



iAM-VIDEO-2

iAM-VIDEO-2-MPEG

**2RU, Multi Channel, Touch Screen
Audio/Video Monitor**

User Guide

Part Number 821816, Revision G

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CHAPTER 1: Installation

Introduction

Overview

The iAM-VIDEO-2 and iAM-VIDEO-2-MPEG units are 2RU multichannel multi-source audio/video monitors with multiple standard copper connections and multiple SFP module options facilitating high density coax and optical fiber connections. The iAM-VIDEO-2 includes a 3G SDI SFP module and it can monitor both video and audio from it. An optional module will allow decoding of Dolby D, DD+, and E from SDI, SMPTE 2110, SMPTE 2022-6, and AES streams. The iAM-VIDEO-2-MPEG includes an MPEG module, so it accepts MPEG Video transport streams over ASI or IP. Both products have options for VoIP formats including MPEG2/4 TS and SMPTE 2022-6, 3G/HD/SD-SDI, and a growing range of additional I/O options via an SFP interface. Refer to the Specifications section of this manual or contact Wohler Sales for more information.

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

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

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

Each iAM-VIDEO 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 monitor. It also reduces operator training to a minimum.

Safety

Instructions

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

equal width).

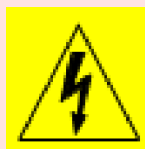
Important:

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

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

Safety Symbols

WARNING:



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

Mounting

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

Table 1-1: Clearance Recommendations

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

Heat Dissipation

The ambient temperature inside the mounting enclosure should not exceed 40°

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

Important

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

Sympathetic Vibration

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

Mechanical Bracing

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

Electrical Interference

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

Power

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

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

Compliance

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can

radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

ICES-003

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

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

CHAPTER 2: Local Operation

Local vs Remote Operation

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

Startup

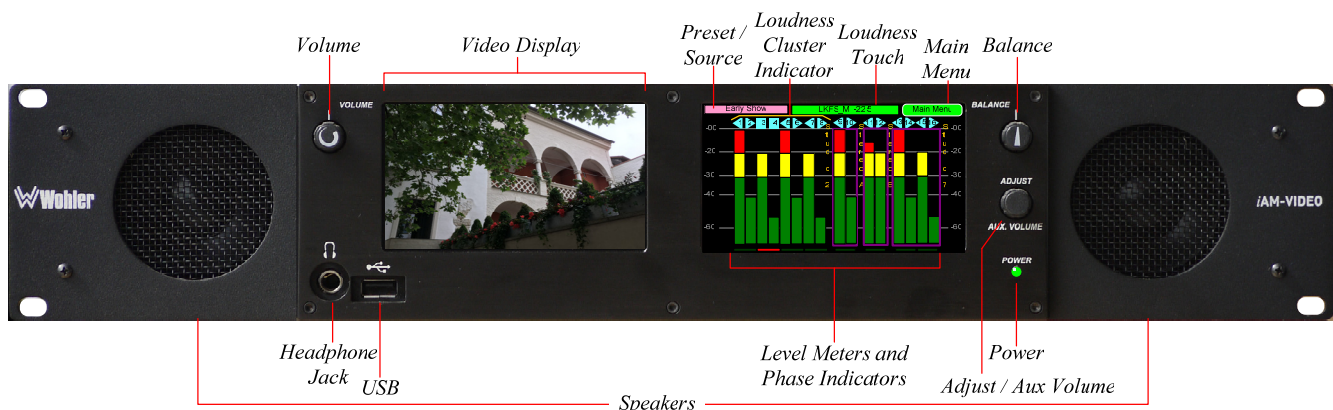
The iAM-VIDEO unit will begin its startup process when it is connected to power through its external power supply. There is no power switch. It is normal for the product to require just over a minute to start up and be ready to use.

When the iAM-VIDEO unit completes its startup, the **Power** indicator will turn green. Depending upon optional settings, all channel clusters will either be in the muted condition or set in a predetermined way. You may then 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: iAM-VIDEO 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.

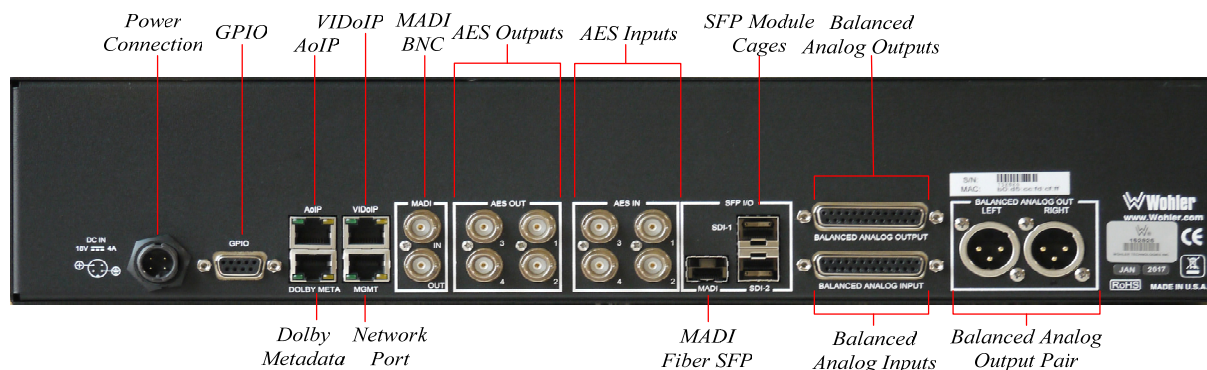
2. **Headphone Jack:** A 1/4" jack for an optional headphone is provided on the front panel. Speaker audio mutes when headphones are plugged in.
3. **Volume:** This controls the speaker and headphone output level for the entire mix.
4. **Balance:** This controls left/right levels for the stereo mixes. By default, it controls loudspeaker and headphone output, though other options may be set in the Web GUI preferences.
5. **Adjust / Aux Volume:** Turning this control right or left moves a white selection box from channel to channel on the metering screen. Pressing the **Adjust** control solos the selected channel. If a muted channel is selected with this control, it is unmuted and soloed. Pressing the **Adjust** control again or touching the meter area anywhere removes the channel solo. On units equipped with the Dolby Decode option, if the **Adjust** control is used to select a Dolby channel, the Dolby Zoom feature will activate and display the channels within the Dolby signal, as well as Dolby metadata.
6. **USB 2.0 Port:** This USB Type A connector allows you to use a flash drive (not supplied) to perform software updates and copy system configurations to another iAM-VIDEO or to a PC. Software updates are accomplished from the Web GUI.
7. **Video Display:** The selected SDI or MPEG video signal is monitored on this screen. A variety of other informational video displays can appear along with the monitored video. This is set up using the iAM-VIDEO Web GUI interface.
8. **Level Meters:** High resolution bar graph meters appear here showing the levels of up to 16 channels selected for monitoring. These are grouped into clusters as specified in the Web GUI: mono clusters (1.0), pair clusters (2.0), or surround sound clusters (5.1 or 7.1). This screen will respond to touch control of audio Mute, Un-Mute 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 a limited amount of setup and status display. The large majority of setup functions are performed using the Web GUI.
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. **Preset / Source:** The name of the current Preset is displayed here. When sources are directly displayed, this shows the name of the input source.
11. **Loudness Cluster:** The Loudness Cluster for which loudness is being displayed is shown by a gold colored bracket above the channel indicators. To select a different Loudness Cluster, touch the green **Loudness** box. It will turn orange, indicating that you may now touch a new cluster. After touching the cluster you choose, touch the orange **Loudness** box to complete the selection.
12. **Loudness Touch:** When Loudness calculations are set up using the Web GUI, this green box displays the loudness of the selected Loudness Cluster as well as the loudness units. This button has two other functions:

- a. **Changing Loudness Cluster:** To change Loudness monitoring to a different cluster, touch the Loudness Touch button. It will turn orange in color. Touch the meters of the desired cluster. The Loudness Cluster Indicator will move to that cluster and start calculating. After about 15 seconds, the Loudness Touch button will return to its green color.
 - b. **Go to the Loudness Meter Screen:** To change to viewing the Loudness Meter screen, touch the Loudness Touch button. It will turn orange in color. Then press the Adjust knob. The screen will immediately change to display the Loudness Meter, as shown in Figure 2-14. To return, touch the Audio Meters button on the Loudness Meter screen.
13. **Main Menu:** Touch to reveal the Main Menu. Refer to the **Menu / Option Touchscreen** section of this chapter.
 14. **Power:** This indicator lights green when the system is powered and ready for use. A solid or blinking yellow color indicates that the product is starting up.

Rear Panel

The rear panel is shown in Figure 2-2.

Figure 2-2: iAM-VIDEO Rear Panel Layout



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

Important:

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

Important:

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

2. **GPIO:** (future implementation)
3. **Network Port:** The MGMT Ethernet port can connect to either a LAN or to a PC to let you customize the iAM-VIDEO configuration. It will also allow you to copy system configurations from one iAM-VIDEO to another. It can also be used to update the iAM-VIDEO software and firmware.
4. **AoIP:** This Ethernet port can accept either a Dante or a Ravenna Audio over IP signal. An optional license key must be purchased to enable this function. There are different hardware option cards for each signal and the appropriate and desired capability must be specified at order.
5. **VIDoIP:** This Ethernet port can accept MPEG Video over IP (VoIP) signals.

Note: The VoIP network and the Management network should always be kept separate to avoid undesirable consequences.

6. **MADI BNC:** This COAX input accepts an AES10 64-channel signal at 48kHz sample rate. The COAX output is reclocked from the MADI source. When power to the iAM-VIDEO is not present, the COAX input and output are automatically connected together to allow the MADI signal to pass through.
7. **MADI Fiber SFP Cage:** This SFP cage is provided to accept one of two optional MADI optical modules. A software license must be installed for either of these modules to function. Refer to the System Setup section in Chapter 4 and to Figure 4-22 to install software licenses. The following MADI SFP modules are offered:
 - a. **SFP-MADI-MM-Fiber** (829081): This optional transceiver module uses Multi-Mode LC fiber connectors to accept an optical AES10 64-channel MADI input signal at 48 kHz sample rate. This module may be used in conjunction with the MADI BNC connectors to provide COAX to fiber or fiber to COAX conversion. The outputs are reclocked.
 - b. **SFP-MADI-SM-Fiber** (829082): This optional transceiver module uses Single-Mode LC fiber connectors to accept an optical AES10 64-channel MADI input signal at 48 kHz sample rate. This module may be used in conjunction with the MADI BNC connectors to provide COAX to fiber or fiber to COAX conversion. The outputs are reclocked.
8. **Dolby Metadata:** (future implementation)

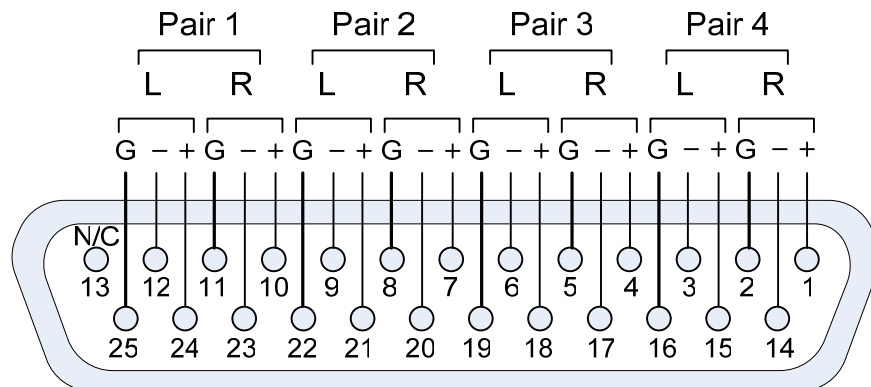
9. **AES Out:** By default, these four BNC jacks output the lower 4 channel pairs being monitored. The first pair is output on AES OUT 1, the second pair on AES OUT 2, the third pair on AES OUT 3, and the fourth pair on AES OUT 4. These outputs are not adjusted by the **Volume** and **Balance** control settings.
10. **AES In:** These four BNC jacks accept AES3id digital audio pairs at a 48 kHz sample rate. An optional license key must be purchased to enable this function. Refer to the **System Setup** section in Chapter 4 and to Figure 4-22 to install software licenses. Channels are selected as AES 1-8.
11. **SFP Module Cages:** The two SFP cages are provided to accept one or two optional SFP modules compatible with SDI coaxial or optical signals. Single or dual transceiver arrangements are possible. The SFP modules are hot swappable for convenience. An optional license key must be purchased to enable each module. A software license must be installed for an SFP port to function. Refer to the **System Setup** section in Chapter 4 and to Figure 4-22 to install software licenses. The following SFP modules are offered:
 - a. **SFP-SDI** (829089): This is a 3G/HD/SD-SDI single video receiver with active loopback with HD-BNC connectors. With the OPT-MPEG option, it carries MPEG over ASI.
 - b. **SFP-SDI-Fiber** (829084): This is a single 3G/HD/SD-SDI video SFP optical input with LC (fiber) connectors. It is a video only Single-Mode Receiver, Medium Haul, Non-MSA, with no output. With the OPT-MPEG option, it carries MPEG over ASI.
 - c. **SFP-SDI-Dual** (829154): This is a dual 3G/HD/SD-SDI receiver with HD-BNC connectors. With the OPT-MPEG option, it carries MPEG over ASI.
 - d. **SFP-SDI-Output** (829083): 3G-SDI Transceiver with HD-BNC connectors. Input and output are both SDI. SDI Output (audio and video output at 1080p60) is from selected source (e.g. MPEG to SDI).
 - e. **SFP-2022-6** (829088): This SMPTE 2022-6 receiver uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM-VIDEO to monitor SDI audio transmitted in real time over Ethernet. You must use the MN-Set configuration software to set up this option. It is available from Wohler Technologies Technical Service.
 - f. **SFP-2110 EMBER+** (829086): This is a SMPTE 2110 EMBER+ receiver that can receive streams up to 3G. It uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM-VIDEO to monitor SDI audio transmitted in real time over Ethernet. You must use the MN-Set configuration software to set up this option. It is available from Wohler Technologies Technical Service.
 - g. **SFP-2110 NMOS** (829086-1): This is a SMPTE 2110 NMOS receiver that can receive streams up to 3G. It uses Multi-Mode 850

NM, LC fiber connectors. It allows the iAM-VIDEO to monitor SDI audio transmitted in real time over Ethernet. You must use the MN-Set configuration software to set up this option. It is available from Wohler Technologies Technical Service.

- h. **SFP-2110 EMBER+ & 2022-6** (829087): This is a SMPTE 2110 EMBER+ or 2022-6 receiver that can receive streams up to 3G. It uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM-VIDEO to monitor SDI audio transmitted in real time over Ethernet. You must use the MN-Set configuration software to set up this option. It is available from Wohler Technologies Technical Service.
- i. **SFP-2110 NMOS & 2022-6** (829087-1): This is a SMPTE 2110 NMOS or 2022-6 receiver that can receive streams up to 3G. It uses Multi-Mode 850 NM, LC fiber connectors. It allows the iAM-VIDEO to monitor SDI audio transmitted in real time over Ethernet. You must use the MN-Set configuration software to set up this option. It is available from Wohler Technologies Technical Service.
- j. **SFP-HDMI-Output** (829155): This module converts audio and video from an SDI signal to an HDMI/DVI output. Video output is only at 1080p60 from selected source.

12. **Balanced Analog DB-25 Inputs:** This DB-25 female connector accepts 8 channels of +10dBu broadcast level balanced audio. Tascam cables may be used, and can be purchased by contacting Wohler Sales. Refer to Figure 2-3 for the pinout of this connector.

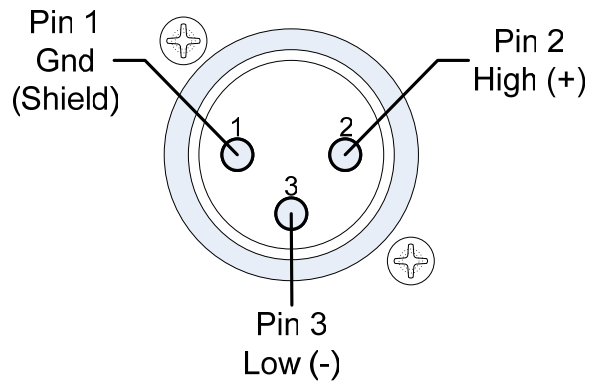
Figure 2-3: Analog DB25 Input Connections



13. **Balanced Analog DB-25 Outputs:** This DB-25 female connector outputs 8 channels of +10dBu broadcast level balanced audio. The source of these signals is the monitored audio channels as shown on meters 1 - 8. Tascam cables may be used, and can be purchased by contacting Wohler Sales. Refer to Figure 2-3 for the pinout of this connector. The **Balanced Analog DB-25 Outputs** are standard on the iAM-VIDEO.

14. **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 iAM-VIDEO.

Figure 2-4: Analog XLR Output Connections

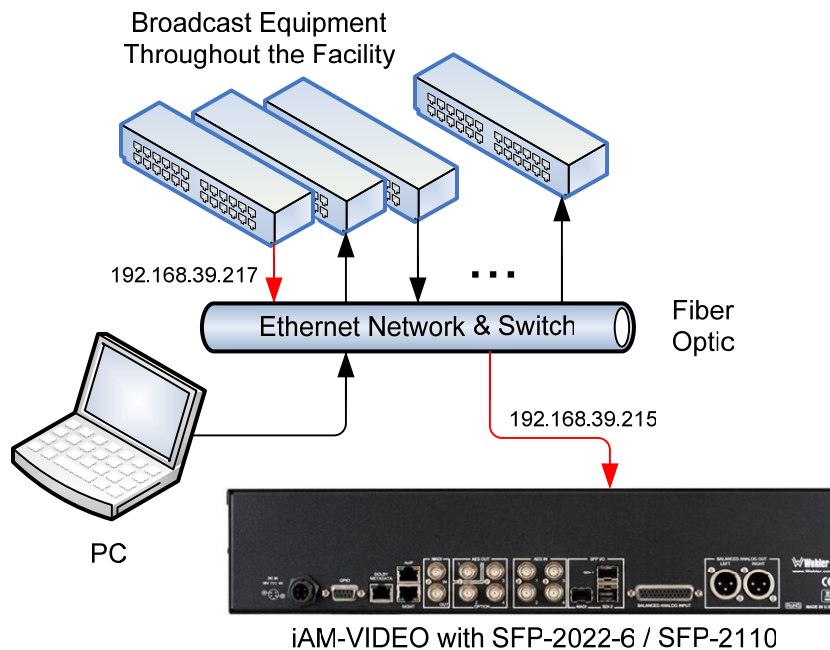


SFP-2022-6 / SFP-2110 Address Setup

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

Note: The VoIP network and the Management network should always be kept separate to avoid undesirable consequences.

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



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

Channel Meters and Touch Operations

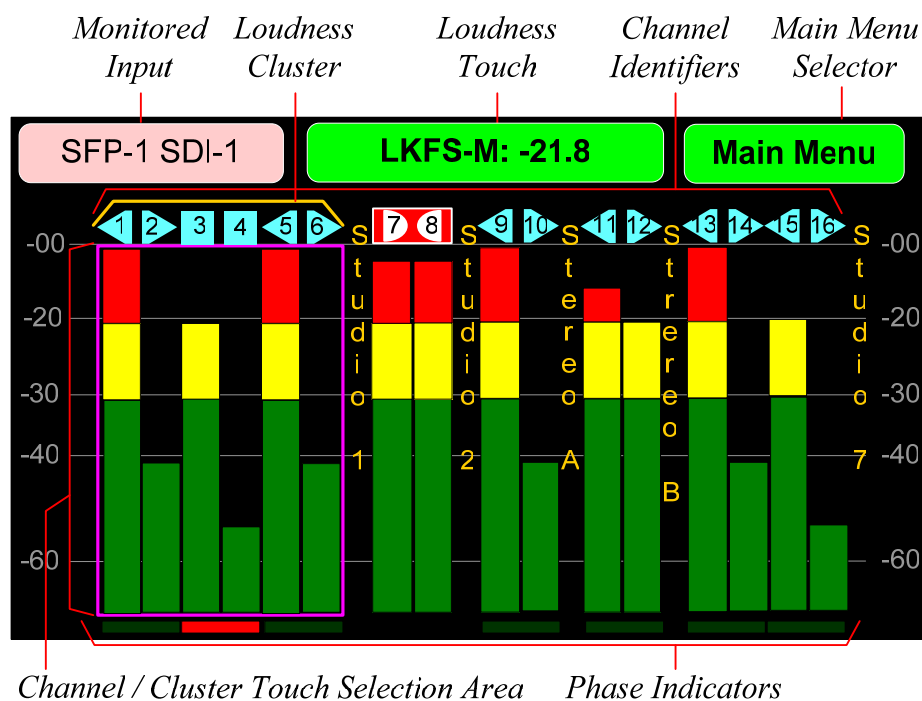
The audio mixer terminology of “solo” is used in this manual when referring to muting all but a specific audio channel or subgroup. Since the terms “group” and “subgroup” have different meanings in SDI vs. pro audio, this manual uses the term “cluster” to define a set of audio channels forming an audio 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. Different presets typically have different input channels assigned to various meters.

Audio meters are displayed on the touchscreen display in labeled clusters, as shown in Figure 2-6. The clusters of channels and other options relating to this are defined using the iAM-VIDEO Web GUI software as described in Chapter 4.

Figure 2-6: Audio Level Meter Screen




1. **Channel Identifiers:** Above the level meters are the Channel Identifiers. They indicate the following:
 - 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.
 - 3 A square indicates that this is a center channel and will be monitored

in both speakers.



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

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

2. **Monitored Input:** The name of the input signal source that is currently selected appears here for your reference.
3. **MPEG Analyzer:** The **MPEG Analyzer** selector replaces the Monitored Input only while monitoring MPEG signals that were selected using the **Source Select** screen. It will not appear if the MPEG signal appeared as a result of selecting a Preset. It is a shortcut to the **MPEG Analyzer** screen. Refer to Figure 2-23. MPEG Analyzer
4. **Main Menu:** Touching the **Main Menu** selector proceeds to the **Main Menu**. Refer to Figure 2-17. The **Main Menu** provides a selection of option setting and system information screens.
5. **Loudness Touch:** The **Loudness Touch** selector displays the monitored cluster (Preset or source) used for the Loudness calculation. The **Loudness Touch** selector is also used to change the monitored Preset or source. Refer to item **7.d** below.
6. **Loudness Cluster:** The **Loudness Cluster** for which loudness is being displayed is shown by a gold colored bracket  above the channel indicators.
7. **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 iAM-VIDEO is first powered or when a preset is changed, all of the channel clusters are muted. Touching a muted channel cluster un-mutes it and removes the violet box. Muting and un-muting by touching is an alternate action function.
 - b. **Solo Selector:** Touch for two seconds any channel cluster you would like to solo. A blue box will then surround the cluster and that will be the only cluster you hear. Any violet boxes will disappear. Touch again to return the combination of monitored clusters to the way they were before you soloed the cluster.
 - c. **Channel Solo:** Rotating the **Adjust** control will move a white selection box from channel to channel. Press the **Adjust** control to

solo the selected channel. That channel alone will then be surrounded by a blue box and it will be the only channel being monitored. Press the **Adjust** control again or touch anywhere on the meters to undo the solo and return the combination of monitored clusters to as it was before you soloed the channel.

- d. **Loudness Cluster:** Touch the green **Loudness Touch** selector and it will turn orange. Touch the cluster you would like to measure the loudness of. Again touch the orange Loudness Touch selector and it will return to green, locking in your Loudness Cluster selection and allowing you to perform Mute, Unmute, or Solo selection. If no action is taken for 15 seconds, the selector will turn green again and cluster mute/unmute touch function will be restored.
8. **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.

Dolby Monitoring Screens

Dolby Zoom Screen

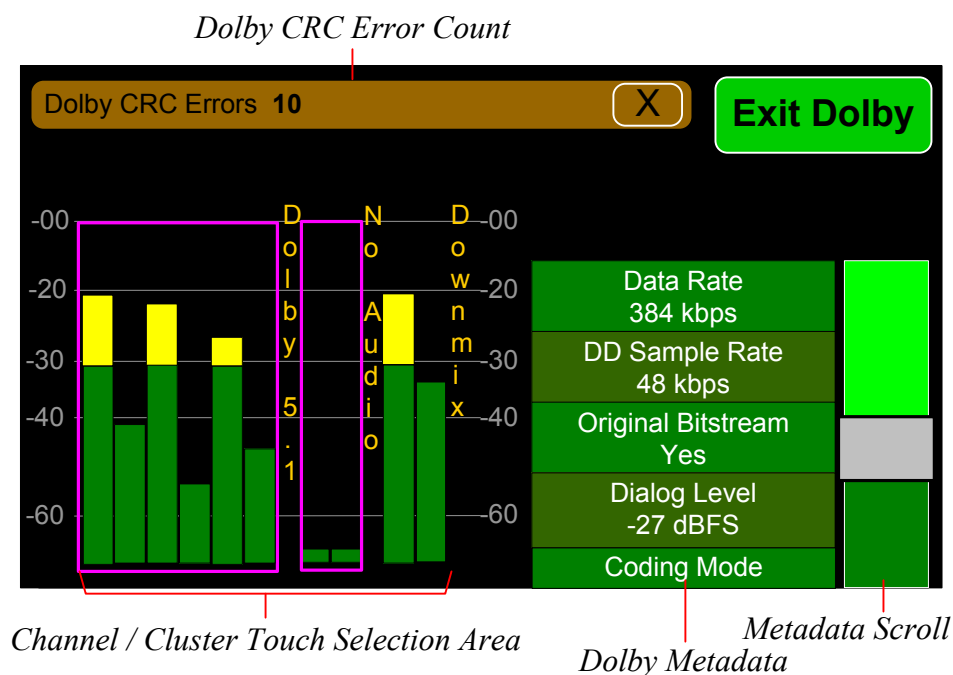
Dolby Zoom is a very powerful analysis tool. Much as a camera lens can "zoom" into a single subject of interest out of many, the **Dolby Zoom** feature lets you quickly "zoom" into a single Dolby bitstream, out of multiple encoded Dolby streams and other channels. Simply rotate the **Adjust** control until the Dolby bitstream, as identified by the Dolby icon (shown here at right), is highlighted and then press the **Adjust** 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 2-6. The **Dolby Zoom Screen** is shown in Figure 2-7.



Note: The **Dolby Zoom** feature functions only for Dolby audio carried over traditional signals. It is not available for Dolby audio carried over MPEG.

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

Figure 2-7: Dolby Zoom Screen



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

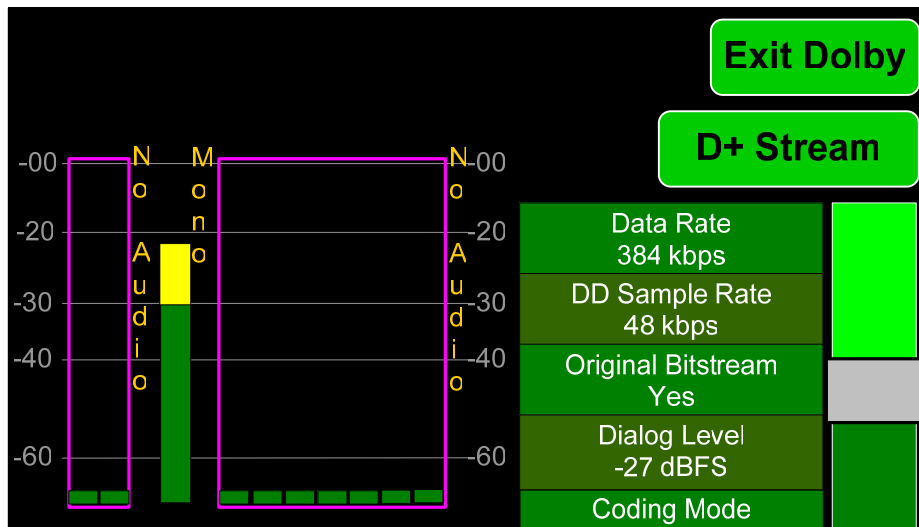
The **Dolby Zoom** screen also displays Dolby CRC (Cyclic Redundancy Check) Errors, which are automatically totaled. It only appears if there is at least one error. Touching the "X" on the Dolby Error Count display, resets the count. The maximum count is 65,535 and it will roll over to 0 and restart counting if this is exceeded. CRC Errors are an indication that the Dolby signal is being disrupted, either by

intermittent network issues or poor wiring. Occasional errors probably cannot be heard, but this is a diagnostic tool that lets you measure the extent of the problem, if any.

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

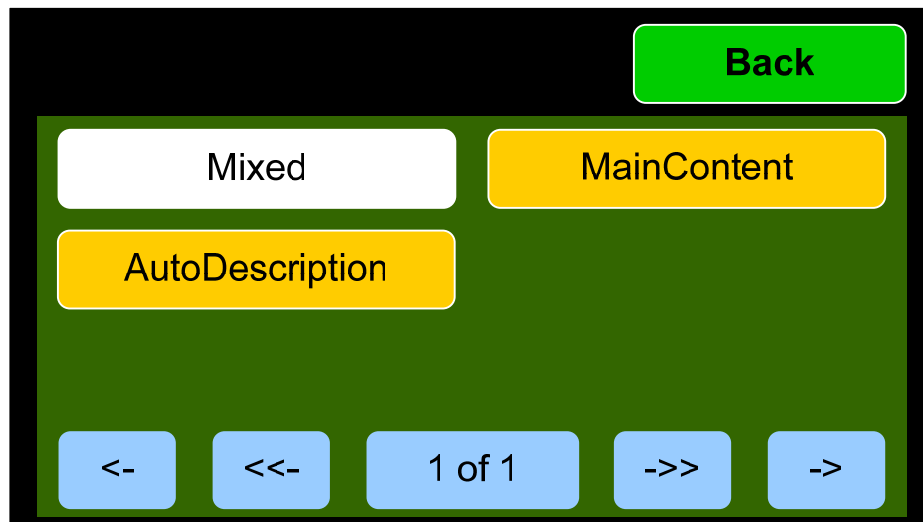
If a Dolby Digital Plus stream is being monitored and it has multiple sub-streams, then a **D+ Stream** button appears on the screen, as shown in Figure 2-8. This lets you select which stream to monitor.

Figure 2-8: Dolby Zoom Screen with DD+ Sub-Streams



The **D+ Stream** button opens the menu shown in Figure 2-9.

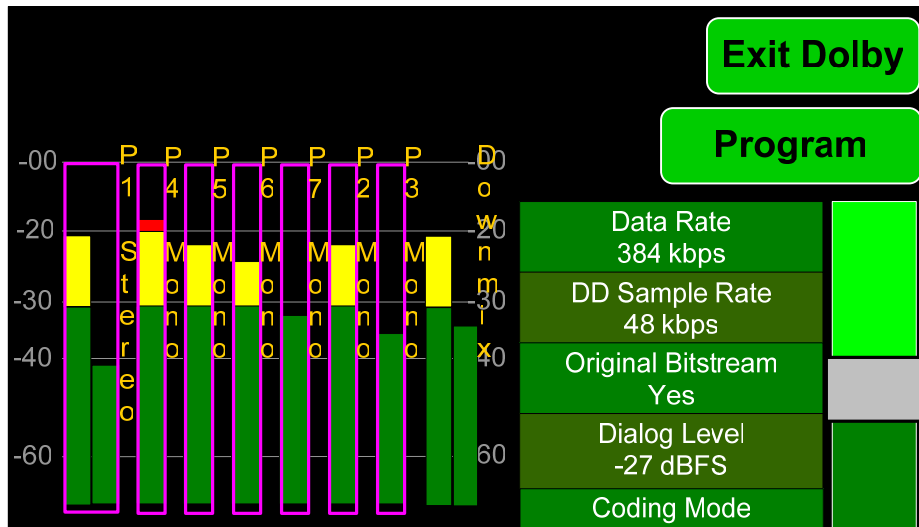
Figure 2-9: Dolby Digital Plus Stream Selection Menu



Touch the button for the stream you would like to monitor and then touch Back to return to the Dolby Zoom screen.

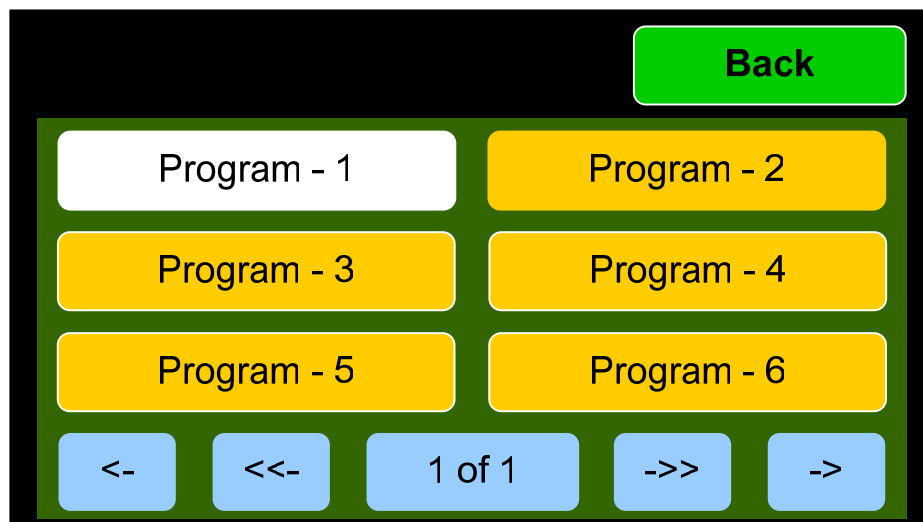
If a Dolby E stream is being monitored and it has multiple programs, then a **Program** button appears on the screen, as shown in Figure 2-10. This lets you select which program to monitor.

Figure 2-10: Dolby E Screen with Multiple Programs



The **Program** button opens the menu shown in Figure 2-11.

Figure 2-11: Dolby E Program Selection Menu

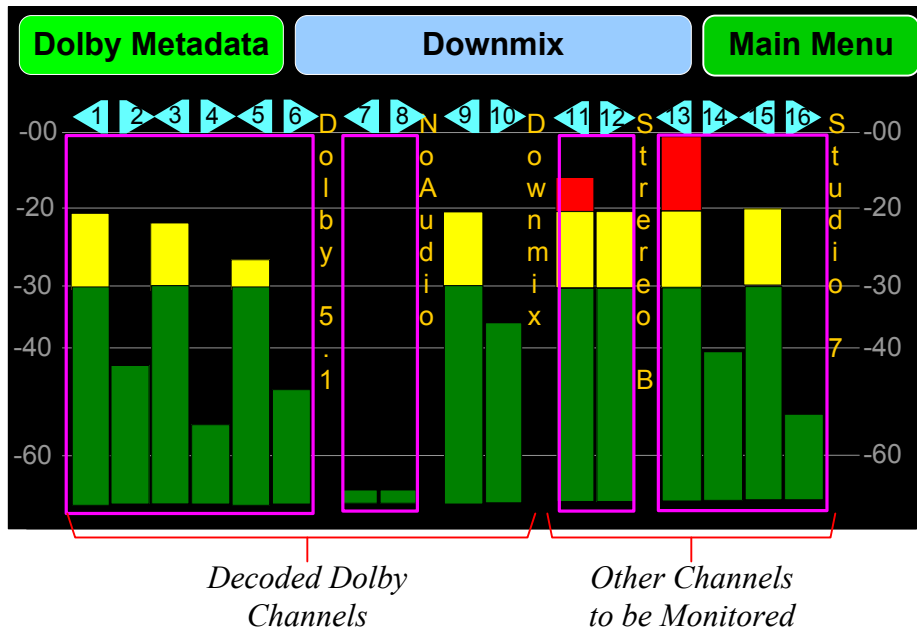


Touch the button for the program that you would like to monitor and then press the **Back** button.

Preset Fixed Dolby Screen

If it is necessary to monitor a Dolby stream, but it is desired to maintain the Dolby screen all of the time, without using the Dolby Zoom feature, then a Preset can be set up to do this. This screen appears as shown in Figure 2-12. Refer to the **Configure Presets** section of Chapter 4 to set up a preset such as this.

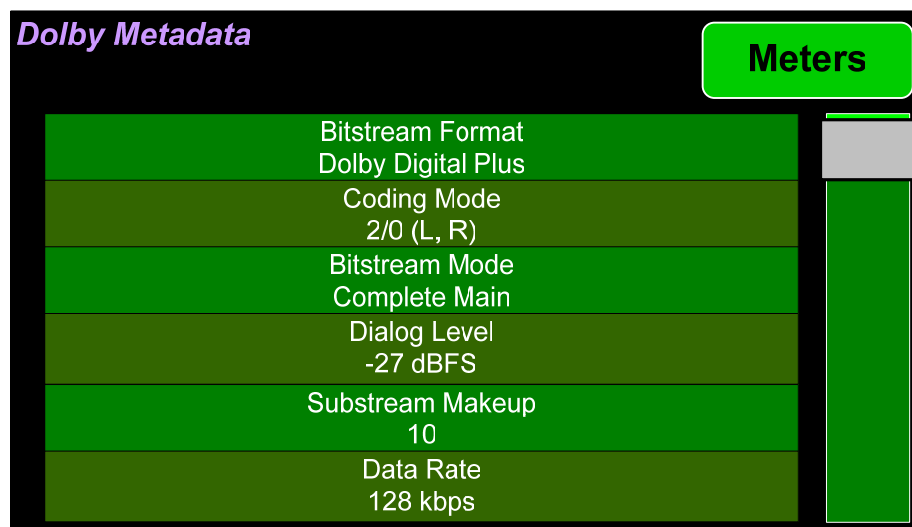
Figure 2-12: Preset Fixed Dolby Screen



Note that both decoded Dolby channels and any other channels can be monitored simultaneously on the meter screen.

Touching the **Dolby Metadata** button proceeds to the screen shown in Figure 2-13.

Figure 2-13: Dolby Metadata Screen

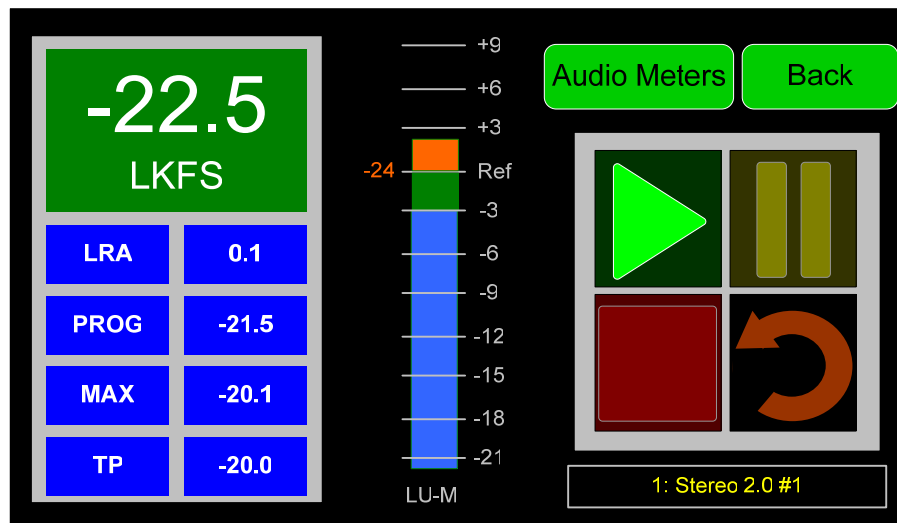


Touching and moving the scroll bar at the right will let you review the list of Dolby Metadata. Touch the **Meters** button to return to the Audio Meters screen.

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 2-14.

Figure 2-14: 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:

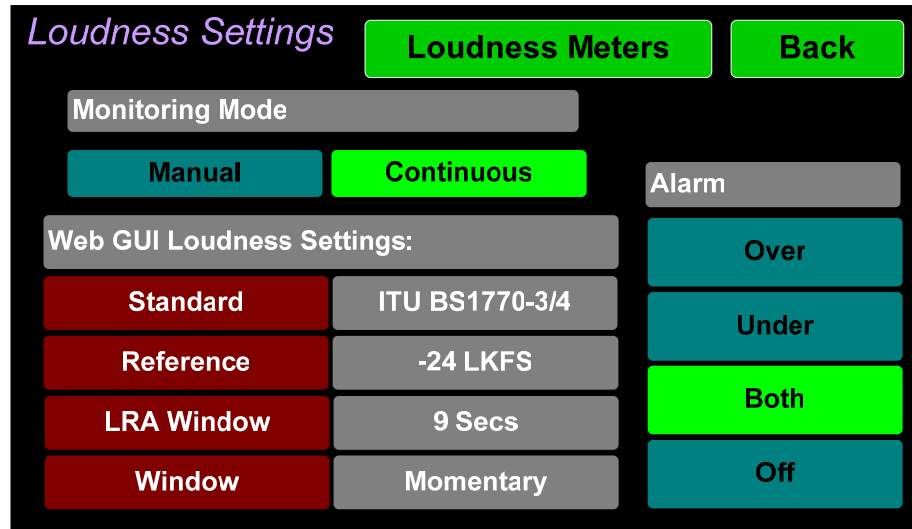
1. **Cluster Select:** The name of the monitored Preset or source is shown at the bottom right of the screen, near the **Adjust** knob. Rotate the **Adjust** knob to select any other monitored channel cluster. Changing clusters with this control will reset the loudness readings and start a new calculation 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 Screen

The **Loudness Settings Screen** allows you to change between **Manual** and **Continuous** Monitoring Modes, and also to set the Alarm mode. It also provides a summary of various Loudness settings, as set in the **Configuration | System Preference | Loudness Configuration** tab of the Web GUI. Refer to Figure 2-15.

Figure 2-15: Loudness Settings Screen



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

Monitoring Mode:

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

Alarm:

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

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

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

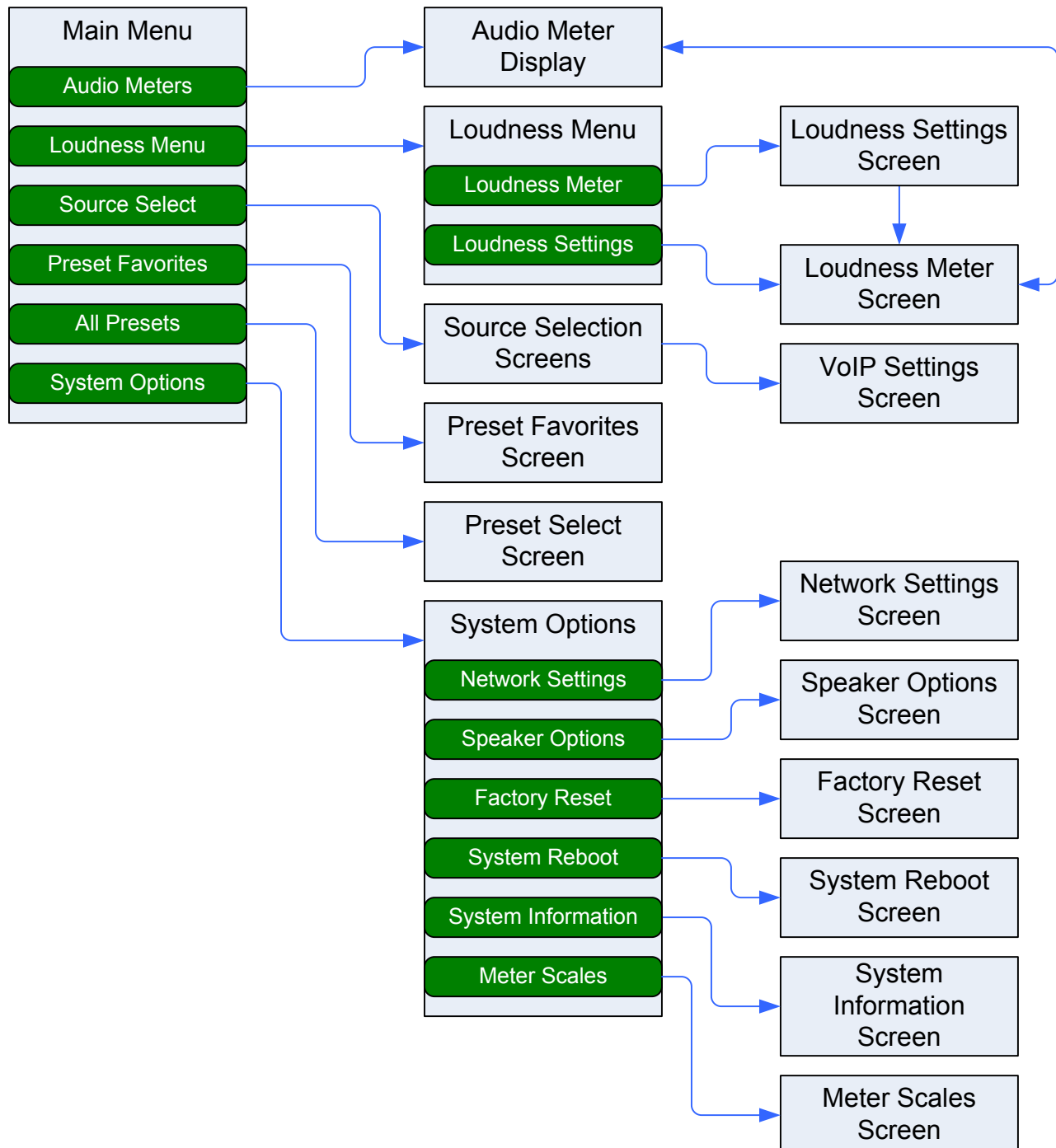
Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

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

Menu / Option Touchscreen

By far, most of the option settings are performed using the Web-based GUI software. However, there are a few commonly used setting and information screens that are available locally in the iAM-VIDEO using the **Main Menu** which appears on the left screen. Figure 2-16 is a diagram of the menu arrangement, a tree showing how to reach any menu from the **Main Menu**. The descriptions in this chapter follow the organization shown in the diagram.

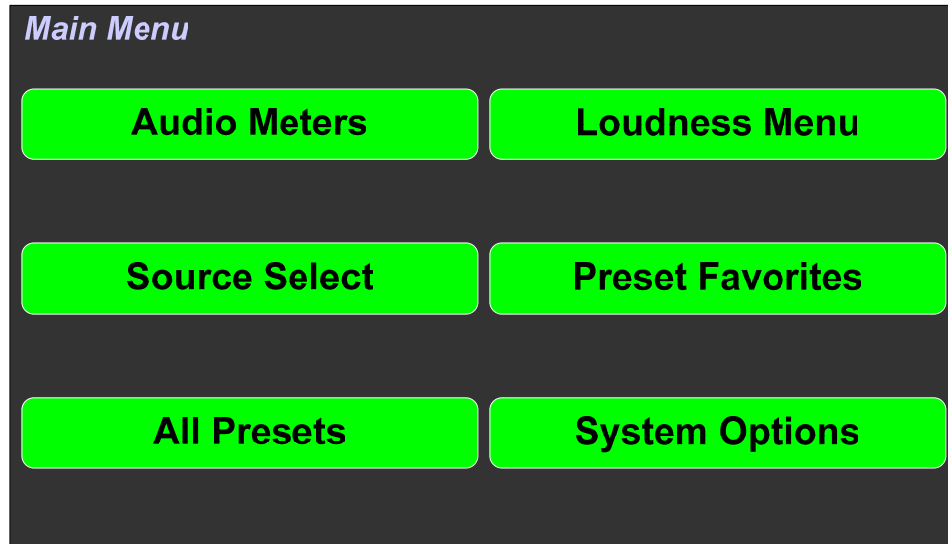
Figure 2-16: Menu Tree



Main Menu

To access the submenus, touch one of the selector buttons presented on the screen in the **Main Menu**, as shown in Figure 2-17. To return to the **Audio Meters** display, touch the **Audio Meter** selector button.

Figure 2-17: Main Menu



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

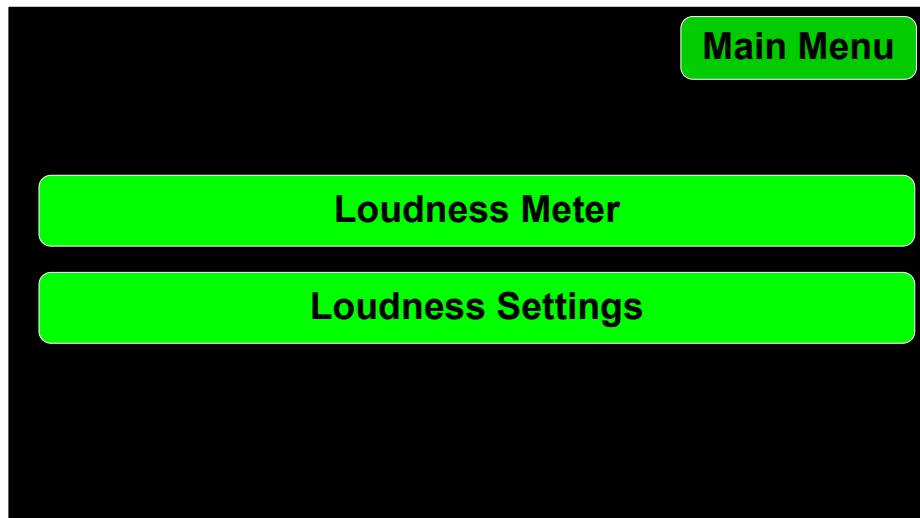
Audio Meters

Touch the **Audio Meters** button in the **Main Menu** to switch to the main audio metering screen. This screen is described in the **Channel Meters and Touch Operations** section of this chapter.

Loudness Menu

Touch the **Loudness Menu** button to display the **Loudness Menu** screen as shown in Figure 2-18.

Figure 2-18: Loudness Menu Screen

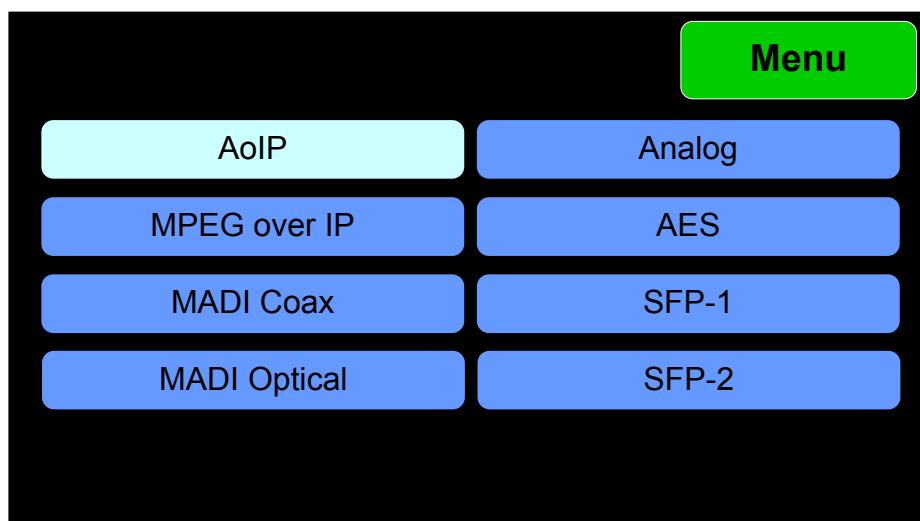


The **Loudness Meter** and **Loudness Settings** selections of this menu are described in the [Loudness Meter Screen](#) and [Loudness Settings Screen](#) sections of this chapter.

Source Select

Touch the **Source Select** button to display the **Source Select** screen as shown in Figure 2-19.

Figure 2-19: Source Select Screen



Using this screen, the installer can quickly determine that the sources are correctly

connected and are ready for use. It allows you to directly monitor each selected source.

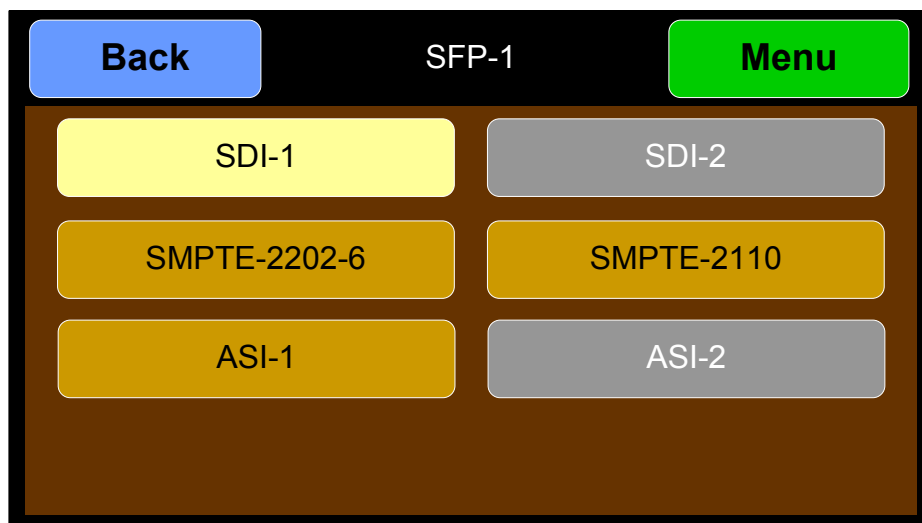
1. The most recently selected source is shown in light blue.
2. Sources that the iAM-VIDEO is equipped to monitor are shown in blue.
3. Sources that the iAM-VIDEO is capable of monitoring, but are not licensed for monitoring are shown in gray. If you would like to license additional signals, contact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

To select a source, simply touch the associated button. After a quick 2-second delay, the metering 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 **Main Menu**, touch the **Menu** button.

Selecting **MPEG over IP** proceeds to the **VoIP Settings** screen described in the next section.

If further detail is required to identify your source selection, another screen will appear for you to use to choose it. An example of this screen is shown in Figure 2-20.

Figure 2-20: Source Selection Detail



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

VoIP Settings

Touch the **Video over Ethernet (VoIP)** on the **Source Select** screen to display the **VoIP Settings** screen as shown in Figure 2-21. Note that settings made on this screen do not persist after the iAM-VIDEO is powered down. To make more permanent settings, use the Web GUI instead. Refer to the **Configuration - Set VOIP Address** section of Chapter 4.

Figure 2-21: VoIP Settings

The VoIP Settings screen has a title bar with 'VoIP Settings' and two buttons: 'Cancel and Exit' (pink) and 'Save and Exit' (green). Below the title bar are two main sections: 'VoIP Port Settings' and 'VoIP Multicast Settings'.

VoIP Port Settings		VoIP Multicast Settings	
Use DHCP	No	Address	224.136.23.1
Address	172.27.2.22	Port	1024
Mask	255.255.255.0	Use SSM	No
Gateway	172.27.2.1	SSM Addr	

Enter the settings for your VoIP program. A keypad as shown in Figure 2-22 will pop up for you to enter the address numbers. If the **Use SSM** (Source Specific Multicast) option is changed to **Yes**, then the **SSM Address** selection will be enabled for you to enter an address. Then touch **Save and Exit**. This will proceed to the **MPEG Analyzer** screen. Alternatively, touch **Cancel and Return** to return to the **Video Input Select** screen.

Figure 2-22 - VoIP Address

The VoIP Address keypad has a title bar with 'Address' and a text field containing '172.27.2.2'. Below the title bar is a numeric keypad with buttons for digits 1-9, 0, and a decimal point. There are also buttons for 'Backspace', 'Clear', 'Cancel', and 'Enter'.

Address			
172.27.2.2			
1	2	3	Backspace
4	5	6	Clear
7	8	9	Cancel
255	0	.	Enter

MPEG Analyzer

This screen can be reached by entering a VoIP address on the **VoIP Settings** screen, by selecting **ASI 1** or **ASI 2** on the **Video Input Select** menu, or by touching the **MPEG Analyzer** button on the **Audio Meter** screen.

Figure 2-23: MPEG Analyzer

PGM	PMT	PCR	VID	AUD	Description	Data Rate
Clear Play						
91	1488				NEW YORK LIVE FEED	4.08 kbps
	1489				MPEG-2 720x576 25.00 FPS 4:2:0	4.34 Mbps
	1491				MPEG 1 chi	194.01 kbps
	1492				MPEG1 por	194.00 kbps
92	1504				LATE LATE SHOW	4.08 kbps
	1505				MPEG-2 720x576 25.00 FPS 4:2:0	4.25 Mbps

A legend appears at the top of the screen using colors to identify the elements present in the MPEG stream, as described by the displayed table. These are as follows:

1. **PGM**: This indicates the current MPEG transport stream program numbers that can be being monitored.
2. **PMT**: This column of the table shows the Program Map Table number for each program in the MPEG transport stream.
3. **PCR**: This indicates the packet identifier of the Program Clock Reference.
4. **VID**: This indicates the program number of each video program in the MPEG transport stream.
5. **AUD**: This indicates the program number of each audio stream in the MPEG transport stream.
6. **Description**: This indicates the description contained in the MPEG transport stream for each program or stream in the MPEG transport stream.
7. **Data Rate**: The bandwidth of each program or stream in the MPEG transport stream is displayed.

The controls for this screen are described as follows:

1. **Vertical Scroll**: If there are too many programs in the MPEG transport stream to fit on the screen, a green and blue vertical scroll bar will appear on the right side of the screen. To use it, simply place your finger on the green bar and slide it up or down to find the program of interest.
2. **Play**: To monitor a program in the MPEG transport stream, touch the

program of interest and then touch **Play**. The program will begin to play.

3. **Clear**: To stop monitoring a chosen MPEG transport stream program, touch **Clear**.
4. **Main Menu**: To exit this screen and return to the Main Menu, touch the **Main Menu** button.

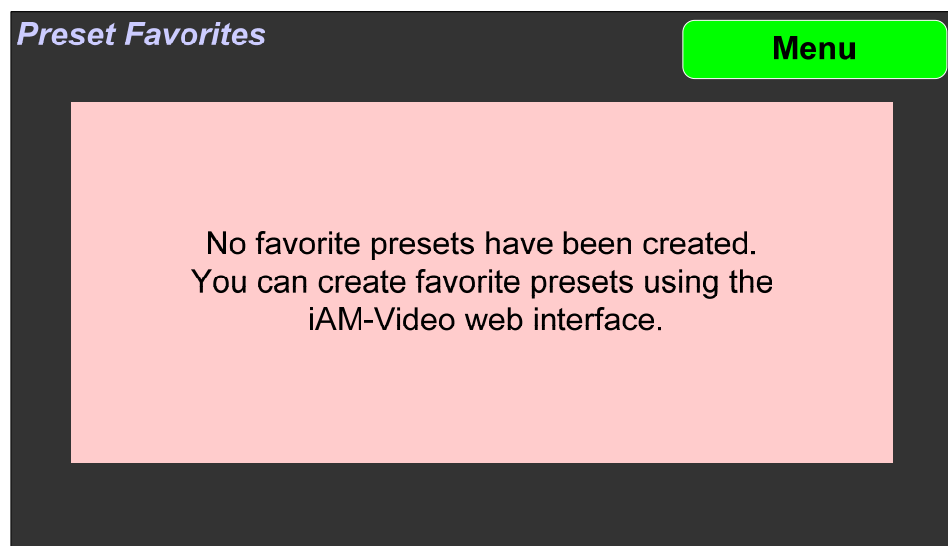
Note: The iAM-VIDEO can very capably decode most MPEG streams, however MPEG streams may vary widely in terms of compatibility. Because of this, there are some MPEG stream-dependent limitations:

1. Not all of the metadata shown in the above Figure 2-23 will appear when monitoring certain MPEG streams.
2. Some MPEG streams may not be able to be interpreted correctly in the MPEG Analyzer. The Web GUI will instead have to be used to create a Preset to monitor the stream.
3. Occasionally, some MPEG streams may cause the system to temporarily stop functioning normally and become inoperable. If this happens, the system will automatically restore itself within 20 to 30 seconds.

Preset Favorites

Presets are complete monitoring setups, including video source and audio metering selection. Often there are some presets that are used far more than others. These Presets can be designated as Favorites. To select from these Presets, touch the **Preset Favorites** button in the **Main Menu**, which will display the **Preset Favorites Menu**. If no Favorite Presets have been designated, the **Preset Favorites Menu** will appear as shown in Figure 2-24.

Figure 2-24: Preset Favorites Menu

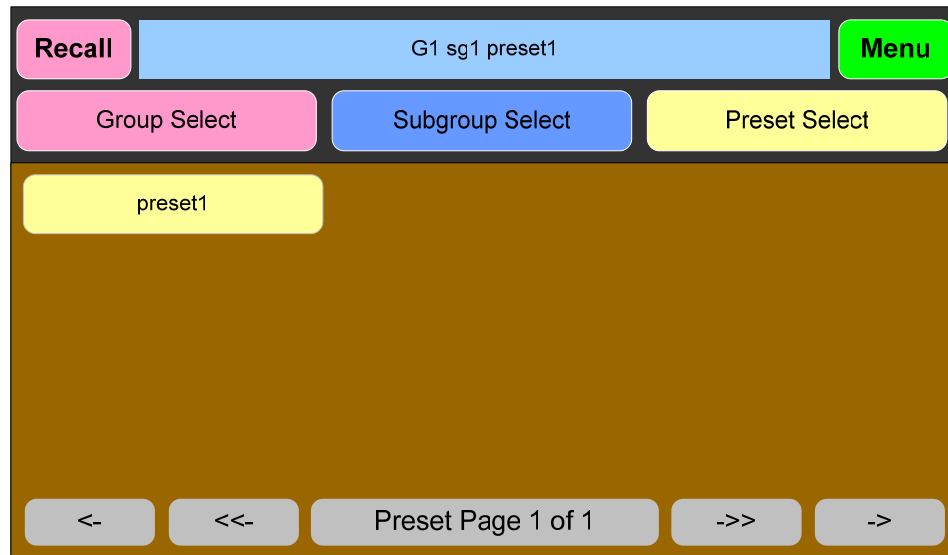


You can designate certain frequently-used presets to be favorites using the **Configure Presets** page in the Web GUI.

All Presets

Presets are complete monitoring setups, including video source and audio metering. Touch the **All Presets** button in the **Main Menu** to display the **All Presets Menu** as shown in Figure 2-25.

Figure 2-25: All Presets Menu



You can set up the content of each Preset using the Web-based GUI software, but you can select a preset in this menu.

The currently selected Preset is shown in the light blue box at the top center of the screen. The many possible Presets are sorted as follows:

1. **Groups:** Up to 20 Groups may be defined.
2. **Subgroups:** Each Group may contain up to 100 Subgroups.
3. **Presets:** Each Subgroup may contain up to 20 Presets.

Use the **Group** and then the **Subgroup** buttons to select. Controls at the bottom of the screen allow you to scroll through the presets. Then, after locating the preset you want, touch it and then touch **Recall**.

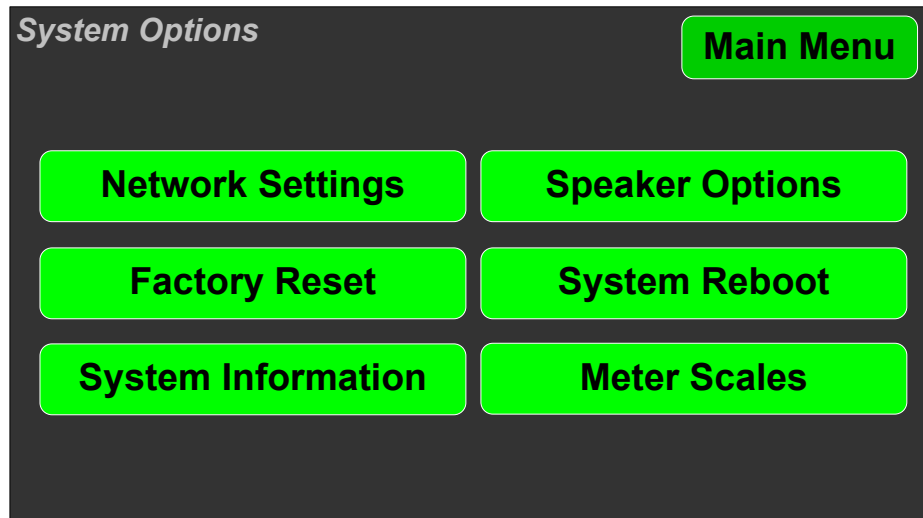
If the selected **Preset** includes both audio and video signals, the both will be played. However, if the selected **Preset** includes only audio signals, such as AES, analog, or MADI, then the video screen will be blank, of course.

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

System Options

Touch the **System Options** button in the Main Menu to display the five choices for setting some system options locally. The **System Options Menu** is shown in Figure 2-26.

Figure 2-26: System Options Menu



The options are:

1. Network Settings
2. Speaker Options
3. Factory Reset
4. System Reboot
5. System Information
6. Meter Scales

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

Network Settings

Touch the **Network Settings** button in the **System Options Menu** to display the **Network Settings** menu as shown in Figure 2-27. This screen lets you view or change the product IP, the Net Mask, and the Gateway. It also lets you switch between a static (fixed) or a dynamic (DHCP) network address.

Figure 2-27: Network Settings Menu

The screenshot shows the 'Network Settings' menu. At the top, there is a title 'Network Settings' and two buttons: 'Cancel and Exit' (pink) and 'Save and Exit' (green). Below these is a large blue button labeled 'Use DHCP'. Underneath, there are four rows of settings, each with a label button on the left and a text input field on the right: 'Address' with '172.27.2.2', 'Mask' with '255.255.255.0', 'Gateway' with '172.27.2.1', and 'DNS' with '172.27.2.1'.

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 2-28.

Figure 2-28: Network Settings: Address Change

The screenshot shows a keypad for changing the network address. At the top, there is a label 'Address' and a text input field containing '172.27.2.2'. Below the input field is a grid of buttons: a 3x3 grid of digits (1-9), a 'Backspace' button, a 'Clear' button, a 'Cancel' button, and a row with '255', '0', and a decimal point '.' followed by an 'Enter' button.

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 2-29. To change back to a static (fixed) network address, touch the **DHCP** button again. The screen depicted in Figure 2-27 will reappear.

Figure 2-29: Network Settings: DHCP

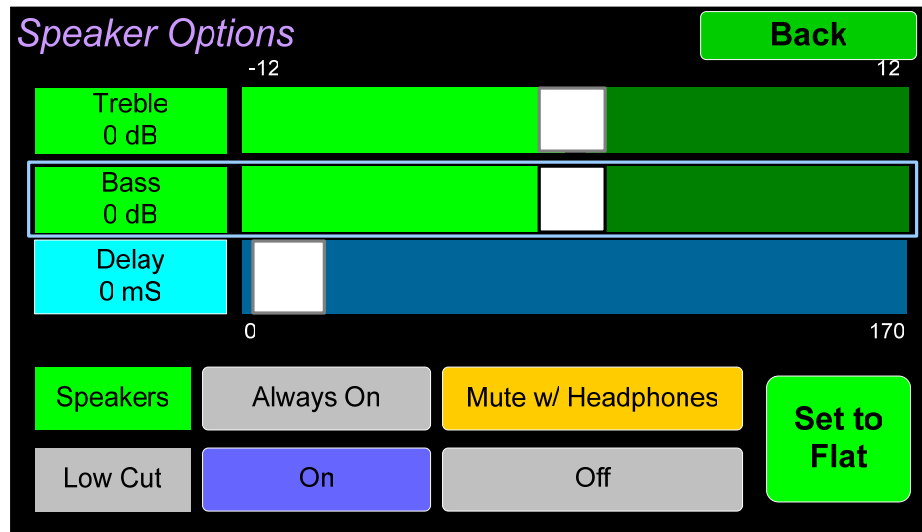
Use DHCP	
Address	172.27.2.2
Mask	255.255.255.0
Gateway	172.27.2.1
DNS	172.27.2.1

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

Speaker Options

Touching the **Speaker Options** button on the **System Options Menu** displays the **Speaker Options** screen as shown in Figure 2-30. The controls on this screen affect various characteristics of the monitored audio as heard on the iAM-VIDEO. The adjustments made on this screen are not saved with each preset. Note that setting changes made here will reflect on similar settings made using the Web GUI.

Figure 2-30: Speaker Options



The controls function as follows:

1. **Speakers:** This setting controls whether the monitor speakers are muted while a headset plug is inserted into the headset jack on the front panel.
2. **Low Cut:** **Low Cut** is provided for cases where unusually deep content produces audible distortion and interferes with monitoring.
3. **Treble:** This tone control adjusts the high frequency speaker audio response from -12 dB to +12 dB. Lowering **Treble** compensates for high frequency pre-emphasis or removes sibilance effects. Increasing **Treble** will add "sizzle" to the sound and bring high-pitched sounds out of the mix. The control can be touched and moved left or right to adjust in 1 dB increments. Alternatively, after touching the control, the **Adjust** knob can be used to more critically adjust the setting.
4. **Bass:** This tone control adjusts the low frequency speaker audio response from -12 dB to +12 dB. Lowering **Bass** will unmask midrange band sounds, while increasing **Bass** will make the sound "fatter". The control can be touched and moved left or right to adjust in 1 dB increments. Alternatively, after touching the control, the **Adjust** knob can be used to more critically adjust the setting.
5. **Set to Flat:** This button sets both the **Treble** and **Bass** controls to 0 dB, removing any emphasis or de-emphasis they can provide. Selecting **Flat** provides the flattest measured response from the internal speakers.
6. **Delay:** The speaker audio can be delayed from 0 to 170 mS to synchronize with video delays, when necessary. The control can be touched and moved

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

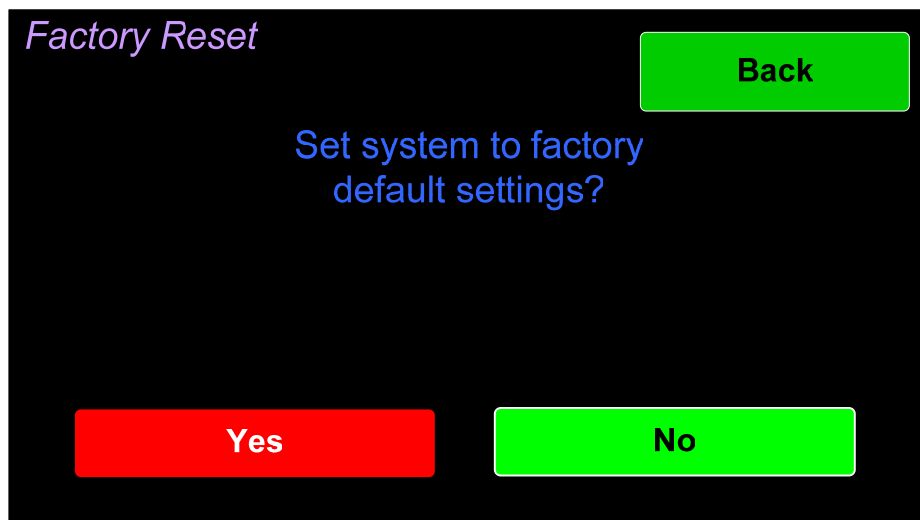
Touch **Back** to exit this screen.

Factory Reset

Touching the **Factory Reset** button in the **System Options Menu** displays the **Factory Reset** screen as shown in Figure 2-31. Because of the large change this function is about to make to the product, it asks for you for verification that you really want to proceed.

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

Figure 2-31: Factory Reset



Note: **Factory Reset** will also reset your IP address to the default one (Static IP: 172.27.2.2/Gateway: 172.27.2.1/Netmask: 255.255.255.0) and clear the database of Presets.

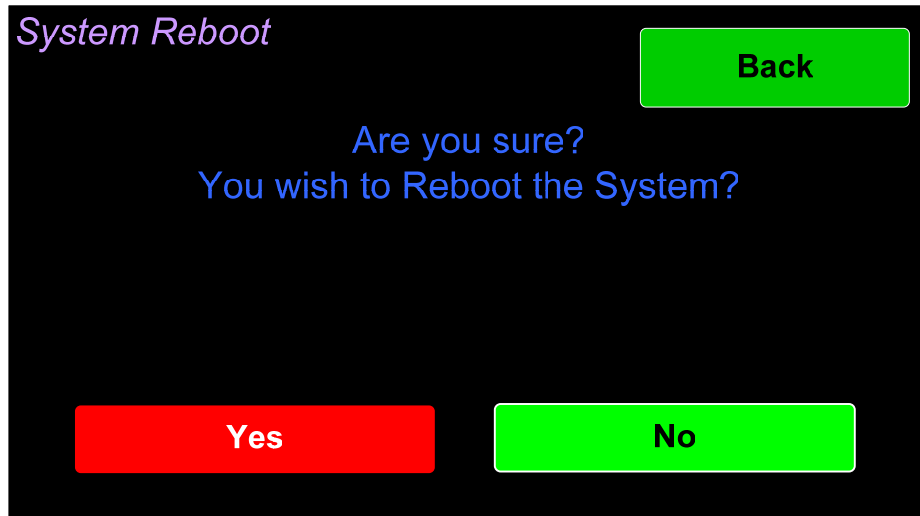
If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

System Reboot

Touching the **System Reboot** button in the **System Options Menu** displays the **System Reboot** screen as shown in Figure 2-32. 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 2-32: System Reboot

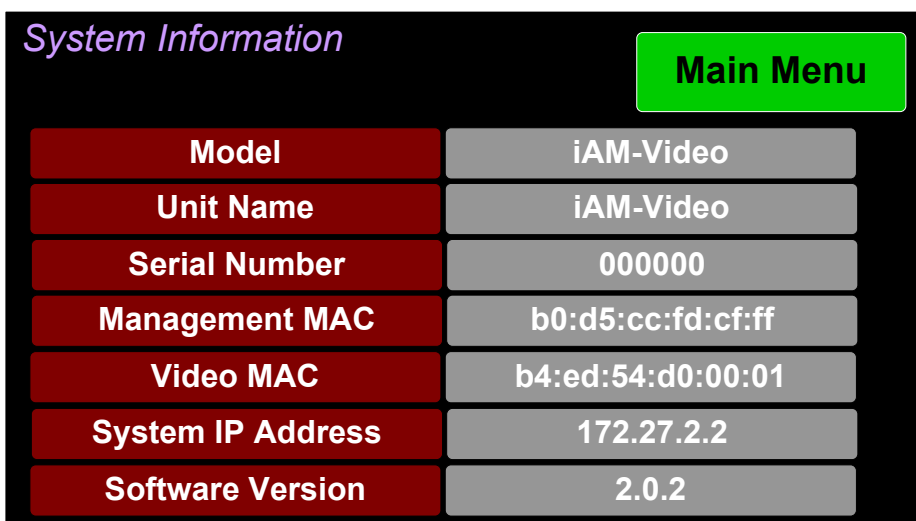


If you have any doubt as to whether you should press **Yes**, press **Back** or **No** instead, and contact Wohler Technical Service for advice. Pressing **Back** or **No** will return you to the **System Options** menu.

System Information

Touching the **System Information** button in the **Main Menu** displays the **System Info** screen as shown in Figure 2-33. This screen lets you view the product Model, the Unit Name, the Serial Number, the Management MAC Address, the Video MAC Address, the System IP Address, and the Software Version.

Figure 2-33: System Information Screen



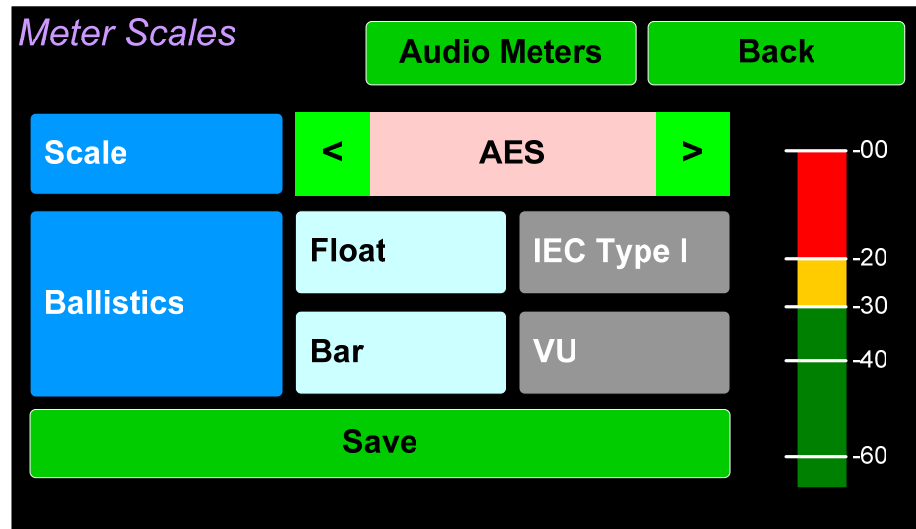
<i>System Information</i>		Main Menu
Model	iAM-Video	
Unit Name	iAM-Video	
Serial Number	000000	
Management MAC	b0:d5:cc:fd:cf:ff	
Video MAC	b4:ed:54:d0:00:01	
System IP Address	172.27.2.2	
Software Version	2.0.2	

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

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

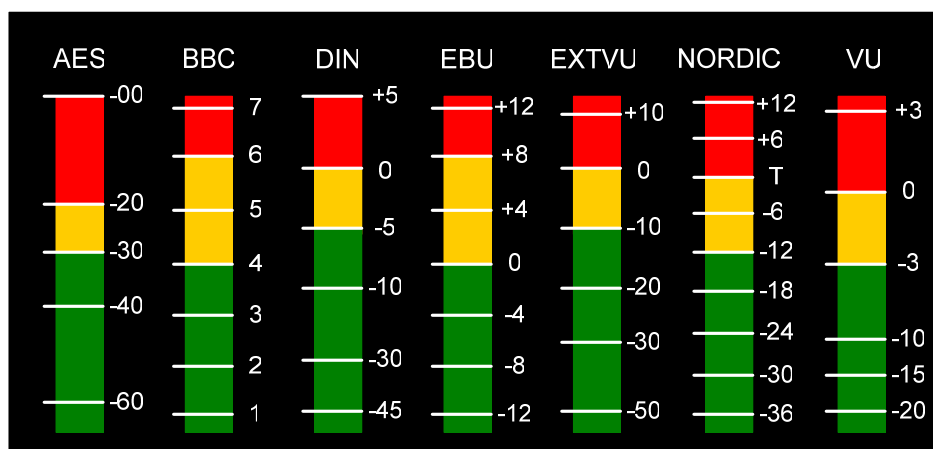


Table 2-1: Meter Limits and References

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 2-2. Ballistic timings are valid only at 48 kHz.

Table 2-2: 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.

CHAPTER 3: Technical Info

Table 3-1: iAM-VIDEO Specifications

Specification	Values/Domains
Power Requirements	100 VAC to 240 V AC \pm 10%, 50/60Hz
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	10.4 lbs. (4.7 kg)
Supplied Accessories	Power Adapter, 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: <ul style="list-style-type: none"> • 16-channel SD/HD/3G-SDI • 64-channel AES10 MADI
SDI Inputs / Outputs	<ul style="list-style-type: none"> • 1 or 2 SDI Inputs or Outputs Optional – Single SFP Transceiver: <ul style="list-style-type: none"> • HD-BNC Coax 3G/HD/SD-SDI • Multi-Mode Fiber: 1 SI Optical SC-Connector, 1300nm • Single-Mode Fiber: 1 SI Optical SC Connector, 1310nm
MADI Inputs / Outputs	<ul style="list-style-type: none"> • 1 MADI BNC, Standard Coax I/O Optional – SFP Transceiver: <ul style="list-style-type: none"> • Multi-Mode Fiber: 1 MADI Optical SC-Connector, 1300nm • Single-Mode Fiber: 1 MADI Optical SC Connector, 1310nm
SMPTE 2022-6 or 2110 Receiver	Optional - SFP Receiver: <ul style="list-style-type: none"> • Multi-Mode Fiber: LC Connectors, 850nm
Cable/Fiber Length (max)	COAX (such as Belden 1694A): > 150 m
	Multi-mode fiber: 1 km
	Single-mode fiber: 10 km

Specification	Values/Domains
AES Inputs / Outputs	<ul style="list-style-type: none"> Inputs: 8 AES channels on 4 BNC are optional Outputs: 8 AES channels on 4 BNC are standard
Audio over IP Input / Output	Ethernet AoIP I/O accepts optional <ul style="list-style-type: none"> Dante/AES67 capable signal, or Ravenna/AES67 signal
Video over IP Input	Ethernet VoIP Input option accepts an MPEG signal
Video Codecs	MPEG4 (H.264) up to HD: HP@L4.3, 4:2:0 8-bit MPEG-2 up to HD: MP@HL, 4:2:0 8-bit 1080p : 60/59.94/50/29.97/30/25/24/ 23.96 fps 1080i : 30/29.97/25 fps 720p : 60/59.94/50/30/29.97/25/24/23.96 fps SD : NTSC, PAL, VGA, QVGA, CIF, SIF, QCIF, QSIF
Audio Codecs	Dolby E* / D* / DD+ (E-AC3), MPEG-1 Layer 2, AAC-LC (*requires OPT-DOLBY) Up to 48kHz audio
Network Protocols	MPEG-2 TS over UDP, SSM IGMPv3
SDI Input Termination	75Ω unbalanced
AES/EBU Input Termination	75Ω unbalanced
AES/EBU/MADI Sampling Rate	48 kHz
Analog Inputs	8 balanced inputs (4 L/R channels) on DB25F
Analog Input Impedance	40kΩ balanced
Analog Outputs	Stereo, 2 x XLR-3 Male, balanced 8 balanced outputs (4 L/R channels) on DB25F +24 dBu max
Analog Output Frequency Response	40 Hz to 20 kHz (± 1 dB)
Analog Output	<0.01% THD+N
Analog Output Dynamic	> 100 dB
Analog Output Reference	-20 dBFS = +4 \pm 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) (-10dB @ 50 Hz, 20 kHz)

Specification	Values/Domains
Headphone Output	Stereo, 40 Hz to 20 kHz (± 1 dB)
Headphone Load	8 Ω to 150 Ω

Table 3–2: iAM-VIDEO Processing Options

Option	Part #	Description
OPT-MPEG	829094	Enables decoding and monitoring of MPEG2 TS o/ASI and o/IP. 1x 3G – SDI/ASI Up to 1080p60 + 1x Stereo Audio / Transport stream Single SPTS selected out of an MPTS, via ASI or IP. Maximum SPTS bit rate of 15Mb/s.
OPT-DANTE	829078	Enable monitoring of up to 64 channel Dante™ Input. Hardware card with software activation key.
OPT-RAVENNA	829079	Enable monitoring of up to 256 channel Ravenna™ / AES67 Input. Hardware card with software activation key.
OPT-DOLBY	829077	Allows decoding and monitoring of Dolby® D, DD+, & E from SDI, SMPTE 2110, SMPTE 2022-6, and AES streams. Hardware card with software activation key.

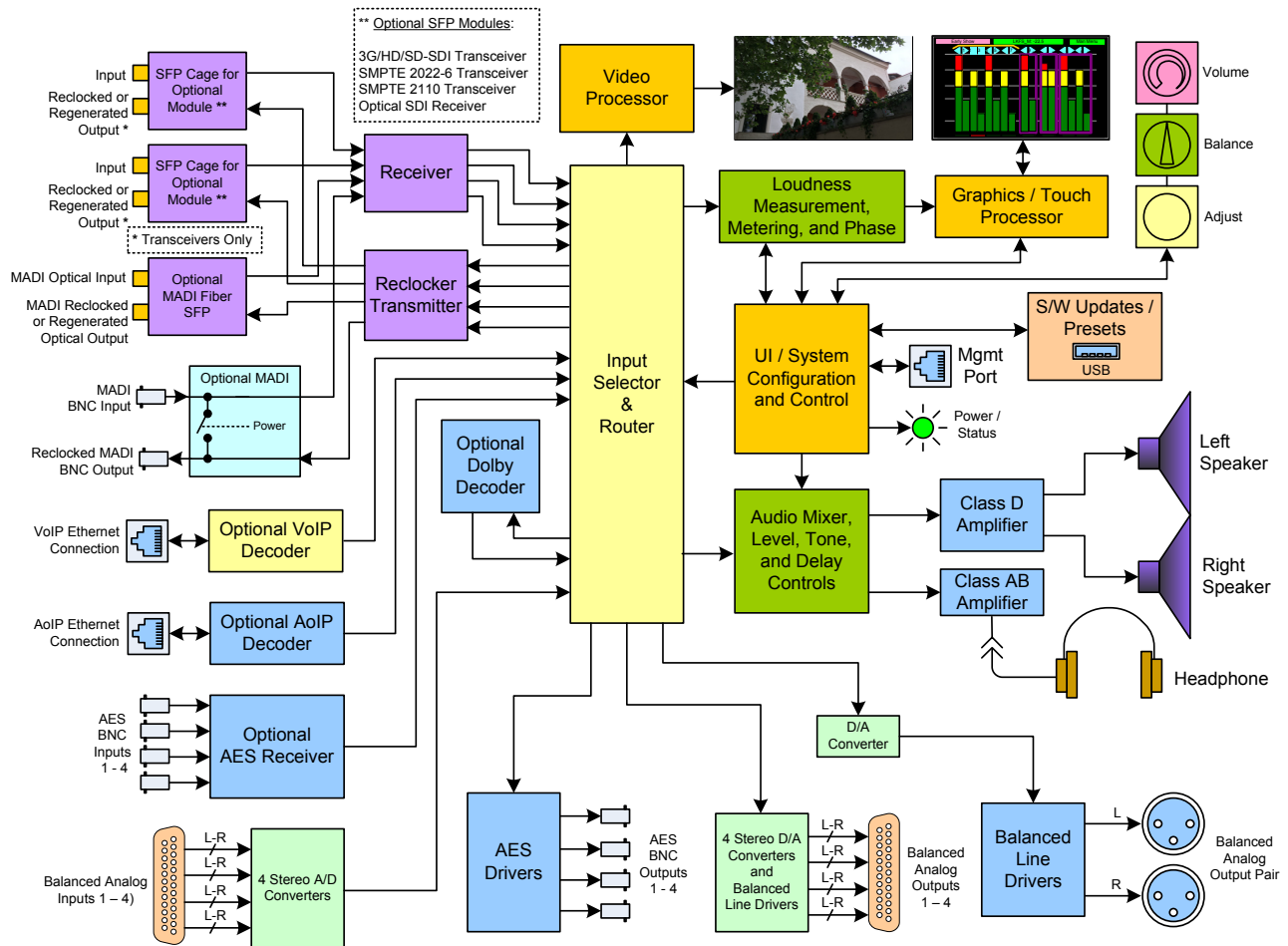
Table 3–3: iAM-VIDEO I/O Options

Option	Part #	Description
SFP-Madi-MM-Fiber	829081	MADI optical fiber transceiver. Multi-Mode, LC (fiber) connectors. SFP module with software activation key.
SFP-Madi-SM-Fiber	829082	MADI optical fiber transceiver. Single-Mode, LC (fiber) connectors. SFP module with software activation key.
SFP-SDI	829089	3G/HD/SD-SDI single video receiver with active loopback, HD-BNC connectors. SFP module with software activation key. Carries MPEG over ASI with OPT-MPEG option.
SFP-SDI-Fiber	829084	3G/HD/SD-SDI video SFP optical input; LC (fiber) connectors; Single-Mode Receiver, Medium Haul, Non-MSA, no output; (VIDEO only) with software activation key. Carries MPEG over ASI with OPT-MPEG option.

SFP-SDI-Dual	829154	3G/HD/SD-SDI dual receiver; HD-BNC connectors; SFP module with software activation key. Carries MPEG over ASI with OPT-MPEG option.
SFP-SDI-Output	829083	3G-SDI Transceiver; HD-BNC connectors; Input and output are both SDI. SDI Output (audio and video output at 1080p60) is from selected source (e.g. MPEG to SDI). SFP module with software activation key.
SFP-2022-6	829088	SMTPE 2022-6 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use MN-Set** to configure SFP.
SFP-2110 EMBER+	829086	SMTPE 2110 EMBER+ receiver; Multi-Mode 850 NM, LC (fiber) connectors. It can support up to 3G SDI. SFP module with software activation key. Use MN-Set** to configure
SFP-2110 NMOS	829086-1	SMTPE 2110 NMOS receiver; Multi-Mode 850 NM, LC (fiber) connectors. It can support up to 3G SDI. SFP module with software activation key. Use MN-Set** to configure
SFP-2110 EMBER+ & 2022-6	829087	SMTPE 2110 EMBER+ and 2022-6 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use MN-Set** to configure SFP.
SFP-2110 NMOS & 2022-6	829087-1	SMTPE 2110 NMOS and 2022-6 receiver; Multi-Mode 850 NM, LC (fiber) connectors. SFP module with software activation key. Use MN-Set** to configure SFP.
SFP-HDMI-Output	829155	SDI to HDMI/DVI output; Audio and video output at 1080p60 from selected source. SFP module with software activation key.
OPT-AES	829080	Enables decoding and monitoring of 4 x AES inputs on BNC connectors. Requires a software activation key.
OPT-MADI	829092	Enables decoding and monitoring of 1 x MADI64 input. BNC connectors. Requires a software activation key.
OPT-ANLG	829093	Enables decoding and monitoring of Analog inputs. Requires a software activation key.

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

Figure 3-1: iAM-VIDEO Block Diagram



CHAPTER 4: The iAM-VIDEO Web GUI

The self-contained iAM-VIDEO Web GUI allows you to customize the configuration of the iAM-VIDEO to suit your needs.

Web Browser / Control Device

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

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

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

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

First Time- IP Assignments

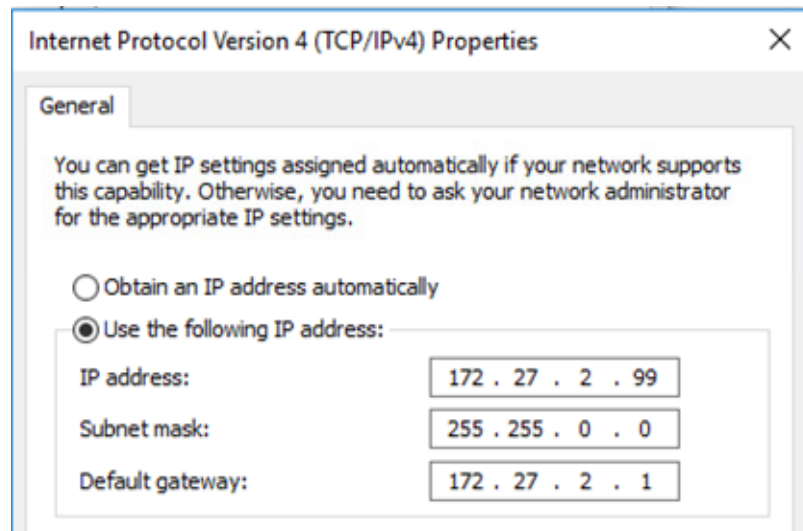
The iAM-VIDEO can operate with a static (fixed) or dynamic (DHCP) IPv4 address. The default address will be **172.27.2.2** when received from the factory or when switched from DHCP to static addressing mode. There two basic types of connections that may be used to connect the iAM-VIDEO to a web browser, a **Peer-to-Peer Connection** or a **Network Connection**.

Peer-to-Peer Connection

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

Figure 4–1: Host IP Settings



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

Network Connection

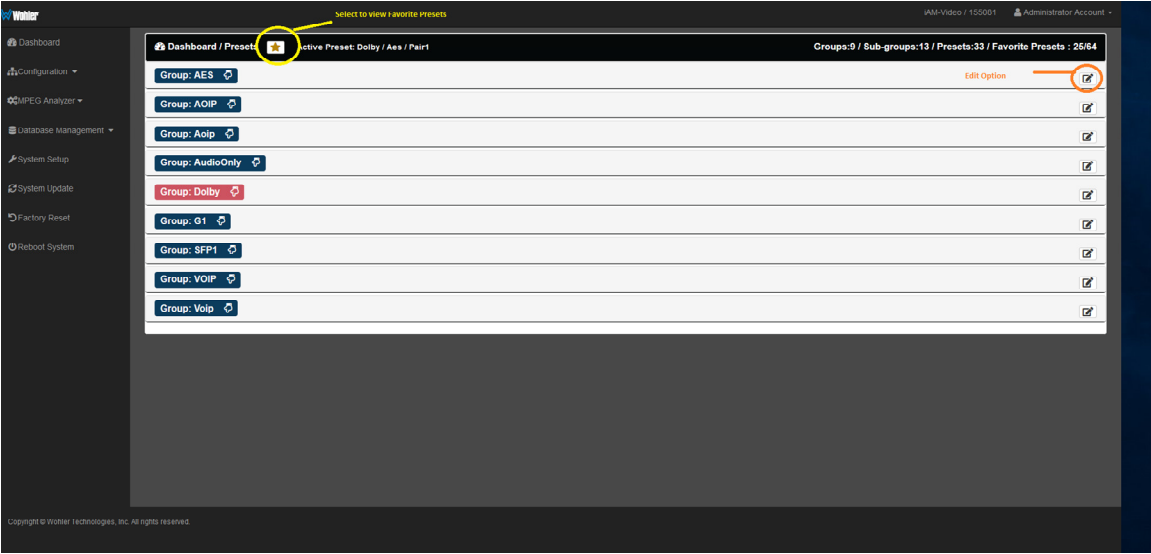
When connected to a network, the iAM-VIDEO address will need to be changed to another address in order to be compatible with the address assignments for that particular network. Immediately after the host setup is complete, change the iAM-VIDEO's address. Make the corresponding address, mask and gateway changes in the iAM-VIDEO **Network Settings** menu described in Chapter 2. Refer to Figure 2-27.

Otherwise set the iAM-VIDEO 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.

Dashboard

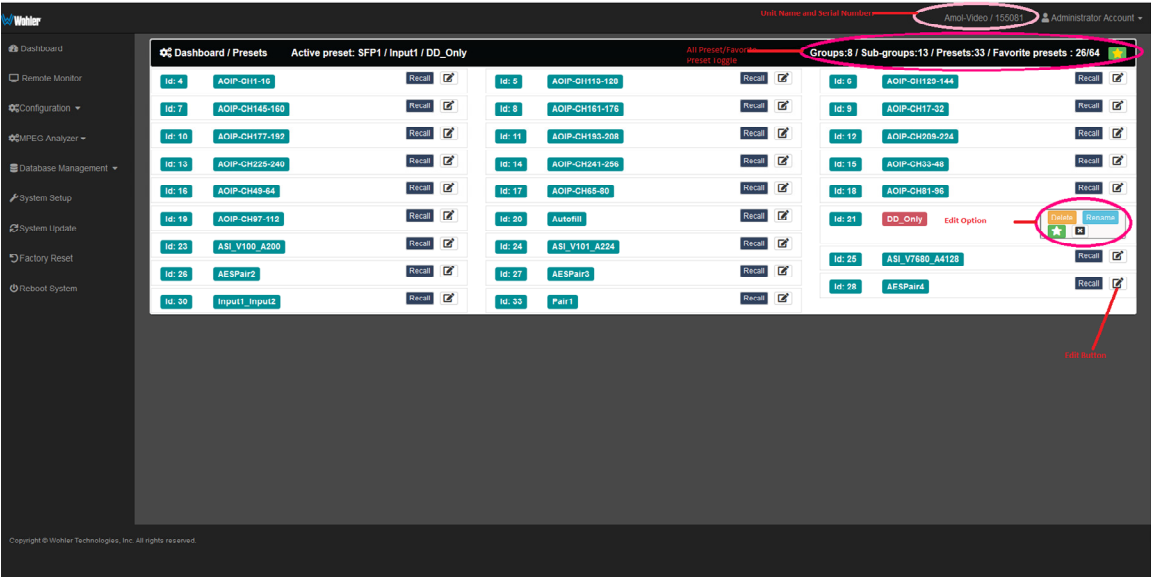
Throughout the Web GUI, other pages are a click or two away using the list of selections on the left side. The Dashboard Presets page allows you to select or delete presets, or create favorite ones. Use the Group, Sub-group, and Preset selections to locate the Preset of interest.

Figure 4-2: Dashboard Presets



Clicking the checkbox at the right of any Preset opens a small box enabling you to rename or delete that Preset. Clicking on the gold star, as shown in Figure 4-2 proceeds to the Favorite Presets screen, as shown in Figure 4-2a.

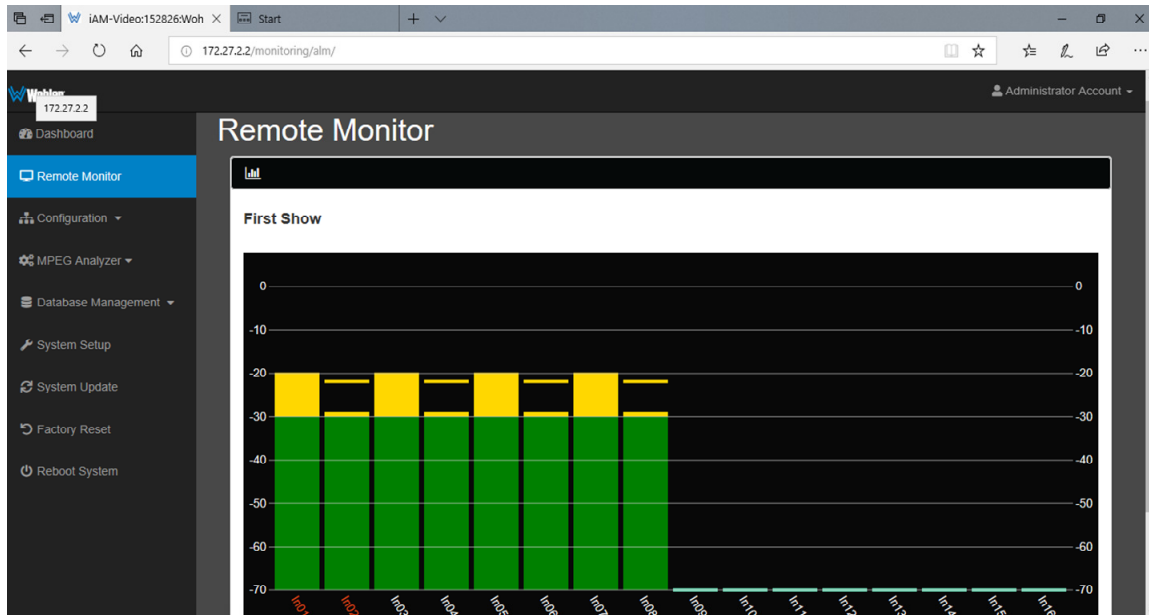
Figure 4-2a: Favorite Presets



Remote Monitor

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

Figure 4-3: Remote Monitor Audio Meters

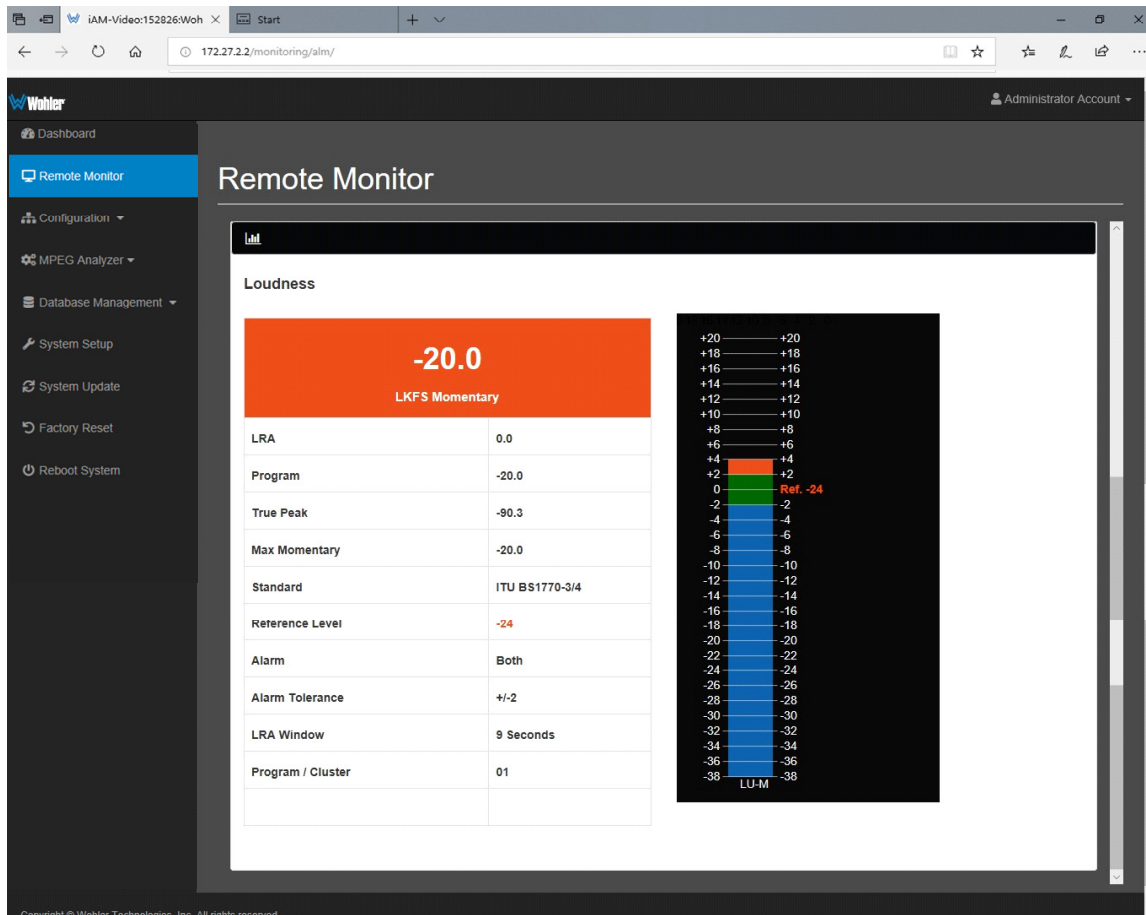


Scrolling across the screen will reveal the Remote Loudness Meter, as shown in Figure 4-4. Both digital and analog meters are displayed. The background color of the digital meter indicates whether or not the displayed level is in an alarm stage. The various alarm stages are denoted by the following colors:

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

Included in the view of this meter is a summary of the Loudness settings currently in effect. These parameters can be adjusted in the **Configuration | System Preference | Loudness Configuration** tab of the Web GUI. Refer to Figure 4-10.

Figure 4-4: Remote Monitor Loudness Meter



Configuration – Preset Setup

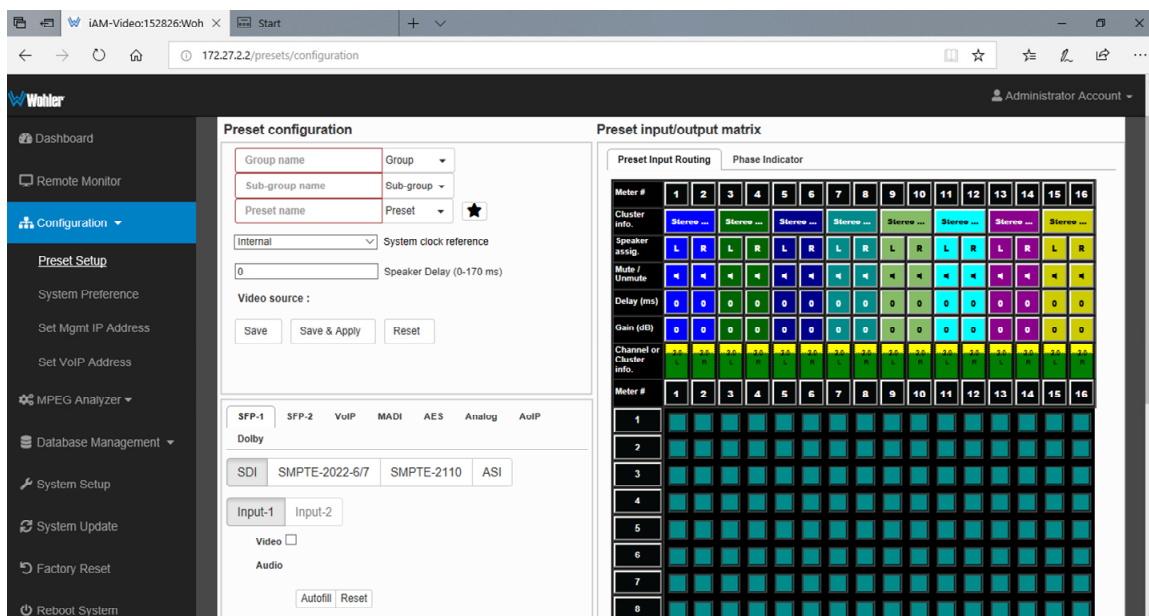
Although the **Source Select** function, as described in the Source Select section of Chapter 2, can be used to choose which input sources to monitor, often a more customized input monitoring scheme will better meet your needs. Inputs from multiple sources can be arranged in logical metering and monitoring 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 iAM-VIDEO front panel.

Preset Input Routing

The **Configuration - Preset Setup - 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.

Note: Unlike all of the other input sources, SDI 2110/2022 and MPEG input sources **cannot** be included in Presets.

Figure 4–5: Preset Setup - Preset Input Routing



Follow these steps to set up a Preset:

1. **Preset Configuration Summary:** You may type or select from pull down lists the Group name, Sub-Group name, and Preset name.
2. **Clock Reference:** You may also select from a pull down list the System Clock Reference for the input. An SDI or MADi stream may exhibit some audible clicks if it is not synchronized externally and is not selected as the clock reference. The Clock Reference for an MPEG stream should always be set to Internal. **A missing signal selected as the clock reference can prevent all audio from being monitored.**

Note: If an AES input is selected as the Clock Reference, and if Dolby Zoom is then used to zoom into another AES input containing a Dolby bitstream, then the Clock Reference is temporarily and automatically changed to that AES input while the Dolby bitstream is being decoded and monitored.
3. **Input Type:** Using the tabs and selections on the lower left side of the page, select between the available inputs. Inputs are enabled by software licenses. SDI optical input must have an SFP module installed to work.
4. **Preset Input/Output Matrix:** The matrix on the right side of the page allows you to assign input channels to any meters. You may also form clusters of channels, such as the 5.1 cluster shown in the figure above. To form a cluster, click the first channel to be in the cluster. Then from the pull down **Cluster Type** list select the type of cluster it is to be. The available **Cluster Type** selections are:
 - a. None: The channel will not appear on the metering screen.
 - b. Mono 1.0: The channel will appear within a single-channel cluster.
 - c. Stereo 2.0: The channels will appear within a two-channel cluster.
 - d. Surround 5.1: The channels will appear within a 6-channel cluster.

- e. Surround 7.1: The channels will appear within an 8-channel cluster.

Check each channel in the chart to indicate which meter it will appear on. In the above figure, the channels are simply mapped to consecutive meters. You may give the cluster a descriptive name in the Cluster Name box. This name will appear on the meter screen adjacent to each meter cluster. You may also add another cluster or reset all clusters using the buttons provided. Using the Mute/Unmute on Recall click boxes, you may set which channels or clusters will be audibly monitored by default when the Preset is recalled.

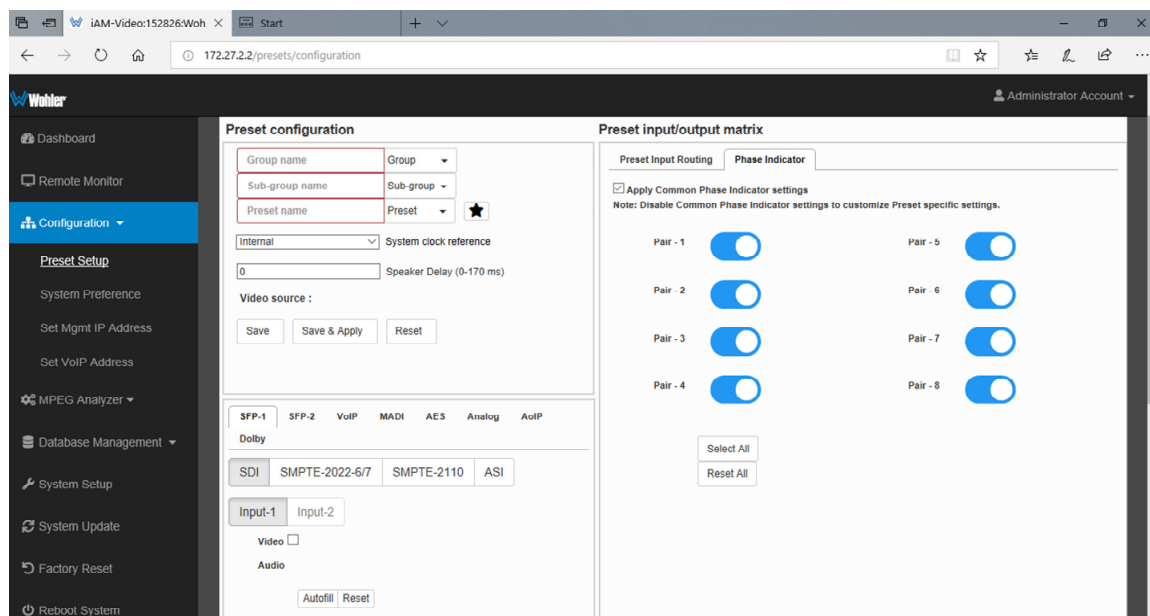
- 5. **Speaker Assign:** Speaker assignments are made automatically when a cluster is set. However, it can be that in an actual signal, the channel assignments may be different than what the automatic assignment assumes. A speaker assignment adjustment is provided for each channel, should you need to 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 **X** to close the box.
- 6. **Mute/Unmute:** When the Preset is recalled, the options set here will determine which channels are first heard. For example, if the first cluster of channels is to be heard, then those channels should be selected here as Unmuted.
- 7. **Delay:** A delay can be added to the channels of your choice, if needed, so that their audio will synchronize with the video.
- 8. **Gain:** Gain or loss can be added to the channels of your choice, as you feel is necessary.
- 9. **Save:** Clicking this button stores the Preset in the database.
- 10. **Save and Apply:** Clicking this button saves the Preset to the database and loads it as the active preset.
- 11. **Reset:** Clicking this button undoes changes you have made.

Presets may be created for any licensed inputs, even if the SPF module for an input is not plugged into its respective socket at the time. This makes it easy to swap SPF input modules without having to recreate presets after the insertion or removal of an SPF module. Note that if a licensed SPF module is not detected, such as when one is removed to be swapped, its monitoring inputs will be muted. Likewise, if the required license has not been entered for an SPF module that is inserted, its monitoring inputs will also be muted. Refer to the **System Setup** section in this chapter and to Figure 4-22 to install software licenses.

Phase Indicators by Preset

The **Configuration - Preset Setup - 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 from frequently but needlessly light. An example of this situation would be when the Center channel and the LFE channel is on the same pair in a 5.1 configuration.

Figure 4–6: Preset Setup - Phase Indicator



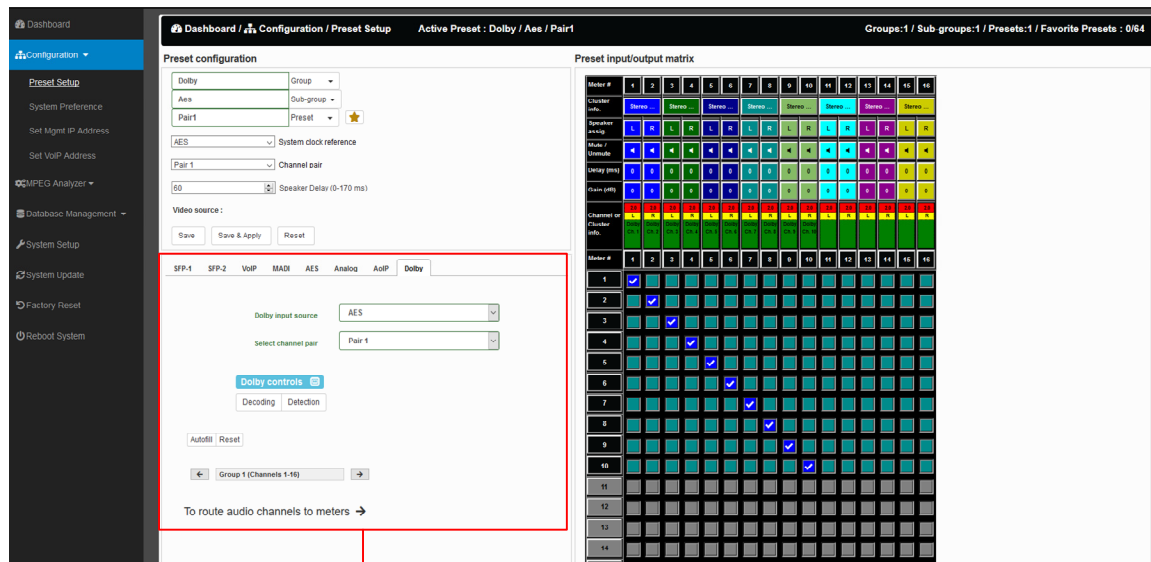
Follow these steps to create a unique Phase Indicator setup for a Preset:

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.

Configuring Dolby Presets

If the Dolby Option module is present in the iAM-VIDEO, a Dolby tab will also be displayed, as shown in Figure 4-7. Choices can be made as to the source of the Dolby bitstream, as well as which decoded Dolby channels should be monitored. Dolby channels are mapped to the meters using exactly the same methods used in the previous section to monitor other channels. Any meter channels which are not being used for decoded Dolby can be used to monitor any other channels available on the other tabs.

Figure 4-7: Configuring Dolby Presets



Dolby Tab

To set up a Preset containing decoded Dolby channels, first select the source of the Dolby bitstream from the **Dolby Input Source** pull down list. Then select the pair containing the Dolby bitstream from the **Select Channel Pair** pull down list. Then, using steps 4 through 11 listed above, complete your configuration of the Preset.

Note: If an AES input is selected as the **Dolby Input Source**, then that AES pair will always be muted and cannot be unmuted from the Metering Screen, whether it contains a PCM signal or a Dolby bitstream. This is to prevent the undecoded Dolby bitstream noise from being inadvertently sent to the speakers or headphones. However, the metering screen will visually display the received signal. This limitation does **not** apply to PCM signals and Dolby bitstreams decoded from an SDI input.

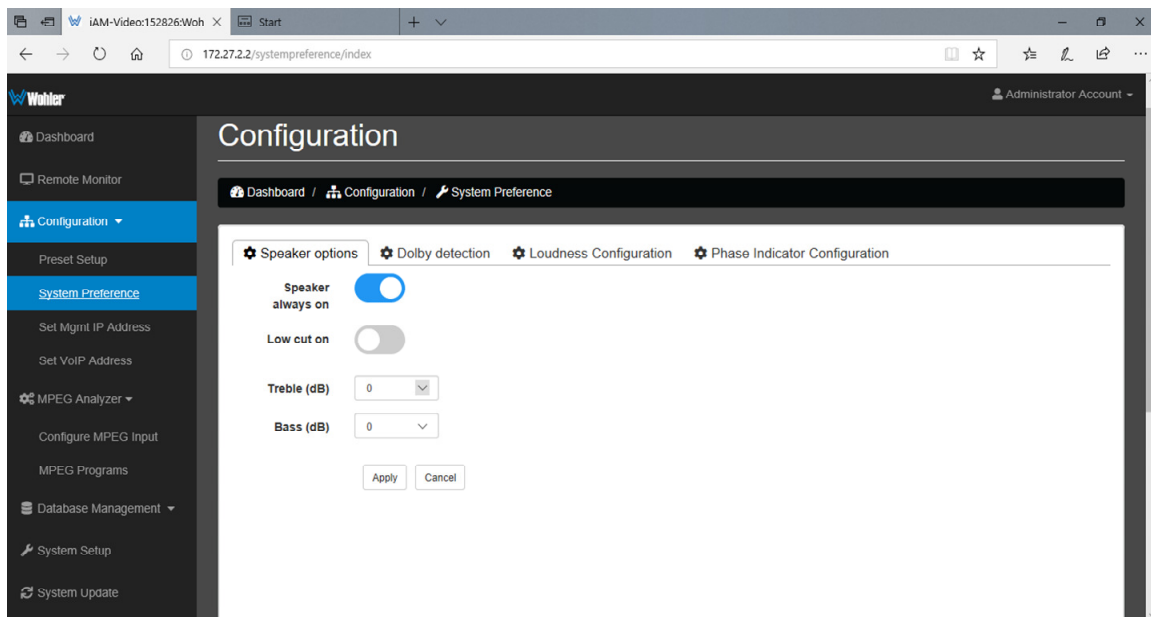
System Preference

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

Speaker Options

The **Speaker Options Tab** is shown in Figure 4-8. Note that setting changes made here will reflect on similar settings made using the iAM-VIDEO front panel menus. Click **Apply** to incorporate your adjustments or to **Cancel** to discard changes you just made.

Figure 4-8: Speaker Options Tab



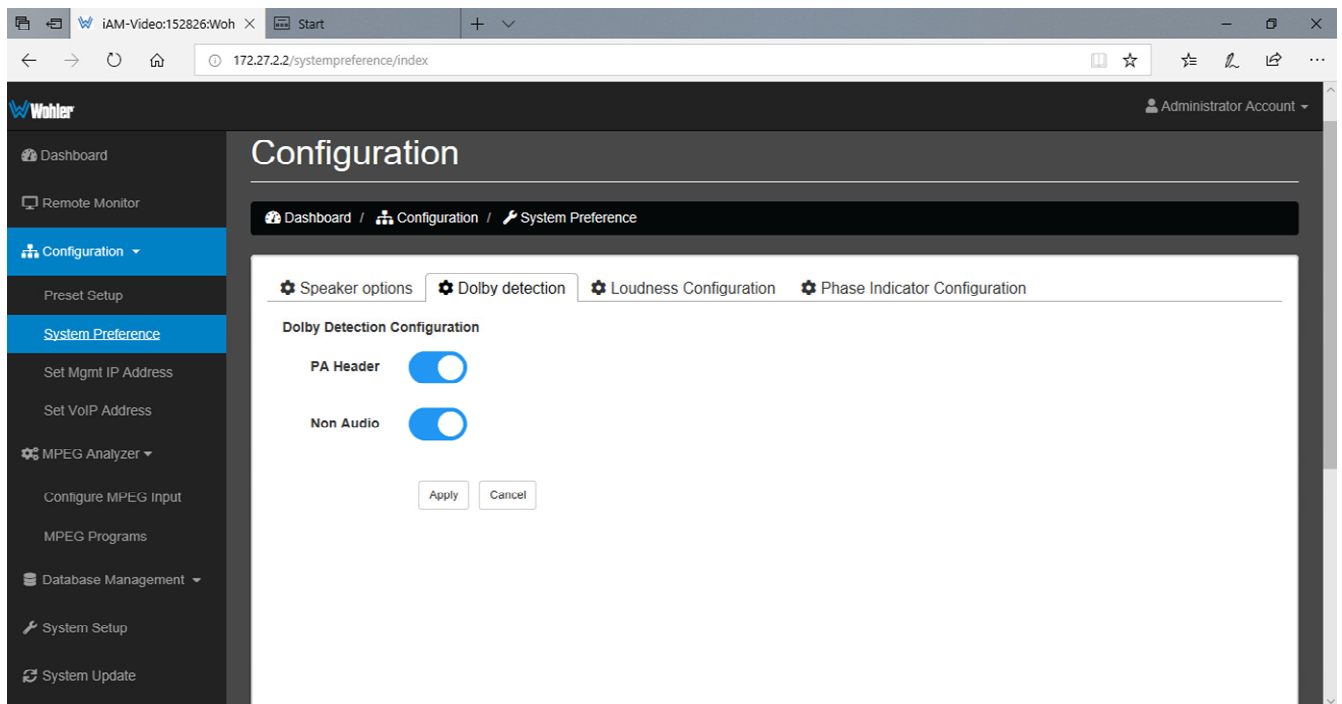
1. **Speaker:** Depending upon the needs of the operator, the speakers of the iAM-VIDEO may need to be programmed as follows:
 - **Never Mute:** The speakers will remain active whether or not a headphone is inserted.
 - **Mute with Headphone Insertion:** The speakers will automatically mute whenever a headphone is inserted.
2. **Low Cut On:** This switch may be set to the ON position if the program material generally contains a high level of low pitched sounds, to the extent that distortion is heard in the internal speakers.
3. **Treble:** Depending upon the preference of the operator, high pitched sounds can be emphasized or de-emphasized. The range of adjustment is -12 dB to +12 dB. 0 dB is the flat setting.
4. **Bass:** Depending upon the preference of the operator, low pitched sounds

can be emphasized or de-emphasized. The range of adjustment is -12 dB to +12 dB. 0 dB is the flat setting.

Dolby Detection

The **Dolby Detection Tab** is shown in Figure 4-9. In this tab, you may select the encoded parameters that the iAM-VIDEO uses to determine whether an audio signal is actually a Dolby signal or not. Detecting Dolby signals allows their presence to be shown on the meter screen and prevents loud blasts of white noise from being heard if these signals are selected. Unless a reason is known not to, both detection parameters should be turned on. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

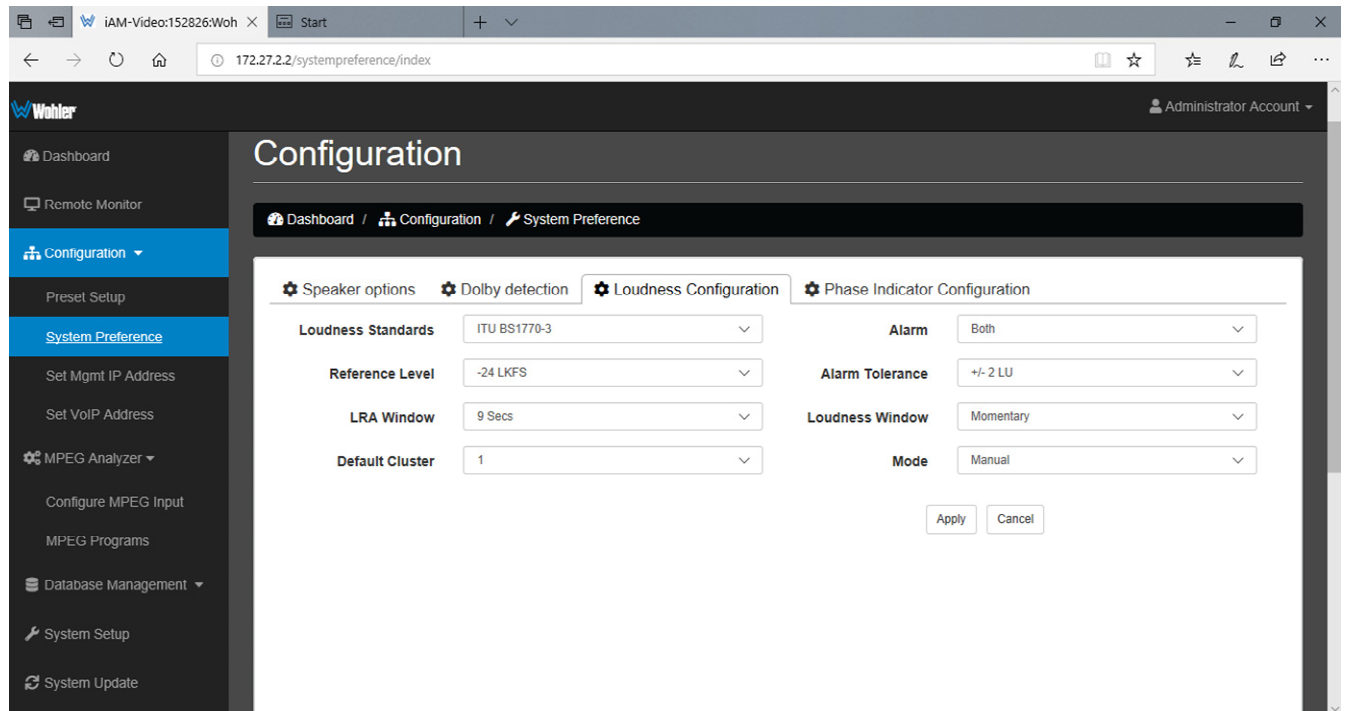
Figure 4–9: Dolby Detection Tab



Loudness Configuration

The **Loudness Configuration** tab is as shown in Figure 4-10. The settings in this tab let you set up the parameters that will be used to accurately calculate loudness to the standard that you need. It is also essential to accurately set up the speaker assignments for each channel of the loudness cluster in the **Configuration | Preset Setup | Preset Input/Output Matrix**. Refer to the **Configure Presets** section of this manual. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

Figure 4-10: Loudness Configuration Tab



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

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

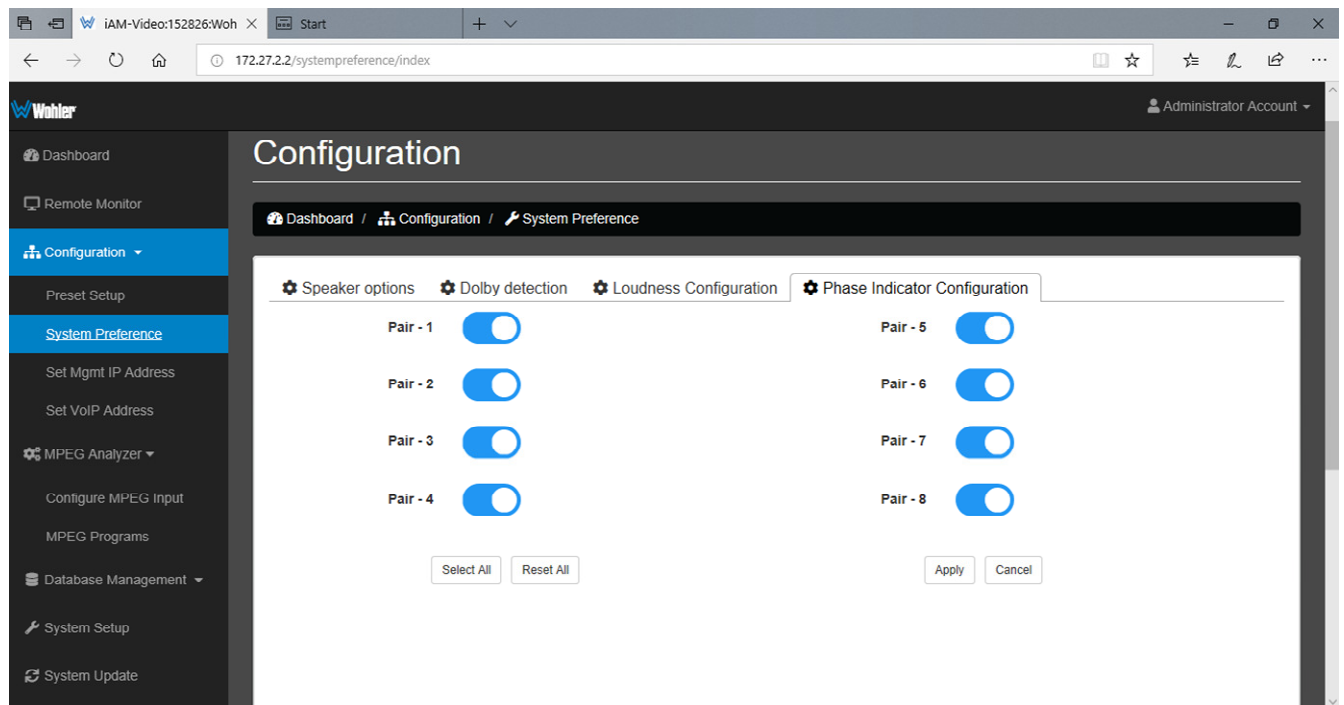
Note: Further and more detailed descriptions of all of the above Loudness terms may be found in the ITU-R BS.1770-3 loudness standard.

Phase Indicator Configuration

The **Phase Indicator Configuration** tab is as shown in Figure 4-11. It allows you to select which channel pairs by default will receive a phase meter on the **Metering Screen**. Generally, it is useful to monitor the relative phase of stereo pairs. However, sometimes each channel of a pair is unrelated to each other. This can be because the channels are used to convey two independent monophonic signals or that one channel may be a Center channel and the other may be a Low Frequency Effects channel. In these instances, the Phase Indicator would almost always indicate an out of phase condition. Because this would be a needless distraction to the operator, switches are provided on the **Phase Indicator Configuration** tab to individually turn phase monitoring for each channel pair on or off. Simply click each switch to the desired on or off position. **Select All** and **Reset All** buttons are also provided. Click **Apply** to incorporate your adjustments or **Cancel** to discard changes you just made.

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

Figure 4-11: Phase Indicator Configuration Tab



Configuration - Set Mgmt IP Address

The page for configuring the IP address of the **Management (MGMT) Port** for the local iAM-VIDEO is shown in Figure 4-12.

Figure 4-12: Set Mgmt IP Address

The screenshot shows the 'Set Mgmt IP Address' configuration page in the Wohler iAM-Video web interface. The page is titled 'Configuration' and has a sidebar with navigation options like Dashboard, Configuration, and System Setup. The main content area is divided into two sections: 'Enter IP Information' and 'Enter Network Time Protocol Server Information'. The 'Enter IP Information' section contains fields for 'Use DHCP?' (unchecked), 'IP Address' (192.168.1.100), 'IP Mask' (255.255.255.0), 'Gateway Address' (192.168.1.1), and 'Dns-nameserver' (172.27.2.1). The 'Enter Network Time Protocol Server Information' section contains a field for 'Use NTP Server?' (unchecked) and an 'NTP Server' field with the value '0.0.0.0' and a note 'It can be a name or IP address.' An 'Apply' button is located at the bottom left of the form.

The procedure for changing the IP Address is as follows:

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

Configuration - Set VoIP Address

The page for configuring the IP address of the **VoIP Port** for the local iAM-VIDEO is shown in Figure 4-13.

Figure 4-13: Set VOIP Address

The screenshot shows a web browser window with the URL `192.168.1.100/net-setup/voip`. The page is titled "Configuration" and "Set VoIP Address". It features a sidebar with navigation links: Dashboard, Configuration (selected), Configure Presets, Set Mgmt IP Address, Set VoIP Address (selected), MPEG Analyzer, Database Management, System Setup, System Update, and Factory Reset. The main content area has a header "Configuration" and a sub-header "Set VoIP Address". Below this, there is a section "Enter IP Information" with a checkbox for "Use DHCP?". The form contains three input fields: "IP Address" (172.27.2.22), "IP Mask" (255.255.255.0), and "Gateway Address" (172.27.2.1). An "Apply" button is located at the bottom of the form.

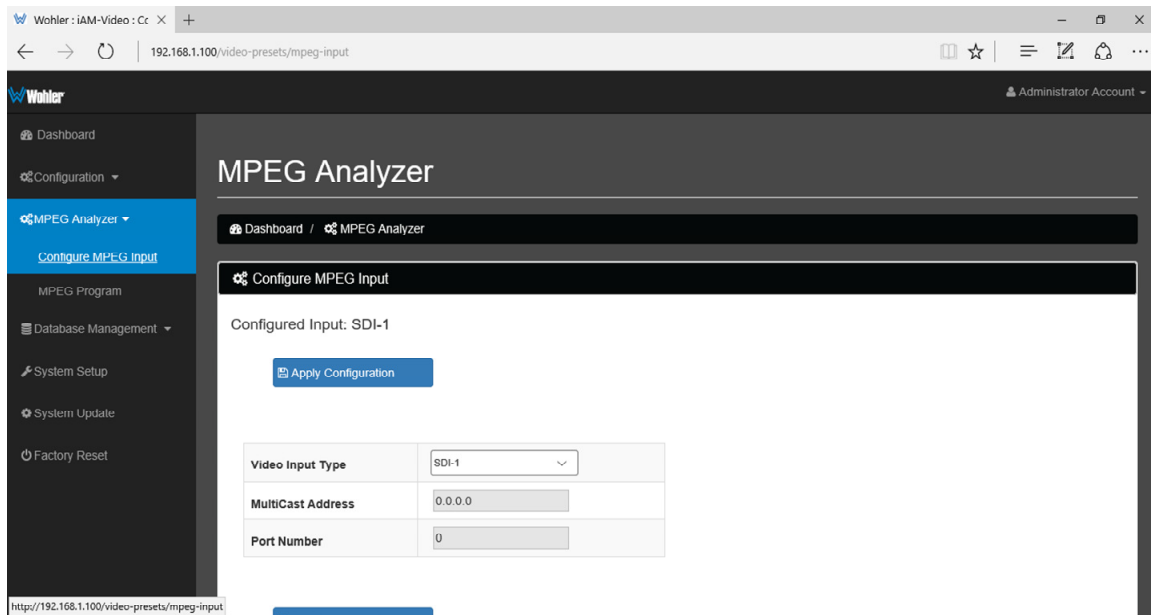
The procedure for changing the VoIP Address is as follows:

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. **Apply:** When you have made all of the necessary entries, press **Apply** to put the changes into effect.

MPEG Analyzer - Configure MPEG Input

To ready the iAM-VIDEO for MPEG monitoring, first the input must be configured. As shown in Figure 4-14, under the MPEG Analyzer heading, click Configure MPEG Input.

Figure 4–14: MPEG Analyzer - Configure MPEG Input



Three settings must be configured:

1. **Video Input Type:** This pull down menu lets you select the physical connection that contains the MPEG signal to be monitored.
2. **MultiCast Address:** Enter the MultiCast Address for use when VoIP is selected as the input. This is not applicable for an ASI input. Also, if VoIP is selected, there will be an additional option of enabling Source Specific Multicast (SSM). If you enable SSM, a text box will then appear allowing you to enter the IP address for the SSM.
3. **Port Number:** Enter the Port Number for the MPEG signal to be monitored.

Click the **Apply Configuration** button after making the three settings above.

Click on the **MPEG Analyzer - MPEG Program** to view the content of the MPEG stream selected. Refer to the next section in this manual.

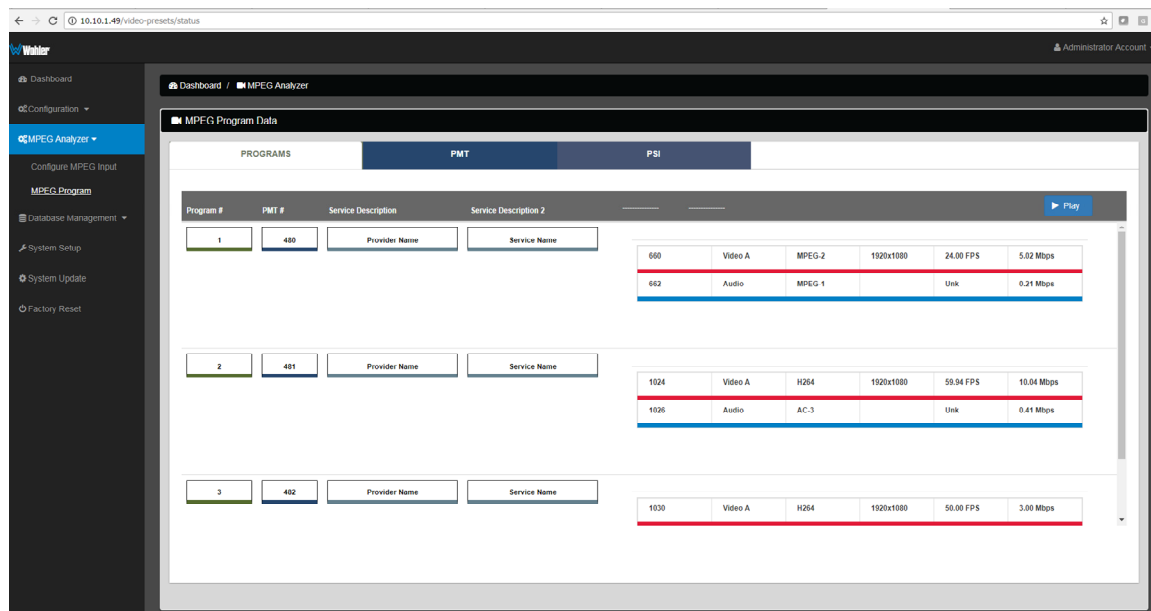
MPEG Analyzer - MPEG Program

The MPEG Program page describes the contents of the MPEG stream. To do this, it is divided into three tabs: Programs, PMT, and PSI. The function and contents of each of these tabs is explained in the following sections.

Programs Tab

The Programs tab lists the programs that are present in the MPEG screen and offers information about each one. An example of a Programs Tab is shown in Figure 4-15.

Figure 4-15: MPEG Analyzer - MPEG Program - Programs Tab



The following pieces of information about each program are shown:

1. **Program #:** The program number for each program in the stream is shown in the green box at the left. Use the scroll bar on the right to review the entire list of programs present.
2. **PMT #:** The Program Map Table number is shown for each program.
3. **Service Description** and **Service Description 2:** Descriptions about the program contained in the MPEG stream are displayed. As in the example in the figure above, this may include the provider name and the service name.

Each table on the right side of the page describes further video (red underscore) and audio (blue underscore) stream information in each column:

1. **Column 1:** The Program Map Table number is shown for reference.
2. **Column 2:** The type of stream is noted, as in the example above, video or audio.
3. **Column 3:** The encoding format of the stream. In the example above, the video stream has MPEG 2 encoding and the audio stream has AC-3 encoding.

PSI Tab

The Program Status Information is shown on this tab. To view Program Status Information, first click on the program number of interest in the Programs Tab. Then click the PSI tab. You may also click directly to the PSI Tab from the PMT tab. An example of the PSI tab is shown in Figure 4-17.

Figure 4-17: MPEG Analyzer - MPEG Program - PSI Tab

PID	PID	Bit Rate (bps)	Pcr Err Cnt	Pts Err Cnt	Ts Cont Err	Present Status
PMT	00	0.00	0	0	0	✓
CAT	01					⊗
NT	10					⊗
SDT	11					⊗
EST	12					⊗
TOT	20					⊗
ST	21					⊗

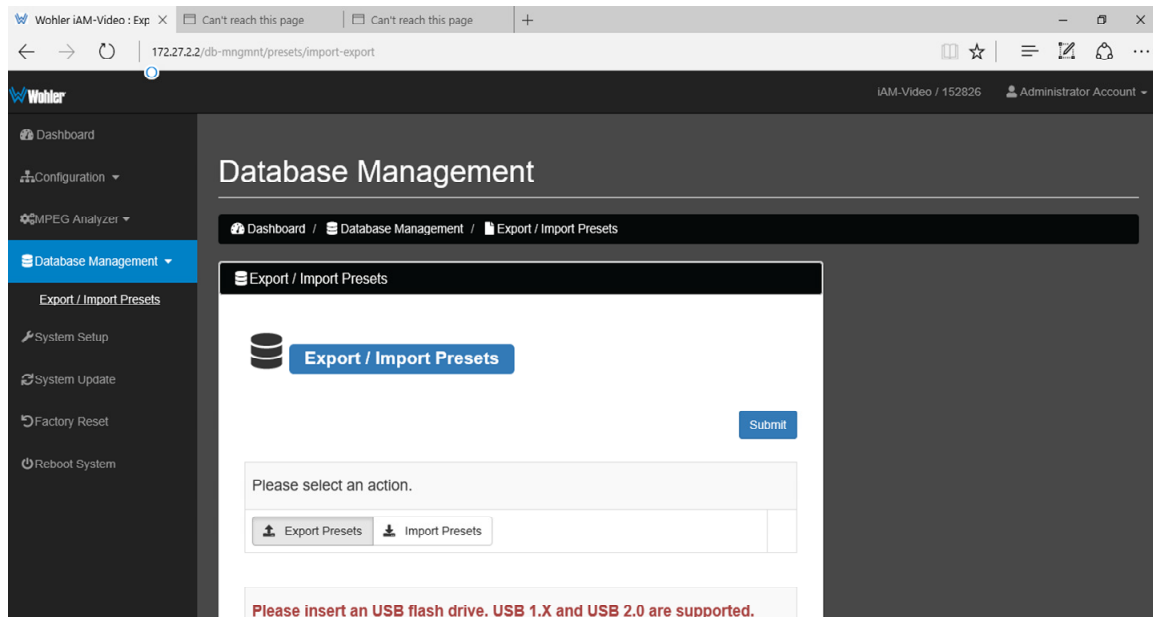
A table is shown to expand the PSI information shown on the PMT tab. From this table, you may learn the details about what caused any given status to be shown. The following informational columns shown in the table for each PSI are:

1. **PID:** The Packet Identifier is shown.
2. **Bit Rate:** The Bit Rate associated with the PSI is shown.
3. **Pcr Err Cnt:** The Program Clock Reference error count is shown.
4. **Pts Err Cnt:** The Presentation Time Stamp error count is shown.
5. **Ts Cont Err:** The Transport Stream Container error count is shown.
6. **Present Status:** The status as listed in the abbreviated PSI on the PMT tab is shown.

Database Management – Export/Import Presets

Use the **Database Management - Database Export / Import** page to back up an iAM-VIDEO's Preset database to a USB flash drive or to retrieve presets from a USB flash drive inserted in the front panel port of the iAM-VIDEO.

Figure 4-18: Export/Import Presets



Export Configuration

Use the following steps:

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

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

Import Configuration

Use the following steps:

1. Click the **Import Presets** button on the **Database Management - Database Export / Import** page.
2. Insert a flash drive in the front panel USB jack on the iAM-VIDEO you want to recover Preset data from.
3. Click the blue **reload page** link at the bottom of the page. The list of Preset

databases that are contained on the Flash Drive will appear on the screen.

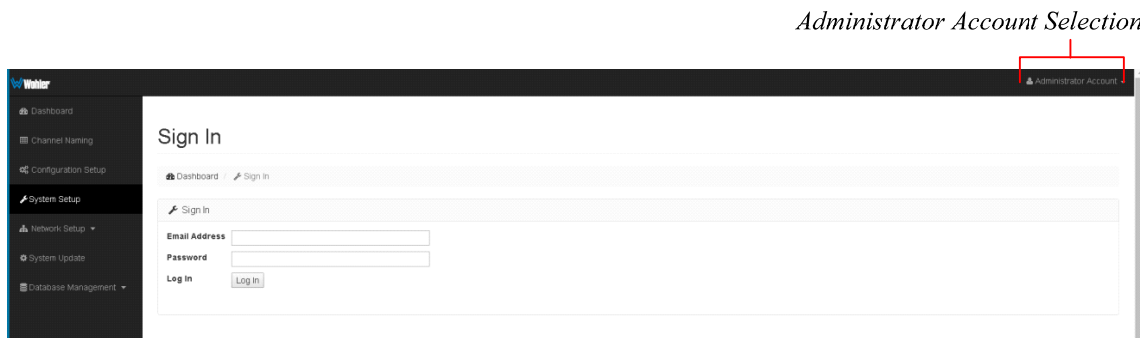
4. Select a Preset database from the list. The Preset data you selected will be copied into the iAM-VIDEO. Do not withdraw the Flash Drive before all of the data is copied.

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

Sign In

Only authorized users should be allowed to make system setup changes or system updates. To log in, click the **Administrator Account** selection as shown in Figure 4-19 and then clicking **Log In**.

Figure 4–19: Administrator Account Log In



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

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

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

System Setup

The **System Setup** page shows Product Information about your iAM-VIDEO. It also shows the System Options that are installed, including the option licenses, and provides a means to add additional option licenses. There are 3 tabs, each containing part of the setup information, and these are explained in the following three sections and are shown in Figures 4-20, 4-21, and 4-22.

Product Information Tab

Figure 4–20: System Setup - Product Information

The screenshot shows the 'System Setup' page with the 'Product Information' tab selected. The page displays various system and hardware details in a table format. At the bottom, there are 'Submit' and 'Reset' buttons, and a 'System Information' download link.

Software Information	
System Version	2.0.2
Video Application Version	v1.11.18
DSP Version	v2.0.2
Front Panel Application Version	v2.0.2
Video Logic Version	0x18072201
Audio Logic Version	A4.13

PCB Information	
Motherboard Version	D-E.0-4
Graphics Card Version	919438
LCD Adapter Version	919437

Unit Information	
Serial #	152026
Management Mac	b0:d5:cc:fd:cf:ff
Video Mac	b4:ed:54:d0:00:01
AOIP Card	Not Present
Name	<input type="text" value="iAM-Video"/>
Passcode Set	<input type="text" value="1234"/>

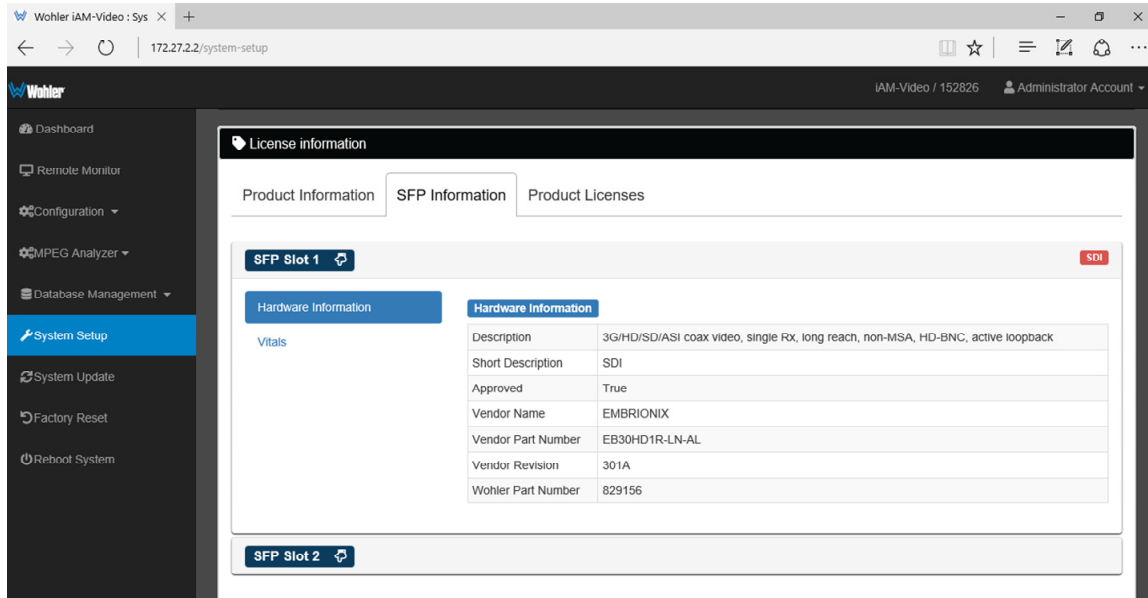
[System Information](#)

The Product Information tab shows basic information about the internal hardware and software versions, as well as certain settings. If you should make a change to the Name or the Passcode, click the **Submit** button. The **System Information**

button allows you to save system logs into a file. This could be useful information to have should you need to contact Wohler Technical Service for any reason.

SFP Information Tab

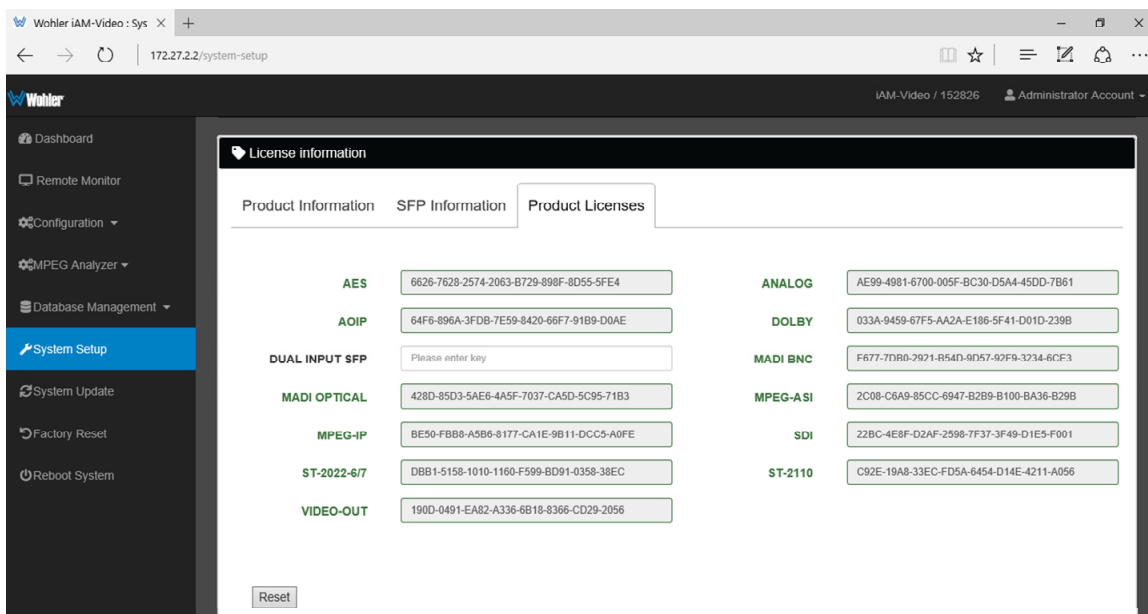
Figure 4-21: System Setup - SFP Information



The SFP Information tab provides detailed information about the modules installed in the SFP slots. This could be useful information to refer to should you need to contact Wohler Technical Service for any reason.

Product Licenses Tab

Figure 4-22: System Setup - Product Licenses



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

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

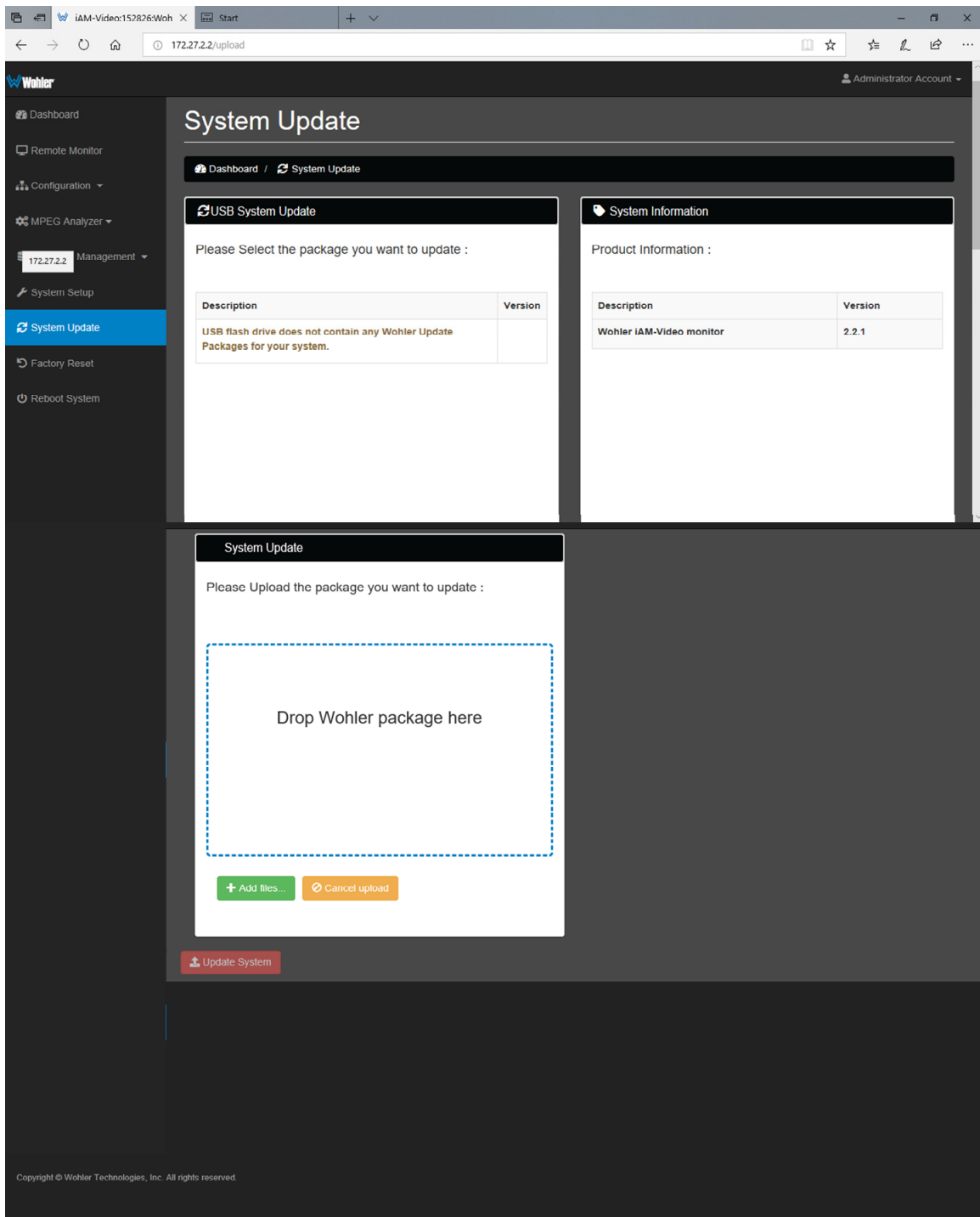
1. Use the Administrator Account Log In as shown in the previous section.
2. Enter the license key in the boxes that appear adjacent to the appropriate module.
3. Repeat Step 2 for any other license keys that you want to enter.
4. Each new license will be immediately available for use.

System Update

This page provides software and hardware System Information in the right hand pane. This information can be useful in the event that you need to contact Wohler Technical Service.

The System Update pane on the left hand side of the page is used when updating the system software. This process is fully described in Appendix A of this manual.

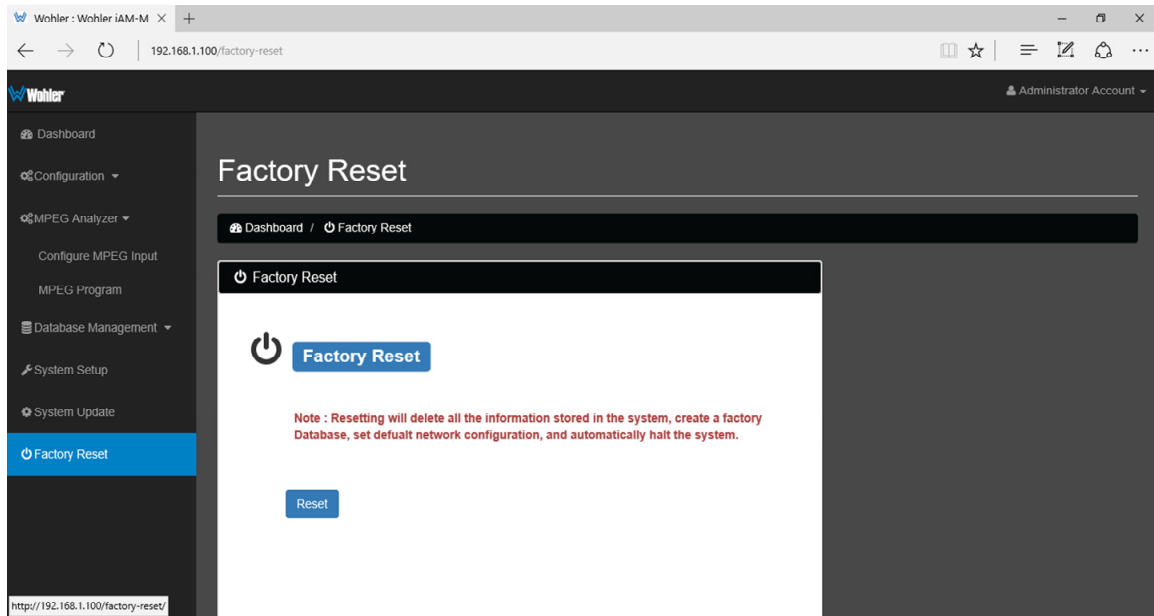
Figure 4–23: System Update



Factory Reset

The **Factory Reset** function should be used with caution. It deletes all of the settings you have programmed into the iAM-VIDEO. It returns the iAM-VIDEO 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 4–24: 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: 172.27.2.2/Gateway: 172.27.2.1/Netmask: 255.255.255.0) and clear the database of Presets. After rebooting, the unit will restore default Presets for all licensed options.

APPENDIX A: Software Upgrades

Introduction

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

Download the Software

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

Unzip and copy the update 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.

The USB flash drive, with Wohler Update Package(s) installed on it, must be inserted into the front panel USB jack of the iAM-VIDEO.

Important:

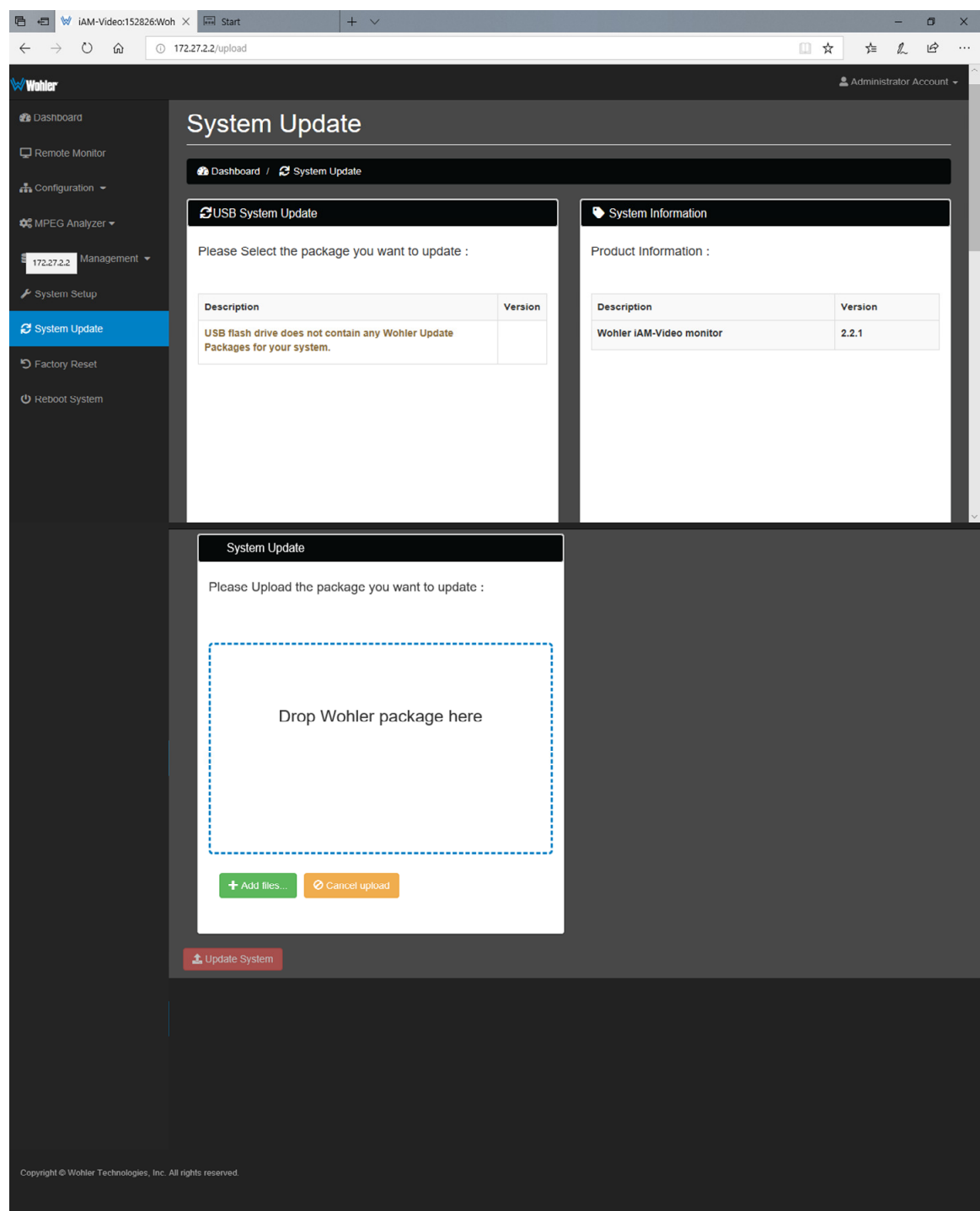
The Web GUI is required to perform the software upgrade procedure. Refer to Chapter 4 **First Time IP Assignments** if not already set up for your network.

Installing the Software

Click on the **System Update** selection in the web browser GUI. Then click on **Administrator Account** to log in. Refer to 4-19.

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

Figure A-1: System Update



Note: If the currently installed software is **version 1.8.0 or less**, please contact Wohler Technical Service before proceeding. Older versions such as this may require an interim update before proceeding with the latest upgrade, and Wohler Technical Service will be able to provide you with the necessary update package file(s) you will need.

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

1. If the iAM-VIDEO update package file is in the computer running the Web GUI, you may simply drag it into the box on the screen as indicated or use the **Add Files** button to select it. Then skip to Step 4.
2. Insert the USB flash drive with iAM-VIDEO update package(s) into the front panel USB jack. Refer to the [Download the Software](#) section of this chapter for the specifics of download and file transfer to the USB flash drive.
3. A list of update file packages present on the USB drive will appear in the **Description** field area shown in Figure A-1, along with software **Version** number(s). Click on the one you want to use. If the "**USB flash drive does not contain ...**" message below appears, the system has the latest software in it, and no further action is required or possible.
4. Click the **Update System** button.

Important:

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

5. The Web GUI will indicate progress of the software installation and results. Be prepared for the update to take some time, perhaps 15 minutes or so.
6. The iAM-VIDEO will prominently display the message, "Software Upgrade in Progress" and when the upgrade is complete it will reboot.
7. The iAM- VIDEO is finished upgrading and rebooting after the Power indicator returns to its green color and the front panel display is back to normal. The flash drive may now be removed from the iAM-VIDEO unit.
8. After the iAM- VIDEO reboots, either **Refresh** the browser by clicking on the Wohler logo, or close and reopen the browser for normal operation of the Web GUI.

This completes the software upgrade.

APPENDIX B: Dante Network Setup

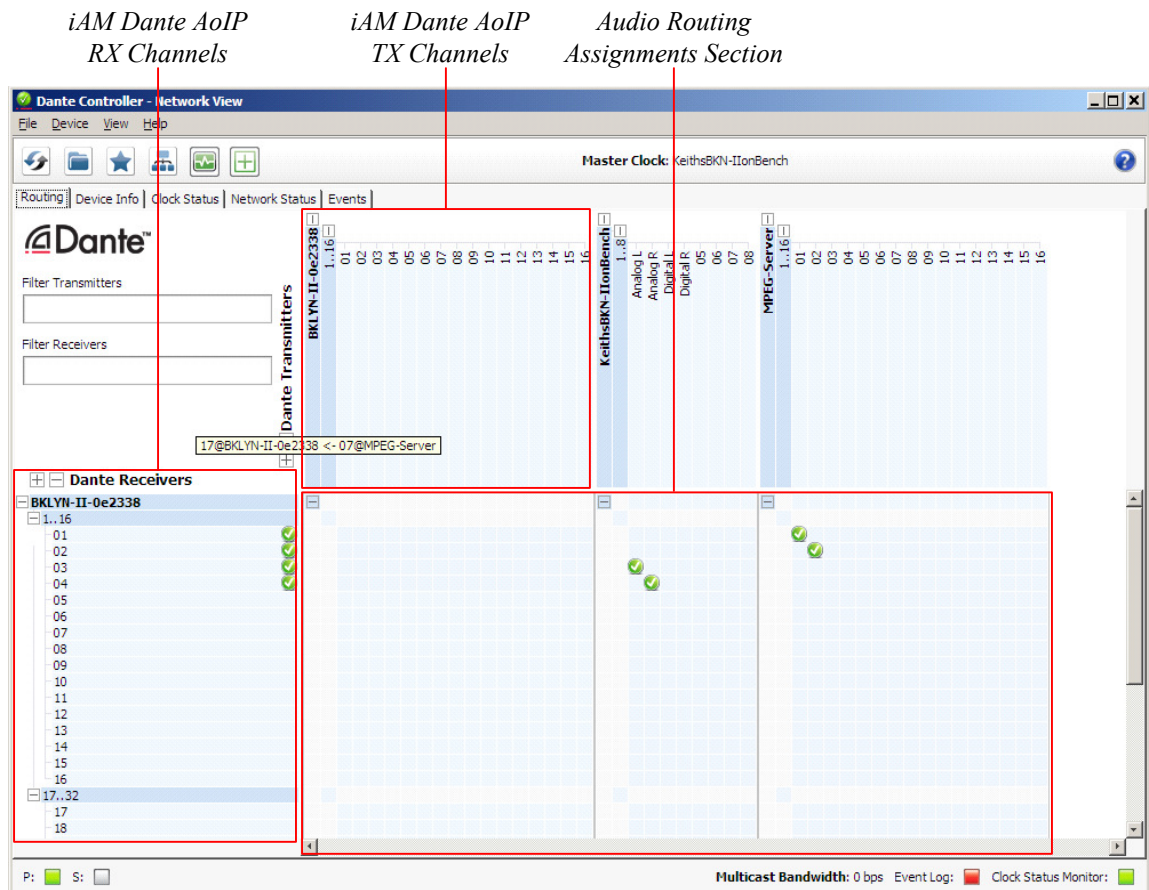
Introduction

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

iAM-VIDEO channel source selections are made by choosing **Input Type 'AoIP'** in the [Configuration-Configure Presets](#) page regardless of which AoIP option is installed.

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

Figure B-1: Network View

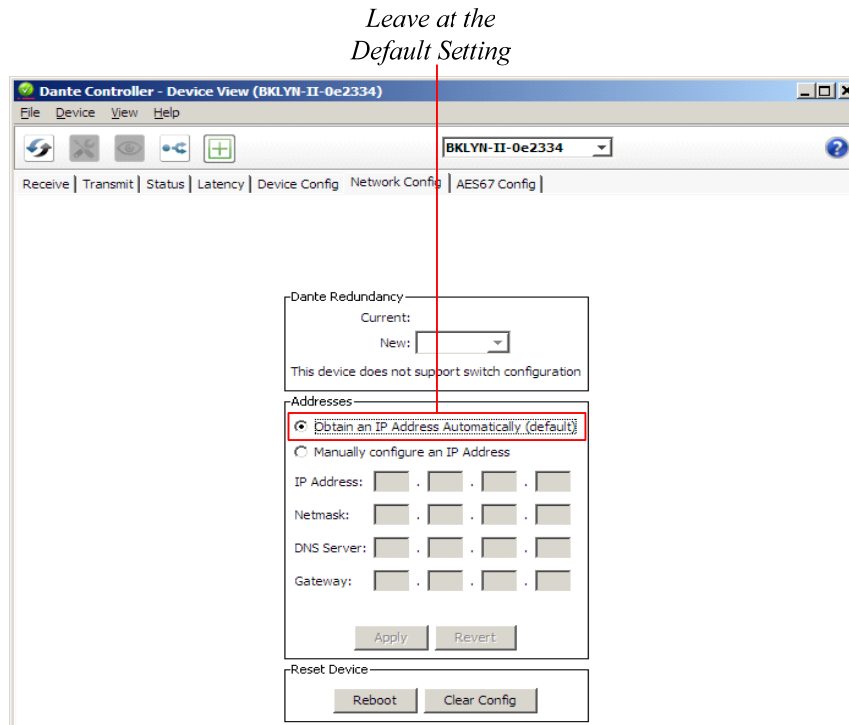


Please refer to the **Dante Controller User Guide** or other control device documentation for specific network and device setup information.

What is in the iAM-VIDEO for Dante

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

Figure B-2: Device View



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

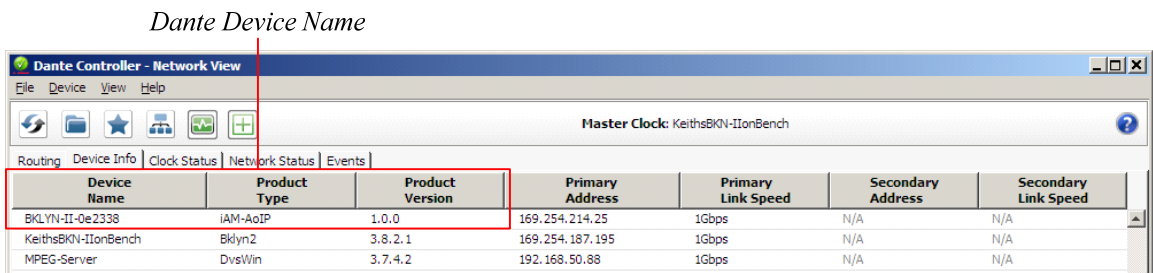
The iAM-VIDEO Dante™ AoIP is configured by the iAM-VIDEO to receive up to 64 channels and transmit 16 channels of Dante AoIP at 48 kHz or 44.1 kHz audio sample rates. 48 kHz is the iAM default rate.

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

Dante™ Device Setup

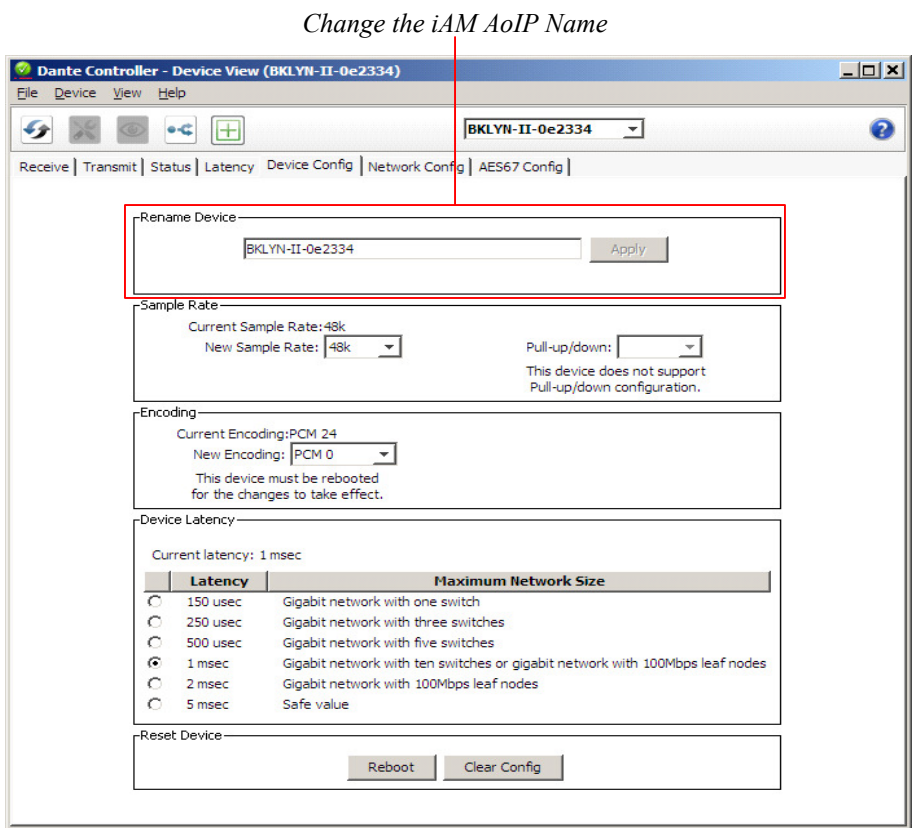
The iAM-VIDEO’s default **Dante Device Name** is “BKLYN-II- ...” followed by the last 6 digits of the Dante port MAC address, as shown in Figure B-3. This name can be changed by the Dante Controller to appear that way on the network, but that will not change the iAM-VIDEO’s unit name appearing on GUI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

Figure B-3: iAM-VIDEO Name



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

Figure B-4: Rename iAM



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

Important:

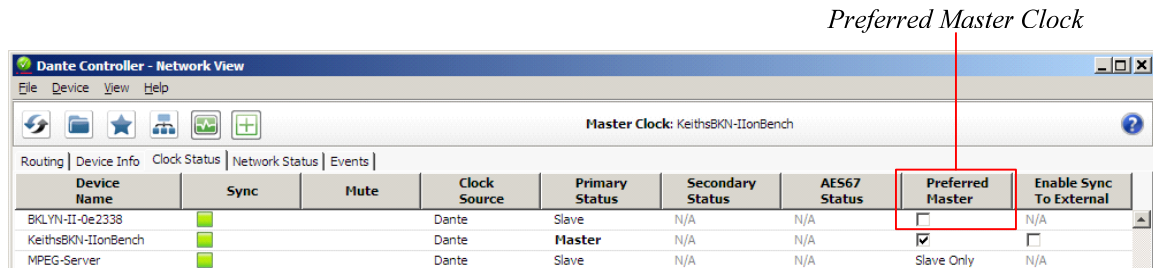
Only 44.1 kHz and 48 kHz audio sample rates are currently supported by the iAM-VIDEO. The Brooklyn II card would accept a Dante Controller command to operate at other rates, without giving an indication it will not be implemented.

Dante Clock Selection

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

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

Figure B-5: Clock Selection



Channel Names

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

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

AES67

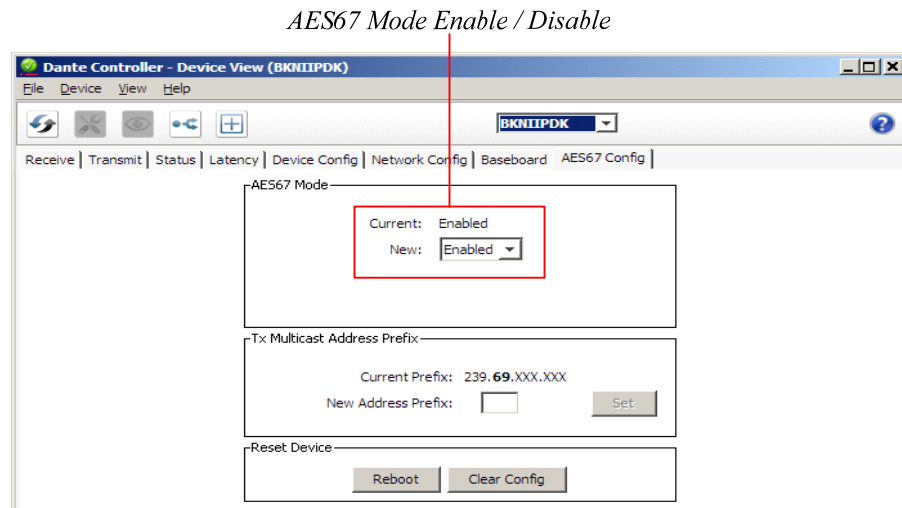
The iAM-VIDEO Brooklyn II can be configured for AES67 operation. AES67 operation with Dante is limited to eight or less receive and transmit channels at 48 kHz sample rates.

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

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

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

Figure B-6: AES67 Enable/Disable



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

Figure B-7: Device View - Network Config

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

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

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

Figure B-8: Multicast

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

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

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

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

Device Lock

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

Dante Firmware Upgrades

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

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

Follow the instructions in [Software Upgrades](#) for iAM-VIDEO updates.

Dante™ Legal Disclosures

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APPENDIX C: Ravenna (Coveloz) Setup

Introduction

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

iAM-VIDEO channel source selections are made by choosing **Input Type 'AoIP'** in the [Configuration-Configure Presets](#) page regardless of which AoIP option is installed.

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

What is in the iAM-VIDEO for Ravenna

The AES67 enabled Coveloz Bach board supports the following features:

RAVENNA-Compatible Talker/Listener

- 1) RFC 3551 – RTP Profile for Audio and Video Conferences
 - a) L16 16-bit linear format defined in RFC 3551 clause 4.5.11
 - b) L24 24-bit linear format defined in RFC 3190 clause 4
 - c) AM824 24-bit Audio as defined in IEC61883-6
 - d) Multicast and unicast session support
 - e) 44.1 kHz, 48 kHz, and 96 kHz audio sampling rates
 - f) 1 to 16 audio channels per stream
 - g) Up to 64 streams
- 2) Media clock support
 - a) 48 kHz and 96 kHz
- 3) Hitless Stream Redundancy
- 4) IGMP v3 support
- 5) Session Announcement Protocol (SAP) support

AVB Ethernet Features

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

- 1) AVB 1722 AVTP with multiple subtypes:
 - a) IEC 61883-6 MBLA
 - b) AM824, 24-bit Audio Encapsulation
 - c) Support up to 64 streams

- d) Up to 8 channels per stream
- e) 512+512 Channels of audio
- f) 48kHz and 96kHz sampling rates
- 2) IEEE 802.1Q/SRP
- 3) IEEE 1722.1/AVDECC control
- 4) IEEE 802.1AS/gPTP
- 5) Compatible with Apple OS X devices, such as MacBooks and MacMini computers
- 6) Media clock per the AVnu specification
- 7) Hitless stream redundancy

BACH™ Controller Interface

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

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

The context is device-specific, meaning that:

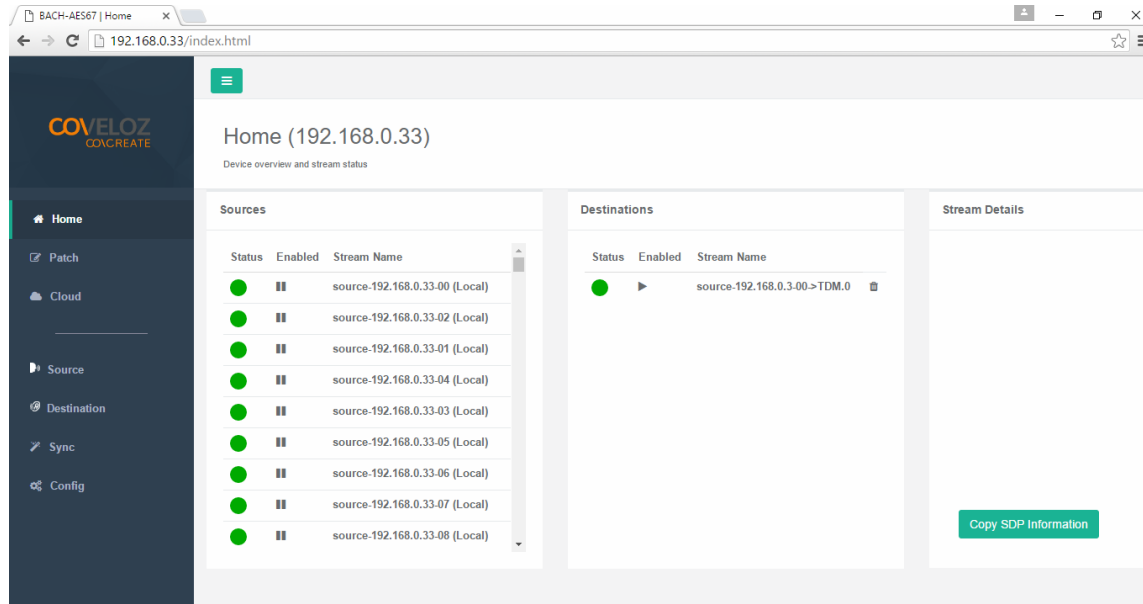
- 1) a stream “source” refers to this device’s source
- 2) One can change context to another device by selecting it on the **Cloud** Page.

Home Page

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

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

Figure C-1: BACH Controller Home Page



Configuration/Device Management

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

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

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

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

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

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

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

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

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

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

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

If you lose track of the IP address of a card, the only way to find it is to connect it to a very small network consisting of a computer, a switch and the card. Then use Wireshark or equivalent to discover its IP address.

Figure C-2: BACH Controller Device Configuration

Device Configuration (192.168.0.33)

Configure or Manage your Device

Settings

View Device Settings

Channel Sampling Frequency: 48KHz

Packet Time: 1ms

Update Global

Configuration management

Save Running to startup

Restore to Default Startup

Reset to Factory Defaults

Firmware

Reboot Device

Update Firmware

Firmware Version: v2.0.2-b0
Firmware Date: Fri Sep 30 17:49:22 EDT 2016
Chipid Version: v1.0.0-b19

IP Addresses

Name	Ip	MAC	Link	Mode
eth0	192.168.11.1	70-83-05-04-20-00	●	static
eth1	192.168.0.33	70-83-05-04-20-01	●	static

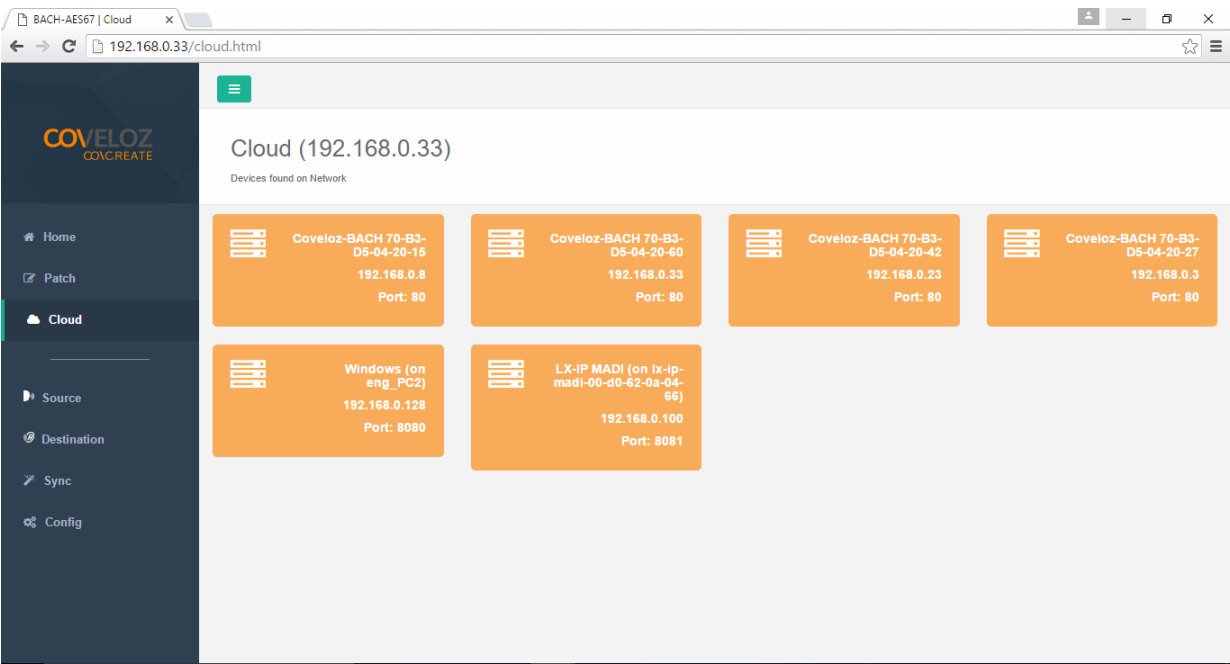
Controller Cloud

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

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

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

Figure C-3: BACH Controller Cloud Page



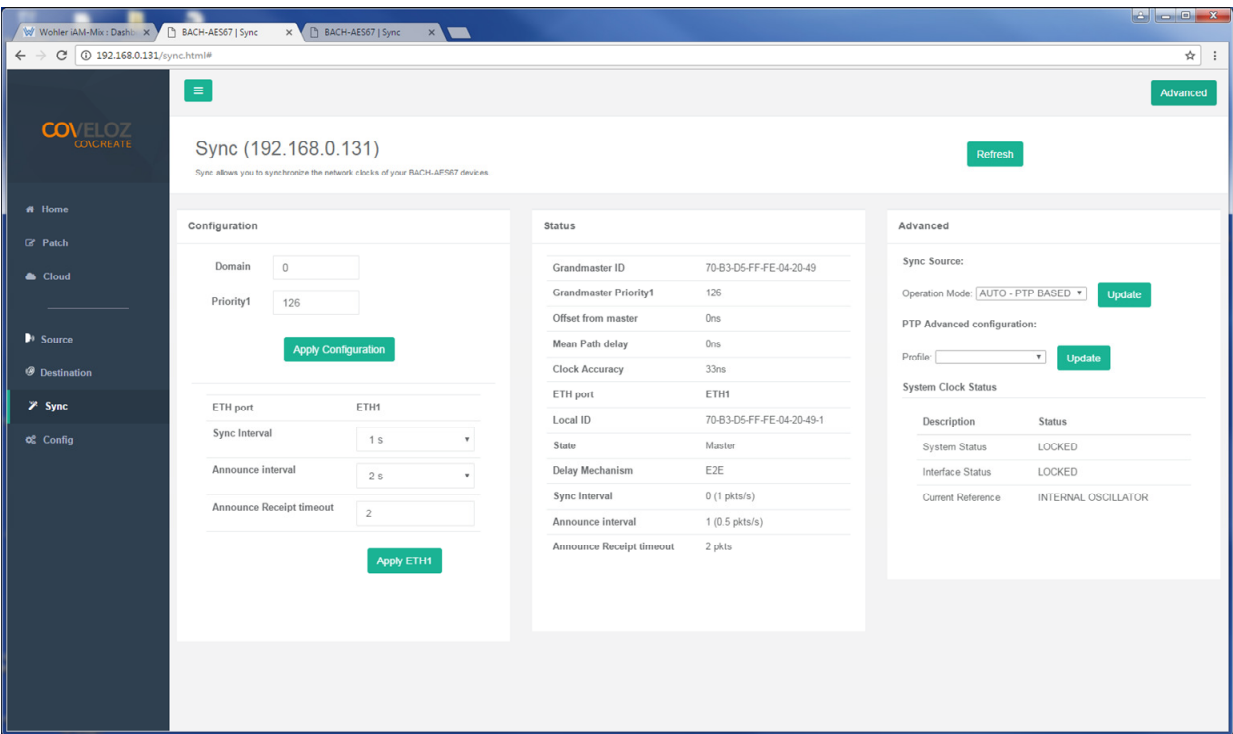
Sync

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

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

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

Figure C-4: BACH Controller Sync Page



Source Streams

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

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

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

Figure C-5: BACH Controller Source Stream

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

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

Stream Destinations

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

Note: The Destinations must be set to ON.

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

Table C-1: Channel Assignments

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

Figure C-6: BACH Controller Stream Destinations

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

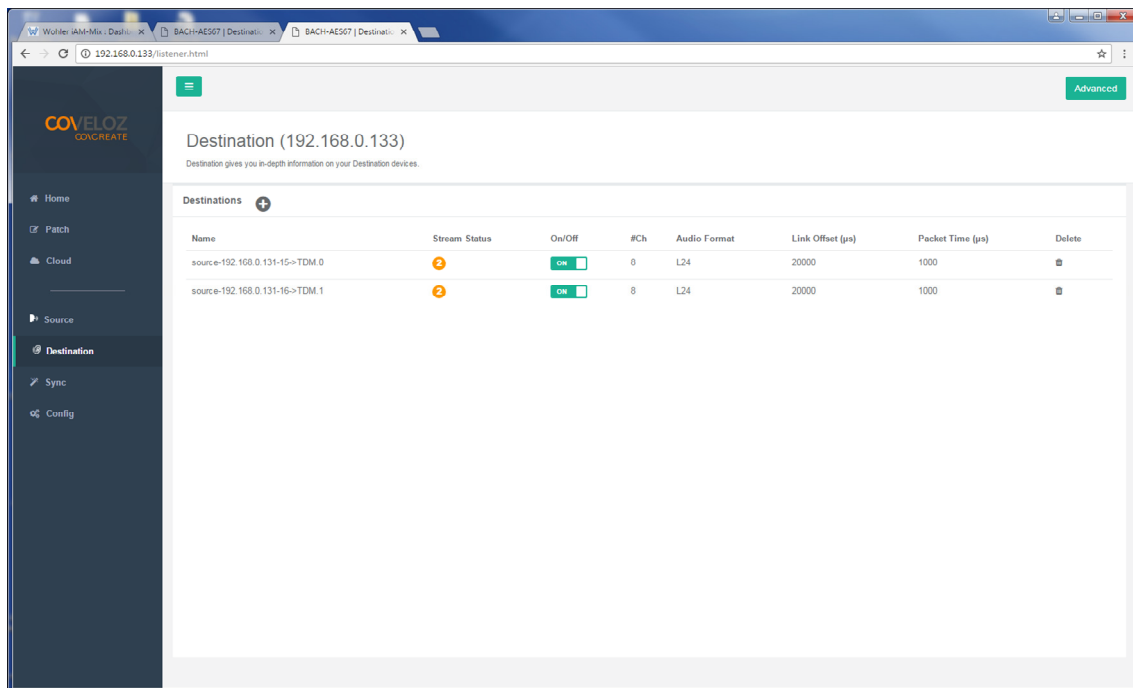
Name	Stream Status	On/Off	#Ch	Audio Format	Link Offset (µs)	Packet Time (µs)	Delete
source-192.168.0.3-00->TDM.0	●	<input checked="" type="checkbox"/>	8	L24	20000	1000	

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

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

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

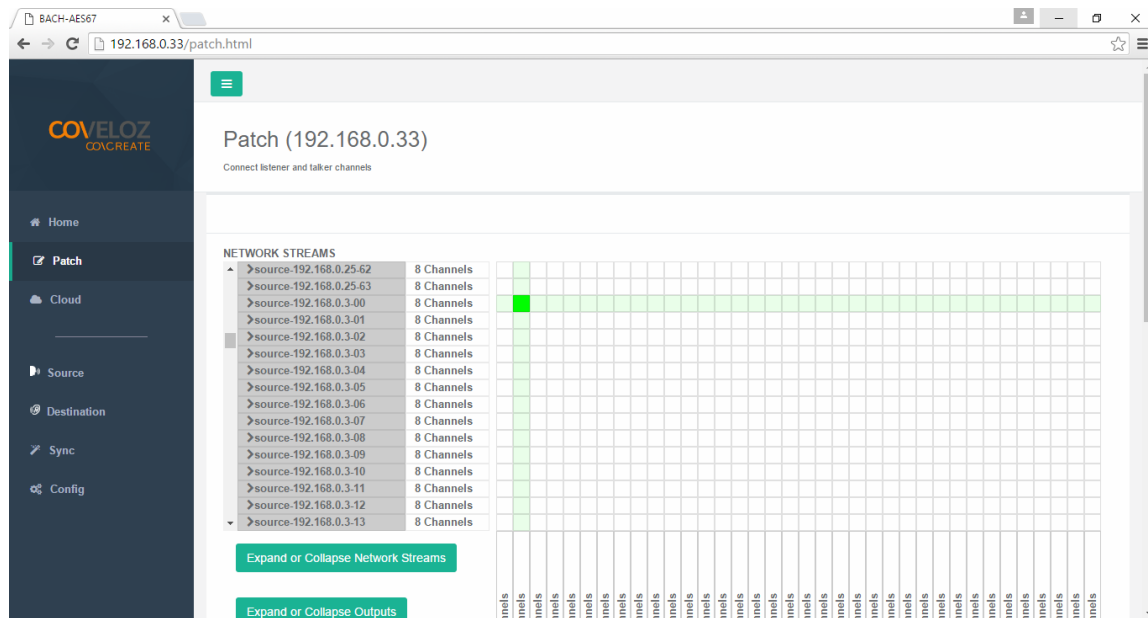
Figure C-7: Deleting Stream Destinations



Patch Panel

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

Figure C–8: BACH Controller Patch Panel



Troubleshooting

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

Table C-2: Troubleshooting

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

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

Ravenna Firmware Upgrades

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

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

APPENDIX D: Ravenna (ZMAN) Setup

Introduction

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

iAM-VIDEO channel source selections are made by choosing **Input Type 'AoIP'** in the [Configuration-Configure Presets](#) page regardless of which AoIP option is installed.

Note: In addition to the iAM-VIDEO configuration, the Merging ZMAN Card needs to be configured using its own configuration tool. The menus in this configuration tool are shown in this Appendix.

What is in the iAM-VIDEO for Ravenna

The AES67 enabled Merging ZMAN Card supports the following features:

RAVENNA-Compatible Talker/Listener

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

AVB Ethernet Features

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

- 1) AVB 1722 AVTP with multiple subtypes:
 - a) IEC 61883-6 MBLA
 - b) AM824, 24-bit Audio Encapsulation
 - c) Support up to 64 streams
 - d) Up to 8 channels per stream
 - e) 512+512 Channels of audio

- f) 48kHz and 96kHz sampling rates
- 2) IEEE 802.1Q/SRP
- 3) IEEE 1722.1/AVDECC control
- 4) IEEE 802.1AS/gPTP
- 5) Compatible with Apple OS X devices, such as MacBooks and MacMini computers
- 6) Media clock per the AVnu specification
- 7) Hitless stream redundancy

Configuring the AOIP Merging Option Card

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

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

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

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

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

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

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

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

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

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

Getting Started | General Settings

This tab is shown in the following figure.

Figure D-1: Getting Started | General Settings

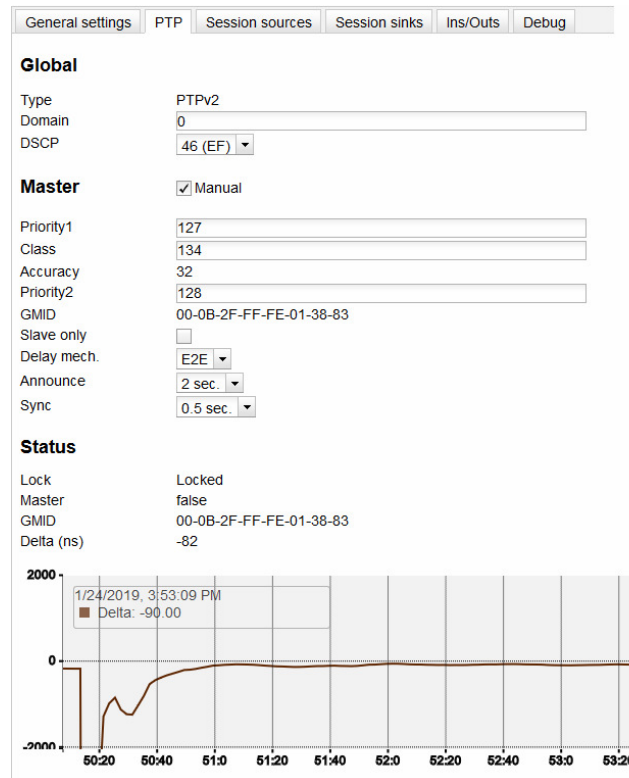
The elements of this tab are as follows:

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

Getting Started | PTP

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

Figure D-2: Getting Started | PTP



The elements of this tab are as follows:

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

3. Status:

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

Getting Started | Session Sources

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

Figure D-3: Getting Started | Session Sources

Configuration

IO: AES 1

Name: Stream, 239.1.66.25, AES 1

Advertise: ☒

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

Address: 239.1.66.25 ☐ user defined

TTL: 15

Payload Type: 98

Codec: L24

Frame size (samples): 64

DSCP: 34 (AF41)

RefCik PTP traceable: ☐

Channels: Channel count: 8, 1 - 8

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

The elements of this tab are as follows:

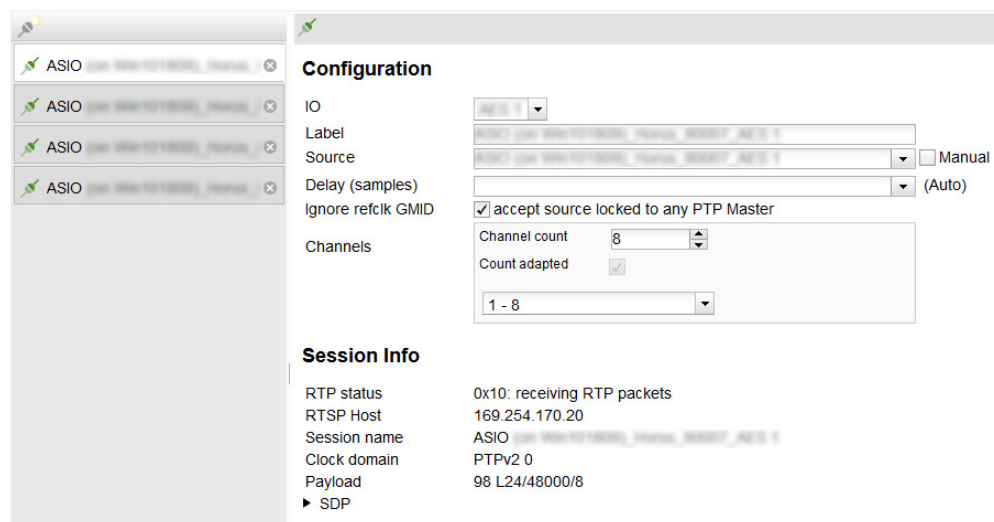
1. **Create session button:** Create a new session sources by clicking on left ICON.
2. **IO:** Select the physical input (when applicable).
3. **Name:** This is the Source name.
4. **Advertise:** Check to enable source advertising on the network.
5. **Auto-unicast - (RTSP):** Check to automatically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

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

Getting Started | Session Sinks

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

Figure D-4: Getting Started | Session Sinks



The elements of this tab are as follows:

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

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

Getting Started | Session Info

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

0x10: receiving RTP packets (OK)

0x01: wrong RTP sequence id

0x02: wrong RTP SSRC

0x04: wrong RTP payload type

0x08: wrong RTP SAC

0x20 stream has been muted

0x40: Horus implementation - an incoming stream is muted

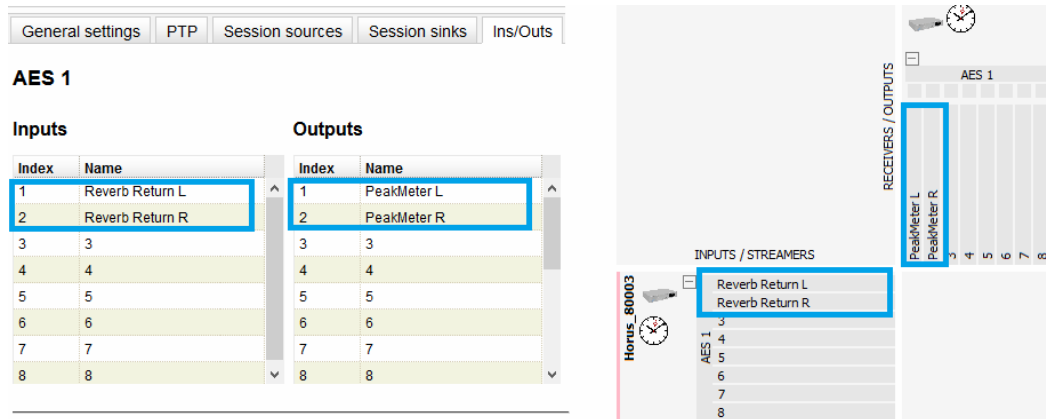
Important Note: The above error numbers are summed. For example, Stream Muted and Wrong Payload together are indicated by 0x24.

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

Getting Started | Ins/Outs

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

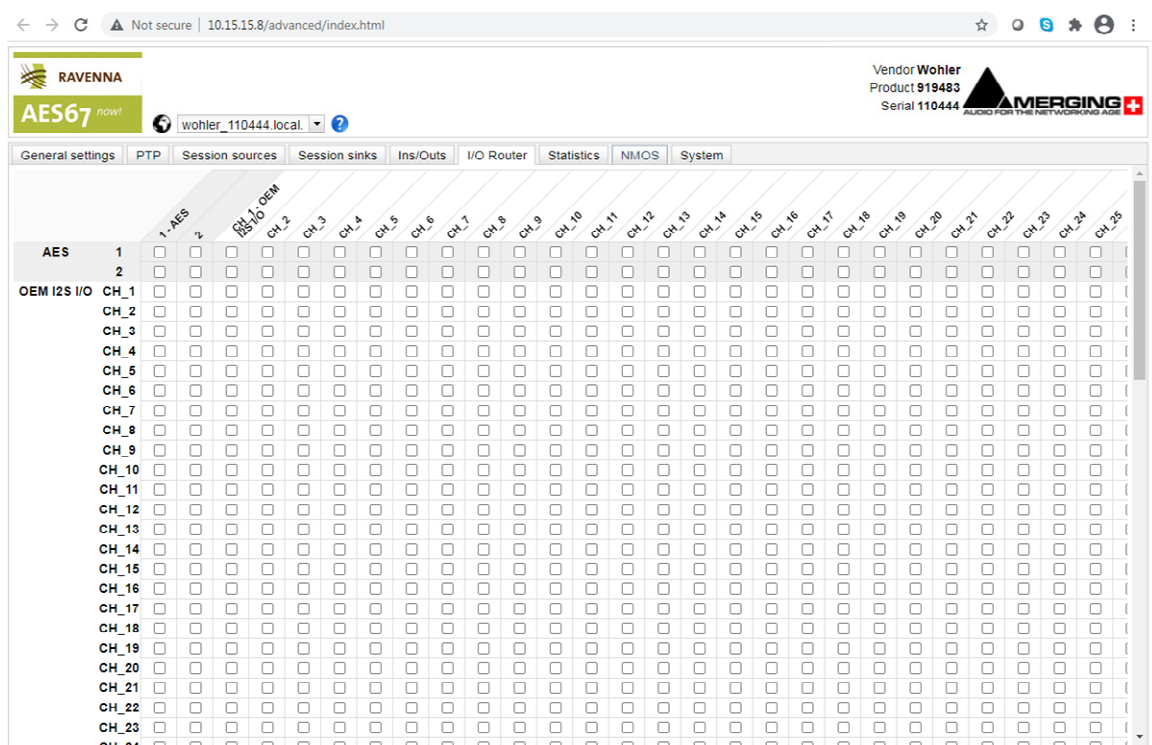
Figure D-5: Getting Started | Ins/Outs



Getting Started | I/O Router

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

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



Operation:

Connecting Remote Source to Local Sink

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

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

ZMAN Session Sinks

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

Use the following procedure:

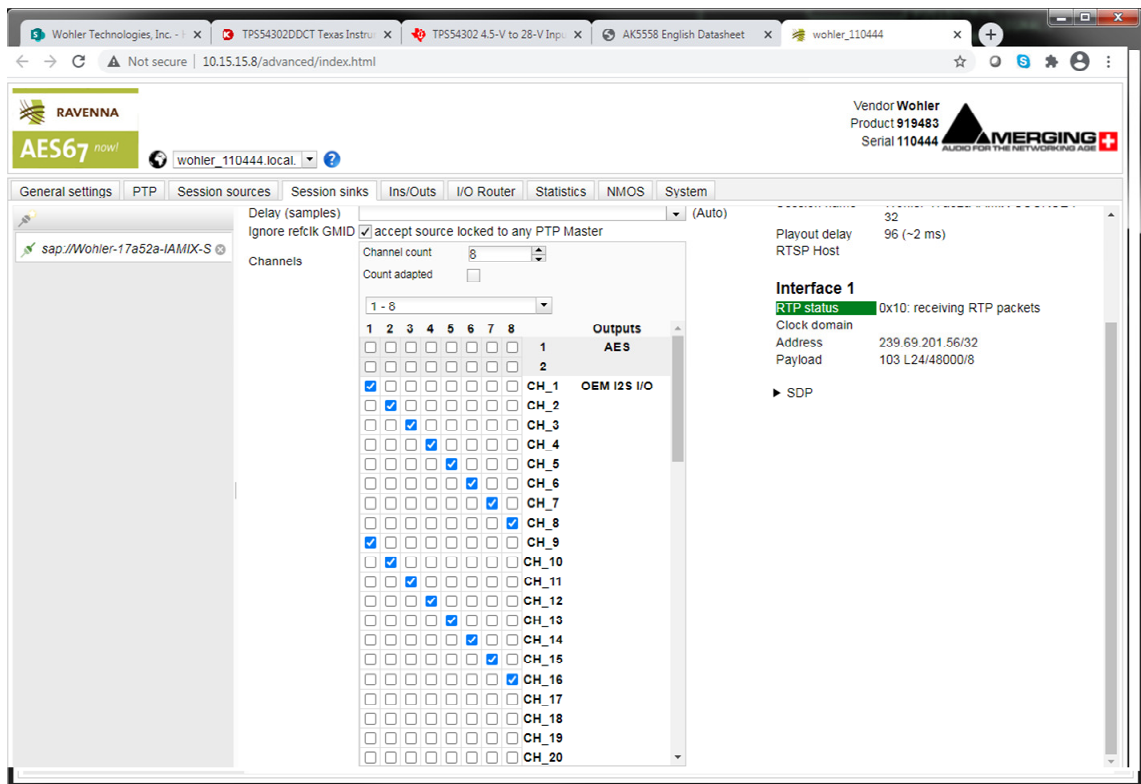
1. Select the **Session Sinks** tab and use the **Create Session Sinks** icon (in the upper left corner) to see the available source Flows.
2. Create an entry on the left panel for each source Flow to be configured.
3. Select the desired Flow and set the number of channels in the Flow. Select the desired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

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

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

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

Figure D-7: Session Sinks Tab



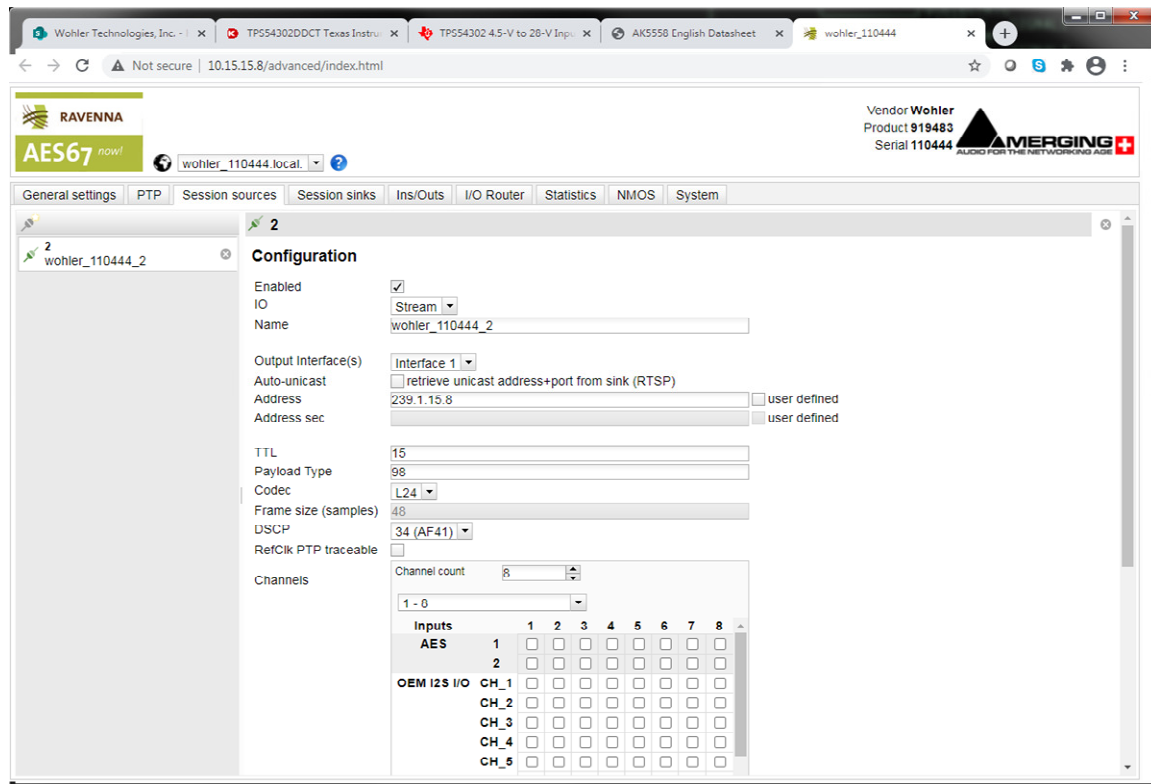
To avoid confusion if monitoring more than one Flow, especially if the various source Flows have overlapping channel numbers, use the matrix to direct Flows to higher channel ranges. For example, for monitoring 2 SDI sources (four 8 channel Flows), assign two flows to 1-8 and 9-16 and the next SDI signal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

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

ZMAN Session Sources

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

Figure D-8: Session Sources Tab



ZMAN Updating

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

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

firmware_1.1.7b43263_18Jun20.wohler

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

APPENDIX E: API Documentation

Introduction

This appendix discusses ways to use the Application Program Interface (API) to allow third party equipment to remotely access options and settings of the iAM-VIDEO. 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.

REST API iAM-Video Version 1.3

Get all available groups, sub-groups and presets:

URL: /api/cf/groups

Method: GET

URL Parameters: Not required

Response JSON Object

- string unit_name: Product Name ("iAM-Video")
- string model: Product model ("iAM_VIDEO")
- string serial_number: Product serial number
- float version: Rest API's version
- string result: List of available Groups, Sub-groups (Programs) and Presets without configuration data.

Status Codes:

- 200 OK
- 400 Bad Request – Invalid url
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

GET /api/cf/groups

Example response: {

"unit_name": "iAM-Video", "model": "iAM_VIDEO", "serial_number": "YYYYYYY", "version": 1.3,
"result": [...] }

Get all favorite presets:

URL: /api/cf/presets/favorite

Method: GET

URL Parameters: Not required

Response JSON Object

- string unit_name: Product Name ("iAM-Video")
- string model: Product model ("iAM_VIDEO")
- string serial_number: Product serial number
- float version: Rest API's version

- string result: List of favorite Presets without configuration data.

Status Codes:

- 200 OK
- 400 Bad Request – Invalid url
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

[GET /api/cf/presets/favorite](#)

Example response: {

```
"unit_name": "iAM-Video", "model": "iAM_VIDEO", "serial_number": "YYYYYYY", "version": 1.3,
"result": [...] }
```

Get current active preset:

URL: [/api/cf/presets/current](#)

Method: GET

URL Parameters: Not required

Response JSON Object:

- string unit_name: Product Name ("iAM-Video")
- string model: Product model ("iAM_VIDEO")
- string serial_number: Product serial number
- float version: Rest API's version
- string result: Preset information without configuration data:

Status Codes:

- 200 OK
- 400 Bad Request – Invalid url
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

[GET /api/cf/presets/current](#)

Example response: {

```
"unit_name": "iAM-Video", "model": "iAM_VIDEO", "version": 1.3, "serial_number": "YYYYYYY", "result":
{...}
}
```

```
{
  "unit_name": "iAM-Video",
  "model": "iAM_VIDEO",
  "serial_number": "YYYYYYY",
  "result": {
    "program": {
      "Id": 2,
      "Name": "CNN"
    },
    "group": {
      "Id": 2,
      "Name": "Group-1"
    },
    "preset": {
      "Data": null,
      "Id": 3,
      "Name": "English"
    }
  }
}
```

Preset activation / recall:

URL: /api/op/presets/<integer: Preset Id>/activate

Method: GET

URL Parameters:

- preset ID -- Preset ID (Number)

Response JSON Object

- integer status: http status code
- string message: message

Status Codes:

- 202 Accepted -- Request accepted for processing
- 400 Bad Request – Invalid URL
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

[GET /api/op/presets/4/activate](#)

Example response:

```
{
  "status":202,
  "message": "Preset 4:English is set for recall"
}
```

Get preset information:

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

Method: GET

URL Parameters:

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

Response JSON Object

- **string unit_name**: Product Name ("iiAM-Video")
- **string model**: Product model ("iAM_VIDEO")
- **string serial_number**: Product serial number
- **float version**: Rest API's version
- **string result**: Preset information with configuration data.

Status Codes:

- 200 OK
- 400 Bad Request – Invalid url
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

[GET /api/cf/presets/4](#)

Example response: {

```
"unit_name": "iAM-Video", "model": "iAM_VIDEO", "serial_number": "YYYYYYY", "version":1.3,
"result": {...} }
```

Source select:

URL: /api/op/sourceselect

Method: POST

URL Parameters: Not required.

Data:

"application/json" type of body content is required.

```
{
  "SourceType": <*String: Input source string>,
  "ChannelGroup": <Integer: Offset of 16 channels group in a 64/256 channels: Valid value 1-16>, /* Required for
MADI and AoIP only otherwise for other input sources having 16 or lesser channels it is fixed to 1 */
  "MpegDecoderSource": { /* MpegDecoderSource is required for ASI/MPEG input sources only */
    "Pid": {
      "Audio": <Integer: Audio PID>,
      "Video": <Integer: Video PID>,
      "Pcr": <Integer: PCR PID> /* Optional */
    },
    "MpegVoip": { /*MpegVoip is required for MPEG over IP only */
      "SSM":<String: Source Specific Multicast Address> /* Optional, do put empty string "" if it is not required */
      "MulticastAddress": <String: Multicast Address>,
      "MulticastPort": <Unsigned integer: Multicast port>
    }
  }
}
```

Note: ***SourceType:** Valid sources strings are

'Madi.Optical', 'Madi.Coax', 'Aes', 'Analog', 'Aoip',
'Sfp-1.Sdi.Sdi-1', 'Sfp-1.Sdi.Sdi-2', 'Sfp-2.Sdi.Sdi-1', 'Sfp-2.Sdi.Sdi-2',
'Sfp-1.Asi.Mpeg-1', 'Sfp-1.Asi.Mpeg-2', 'Sfp-2.Asi.Mpeg-1', 'Sfp-2.Asi.Mpeg-2',
'Sfp-1.Smpte2022', 'Sfp-2.Smpte2022', 'Sfp-1.Smpte2110', 'Sfp-2.Smpte2110',
'Voip.Mpeg'.

****ChannelGroup:**

For channels 1-16, channel group should be 1 and
for channels 17-32, channel group should be 2 and
for channels 33-48, channel group should be 3 so on

Body content for VoIP:

```
{
  "SourceType": "Voip.Mpeg",

  "MpegDecoderSource": {
    "Pid": {
      "Audio": <Audio PID>,
      "Video": <Video PID>,
      "Pcr": <PCR PID>, /* Optional */
    },
    "MpegVoip": {
      "SSM": "String: Source Specific Multicast Address",
      "MulticastAddress": "String: Multicast Address",
      "MulticastPort": "Unsigned integer: Multicast port"
    }
  }
}
```

Body content for ASI:

```
{
  "SourceType": <ASI Input Source>,

  "MpegDecoderSource": {
    "Pid": {
      "Audio": <Audio PID>,
```

```

    "Video": <Video PID>,
    "Pcr": <PCR PID>, /* Optional */
  }
}

```

Note: Allowed ASI input sources are

"Sfp-1.Asi.Mpeg-1", "Sfp-1.Asi.Mpeg-2",
 "Sfp-2.Asi.Mpeg-1", "Sfp-2.Asi.Mpeg-2".

Where Sfp-1 denotes SFP slot 1 and Sfp-2 for SFP slot 2

and Mpeg-1 denotes for ASI Input 1 and Mpeg-2 for ASI Input 2 (Dual Input SFPs).

Body content for SDI

```

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

```

Note: Allowed SDI input sources are

"Sfp-1.Sdi.Sdi-1", "Sfp-1.Sdi.Sdi-2",
 "Sfp-2.Sdi.Sdi-1", "Sfp-2.Sdi.Sdi-2".

Where Sfp-1 denotes SFP slot 1 and Sfp-2 for SFP slot 2

and Sdi-1 denotes for SDI Input 1 and Sdi-2 for SDI Input 2 (Dual Input SFPs).

Body content for AoIP

```

{
  "SourceType": "Aoip",
  "ChannelGroup": <Integer: Offset of 16 channels group in a 64/256 channels: Valid value 1-16>
}

```

ChannelGroup:

For channels 1-16, channel group will be 1 and

for channels 17-32, channel group should be 2 and

for channels 33-48, channel group should be 3 and so on

Body content for MADI

For MADI/Coax

```

{
  "SourceType": "Madi.Coax",
  "ChannelGroup": <Integer: Offset of 16 channels group in a 64 channels: Valid value 1-4>
}

```

For MADI/Optical

```

{
  "SourceType": "Madi.Optical",
  "ChannelGroup": <Integer: Offset of 16 channels group in a 64 channels: Valid value 1-4>
}

```

ChannelGroup:

For channels 1-16 , channel group will be 1 and

for channels 17-32, channel group should be 2 and

for channels 33-48, channel group should be 3 and so on

Body content for Analog

```

{
  "SourceType": "Analog",
}

```

Body content for AES

```

{
  "SourceType": "Aes",
}

```

Response JSON Object:

- **string unit_name:** Product Name ("iAM-Video").
- **string model:** Product model ("iAM_VIDEO").
- **string serial_number:** Product serial number.
- **float version:** Rest API's version.
- **string result:** Information applied on the input including Cluster and Meter configuration.

Status Codes:

- 200 OK

- 400 Bad Request – Invalid url
- 404 Data Not Found – Invalid HTTP method request
- 500 Server error – Internal server error

Example request:

POST /api/op/sourceselect

```
{
  "SourceType": "Voip.Mpeg",
  "MpegDecoderSource": {
    "Pid": {
      "Audio": 4352,
      "Video": 4113
    },
    "MpegVoip": {
      "SSM": "",
      "MulticastAddress": "224.4.4.5",
      "MulticastPort": 5001,
    }
  }
}
```

Example response: {"unit_name": "iAM-Video", "model": "iAM_VIDEO", "serial_number": "YYYYYYY", "version": 1.3, "result": {...}}

Setting mute/unmute clusters:

URL: /api/op/presets/<int: Preset Id>/mute-clusters

Method: PATCH

URL Parameters:

- **preset ID** -- Preset ID (Number)

Data:

“application/json” type of body content is required.

```
{
  "clusters": Array of cluster information object/s {"name":<String: name of cluster to mute/unmute>,
  "mute": <String: "Y" or "N">}
}
```

Response JSON Object

- **integer status**: http status code
- **string message**: message

Status Codes:

- 202 Accepted -- Request accepted for processing.
- 400 Bad Request – Invalid URL.
- 404 Data Not Found – Invalid HTTP method request.
- 422 Data Not Found – For missing or invalid parameters.
- 500 Server error – Internal server error.

Example request:

PATCH /api/op/presets/4/mute-clusters

data: “application/json”

```
{
  "clusters": [
    {
      "name": "Stereo 2.0 #1",
      "mute": "N"
    }
  ]
}
```



```

    },
    {
      "name": "Stereo 2.0 #2",
      "mute": "Y"
    },
    {
      "name": "Stereo 2.0 #3",
      "mute": "Y"
    },
    {
      "name": "Stereo 2.0 #4",
      "mute": "N"
    }
  ]
}

```

Example response: {
 "status":202,
 "message": "Request to mute/unmute cluster have been successfully accepted.",
 "serial_number": "YYYYYYY",
 "version":1.3,
 "result": {...}
}

Setting solo cluster:

URL: /api/op/presets/<int: Preset Id>/solo-cluster

Method: PATCH

URL Parameters:

- **preset ID** -- Preset ID (Number)

Data:

“application/json” type of body content is required.

```

{
  "cluster_name"<String: name of cluster to set>
}

```

Response JSON Object

- **integer status**: http status code
- **string message**: message

Status Codes:

- 202 Accepted -- Request accepted for processing.
- 400 Bad Request – Invalid URL.
- 404 Data Not Found – Invalid HTTP method request.
- 422 Data Not Found – For missing or invalid parameters.
- 500 Server error – Internal server error.

Example request:

PATCH /api/op/presets/<int: Preset Id>/solo-clusters

data: “application/json”

```

{
  "cluster_name": "Stereo 2.0 #4"
}

```

Example response:

```

{
  "status":202,
  "message": "Request to apply Solo cluster: Stereo 2.0 #4 has been successfully accepted.",
  "serial_number": "YYYYYYY",
  "version":1.3,
  "result": {...}
}

```

Setting solo meter:

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

Method: PATCH

URL Parameters: Not required.

Data:

"application/json" type of body content is required.

```
{  
  "meter_number": "<Integer: Meter Number [1-16]>  
}
```

Response JSON Object

- integer status: http status code
- string message: message

Status Codes:

- 202 Accepted -- Request accepted for processing.
- 400 Bad Request – Invalid URL.
- 404 Data Not Found – Invalid HTTP method request.
- 422 Data Not Found – For missing or invalid parameters.
- 500 Server error – Internal server error.

Example request:

PATCH /api/op/presets/solo-meter

data: "application/json"

```
{  
  "meter_number": 4  
}
```

Example response: {

"status":202,

"message": "Request to apply Solo meter: 4 has been successfully accepted..",

"serial_number": "YYYYYYY", "version":1.3, "result": {...} }

HTTP Routing Table

/api

[GET /api/cf/groups](#)

[GET /api/cf/favorite](#)

[GET /api/cf/presets/current](#)

[GET /api/op/presets/<int: Preset Id>/activate](#)

[GET /api/cf/presets/<int: preset ID>](#)

[POST /api/op/sourceselect](#)

[PATCH /api/op/presets/<int: Preset Id>/mute-clusters](#)

[PATCH /api/op/presets/<int: Preset Id>/solo-cluster](#)

[PATCH /api/op/presets/solo-meter](#)