iAM-MADI

- iAM-MADI -8
- iAM-MADI -16

1RU, 8/16 of 64-Channel, MADI Audio Monitor

User Guide

(Software Release: V1.4)

Part Number 821804, Revision A

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Introduction

Overview

The iAM-MADI units are 1RU multichannel MADI audio monitors with BNC input and output coax and optional optical fiber connections. Optical fiber connections require an optional SFP hardware module and software license. Refer to Specifications section for or contact Wohler sales for more information.

The iAM-MADI has individual channel volume controls and mute switches. Any channel in the MADI stream may be audibly monitored and mixed with the other selected channels. The IAM-MADI is small, low-cost, and simple to operate. Its setup configuration can easily be copied to other IAM-MADI units.

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

Safety

Instructions

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

Important:

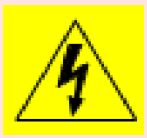
By design, this monitor will only plug into a three-prong outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

7. Protect the power cord from being walked on or pinched, particularly at plug's source 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 or outside 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:

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:

To reduce noise, the monitor does not have any fans. As a result, the heat generated by the class D power amplifiers, power supplies, and other components is vented by slots in the sides and back of the unit. Therefore, as a safety precaution, you must allow proper ventilation on these surfaces.

Sympathetic Vibration

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

Mechanical Bracing

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

Electrical Interference

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

Power

The unit comes with a standard internal power supply and connects an A/C mains power source (60W, 100 to 240 VAC, ±10%, 50/60Hz) through the IEC connector provided on the rear panel of the unit.

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

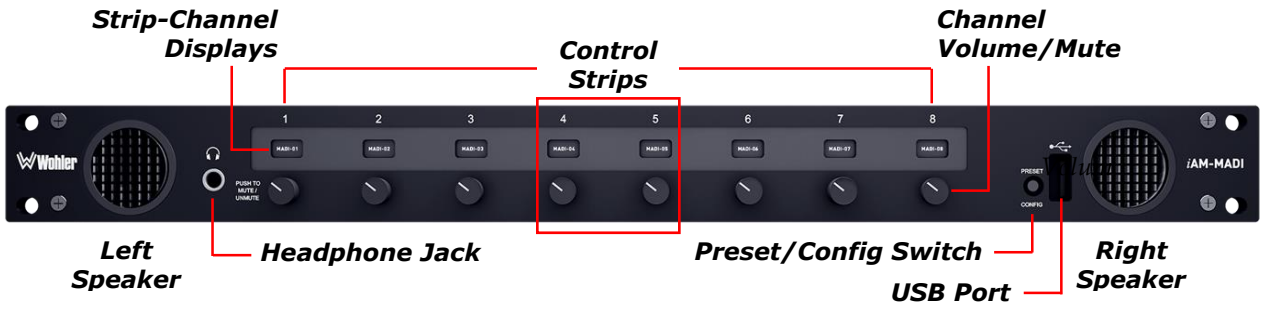
This Class A digital apparatus complies with Canadian ICES-003.

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

CHAPTER 2: Local Operation

Front Panel

Figure 2–1: Front Panel Layout



Important: The number above the channel control strips does not indicate any particular source channel number or arrangement. Strip numbers only serve as references for channel configurations at the Web GUI level. Different presets typically have different channel numbers assigned to control strips.

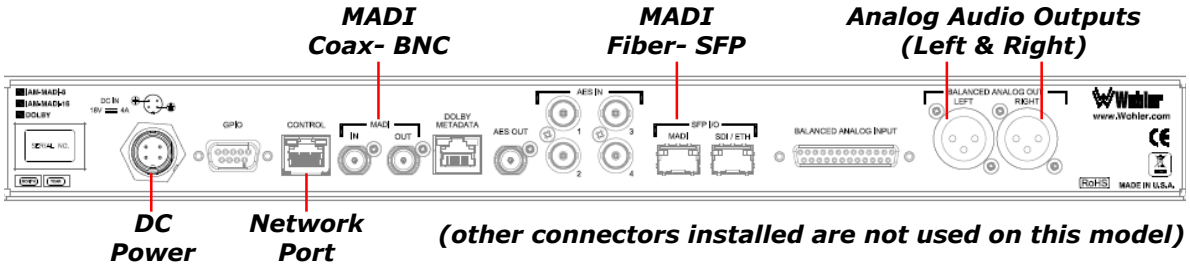
We use audio mixer terminology of "strips" when referring to generic control functions or individual items within a control (strip) group. When we say "channel" we are generally referring to a particular source channel or an individual channel within an audio group—either here at the front panel or externally as part of the audio system being monitored.

The control strip display label default is to display the MADI channel number, but may be changed in the Web GUI to be any displayable text or numbers from the **Channel Naming** page.

- **Speakers:** Audio monitoring is achieved through the use of class D amplifiers driving two (left/right) wide range speakers.
- **Headphone Jack:** A 1/4" jack for an optional headphone is provided on the front panel. Speaker audio mutes when headphones are plugged in.
- **Channel Volume/Mute:** Rotating the volume knob adjusts the individual level of each corresponding channel. Pressing the knob mutes or unmutes channel.
- **Preset / Config Switch:** Pressing this switch activates a menu for preset selection and configuration status information.
- **USB Port:** This USB 2.0 Type A connector allows you to use a flash drive (not supplied) to perform software updates and copy system configurations to another IAM-MADI or to a PC.

Rear Panel

Figure 2-2: Rear Panel Layout



- **DC Power:** The IAM-MADI uses an external AC to 18V DC power adapter. The adapter's AC inlet is a standard IEC receptacle for 100 to 240 VAC ±10%, 50/60 Hz power connection. Four regional AC power cords, supplied per 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 not perform properly. Wohler Technologies cannot accept any responsibility for the outcome in such cases.

- **MADI Inputs:** (1 Coax, 1 Optical) These two connectors accept 64-channel MADI input signals.

. **MADI Outputs:** (1 Coax, 1 Optical) These two connectors output 64-channel MADI output signals, reclocked from the selected MADI source. This allows conversion from coax to fiber or from fiber to coax cable types.

- **Network Port:** The Ethernet network port can connect to either a LAN or to a PC to let you customize the IAM-MADI configuration. It will also allow you to copy system configurations from one IAM-MADI to another. Lastly, it is used to manage IAM-MADI software and firmware updates.

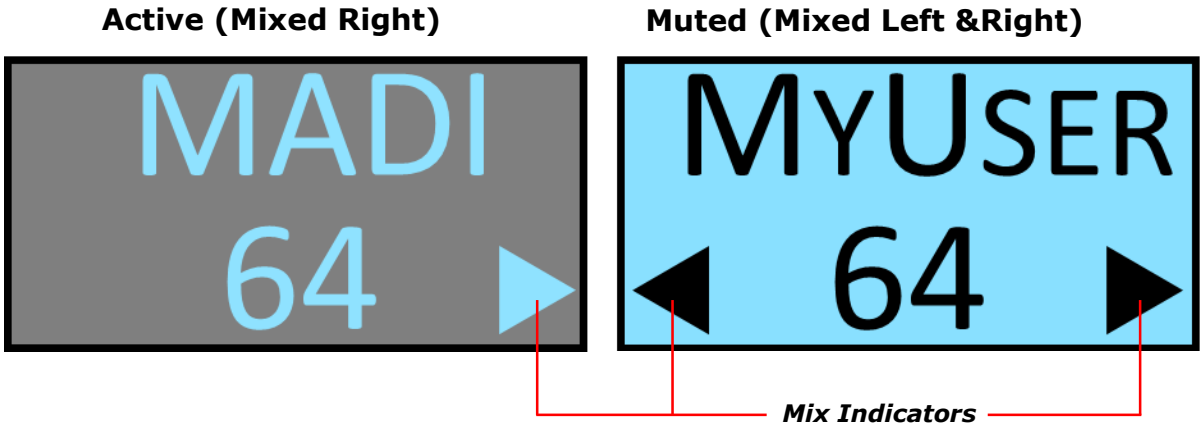
- **Analog Outputs:** These male XLR connectors provide two balanced analog outputs: Left and Right. The source of these signals is the mix of audio as monitored by the internal speakers.

Channel Displays

Display information for each channel strip is shown in Figure 1-3 below.

The OLED display intensity will dim after one hour of inactivity to prolong display life. Pressing any knob's switch will restore normal brightness levels without affecting the monitor mix.

Figure 2-3: Strip-Channel Display



- **Mix Indicators:** These icons identify how the channel is set to mix audio to the speakers, headphones and line outputs.

  ◀ A left-pointing triangle indicates audio mixed to the left.

  ▶ A right-pointing triangle indicates audio mixed to the right.

  - A channel can be mixed to both left and right outputs. This is also known as a dual-mono mix in normally stereo applications, or phantom center mix in surround sound terms .

- **Strip Labels**: Two lines of text can be used to identify the audio source by name, channel number, or other information. Fewer characters will fit on the lower line between the icons, so it may only display four characters of full width.

  - The default labels are as shown in the first example above, but any text or number characters can be entered.

  - Six capital letters will typically fit on each line. Since text character widths vary, the exact number of characters displayed can vary, and the right edge may get cut off.

  - Lower case text characters are shown as smaller capital letters (SMALL CAPS) to allow more characters to be displayed.

- **Mute**: When a channel is muted, the entire display is inverted for reverse video, with labels and icons becoming black.

Preset / Config Menu

Operators can select another preset or check machine status by pressing the red PRESET / CONFIG button on the front panel. It is recessed to prevent accidental activation. If accidentally pressed, pressing "EXIT MENU" or any button below a blank display will exit the menu and return to normal monitor operation unchanged.

Figure 2-4 Preset / Config Menu

Preset Selection

Pressing control strip (knob) button #1, directly below "**SET PRESET**" displayed will display all the available presets by name. The current preset will be highlighted in reverse video, press it to exit the menu with no changes. Press any other button to select that preset and exit the menu.

View Current Version

Pressing "**VERSION AND SN**" (#2) shows the software rev and serial number.

View Current IP Address

Pressing "**SHOW IP ADDR**" (#3) displays the IP Address currently set.

Reset IP Address

Pressing "**RESET IP ADDR**" (#4) changes the unit's network address to factory default (172.27.2.2). A confirmation message will ask if you are sure. Answer "**NO**" if not sure.

Transfer Presets via USB

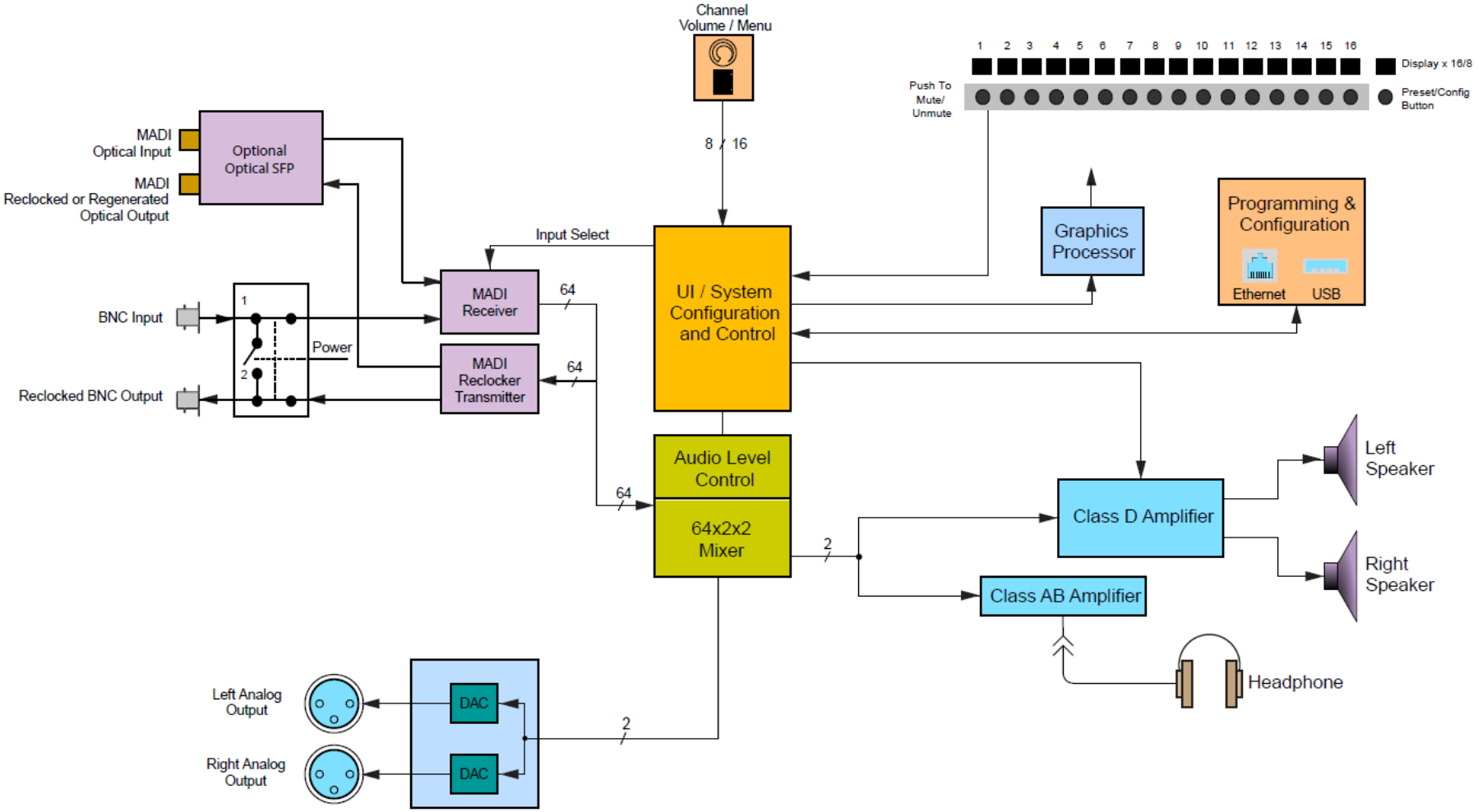
Pressing "**G**ET **USB C**ONFIGS" (#5) begins the process of loading preset configurations from the front panel USB port.

CHAPTER 3: Specifications

Table 3–1: Specifications

Specification	Values/Domains
Power requirements	100 V to 240 V AC ± 10%, 50/60Hz
Power consumption	30 Watts
Dimensions; inches H x W x D (mm)	1.75" x 19" x 6" (44mm x 483mm x 52mm)
Weight	5.5 lbs. (2.5 kg)
Space Required	1 RU in a standard 19" rack
Supplied Accessories	Power Adapter, AC Power Cord
Display Type	Passive Matrix OLED
Number of Displays	8 / 16 (special order)
Screen Size	2.4" diagonal per screen
Screen Resolution	64 x 32
Sample Rate	48kHz
De-Multiplexing	8 or 16 channels from a 64-channel AES10 MADI stream
MADI Inputs / Outputs	▪ 1 MADI BNC, Standard I/O Optional – SFP Transceiver: • Multi-Mode Fiber: 1 MADI Optical SC-Connector, 1300nm or • Single-Mode Fiber: 1 MADI Optical SC Connector, 1310nm
Cable/Fiber Length (max)	COAX (such as Belden 1694A): 300 m
	Multi-mode fiber: 2 km
	Single-mode fiber: 10 km
Analog Output Frequency	40 Hz to 20 kHz (± 1dB)
Analog Output Distortion	<0.01% THD+N
Analog Output Dynamic	> 100 dB
Analog Output Ref. Level	-20 dBFS = +4 ± 1.0 dBu
Peak Acoustic Output	90dBA SPL (@ 2 feet)
Speaker Power Rating	4 Watts RMS, 8 Watts peak (each side)
Acoustic Freq. Response	150 Hz to 16 kHz (± 5 dB)

Figure 3–1: IAM-MADI Block Diagram



CHAPTER 4: Using the iAM-MADI Web GUI

The IAM-MADI Web GUI allows you to customize the monitor's configuration to perfectly suit your needs. The default presets configure all 64 MADI channels in consecutive fashion. The following setup steps are not necessary to use the iAM-MADI in the default configuration.

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-MADI Web GUI.

Tablets would need to be linked to a copper LAN through a Wi-Fi adapter if the tablet has no network connector.

Phones are not recommended due to their smaller screen size that will require more scrolling.

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

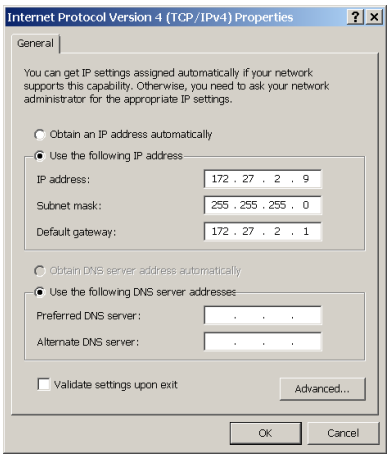
First Time- IP Assignments

The iAM-MADI operates with a static (fixed) IPv4 address. The address will be **172.27.2.2** when received from the factory or when reset at the front panel. The iAM-MADI address will need to be changed to some other address to be compatible with the customer's network address assignments. Go to iAM-MADI **Network Setup**, immediately after this host setup is done, to change the unit's address.

The surest way to do this, free of possible network conflicts, is to establish a direct peer-to-peer connection between the setup computer and the iAM-MADI. A 10/100/1000 MHz Ethernet switch may be used in between, but is not required.

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

Figure 4–1 Host IP Settings

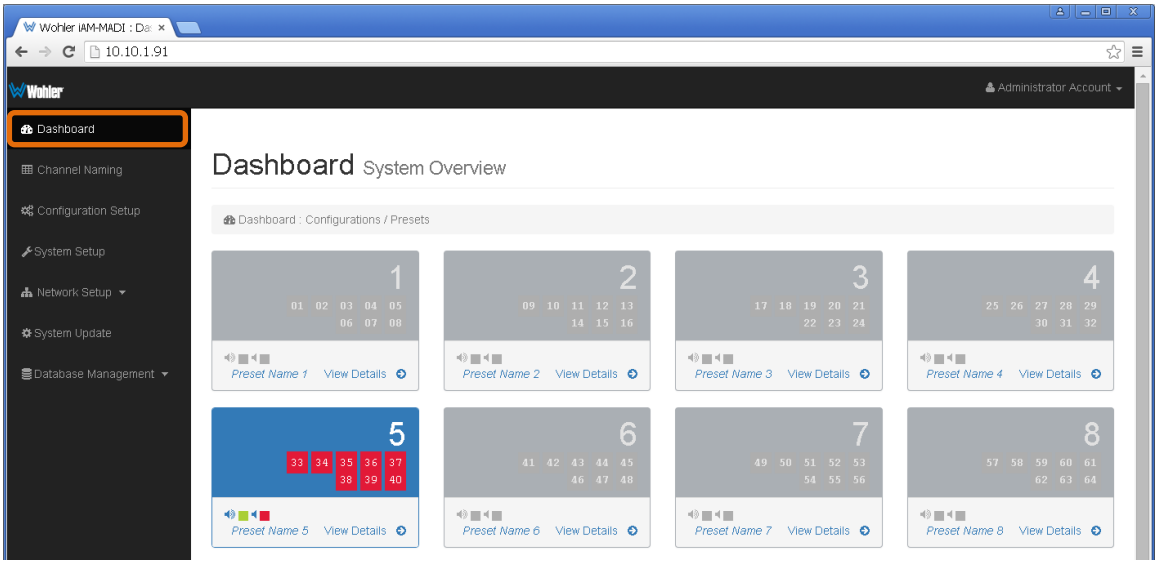


Close the control panel and reboot the host computer after making an IP address change like this to be sure the change takes effect. Either reconnect to the installed network or continue with this direct connection to access the iAM-MADI Web GUI.

Make the corresponding address, mask and gateway changes in the iAM-MADI **Network Setup** page.

Dashboard

Throughout the Web GUI, other pages are one click away on the left side. System Overview on this Dashboard page shows all preset configurations at a glance.



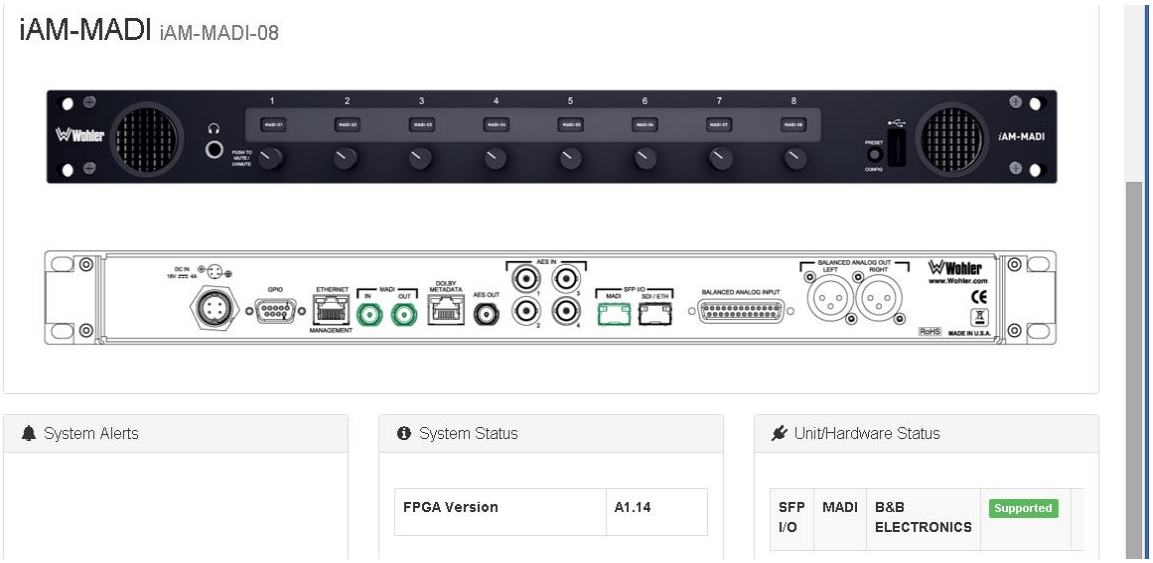
The currently selected preset for local operation is shown full color. Other loaded, but not selected presets have gray backgrounds.

The colored boxes around channel numbers indicate green for active, or red for muted states.

The preset name can be changed on this screen. Click where it says ‘Preset Name n’ in this example to open a text entry box where the name can be changed.

Clicking “View Details’ or any inactive part of the preset box will open the Configuration page for editing that preset.

The lower part of the page shows front and rear panels for setup reference, plus alerts, status and license information.



Sign In

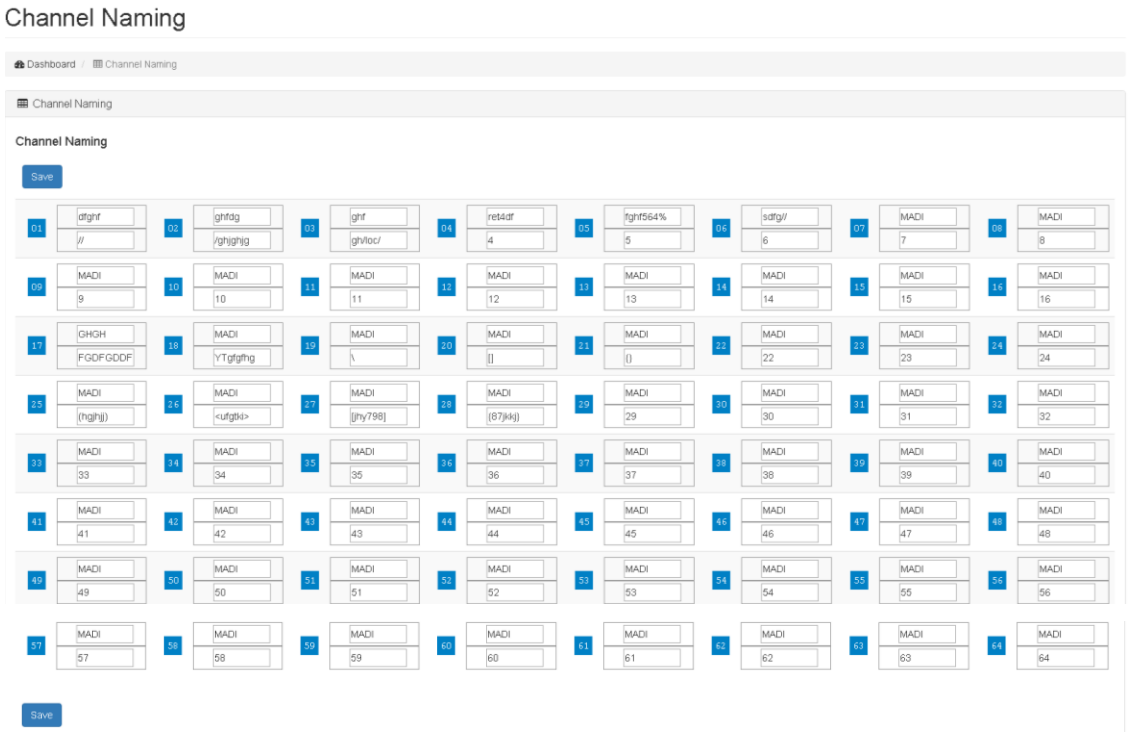
Only authorized users should be allowed to make preset and network changes. Anybody can view status of iAM-MADI units on the network, but logging in with a password is required to make any changes. When logging in is required to make a change, the following page will appear.

The factory default Email Address (user name) and Password will appear the first time this page is accessed, and will continue to appear until they are changed.

The setup user will remain logged in until the browser window is closed or the session is disconnected physically or virtually.

Channel Naming

Each channel can be preassigned a name in the configuration database. These names will be automatically assigned to the channel-strip label fields in a preset when selected.

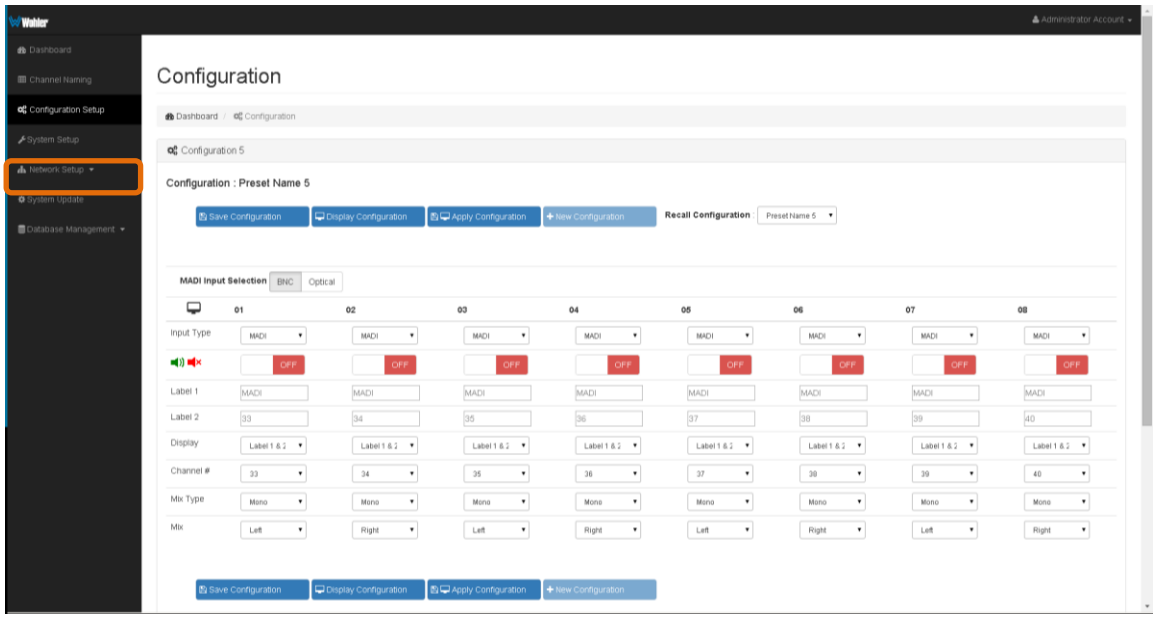


Names (Labels) can be changed in the Configuration page for a specific preset without affecting the names assigned here.

Configuration Setup

Factory default presets simply have Channels 1-8 in Preset 1, 9-16 in Preset 2, etc. Default mixes are left for odd-numbered channels and right for even-numbered channels. If that simple arrangement works for your application, there is no need to change any of your presets, since all channels can be monitored by selecting the preset for the 8-channel bank desired.

The Configuration page is where the setup can be made in virtually any arrangement. Clicking through from the Dashboard screen will present that preset for configuration. Select other presets for editing by clicking on the **Recall Configuration** box.



The **MADI Input Selection** box switches between BNC coax and Optical fiber input jacks. The optical input must be enabled by a software license for it to appear as a choice. An SFP module must be installed for it to work. The iAM-MADI loops the incoming stream to both coax and fiber outputs (if installed).

Input Type allows other sources to be selected on other models sharing similar hardware and software. Only the **MADI** input is available on the iAM-MADI model.

The Speaker **ON** / **OFF** switch allows channels to be set as active or muted when the preset is loaded by the operator. After that, mute/unmute is controlled by the front panel operator.

Display- (control of each channel strip's scribble strips' contents)

- **Label 1 or Label 2** selects which **Channel Name** will be displayed on the upper line of the channel strip. The lower display line will show two characters of the input type and the input channel number, as in "MA-64".
- **Label 1 & 2** will show both labels from the **Channel Naming** page for that channel strip, Label 1 above Label 2.

Channel# is where the source channel for each strip location is set.

Mix Type: Use **Mono** for normal active channel assignments. Use **None** to leave an unneeded strip always muted, even though the channel assignment is retained.

Mix is where you can set Left, Right or Left & Right mix assignments for the input source audio to be heard on front panel speakers and headphones, and how the rear panel outputs are mixed.

Save Configuration stores the preset in the database.

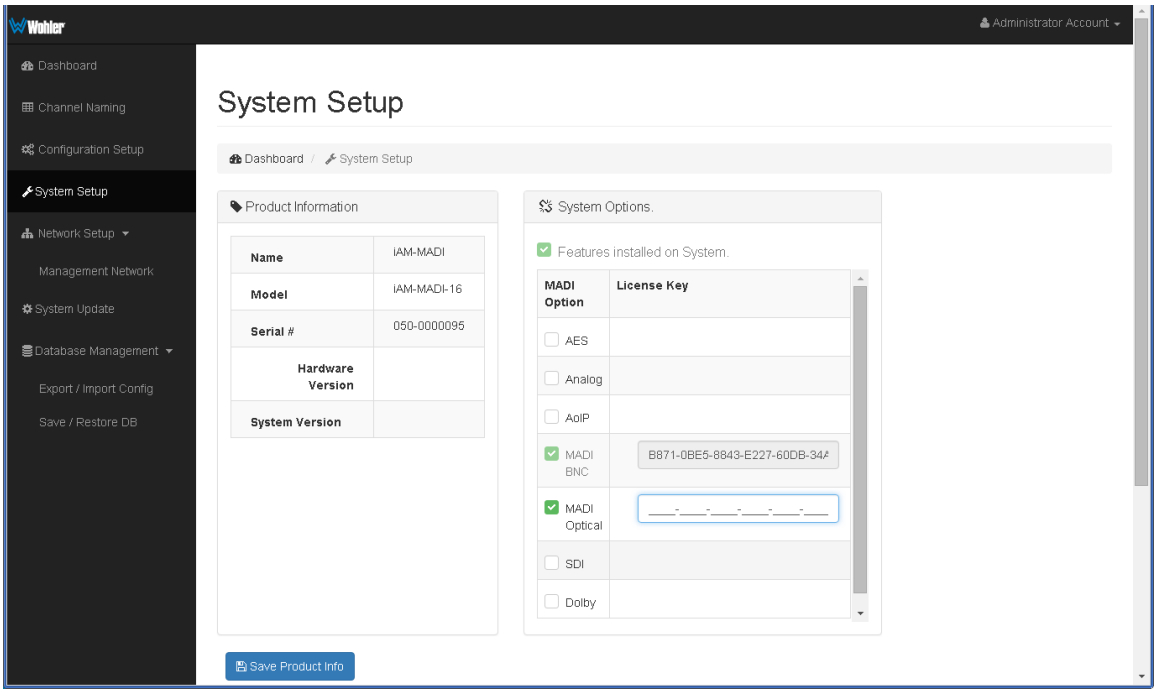
Display Configuration loads the current (edited) preset into the iAM-MADI for test purposes only. It will not be stored, and cannot be recalled later

Apply Configuration loads the preset to the database and loads it as the active preset.

New Configuration creates a new preset in addition to the existing ones.

System Setup

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



The example above shows an iAM-MADI-16 with BNC I/O installed, and its license key displayed for reference.

Below that, the MADI Optical option has been clicked on (to check it) and is awaiting entry of the license key provided by Wohler Customer Service. Once entered, saved and accepted, the new license is available for use.

Network Setup

This is the place to make network **IP Address** changes to the iAM-MADI unit.

IP Address: Enter the network address. Leading zeroes are not required.

IP Mask should usually be 255.255.255.0 unless your network can work across multiple subnets.

Gateway Address should usually be the same domain and subnet address numbers, with the last octet being .1.

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.

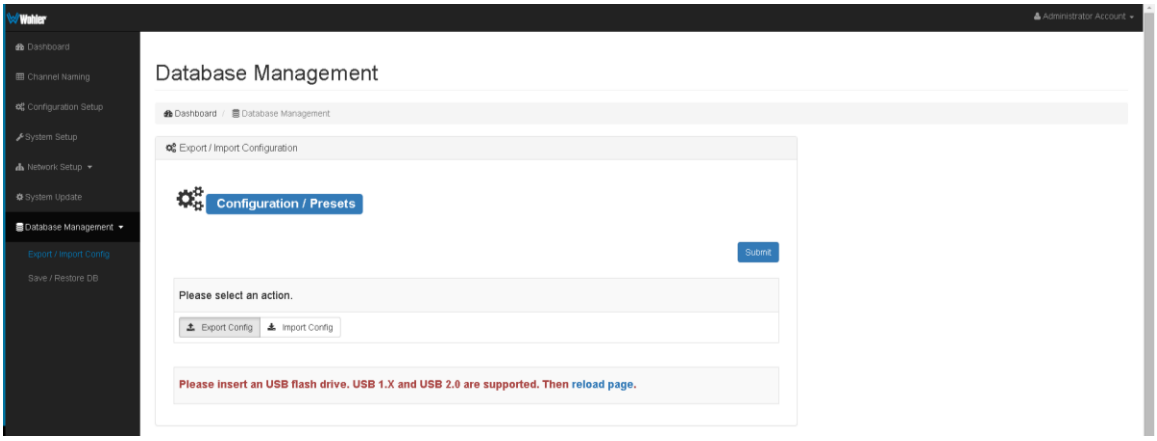
Save applies the changes internally before rebooting the unit.

Database Management

Export Configuration

Use this page to offload an iAM-MADI's preset database to a USB flash drive, inserted in the front panel port.

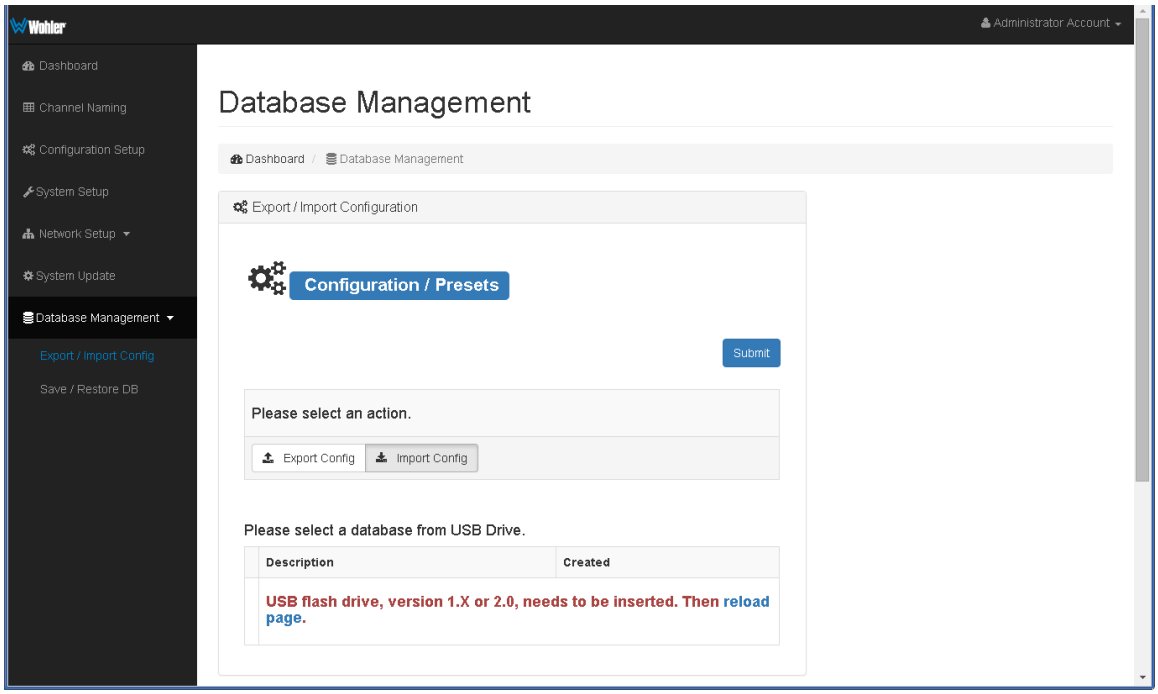
Follow instructions on the bottom of the page to complete the procedure.



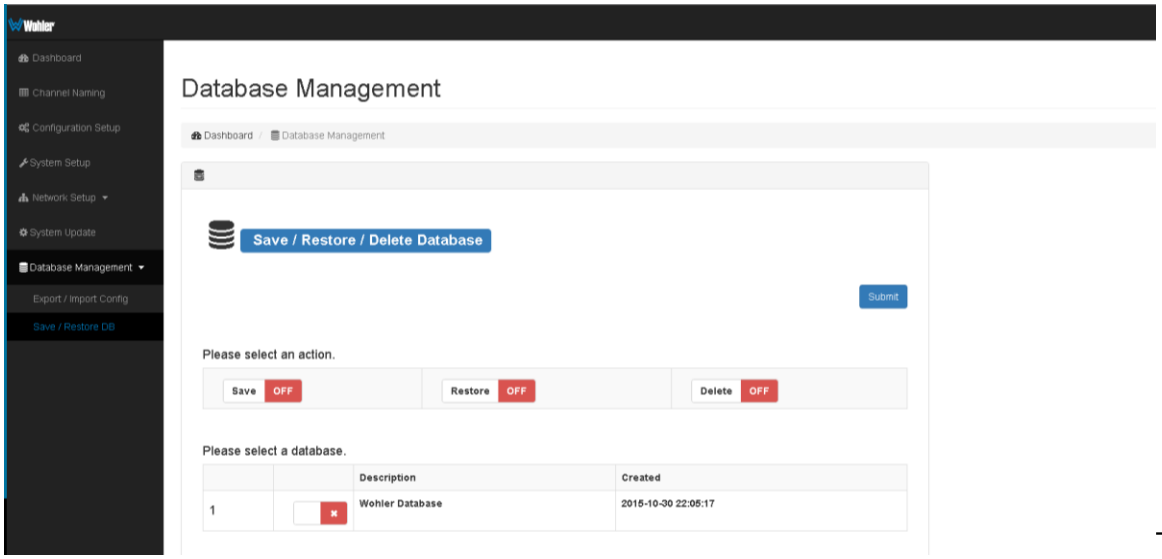
Import Configuration

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

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



Save / Restore Database (DB)



The iAM-MADI can internally store up to fifteen (15) configuration sets of presets. This page is used to manage the databases within an iAM-MADI unit.

Refer to the list of databases at page bottom. There will only be one database until a new one is **Save**d.

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

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

APPENDIX A:
Software Upgrades

Introduction

This chapter describes how to download a software upgrade file to your PC, transfer it to a USB flash drive and install into your iAM-MADI.

Download the Software

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

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

Important:

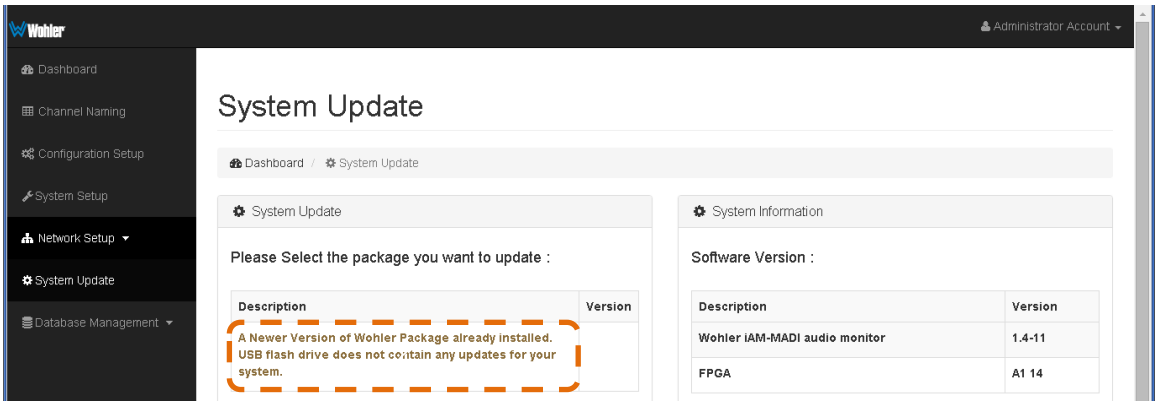
The Web GUI is required to perform the software upgrade procedure. Refer to Chapter 4 First Time IP Assignments if not already set up for your network.

Installing the Software

Insert USB drive into iAM-MADI front panel jack.

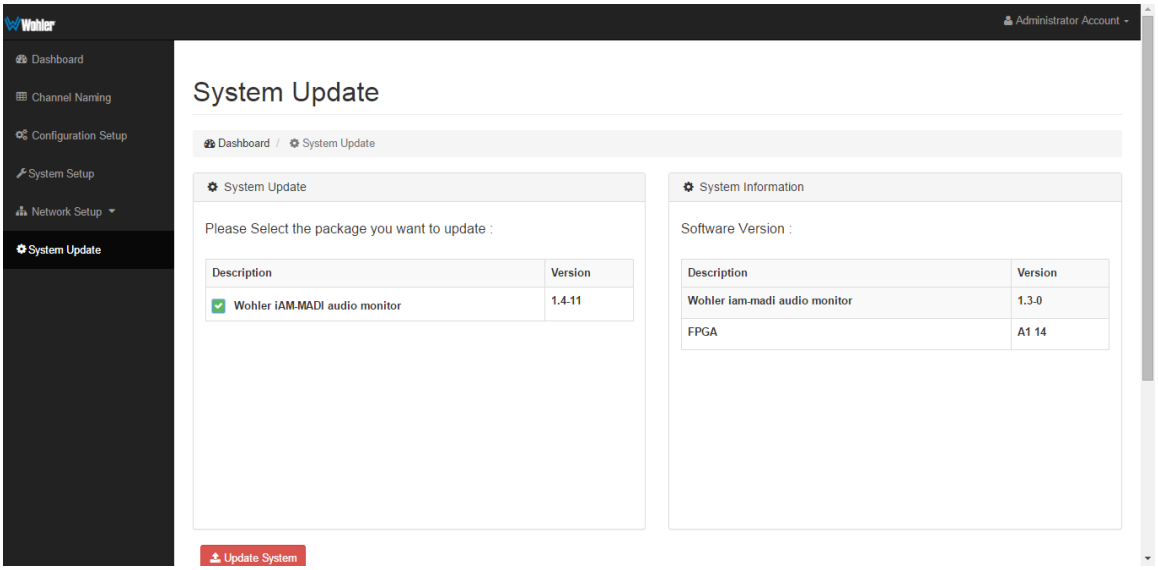
Click on System Update in the web browser GUI.

If the "**Newer Version …**" message below appears, the system has the latest software in it, and no further action is required or possible.



Otherwise, select the file to be installed by clicking the check box, making it green, as shown below.

Then click **Update System**.



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

Important:

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

The iAM-MADI will display a message when the upgrade is complete and reboot.

Remove the USB drive any time after upgrade is complete.

Either **Refresh** the browser by clicking on the Wohler logo, or close and reopen the browser for normal operation of the Web GUI after the iAM-MADI reboots.