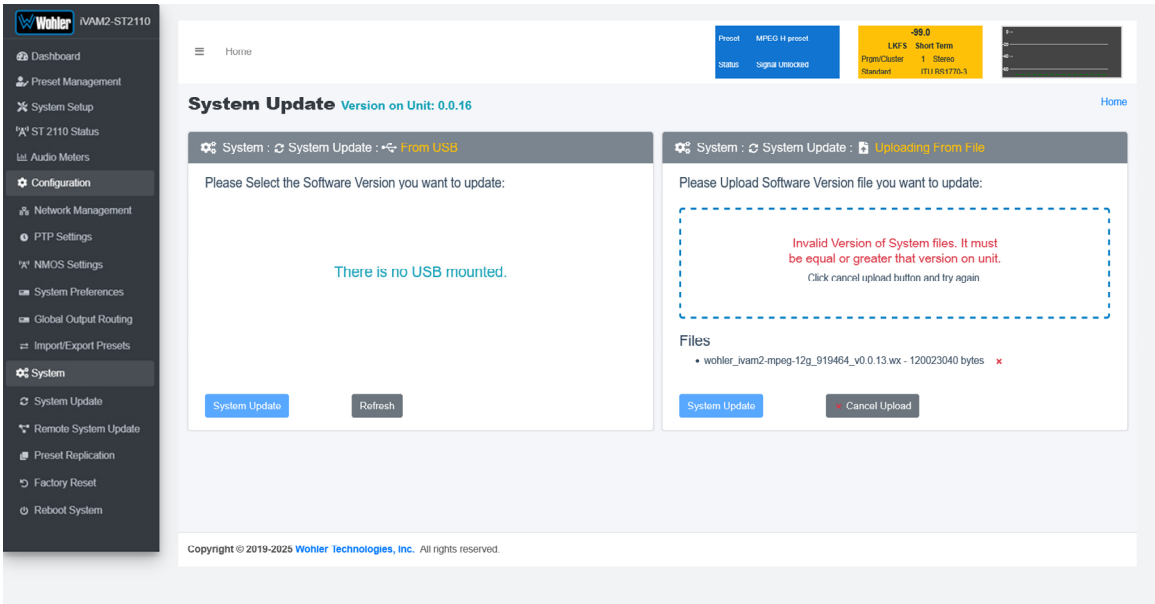
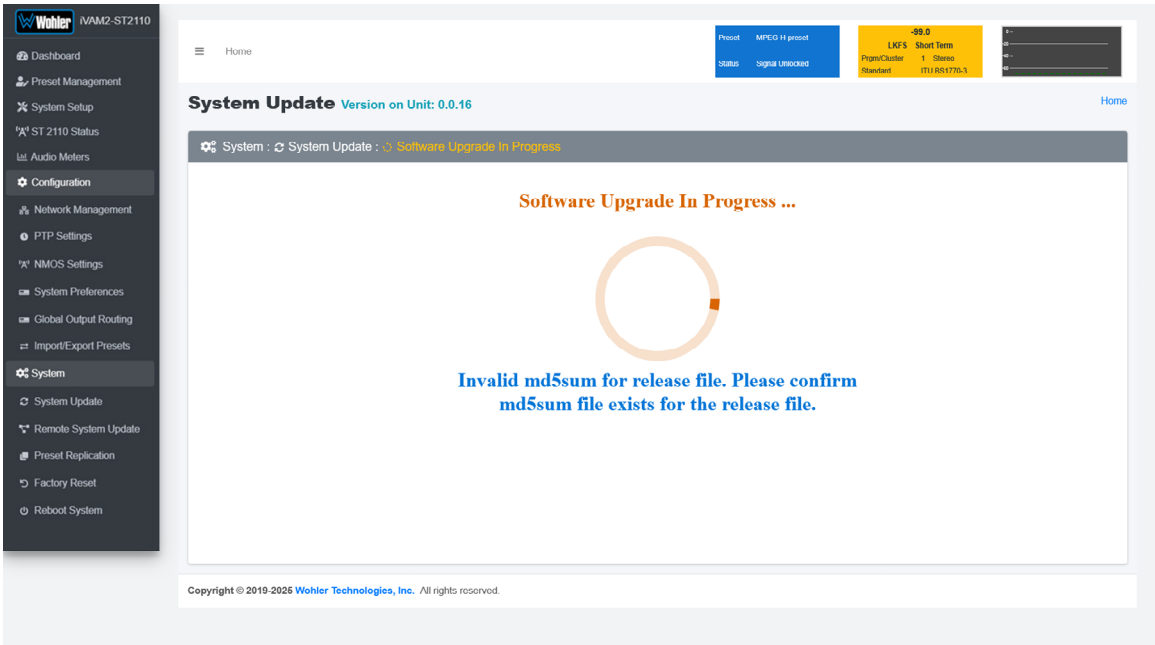


Figure A-12 – Invalid Checksum



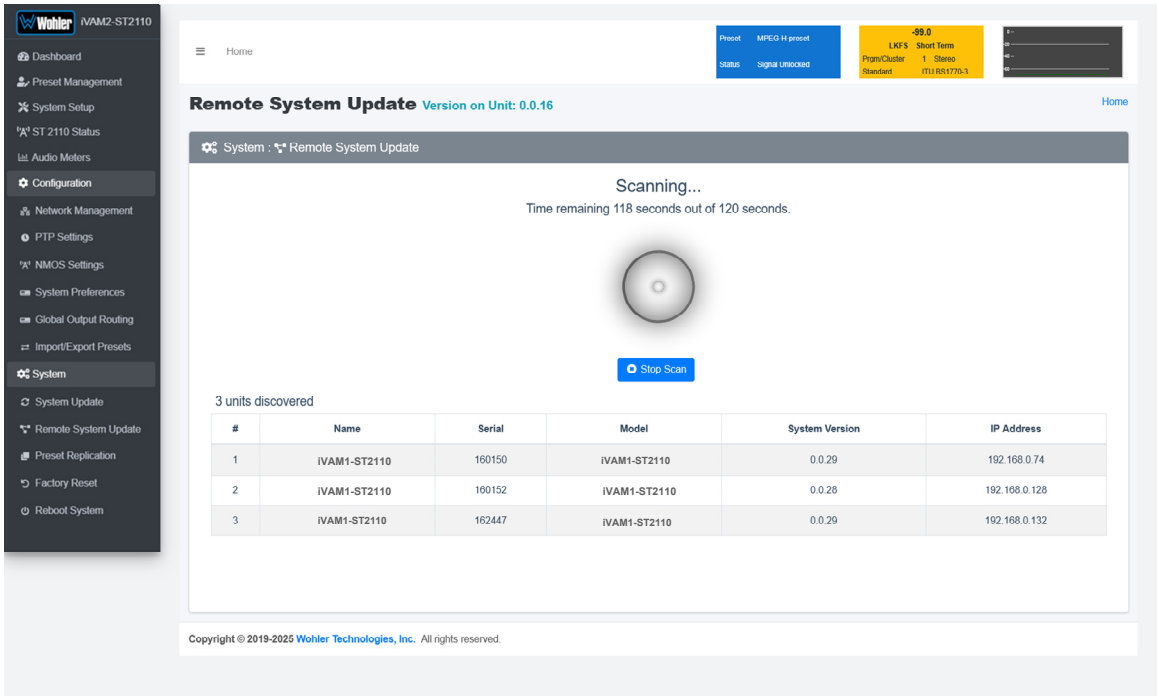
3. At this point, wait for the update to complete. It may take several minutes, but **it is critical not to disturb the iVAM2-ST2110 or the Web GUI** until the update process is complete. When it is complete, the iVAM2-ST2110 will restart.

Updating Multiple Units Remotely

Use the following steps to update one or more iVAM2-ST2110 units remotely by transferring the software from a previously updated iVAM2-ST2110:

1. If any of the iVAM2-ST2110 units that you intend to update remotely may be in use, contact the people using them and let them know what you will be doing. The iVAM2-ST2110 units being updated will be temporarily out of service.
2. Use the Wohler Web GUI to connect to an iVAM2-ST2110 already containing the latest update. This will be referred to as the **Master Unit**. Navigate to the **System | System Update | Remote System Update** menu. The screen shown in Figure A-13 will appear and the Web GUI will scan the network for any active iVAM2-ST2110 units.

Figure A-13 – Scanning for iVAM2-ST2110 Units

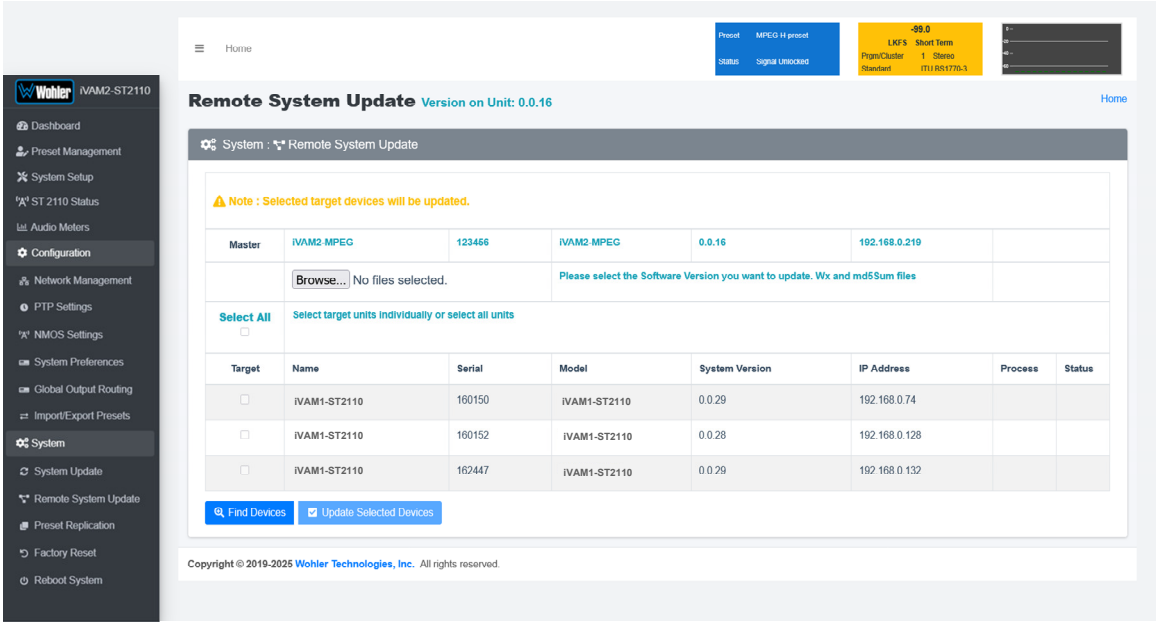


Note: The scanning process will take 2 minutes. Progress is shown on the screen. If for some reason you would like to stop the scan prematurely, click the **Stop Scan** button.

Important: Do not run the scanning or updating process from **more than one Master Unit** at a time, to avoid problems. Although you may be updating multiple units at the same time, never attempt this process from more than one **Master Unit**.

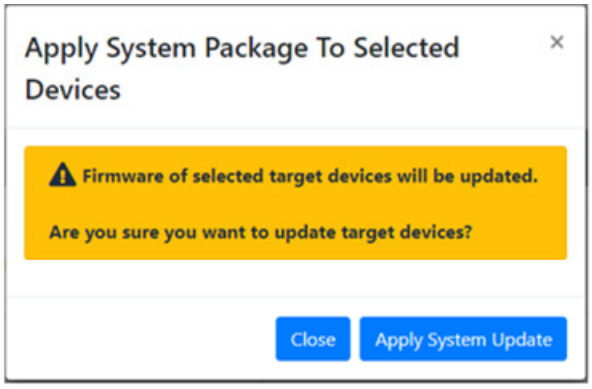
3. When the scanning is complete, a list of found iVAM2-ST2110 units will be shown as in Figure A-14. Click either **Select All** or click only the **Target** units that you want to update.

Figure A-14 – List of Found iVAM2-ST2110 Units



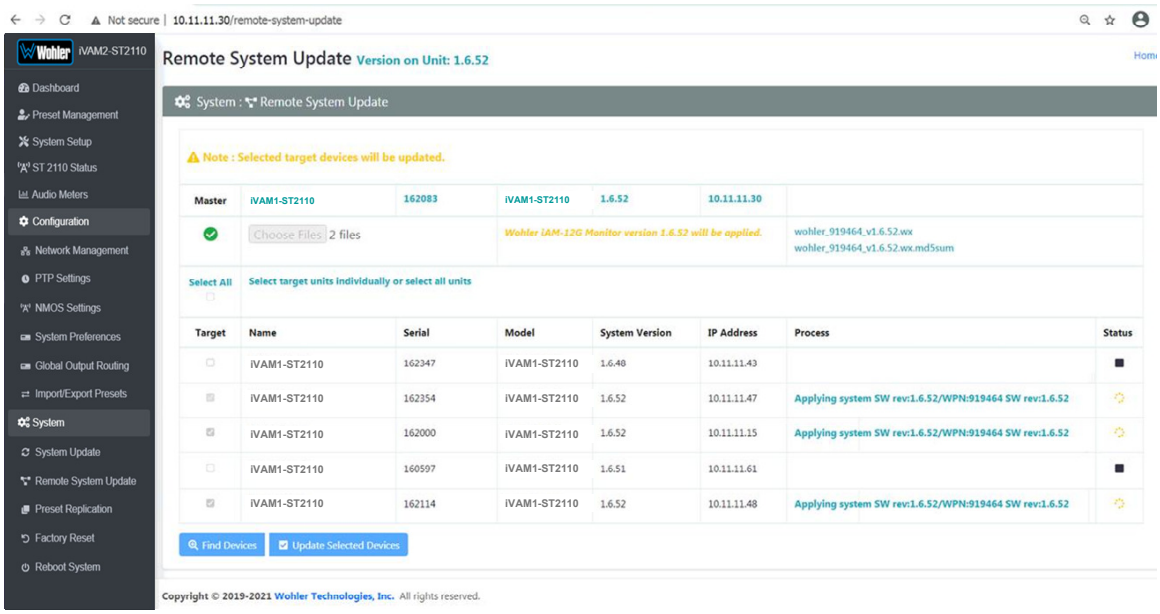
4. Then click **Update Selected Devices**. The window shown in Figure A-15 will appear.

Figure A-15 – Apply System Package



5. Click **Apply System Update**. The screen shown in Figure A-16 will appear. This screen contains a table showing the update progress of each of the iVAM2-ST2110 units being updated.

Figure A-16 – System Update Progress



6. At this point, wait for each update to complete. It may take several minutes, but **it is critical not to disturb any of the iVAM2-ST2110 units or the Web GUI** until the update process is complete. When it is complete, each iVAM2-ST2110 will restart.

APPENDIX B: Dante Network Setup

Introduction

Installing the iVAM2-ST2110 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.

iVAM2-ST2110 channel source selections are made by choosing **Input Type** '**AoIP**' in the Configuration-Configure Presets page regardless of which AoIP option is installed.

The iVAM2-ST2110 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.

Please refer to the ***Dante Controller User Guide*** or other control device documentation for specific network and device setup information. The next section provides a guide to configuring the card and AOiP port.

What is in the iVAM2-ST2110 for Dante

The Dante AOIP option consists of an Audinate Brooklyn II card directly connected to the AOIP port. This port is dedicated to the card and should not be confused with the Wohler unit Management port. These two ports must be on two different subnets, one for the AOIP network and the other for access to the Wohler Web GUI for management of the Wohler unit itself. Either one can be configured to have static or DHCP addresses. The Wohler Web GUI indicates the presence of the Dante card and the AOIP license but does not provide access to the various configuration parameters internal to the card. The speed of the AOIP port is 1G default or 100Mbps.

The Audinate® Brooklyn II card has a simple process to set its initial IP address. The initial factory setting for the card's AOIP port is DHCP. When connected to a DHCP based Dante network and the unit powered on, the Dante card sets the DHCP server provided address as its default address.

Therefore, if the Dante network has a DHCP server, the unit can be inserted into the network and can be configured further using the Audinate application, Dante Controller, running on a host on the same DHCP based subnet.

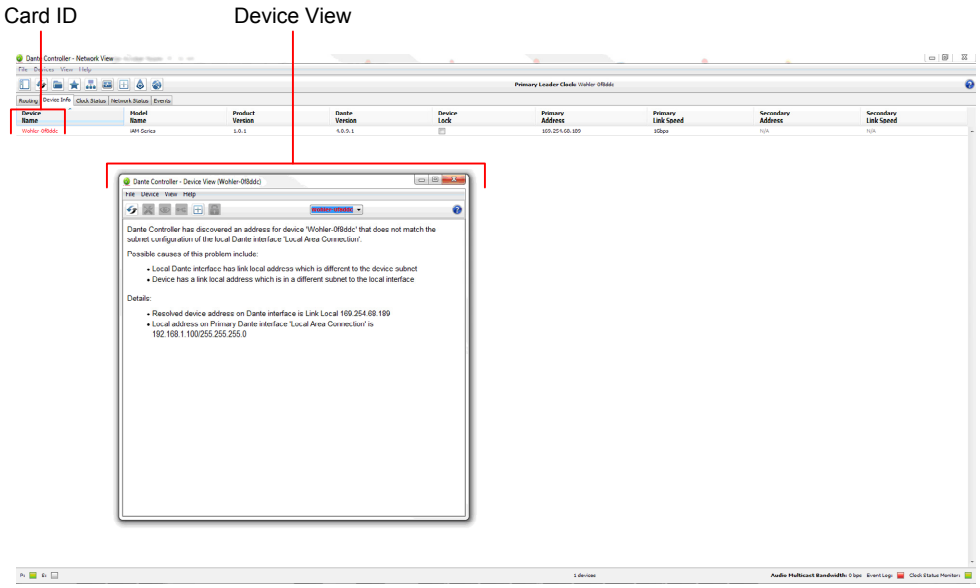
If the Dante network is static based or if DHCP fails, the card sets a static Link Local arbitrary address in the format 169.254.x.y, where x and y are each in the range 0 to 255. The mask is set to 255.255.0.0 to provide a ~65000 entry address space.

The Dante Controller host must also have a Link Local address to communicate with the card over the unit's AOIP port. Connect the AOIP port directly to a host (e.g. laptop) running the Dante Controller, where the host address is preconfigured to an arbitrary Link Local address (169.254.x.y, mask 255.255.0.0). The connection can be direct cable or through a switch. The Dante Controller **Device Info** tab shows the card's default static address, speed, etc. By double clicking its entry line,

additional settable parameters on the card can be reconfigured to be compatible with the Dante network addressing and other parameters as necessary. When the unit is rebooted on the Dante network, the card will be seen by the Dante Controller used to manage the overall network.

If the Dante Controller **Device Info** tab detects the card but does not allow modification and full presentation of card internals, the **Card ID** will be shown in red, e.g. Wohler-xxxxxx where xxxxxx is the last 6 hex digits of the card MAC address as shown in B-1. This usually indicates that the IP address of the card is not in the same subnet as the Dante Controller host. By double clicking the ID, a **Device View** screen will appear as also shown in Figure B-1 with further details about the two incompatible addresses. Change the address of the host or move the unit to another host with an address compatible with the Dante card.

Figure B-1 – Dante Controller Device Info Tab



Up to sixteen of the 64 AoIP receive channels can be monitored at once in the iVAM2-ST2110. The sixteen iVAM2-ST2110 input channels selected by presets are transmitted to the Dante network.

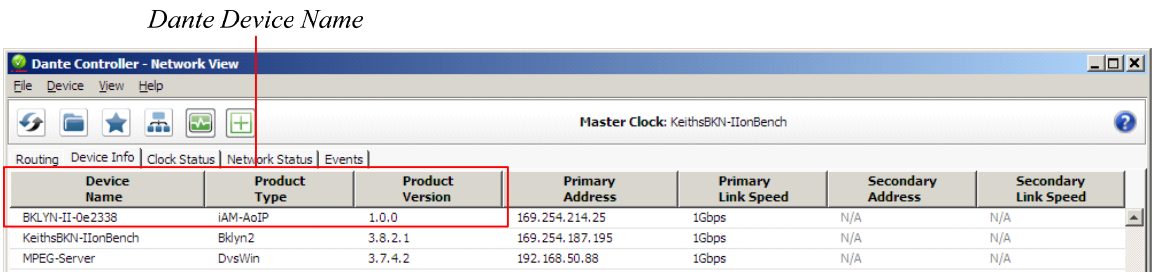
The iVAM2-ST2110 Dante™ AoIP is configured by the iVAM2-ST2110 to receive up to 64 channels and transmit 16 channels of Dante AoIP at 48 kHz or 44.1 kHz audio sample rates. 48 kHz is the iAM default rate.

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 iVAM2-ST2110 monitor when monitoring different input types at different sample rates or if sources are asynchronous.

Dante™ Device Setup

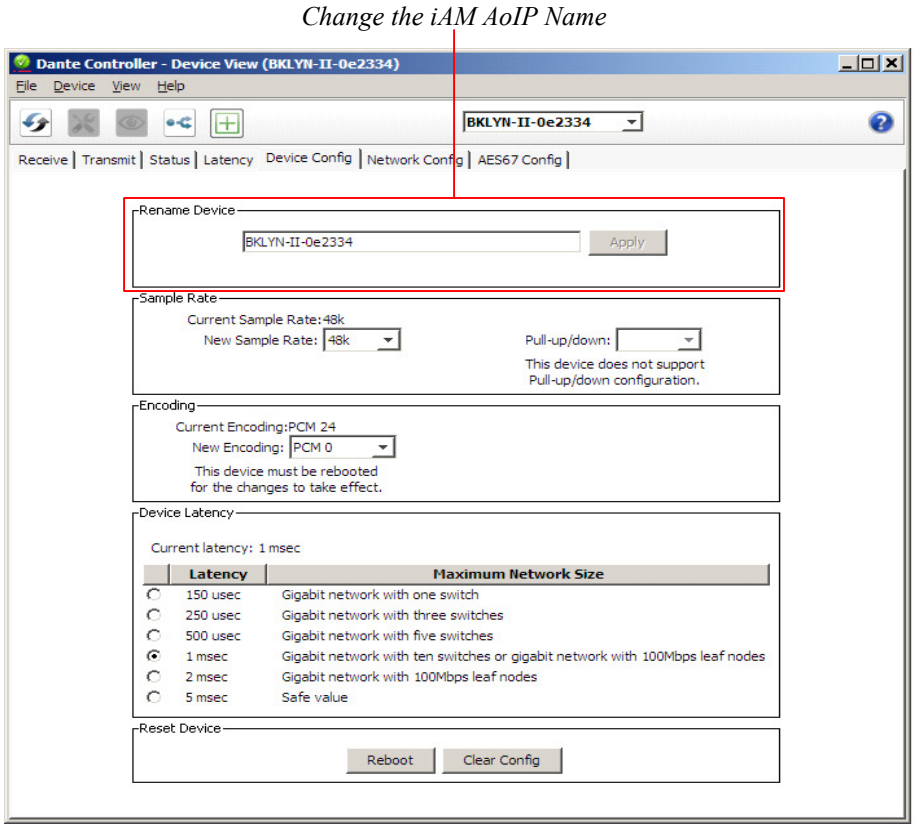
The iVAM2-ST2110's default **Dante Device Name** is "BKLYN-II- …" followed by the last 6 digits of the Dante port MAC address, as shown in Figure B-2. This name can be changed by the Dante Controller to appear that way on the network, but that will not change the iVAM2-ST2110's unit name appearing on GUI pages and iVAM2-ST2110 **Remote Metering** or **Discovery** pages.

Figure B–2: iVAM2-ST2110 Name



During initial setup, you may want to manually change the iAM unit **Name** in the System Setup page to match the reassigned **Dante Device Name** for consistency. Refer to Figure B-3.

Figure B–3: Rename iAM



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

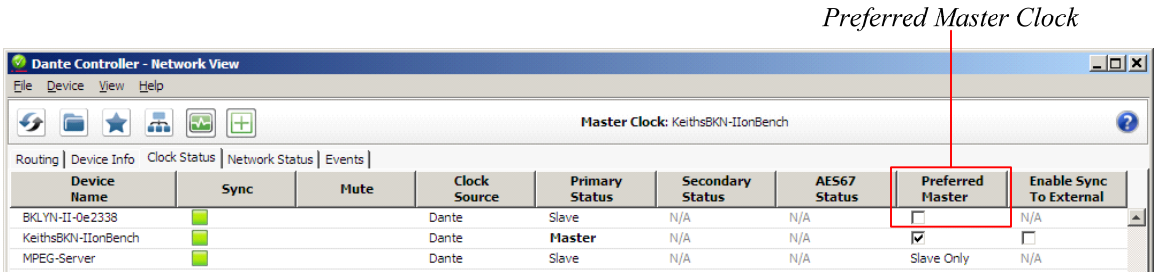
Important: Only 44.1 kHz and 48 kHz audio sample rates are currently supported by the iVAM2-ST2110. The Brooklyn II card would accept a Dante Controller command to operate at other rates, without giving an indication it will not be implemented.

Dante Clock Selection

While the Brooklyn's internal clock is highly accurate, the iVAM2-ST2110 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-4.

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–4: Clock Selection



Channel Names

The iVAM2-ST2110 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 iVAM2-ST2110 internal channel names are not passed to the Dante network for discovery purposes, and are internal to the iVAM2-ST2110.

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 iVAM2-ST2110 **Channel Naming - AoIP** page to match.

AES67

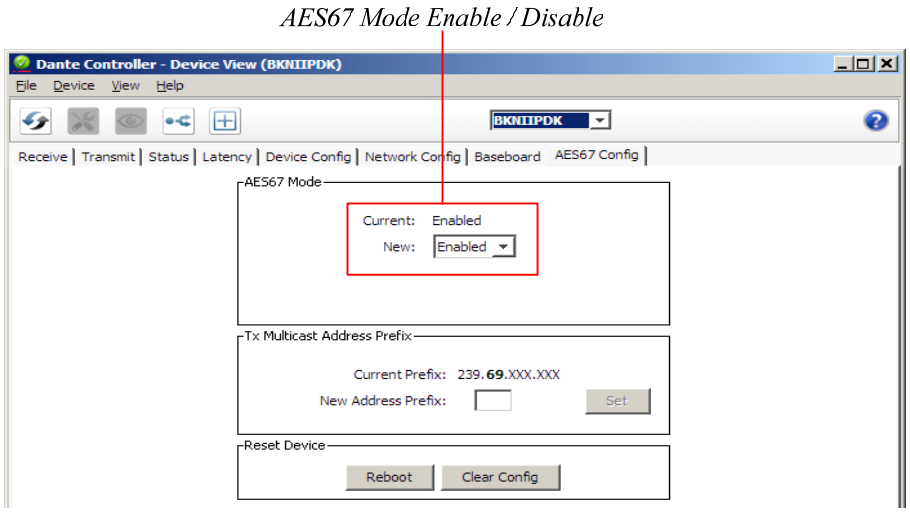
The iVAM2-ST2110 Brooklyn II can be configured for AES67 operation. AES67 operation with Dante is limited to eight or less receive and transmit channels at 48 kHz sample rates.

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.

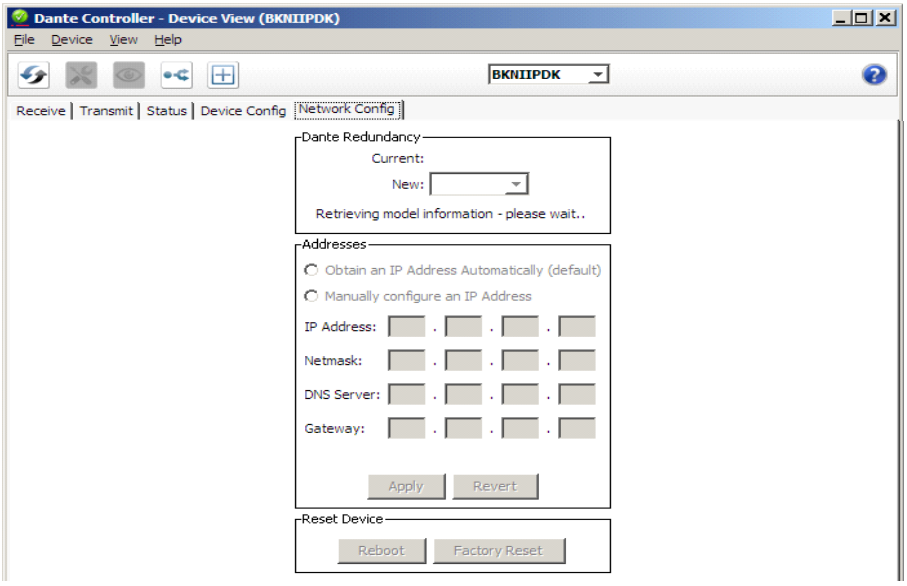
The **Device View - AES67 Config** menu enables/disables AES67.

Figure B–5: AES67 Enable/Disable



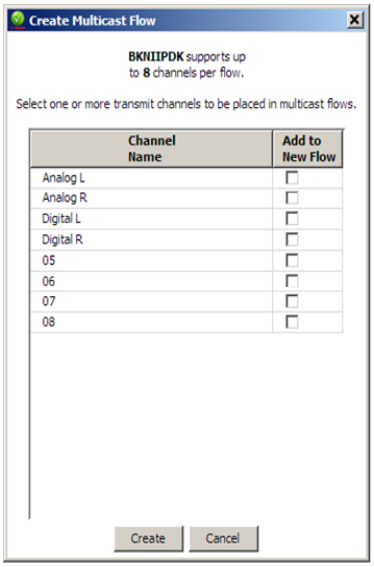
Further, Dante AES67 discovery and operational protocol requires manual assignments for static multicast transmit and receive IP addresses per Dante protocols for discovery and IGMP network operation. Destination addresses in range 239.nnn.0.0 – 239.nnn.255.255, port 5004 o nnn can be configured using 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-6.

Figure B–6: Device View - Network Config



The channels to be multicast are selected in the File menu-**Create Multicast Flows** window shown in Figure B-7.

Figure B–7: Multicast



Device Lock

Audinate recently added a feature whereby a remote controller can send a command to lock Dante network device configurations. The iVAM2-ST2110 does not implement the Device Lock command at this time.

Dante Firmware Upgrades

Wohler iVAM2-ST2110 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 iVAM2-ST2110 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 iVAM2-ST2110 updates.

Additional Information

The following links are provided for those who need more information about the Dante controller or the Dante Firmware update manager.

https://my.audinate.com/products/firmware-update-manager

https://www.audinate.com/products/software/dante-controller

https://dev.audinate.com/GA/dante-controller/userguide/pdf/latest

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APPENDIX D: Ravenna (ZMAN) Setup

Introduction

Installing the iVAM2-ST2110 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.

iVAM2-ST2110 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 iVAM2-ST2110 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 iVAM2-ST2110 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 iVAM2-ST2110 can be configured using its Front Panel controls or its web interface through its Management port. Details specific to the iVAM2-ST2110 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 iVAM2-ST2110 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 iVAM2-ST2110. 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 iVAM2-ST2110 Management port. For example, the iVAM2-ST2110 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 iVAM2-ST2110 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 iVAM2-ST2110.

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

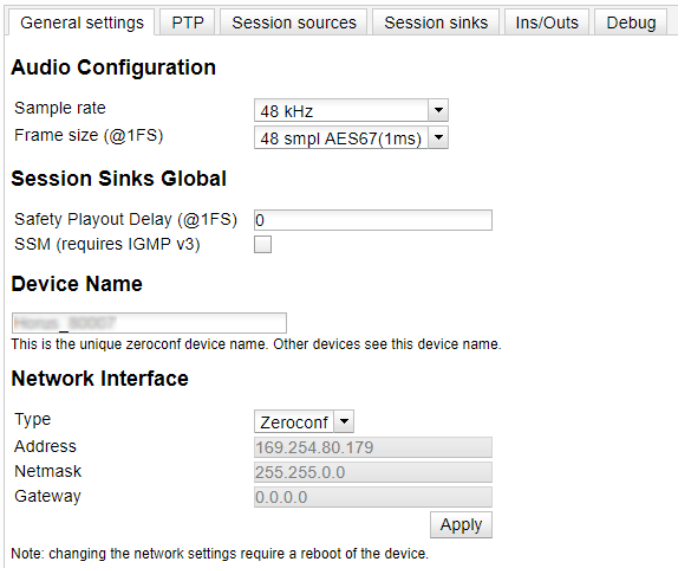
item View is enabled. Do not proceed until the card shows on Aneman. Right click on that line and select Web Services: Advanced (or Ravenna) to bring up the Merging Ravenna configuration page. Also, the ICON of the card will appear in the main part of the Aneman screen. Double Clicking on the ICON also 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

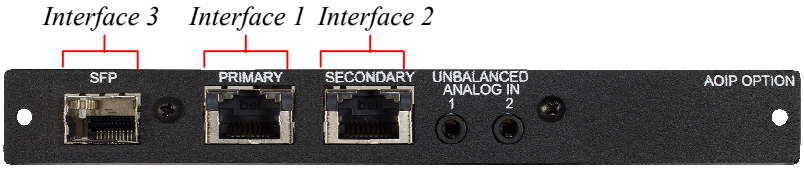


The elements of this tab are as follows:

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.)

The Out-Of-Band Control for the Ravenna module is available using the SFP port. Out-Of-Band NMOS is more relevant in 2110 networks, and often Ravenna cards are used to monitor 2110-30 (the Audio essence of 2110). Customers can use any off-the-shelf network SFP's to connect into the ports shown in the following figure.

Figure D-2: AOIP Ports



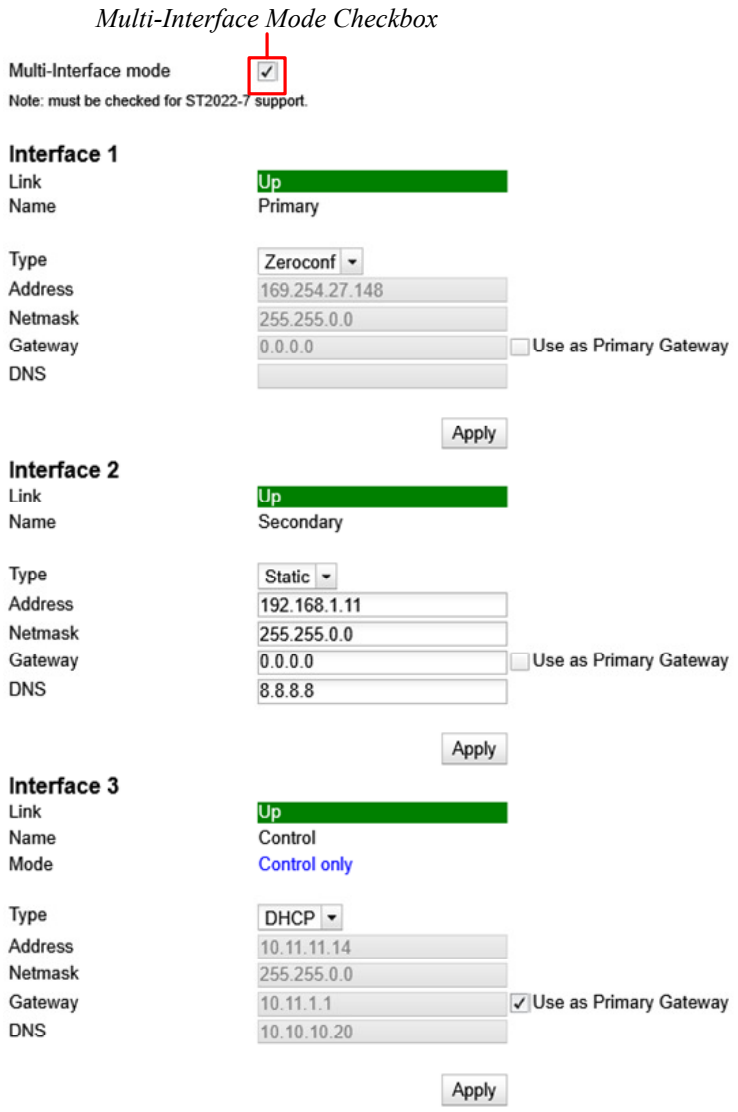
The SFP interface on the Ravenna module can be discovered using ANEMAN as with the Primary and Secondary port.

To use the SFP Interface, make sure the Multi-Interface mode checkbox is enabled. Refer to Figure D-3. The IP address configuration for SFP can be made using the "Interface 3" section as shown in Figure D-3. Note that the IP address settings shown in this Figure are for reference only; you should configure each interface per your network.

On the Ravenna web interface, the following nomenclature is used. "Interface 1" for PRIMARY RJ-45 Port, "Interface 2" for SECONDARY RJ-45 Port, "Interface 3" for SFP port. Refer to Figure D-2. Once the network settings for SFP port are configured, the web interface for Ravenna module can be accessed from any of the three interfaces. The default port numbers used to access the web interface are as follows:

- **"Interface 1" (PRIMARY):** Uses port 80. The web page for Ravenna can be accessed using http://<zman IP>
- **"Interface 2" (SECONDARY):** Uses port 81. The web page for Ravenna can be accessed using http://<zman IP>:81
- **"Interface 3" (SFP):** Uses port 82. The web page for Ravenna can be accessed using http://<zman IP>:82

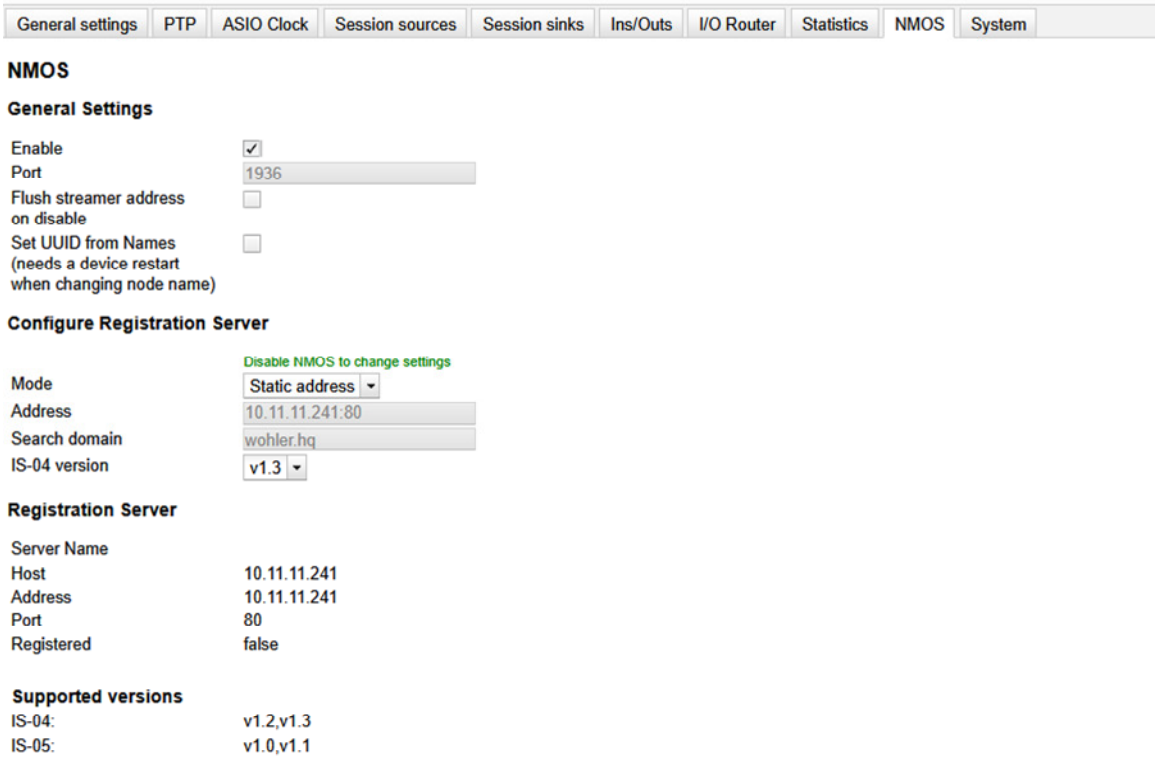
Figure D-3: SFP Interface Setup



The Ravenna "Interface 1" and "Interface 2" act as Media as well as control ports. In-band NMOS will still continue to work for customers who have control interface on the same network as the media. SFP or "Interface 3" is a Control Only port and should not be connected to Media Network.

The NMOS settings on the Ravenna module can be enabled using the NMOS tab of the Ravenna Web Interface. The registration server can be configured using a Static address, an mDNS, or a search domain. The settings shown in the following Figure are for reference only.

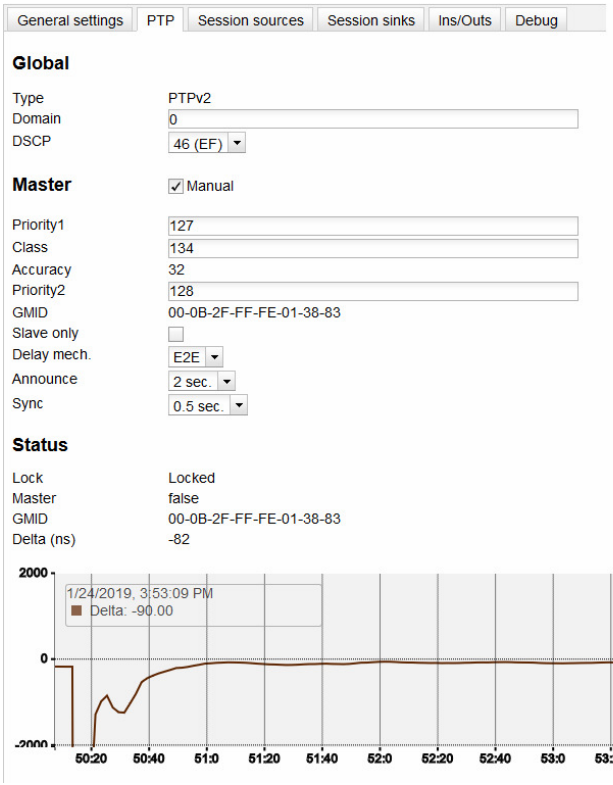
Figure D-4: NMOS Settings



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-5: Getting Started | PTP



The elements of this tab are as follows:

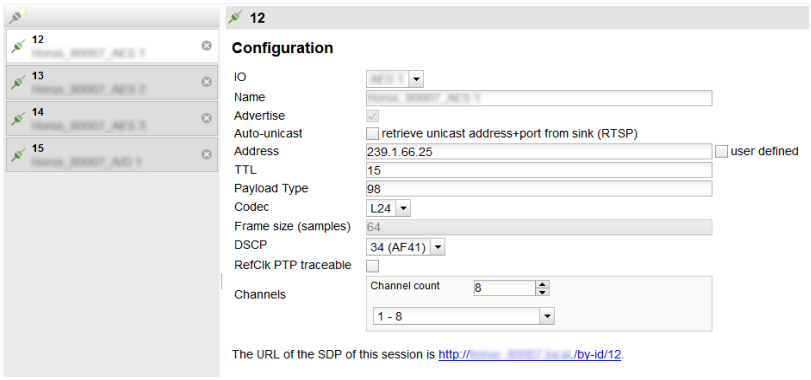
1. **Global Settings**: The default value for PTP
    a. **Domain**: For the Merging Ravenna card this value is 0.
    b. **DSCP**: 46 for PTP AES67 or 48 for PTP Ravenna.
2. **Master**: To modify the PTP setting, you must first check the "Manual" checkbox.
    a. **Priority**: 1 is the main priority 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-6: Getting Started | Session Sources



The elements of this tab are as follows:

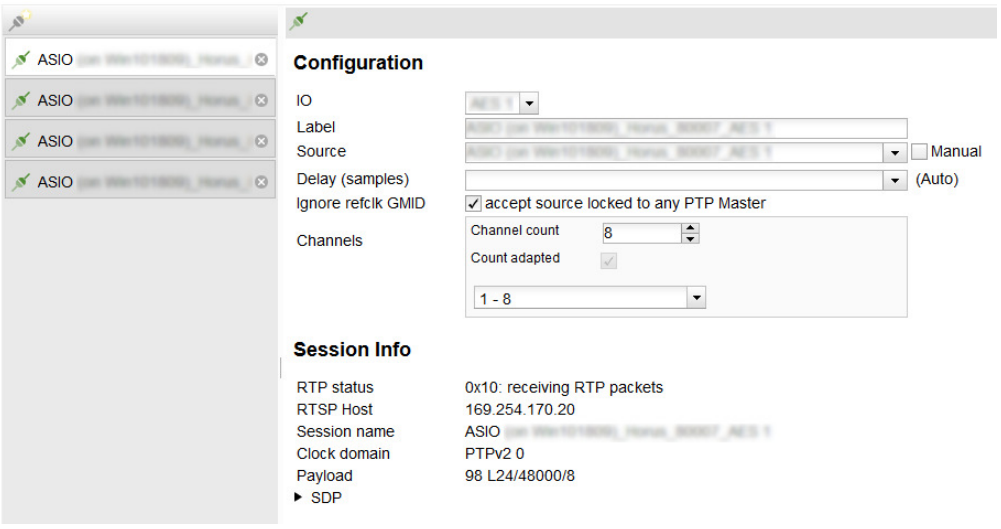
1. **Create session button**: Create a new session sources by clicking on left ICON.
2. **IO**: Select the physical input (when applicable).
3. **Name**: This is the Source name.
4. **Advertise**: Check to enable source advertising on the network.
5. **Auto-unicast - (RTSP)**: Check to automatically 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-7: Getting Started | Session Sinks



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

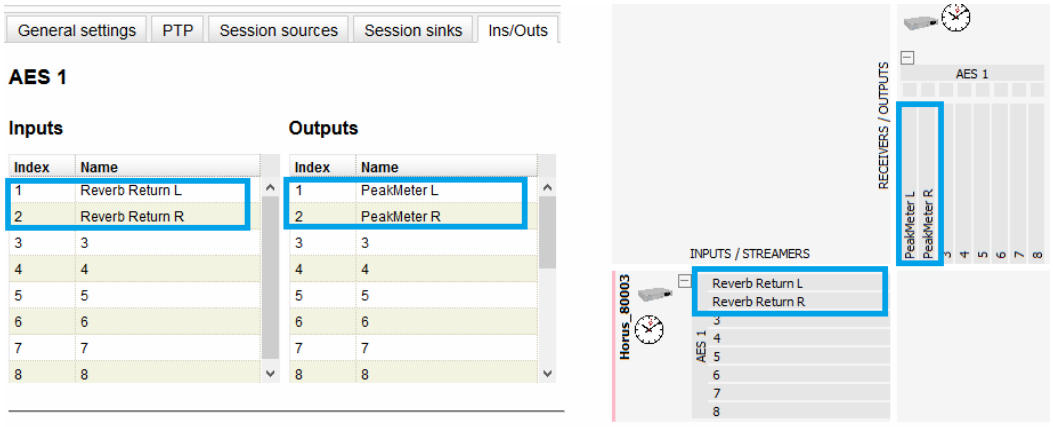
Important Note: The above error numbers are summed. For example, Stream Muted and Wrong Payload together are indicated by 0x24.

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.

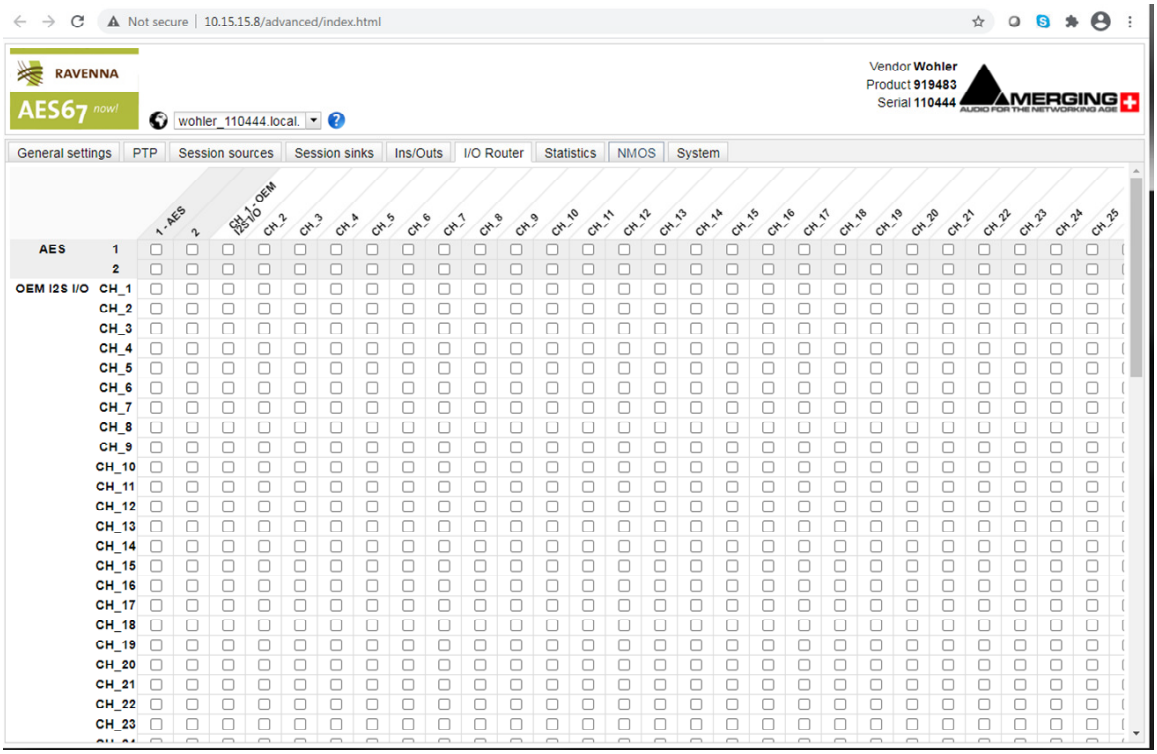
Figure D-8: Getting Started | Ins/Outs



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-9: 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 iVAM2-ST2110 must be set to receive AOIP from the Source Select Front Panel menu or a browser iVAM2-ST2110 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:

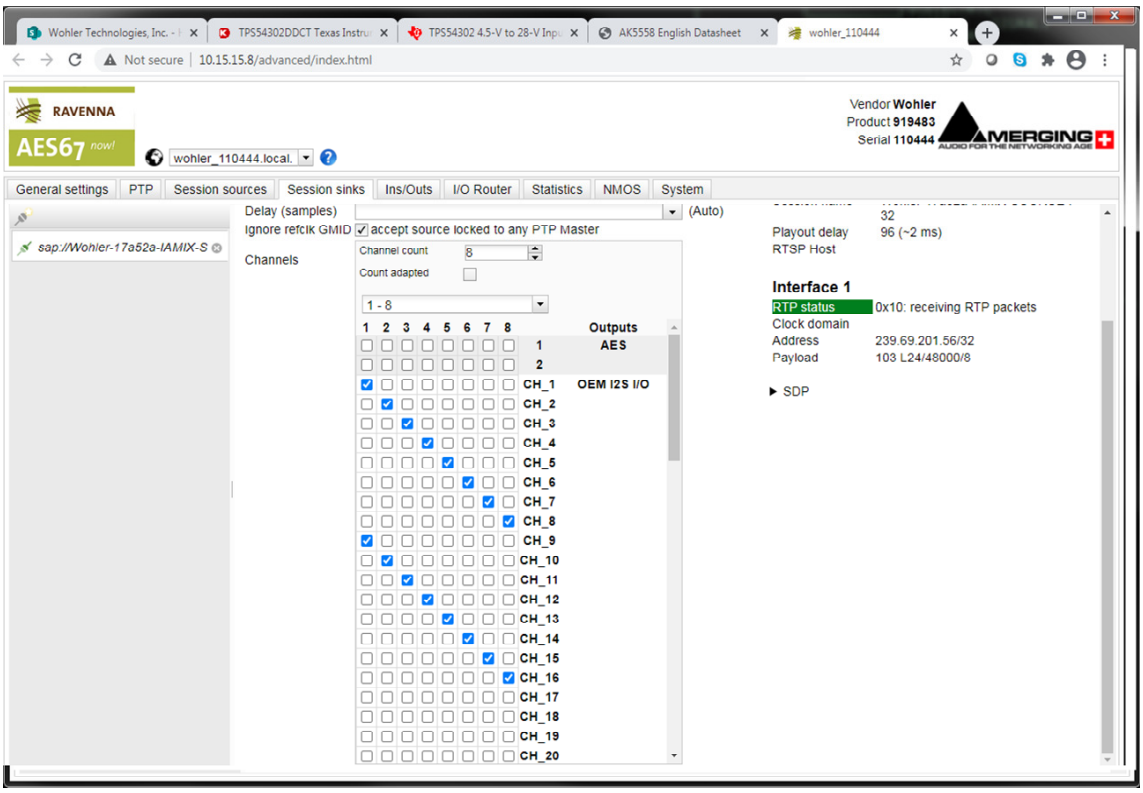
1. Select the **Session Sinks** tab and use the **Create Session Sinks** icon (in the upper left corner) to see the available source Flows.
2. Create an entry on the left panel for each source Flow to be configured.
3. Select the desire Flow and set the number of channels in the Flow. Select the desired range to direct the Flow to the internal channels of the iVAM2-ST2110.
4. Click the matrix, as shown in Figure D-10, to direct the incoming channels to the desired iVAM2-ST2110 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 iVAM2-ST2110 channels also.

Input channels can be mapped to more than one iVAM2-ST2110 channel by selecting additional matrix elements to map input channels 1-8 to both 1-8 and 9-16.

Figure D-10: Session Sinks Tab



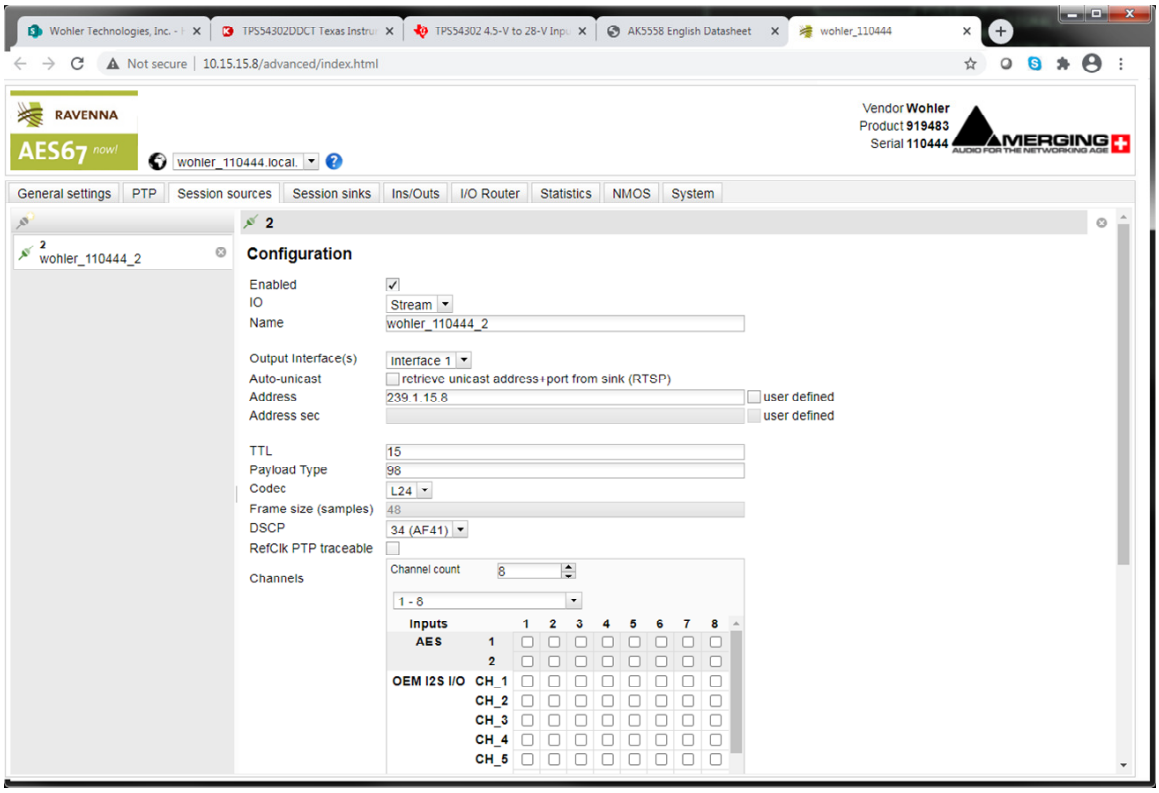
To avoid confusion if monitoring more than one Flow, especially if the various source Flows have overlapping channel numbers, use the matrix to direct Flows to higher channel ranges. For example, for monitoring 2 SDI sources (four 8 channel Flows), assign two flows to 1-8 and 9-16 and the next SDI signal to 17-24 and 25-32. Touch the iVAM2-ST2110 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 iVAM2-ST2110.

ZMAN Session Sources

If the ZMAN card is to Source Flows, use the **Session Sources** tab. Refer to Figure D-11. 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-11: 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 iVAM2-ST2110. 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

1. **GET Active Preset**

Method: GET

/api/cf/presets/current

Example Response:


```
{
    "serial_number": "",
    "model": "iVAM2-ST2110",
    "version": 1.3,
    "name": "iVAM2-ST2110",
    "result": {
        "group": {
            "Id": 1,
            "Name": ""
        },
        "preset": {
            "Data": null,
            "Favorite": 0,
            "Id": 1,
            "Name": ""
        }
    }
}
```


2. **GET Preset Configuration**

Method: GET

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

Example Response:


```
{
```

```
"error": null,
"params": {
    "PresetId": 1
},
"result": {
    "GroupId": 1,
    "PresetName": "SDI",
    "Data": {
        "Name": {
            "Program": "",
            "Group": "G1",
            "Preset": "SDI"
        },
        "VideoSource": {
            "InputNo": 1,
            "ConnectorType": "BNC",
            "Slot": 1,
            "Type": "SDI",
            "Cage": 1
        },
        "DolbyDetection": {
            "NonAudio": "Enabled",
            "PaHeader": "Enabled"
        },
        "Clusters": [
            {
                "NumberOfMeters": 2,
                "FirstMeter": 1,
                "Name": "Stereo 2.0 #1",
                "Type": "Stereo",
                "MuteOnPresetRecall": true
            },
            {
                "NumberOfMeters": 2,
                "FirstMeter": 3,
                "Name": "Stereo 2.0 #2",
                "Type": "Stereo",
                "MuteOnPresetRecall": true
            },
            {
                "NumberOfMeters": 2,
                "FirstMeter": 5,
                "Name": "Stereo 2.0 #3",
                "Type": "Stereo",
                "MuteOnPresetRecall": true
            },
            {
                "NumberOfMeters": 2,
                "FirstMeter": 7,
                "Name": "Stereo 2.0 #4",
                "Type": "Stereo",
                "MuteOnPresetRecall": true
            },
            {
                "NumberOfMeters": 2,
                "FirstMeter": 9,
                "Name": "Stereo 2.0 #5",
                "Type": "Stereo",
```

```
            "MuteOnPresetRecall": true
        },
        {
            "NumberOfMeters": 2,
            "FirstMeter": 11,
            "Name": "Stereo 2.0 #6",
            "Type": "Stereo",
            "MuteOnPresetRecall": true
        },
        {
            "NumberOfMeters": 2,
            "FirstMeter": 13,
            "Name": "Stereo 2.0 #7",
            "Type": "Stereo",
            "MuteOnPresetRecall": true
        },
        {
            "NumberOfMeters": 2,
            "FirstMeter": 15,
            "Name": "Stereo 2.0 #8",
            "Type": "Stereo",
            "MuteOnPresetRecall": true
        }
    ],
    "MeterSet": {
        "13": {
            "Source": {
                "Slot": 1,
                "Cage": 1,
                "Channel": 13,
                "ConnectorType": "BNC",
                "InputNo": 1,
                "InputIndex": 0,
                "Type": "SDI"
            },
            "VolumeDb": 0,
            "DelayMs": 0,
            "Speaker": "Left"
        },
        "8": {
            "Source": {
                "Slot": 1,
                "Cage": 1,
                "Channel": 8,
                "ConnectorType": "BNC",
                "InputNo": 1,
                "InputIndex": 0,
                "Type": "SDI"
            },
            "VolumeDb": 0,
            "DelayMs": 0,
            "Speaker": "Right"
        },
        "2": {
            "Source": {
                "Slot": 1,
                "Cage": 1,
                "Channel": 2,
```

```
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "3": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 3,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "4": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 4,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "16": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 16,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "11": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 11,
            "ConnectorType": "BNC",
            "InputNo": 1,
```

```
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "15": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 15,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "5": {
        "Slot": 0,
        "Cage": 0,
        "ConnectorType": "None",
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 5,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "9": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 9,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "14": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 14,
            "ConnectorType": "BNC",
```

```
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "6": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 6,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "7": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 7,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Left"
    },
    "10": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 10,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
            "Type": "SDI"
        },
        "VolumeDb": 0,
        "DelayMs": 0,
        "Speaker": "Right"
    },
    "12": {
        "Source": {
            "Slot": 1,
            "Cage": 1,
            "Channel": 12,
            "ConnectorType": "BNC",
            "InputNo": 1,
            "InputIndex": 0,
```

```
                        "Type": "SDI"
                    },
                    "VolumeDb": 0,
                    "DelayMs": 0,
                    "Speaker": "Right"
                },
                "1": {
                    "Source": {
                        "Slot": 1,
                        "Cage": 1,
                        "Channel": 1,
                        "ConnectorType": "BNC",
                        "InputNo": 1,
                        "InputIndex": 0,
                        "Type": "SDI"
                    },
                    "VolumeDb": 0,
                    "DelayMs": 0,
                    "Speaker": "Left"
                }
            },
            "SystemClockSource": {
                "Slot": 0,
                "Cage": 0,
                "ConnectorType": "None",
                "InputNo": 0,
                "Type": "None",
                "Pair": 0
            }
        },
        "Favorite": 0,
        "PresetId": 1,
        "GroupName": "G1"
    }
}
```


3. GET list of groups/presets

Method: GET

/api/cf/groups

Example Response:


```
{
    "error": null,
    "params": null,
    "result": [
        {
            "Name": "G1",
            "Presets": [
                {
                    "Favorite": 1,
                    "Name": "AES",
                    "Id": 3
                },
                {
```

```
                    "Favorite": 0,
                    "Name": "SDI",
                    "Id": 1
                }
            ],
            "Id": 1
        },
        {
            "Name": "AES",
            "Presets": [
                {
                    "Favorite": 0,
                    "Name": "dfsdf",
                    "Id": 2
                }
            ],
            "Id": 2
        }
    ]
}
```


4. **GET to recall the preset**

   Method: GET

   /api/cf/presets/<int:presetID>/activate

   Example Response:


```
{
    "error": null,
    "params": {
        "PresetId": 1
    },
    "result": {
        "PresetId": 1,
        "GroupId": 1,
        "PresetName": "SDI",
        "GroupName": "G1"
    }
}
```


5. **POST to delete the group**

   Method: POST

   api/op/group/<int:groupID>/delete

   Example Response:


```
{
    "error": null,
    "params": {
```

```
            "GroupId": 2
        },
        "result": {
            "GroupId": 2
        }
    }
```


6. **POST to delete the preset**

Method: POST

api/op/preset/<int:presetID>/delete

Example Response:


```
{
    "error": null,
    "params": {
        "PresetId": 4
    },
    "result": {
        "PresetId": 4
    }
}
```


7. **POST to rename group**

Method: POST

/api/op/group/<int:groupID>/*newGrpNameSdi*/rename

Example Response:


```
{
    "error": null,
    "params": {
        "GroupId": 1,
        "GroupName": "newGrpNameSdi"
    },
    "result": {
        "GroupId": 1,
        "GroupName": "newGrpNameSdi"
    }
}
```


8. **POST to rename preset**

Method: POST

/api/op/preset/<int:presetID>/*newPresetNameTest*/rename

Example Response:


```
{
    "error": null,
    "params": {
        "PresetId": 1,
        "PresetName": "newPresetNameTest"
    },
    "result": {
        "PresetId": 1,
        "PresetName": "newPresetNameTest"
    }
}
```


9. **POST to set preset as Favorite**

Method: POST

/api/op/preset/<int:presetID>/<favoriteVal>/favorite

Example Response:


```
{
    "error": null,
    "params": {
        "PresetId": 4,
        "Favorite": 1
    },
    "result": {
        "PresetId": 4,
        "Favorite": 1
    }
}
```


10. **Source Select**

Method: POST

/api/op/sourceselect

For Source Select API for ST2110 IP:

1. **Body content for St2110 IP**

{
“Sourcetype”: “ST2110 IP:
“ChannelGroup”: < Int:1-2 >
}

ChannelGroup 1 => Channels 1-16 and
ChannelGroup 2 => Channels 17-32

For Source Select API for AoIP:
{
“Sourcetype”: “AoIP:
“ChannelGroup”: < Int:1-16 >
}

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

For Source Select API for Analog:

Body content for Analog:
{
“SourceType": "Analog"
}

2. **Body content for SDI/SMPTE-2022-6/ SMPTE-2110**

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

Note: Allowed SDI input sources are:
"Bnc-1.Sdi",

11. Setting Mute/Unmute Clusters

Method: PATCH

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

{
"clusters": [
{"name": "MADI 1", "mute": "N"},
{"name": "MADI 2", "mute": "N"},
{"name": "MADI 3", "mute": "Y"},
{"name": "MADI 4", "mute": "Y"}
]
}

12. Setting Solo Cluster

Method: PATCH

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

```
        "cluster_name":"Test1"
}
```

13. Setting Solo Channel

Method: PATCH

/api/op/presets/solo-channel

```
{
        "channel_number":1
}
```