HANDBOOK

Multi-Channel Audio Interfaces Using AES67 AoIP - AVN Portals

AVN-PA8/T/D 8 Stereo Analogue Line Inputs & Outputs, AES67 Portal

AVN-PD8/T/D 8 Stereo Digital Line Inputs & Outputs, AES67 Portal

AVN-PM8/T/D 8 Mic/Line Inputs, 8 Stereo Line Outputs, AES67 Portal



Manufacturers of Audio Products for AV,
Installed Sound, Broadcast Radio & Broadcast TV

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This handbook is for use with the following product:
AVN-PA8/T/D 8 Stereo Analogue Line Inputs & Outputs, AES67 Portal.
AVN-PD8/T/D 8 Stereo Digital Line Inputs & Outputs, AES67 Portal.
AVN-PM8/T/D 8 Mic/Line Inputs, 8 Stereo Line Outputs, AES67 Portal.
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Register Online for an Extended 2 Year Warranty

As standard, Sonifex products are supplied with a 1 year back to base warranty.

If you register the product online, you can increase your product warranty to 2 years and we can also keep you informed of any product design improvements or modifications.

Product: _____

Serial No: _____

To register your product, please go online to www.sonifex.co.uk/register

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Product Warranty - 2 Year Extended

As standard, Sonifex products are supplied with a 1 year back to base warranty. In order to register the date of purchase and so that we can keep you informed of any product design improvements or modifications, it is important to complete the warranty registration online. Additionally, if you register the product on the Sonifex website, you can increase your product warranty to 2 years. Go to the Sonifex website at: www.sonifex.co.uk/register to apply for your 2 year warranty.

Sonifex Warranty & Liability Terms & Conditions

1. Definitions

'the Company' means Sonifex Ltd and where relevant includes companies within the same group of companies as Sonifex Limited.

'the Goods' means the goods or any part thereof supplied by the Company and where relevant includes: work carried out by the Company on items supplied by the Purchaser; services supplied by the Company; and software supplied by the Company.

'the Purchaser' means the person or organisation who buys or has agreed to buy the Goods.

'the Price' means the Price of the Goods and any other charges incurred by the Company in the supply of the Goods.

'the Warranty Term' is the length of the product warranty which is usually 12 months from the date of despatch; except when the product has been registered at the Sonifex website when the Warranty Term is 24 months from the date of despatch.

'the Contract' means the quotation, these Conditions of Sale and any other document incorporated in a contract between the Company and the Purchaser.

This is the entire Contract between the parties relating to the subject matter hereof and may not be changed or terminated except in writing in accordance with the provisions of this Contract. A reference to the consent, acknowledgement, authority or agreement of the Company means in writing and only by a director of the Company.

2. Warranty

a. The Company agrees to repair or (at its discretion) replace Goods which are found to be defective (fair wear and tear excepted) and which are returned to the Company within the Warranty Term provided that each of the following are satisfied:

   i. notification of any defect is given to the Company immediately upon its becoming apparent to the Purchaser;

   ii. the Goods have only been operated under normal operating conditions and have only been subject to normal use (and in particular the Goods must have been correctly connected and must not have been subject to high voltage or to ionising radiation and must not have been used contrary to the Company's technical recommendations);

   iii. the Goods are returned to the Company's premises at the Purchaser's expense;

   iv. any Goods or parts of Goods replaced shall become the property of the Company;

   v. no work whatsoever (other than normal and proper maintenance) has been carried out to the Goods or any part of the Goods without the Company's prior written consent;

   vi. the defect has not arisen from a design made, furnished or specified by the Purchaser;

vii. the Goods have been assembled or incorporated into other goods only in accordance with any instructions issued by the Company;

viii. the defect has not arisen from a design modified by the Purchaser;

ix. the defect has not arisen from an item manufactured by a person other than the Company. In respect of any item manufactured by a person other than the Company, the Purchaser shall only be entitled to the benefit of any warranty or guarantee provided by such manufacturer to the Company.

b. In respect of computer software supplied by the Company the Company does not warrant that the use of the software will be uninterrupted or error free.

c. The Company accepts liability:

(i) for death or personal injury to the extent that it results from the negligence of the Company, its employees (whilst in the course of their employment) or its agents (in the course of the agency);

(ii) for any breach by the Company of any statutory undertaking as to title, quiet possession and freedom from encumbrance.

d. Subject to conditions (a) and (c) from the time of despatch of the Goods from the Company's premises the Purchaser shall be responsible for any defect in the Goods or loss, damage, nuisance or interference whatsoever consequential economic or otherwise or wastage of material resulting from or caused by or to the Goods. In particular the Company shall not be liable for any loss of profits or other economic losses. The Company accordingly excludes all liability for the same.

e. At the request and expense of the Purchaser the Company will test the Goods to ascertain performance levels and provide a report of the results of that test. The report will be accurate at the time of the test, to the best of the belief and knowledge of the Company, and the Company accepts no liability in respect of its accuracy beyond that set out in Condition (a).

f. Subject to Condition (e) no representation, condition, warranty or other term, express or implied (by statute or otherwise) is given by the Company that the Goods are of any particular quality or standard or will enable the Purchaser to attain any particular performance or result, or will be suitable for any particular purpose or use under specific conditions or will provide any particular capacity, notwithstanding that the requirement for such performance, result or capacity or that such particular purpose or conditions may have been known (or ought to have been known) to the Company, its employees or agents.

g. (i) To the extent that the Company is held legally liable to the Purchaser for any single breach of contract, tort, representation or other act or default, the Company's liability for the same shall not exceed the price of the Goods.

(ii) The restriction of liability in Condition (g)(i) shall not apply to any liability accepted by the Seller in Condition (c).

h. Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Purchaser are not affected by these Conditions of Sale.

Unpacking Your Product

Each product is shipped in protective packaging and should be inspected for damage before use. If there is any transit damage take pictures of the product packaging and notify the carrier immediately with all the relevant details of the shipment. Packing materials should be kept for inspection and also for if the product needs to be returned.

The product is shipped with the following equipment so please check to ensure that you have all of the items below. If anything is missing, please contact the supplier of your equipment immediately.

Item	Quantity
Product unit	1
IEC mains lead fitted with moulded mains plug	1
Handbook	1

If you require a different power lead, please let us know when ordering the product.

Repairs & Returns

Please contact Sonifex or your supplier if you have any problems with your Sonifex product. Email technical.support@sonifex.co.uk for the repair/upgrade/returns procedure, or for support & questions regarding the product operation.

CE Conformity

The products in this manual comply with the essential requirements of the relevant European health, safety and environmental protection legislation.

The technical justification file for this product is available at Sonifex Ltd.

The declaration of conformity can be found at:
http://www.sonifex.co.uk/declarations

Safety & Installation of Mains Operated Equipment

There are no user serviceable parts inside the equipment. If you should ever need to look inside the unit, always disconnect the mains supply before removing the equipment covers. The cover is connected to earth by means of the fixing screws. It is essential to maintain this earth/ground connection to ensure a safe operating environment and provide electromagnetic shielding.

Voltage Setting Checks

Ensure that the machine operating voltage is correct for your mains power supply by checking the box in which your product was supplied. The voltage is shown on the box label. The available voltage settings are 115V, or 230V. Please note that all products are either switchable between 115V and 230V, or have a universal power supply.

Fuse Rating

The product is supplied with a single fuse in the live conducting path of the mains power input. For reasons of safety it is important that the correct rating and type of fuse is used. Incorrectly rated fuses could present a possible fire hazard, under equipment fault conditions. The active fuse is fitted on the outside rear panel of the unit.

Power Cable & Connection

An IEC power connector is supplied with the product which has a moulded plug attached.

The mains plug or IEC power connector is used as the disconnect device. The mains plug and IEC power connector shall remain readily operable to disconnect the apparatus in case of a fault or emergency.

The mains lead is automatically configured for the country that the product is being sent to, from one of:

Territory	Voltage	IEC Lead Type	Image
UK & Middle East	230V	UK 3 pin to IEC lead	
Europe	230V	European Schuko round 2 pin to IEC lead	
USA, Canada and South America	115V	3 flat pin to IEC lead	
Australia & New Zealand	230V	Australasian 3 flat pin to IEC lead	

Connect the equipment in accordance with the connection details and before applying power to the unit, check that the machine has the correct operating voltage for your mains power supply.

This apparatus is of a class I construction. It must be connected to a mains socket outlet with a protective earthing connection.

Important note: If there is an earth/ground terminal on the rear panel of the product then it must be connected to Earth.

WEEE Directive



The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed on 13 February 2003, along with the related Directive 2002/95/EC on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS). The Waste Electrical and Electronic Equipment Directive (WEEE) aims to minimise the impacts of electrical and electronic equipment on the environment during their life times and when they become waste. All products manufactured by Sonifex Ltd have the WEEE directive label placed on the case. Sonifex Ltd will be happy to give you information about local organisations that can reprocess the product when it reaches its “end of use”, or alternatively all products that have reached “end of use” can be returned to Sonifex and will be reprocessed correctly free of charge.

Atmosphere/Environment

This apparatus should be installed in an area that is not subject to excessive temperature variation (<0°C, >50°C), moisture, dust or vibration.

This apparatus shall not be exposed to dripping or splashing, and no objects filled with water, such as vases shall be placed on the apparatus.

1. Multi-Channel Audio Mix Engines Using AES67 AoIP, AVN Portals

Introduction



Fig 1-1: The AVN-Portal Front Panel

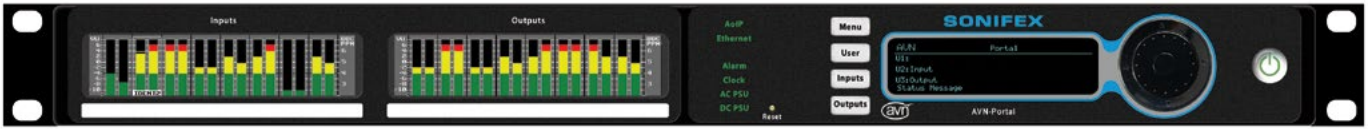


Fig 1-2: The AVN-Portal Front Panel with Meter Display

The AVN portals are part of the Sonifex range of IP based AVN (Audio/Video/Network) products. The portals consist of three multi-channel audio mix engine interfaces which can perform mixing and routing of audio from physical analogue, AES3 and microphone inputs and also from AoIP (Audio over IP) input streams, using a comprehensive browser-based mix matrix.

The inputs can be routed to analogue and AES3 physical outputs and to AES67 and RAVENNA compatible AoIP output streams.

The audio levels of each physical input and output can be adjusted and can be monitored using the meter displays.

For more information on the AVN product range please refer to the separate guide entitled “Guide to Media Networking & Configuration of the AVN Product Range”.

All of the units also allow input from up to 8 AoIP streams with a maximum of 16 AoIP input channels which can be routed. The units provide up to 8 AoIP output streams with a maximum of 8 channels per stream providing up to 64 stream outputs. The level of each routing can be individually adjusted at the input, output or crosspoint along with the addition of a high-pass and low-pass filter on all inputs and outputs.

AVN-PA8 8 Stereo Analogue Line Inputs & Outputs, AES67 Portal

- 8 stereo line inputs and 8 stereo line outputs on D-type sockets with AES59 analogue pinout, paralleled with 8 x RJ45 connectors using StudioHub® pinout.
- ‘T’ version has audio I/O on terminal blocks.
- ‘D’ version has input & output metering.
- Input/output full-scale line-up.
- Responsive webserver software router/mixer.
- Up to 8 AoIP input streams with a maximum of 16 input channels to be routed.
- Up to 8 AoIP output streams with a maximum of 8 channels each.
- Dual 1Gb Ethernet & 1Gb SFP port.
- Dual AC & DC power supply inputs.
- 10 user assignable GPIO ports.

AVN-PD8 8 Stereo Digital Line Inputs & Outputs, AES67 Portal

- 8 x stereo digital AES3 inputs and 8 x stereo digital AES3 outputs on D-type sockets with AES59 pinout, paralleled with 8 x RJ45 connectors using StudioHub® pinout.
- 'T' version has audio I/O on terminal blocks.
- 'D' version has input & output metering.
- Individual input sample rate conversion.
- Responsive webserver software mixer/router to mix any input to any output.
- Input and output gain adjustment.
- Up to 8 AoIP input streams with a maximum of 16 input channels to be routed.
- Up to 8 AoIP output channels with a maximum of 8 channels each.

AVN-PM8 8 Mic/Line Inputs, 8 Line Outputs, AES67 Portal

- 8 x mic/line inputs on XLR sockets, or terminal blocks.
- 3mm red LED phantom presence indication for each microphone input.
- 'T' version has 8 x stereo line outputs on terminal block connectors.
- Non 'T' version has outputs on D-type sockets with AES59 analogue pinout, paralleled with 8 x RJ45 connectors using StudioHub® pinout.
- 'D' version has input & output metering.
- Input and output gain/trim adjustment.
- Additional mic pre-amp gain adjustment.
- Output connections capable of supplying analogue power to satellite headphone amplifiers.
- Responsive webserver software router/mixer.
- Up to 8 AoIP input streams with a maximum of 16 input channels to be routed.
- Up to 8 AoIP output channels with a maximum of 8 channels each.
- Dual 1Gb Ethernet & 1Gb SFP port.
- Dual AC & DC power supply inputs.
- 10 user assignable GPIO ports.

The AVN portal range can transmit and receive audio using AoIP with support for both RAVENNA and AES67. AoIP input streams are discovered and output streams are advertised using Avahi/Bonjour and SAP.

The rear panel contains IEC mains and DC power inputs which allow for power redundancy. There are also two ethernet RJ45 connections (control and AoIP) and an SFP (Small Form-factor Pluggable) port. This allows the user to install an SFP transceiver of their choice such as a 1Gbit/s copper or optical SFP transceiver. When an SFP is used, this replaces the AoIP RJ45 connection.

Each portal has a configurable GPIO system, with 10 physical ports (provided by a D-Sub or terminal block connection) and 10 virtual ports, which can be user configured as inputs or outputs and provide software-controlled functionality. A voltage free relay contact is also available on the physical port which can be used to operate external equipment.

Audio connectivity is available with either RJ45/XLR and D-Sub connectors or terminal block connectors. The AVN-PM8 also supports microphone inputs and phantom power. If phantom power is activated, the associated LED on the back panel of the device is illuminated.

A built-in web server allows the user to modify and backup the device's configuration and apply firmware updates. An Ember+ interface also gives access to the unit's configuration as well as providing remote control and monitoring of the GPIO and virtual GPIO ports.

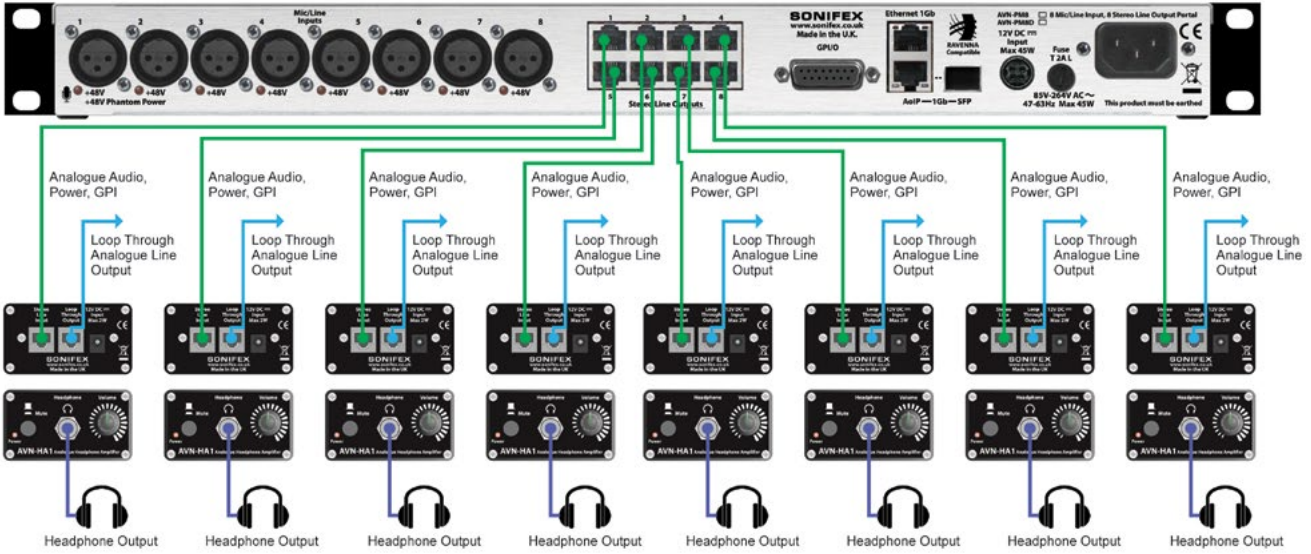
The front panel provides status information and allows some of the device configuration to be modified directly. The front panel has an OLED display used to display these menus. The front panel controls also include user configurable buttons which can be set-up to perform actions such as activating a GPIO or as a shortcut button to jump to a specified menu on the OLED display.

A meter display can be added to any of the portals, this provides a live display of the levels of the physical inputs and outputs. It is also possible to select a single input or output and view its metering data in a more detailed view. The scale used on the meter is also user configurable. On devices without a meter display, a smaller display is shown on the main OLED display.

Headphone Distribution System

The portals can be combined with the Sonifex AVN-HA1 and AVN-HD1 headphone amplifiers to provide 8 separate headphone signals where each headphone amplifier can be sent a separate feed, mixed from any physical or stream inputs. On portal units with RJ45 outputs, an AVN-HA1 (for the AVN-PA8 and AVN-PM8) or AVN-HD1 (for the AVN-PD8) headphone amplifier can be used to listen to the outputs, with the portals providing power and audio signals. The switches on the front panel of the AVN-HA1 and AVN-HD1 can be used as another GPI for muting the output (in the GPIO settings menu these are known as 'Cough Ports'). Please refer to the Sonifex website for more information on the AVN-HA1 and AVN-HD1 headphone amplifiers.

Headphone Distribution System Using Analogue Portals (AVN-PA8, AVN-PA8D, AVN-PM8, AVN-PM8D) & 8 x AVN-HA1 Units



2. Quick Start Guide

This section outlines the steps required to get an AVN portal setup and routing audio.

1. Connect the upper Ethernet port to a suitable network to access the web server to configure the initial settings. By default, this port is configured to use the static IP address 192.168.0.100.
2. Apply power to the unit via the IEC mains connection or via an external 12V DC power supply.
3. Once the unit has started and the main screen is shown on the OLED display, open a web browser and connect to the unit by entering the URL: http://192.168.0.100 into the browser address bar. Once connected, the device information web page will be shown.
4. On the web page, select Network from the configuration tab and configure the Ethernet and AoIP ports to the required settings. The IP addresses assigned to the 2 ports must be on different subnets. For example, with the subnet mask on both ports set to 255.255.255.0, if the IP address on the Ethernet port is set to 192.168.0.100, the AoIP port must be set to 192.168.x.y where x is not 0 and y is unique on the chosen subnet.
5. Although not essential at this point, it is a good idea to assign a recognisable friendly name so that other users can easily identify and use services from this unit.
6. To simplify the configuration process, make sure the Auto Multicast option is enabled. This removes the need to set the transmit AoIP multicast IP addresses as they will be configured automatically based on the AoIP port IP address. Once the settings on the network page have been configured, press the submit button to save them to the connected unit. When the network settings have been changed, the unit will automatically restart. If the settings of the network port the browser is connected to have changed, a new browser connection will need to be established using the new IP address. If dynamic address mode has been selected, the active IP address for the network port can be found by going to the system info menu on the front panel. See System Info menu item on page 58 for details.
7. If a dedicated grandmaster clock, such as the AVN-GMC from Sonifex, is going to be used as the master PTP clock for the network audio system, the PTP profile on the portal will need to be set to the current setting on the grandmaster device. On the web page, select PTP Profiles from the configuration tab. Select the required profile from the drop-down list box and ensure that the domain number for the selected profile matches the grandmaster setting. Press the submit button to save the new settings. If no dedicated grandmaster device is used, all PTP aware devices in the network will automatically establish a master clock hierarchy. In this case, the default profile can be used.
8. Connect the lower AoIP port to the audio network.
9. On the web page, select Audio Routing from the Configuration tab. A routing grid can now be seen with inputs down the left-hand side and outputs along the top. By clicking on a square in the routing table, the channels for the input and output corresponding to that square will be shown, clicking the square at which two channels meet routes the input channel to the output channel. Where an input is routed to an output, the square will be highlighted in green. Clicking on an existing routing raises a dialog box which allows the user to modify the mix level or remove the routing. (An existing routing can also be removed by holding the Ctrl key and clicking on it).
10. AoIP input streams can be added to the routing grid by clicking ‘Add AoIP In Stream’. A dialog box will be shown containing a list of the discovered AoIP streams. Select a stream from the list and click ‘Add’.
11. AoIP output streams can be added to the routing table by clicking ‘Add AoIP Out Stream’. A dialog box will be shown and a stream can be set up by typing in an AoIP stream name and clicking ‘Add’.
12. Clicking on the name of an input or output raises a dialog which allows various settings such as Trim and EQ of the input or output to be adjusted.

3. Installation

Network Connection

All devices in the AVN portal series have two gigabit ethernet network ports.

Upper Port: Configuration and control interface.
Lower Port: Audio over IP (AoIP) interface.

In an ideal installation, the lower port should be connected to a dedicated network switch that handles audio and audio related traffic only. All other AoIP sources and destinations, and grandmaster clocks should be connected to this network. The upper port can then be connected to a separate network to provide access to the embedded web server. With this setup, potentially heavy network traffic on a company LAN does not affect the performance of the AoIP network.

The AVN portals can be used with a single network connection using the lower (AoIP) port as this also provides access to the embedded web server. The AoIP sources and destinations, and grandmaster clocks should still ideally be connected to a dedicated network switch.

Audio Inputs

The AVN-PA8 has 8 analogue balanced stereo inputs. The AVN-PD8 has 8 digital AES3 inputs and the AVN-PM8 has 8 balanced mono mic/line inputs. These audio inputs can be monitored using the meter display if fitted, otherwise confidence metering is available on the OLED display. These inputs can be routed to any of the devices physical outputs and any of the AoIP output streams. This routing can be controlled through the devices webserver.

Audio Outputs

The AVN-PA8 has 8 analogue balanced stereo outputs. The AVN-PD8 has 8 digital AES3 outputs and the AVN-PM8 has 8 analogue balanced stereo outputs. These audio outputs can be monitored using the meter display if fitted, otherwise confidence metering is available on the OLED display. The audio sent to these outputs can be routed from any of the physical and AoIP input streams. This routing is controlled through the webserver.

GPIO

All devices in the AVN portal series have a GPIO connector, this GPIO connector provides the device with 10 physical GPIO ports and a single output relay. Each GPIO port can be disabled, used as an input or used as an output. All devices in the series also have 10 virtual GPIO ports available. All GPIO and relay settings can be configured through the devices webserver. All units with RJ45 type outputs provide an extra 8 GPI ports that can be used in conjunction with the AVN-HA1 (for the AVN-PA8 and AVN-PM8) or AVN-HD1 (for the AVN-PD8). The settings for these GPIO ports can also be configured through the webserver and are known as Cough Ports.

Power Supply

The unit can be powered from the mains via the supplied IEC lead, or by using the optional external 12V DC power supply, part number AVN-DC150. Please contact Sonifex Ltd sales for more details. Both power supplies can be connected and powered at the same time to provide redundancy if required.

4. Front Panel Controls, Indicators & Displays

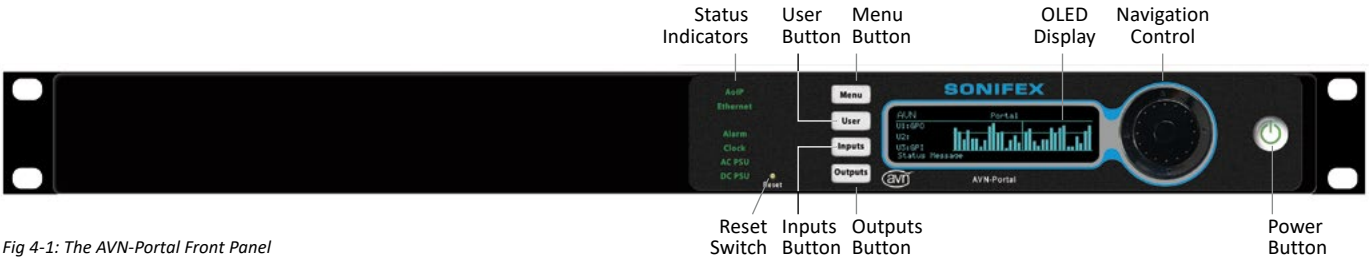


Fig 4-1: The AVN-Portal Front Panel

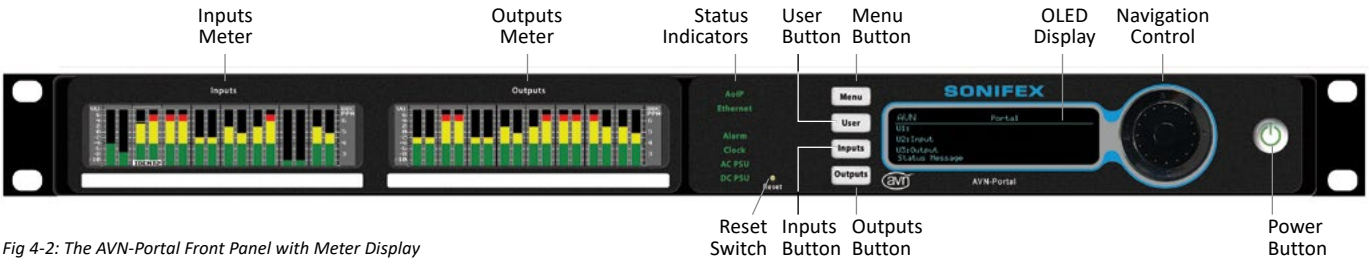


Fig 4-2: The AVN-Portal Front Panel with Meter Display

Status Indicators

The RGB status indicators are located on the left side of the main display.

AoIP

Indicates the link status of the AoIP port (lower network connector).

Green	The link is up.
Off	The link is down.

The AoIP network interface is configured through the embedded web server.

Ethernet

Indicates the link status of the Ethernet port (upper network connector).

Green	The link is up.
Off	The link is down.

The Ethernet network interface is configured through the embedded web server.

Alarm

This status LED is not currently used but is reserved for future use.

Clock

Indicates the status of PTP clock as follows.

Green	The unit is a PTP slave with a clock offset of less or equal to ±1µs or the unit is the PTP master.
Amber	The unit is a PTP slave with a clock offset of between ±1µs and ±10µs.
Flash Amber	The unit is in a listening state and is not yet acting as the master or a slave.
Red	The unit is a PTP slave with a clock offset of greater than ±10µs.
Flash Red	The unit is a PTP slave and no master is available.

The devices PTP settings can be configured through the embedded web server.

AC PSU

Indicates the status of the internal AC-DC power supply as follows.

Green	AC-DC generated voltage is within normal operating range of +11V to +13V. This is the normal condition.
Amber	AC-DC generated voltage is less than +11V or greater than +13V. This indicates a warn condition.
Red	AC-DC generated voltage is less than +10V or greater than +14V. This indicates a fault condition if an AC power source is connected.

DC PSU

Indicates the status of the DC power input as follows:

Green	DC voltage is within normal operating range of +11V to +13V. This is the normal condition.
Amber	DC voltage is less than +11V or greater than +13V. This indicates a warn condition.
Red	Not connected or DC voltage is less than +10V or greater than +14V. This indicates a fault condition if a DC power source is connected.

NB: Both the AC PSU and DC PSU LEDs can be disabled via the Display Settings web page menu.

Menu Button

Press the menu button to open the front panel main menu. Pressing the button whilst in the menu will close the menu. (The main menu can also be opened by pressing and holding the centre button of the rotary control for 3 seconds).

User Buttons

There are three user buttons on the devices front panel, each one of these buttons can be configured to control various functions on the unit. Information on configuring these buttons can be found on page 33.

these buttons are currently labelled “Menu”, “Inputs” and “Outputs” however the labels can be changed to match the configured function.

OLED Display



Fig 4 3: Main OLED Display

The portals OLED display shows useful system information and allows the user to view and change device settings from the front panel. The display

shows the device ID, friendly name, the user button settings, and on devices without a meter panel, confidence metering of the physical inputs on the left and the physical outputs on the right (see Fig 4-1).

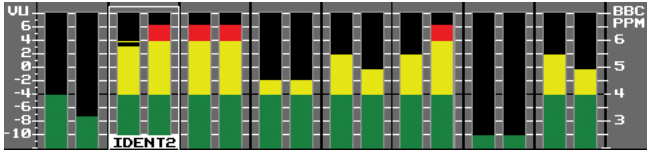


Fig 4 4: Meter TFT Display

Each of the portals can be ordered with input/output metering displays (D version). These displays show active level metering of the audio at the input and output of the device. An individual input and output can be selected to take up the full display to show a more detailed view of the level. The layout of the metering and type of scale used can be varied from either the front panel menu or the embedded web server. The name of each input and output can also be seen by hovering over the input or output on the meter TFT display by using the navigation controls on the front panel.

Navigation Control

The navigation control, located to the right of the OLED display, can be used to select a stereo input (AVN-PA8 and AVN-PD8) or mono input (AVN-PM8) on the input meter display, or a stereo output on the output meter display. The selected channel or channels will be shown in more detail using the whole screen. To select whether to access the input or output meter display, use the up and down buttons on the navigation control, an individual input or output channel can then be selected using the scroll wheel or the left and right keys and pressing the centre key to confirm.

By holding the centre button of the controls, the user can enter the devices main menu. The user can then use the left and right buttons to move in and out of menus, the up and down buttons or rotary control to move up and down menus and the centre button to move into menus.

Reset Button

The recessed reset button is located to the right of the LED status indicators on the front panel and can be used to perform a full hardware reset on the unit.

Power Button

The power button turns the unit on and off. When the unit is on, the indicator is green. When the unit is off, the indicator is red. The power button is disabled by default and can be enabled through the “Display Settings” web page.

5. AVN-PA8/T/D 8 Stereo Analogue Line Inputs & Outputs, AES67 Display Portal

Rear Panel Connections

AVN-PA8/AVN-PA8D 8 Stereo Analogue Line Inputs & Outputs, AES67 Display Portal

D-Sub (DB-25) Stereo Line Input Connections

The AVN-PA8 and AVN-PA8D have 2 female D-Sub (DB-25) input connections with a TASCAM AES-59 analogue pinout, these connections are paralleled with the 8 RJ45 input connections. This has the following pinout.

TASCAM AES-59 analogue pinout.

Pin 1: Channel 8 + (Phase)
Pin 2: Channel 8 ground
Pin 3: Channel 7 – (Non-phase)
Pin 4: Channel 6 + (Phase)
Pin 5: Channel 6 ground
Pin 6: Channel 5 – (Non-phase)
Pin 7: Channel 4 + (Phase)
Pin 8: Channel 4 ground
Pin 9: Channel 3 – (Non-phase)
Pin 10: Channel 2 + (Phase)
Pin 11: Channel 2 ground
Pin 12: Channel 1 – (Non-phase)
Pin 13: No connection
Pin 14: Channel 8 – (Non-phase)
Pin 15: Channel 7 + (Phase)
Pin 16: Channel 6 ground
Pin 17: Channel 6 – (Non-phase)
Pin 18: Channel 5 + (Phase)
Pin 19: Channel 5 ground
Pin 20: Channel 4 – (Non-phase)
Pin 21: Channel 3 + (Phase)
Pin 22: Channel 3 ground
Pin 23: Channel 2 – (Non-phase)
Pin 24: Channel 1 + (Phase)
Pin 25: Channel 1 ground

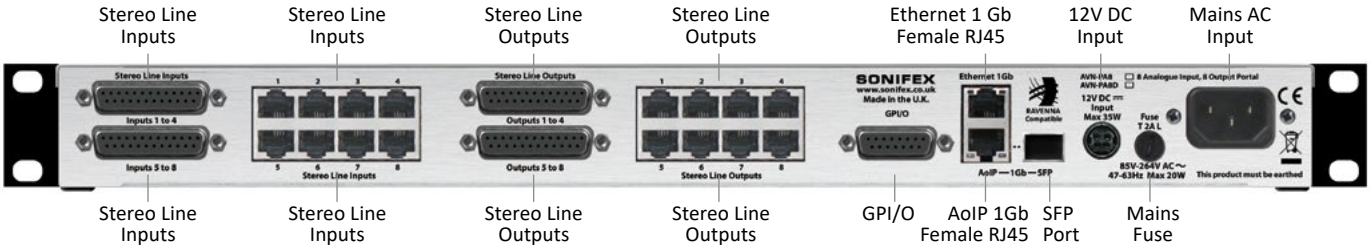


Fig 5-1: AVN-PA8/AVN-PA8D Rear Panel

RJ45 Stereo Line Input Connections

The AVN-PA8 and AVN-PA8D have 8 female analogue RJ45 inputs. Analogue RJ45s connections for inputs use the StudioHub+ pinout, these connections are paralleled with the D-Sub (DB-25) connections. This has the following pinout.

StudioHub+ pinout.

Pin 1: I/O Left + (Phase)
Pin 2: I/O Left – (Non-phase)
Pin 3: I/O Right + (Phase)
Pin 4: Ground
Pin 5: No connection
Pin 6: I/O Right – (Non-phase)
Pin 7: No connection
Pin 8: +12V

D-Sub (DB-25) Stereo Line Output Connections

The AVN-PA8 and AVN-PA8D have 2 female D-Sub (DB-25) output connections with a TASCAM AES-59 analogue pinout, these connections are paralleled with the 8 RJ45 output connections. This has the following pinout.

TASCAM AES-59 analogue pinout.

Pin 1: Channel 8 + (Phase)
Pin 2: Channel 8 ground
Pin 3: Channel 7 – (Non-phase)
Pin 4: Channel 6 + (Phase)
Pin 5: Channel 6 ground
Pin 6: Channel 5 – (Non-phase)
Pin 7: Channel 4 + (Phase)
Pin 8: Channel 4 ground
Pin 9: Channel 3 – (Non-phase)
Pin 10: Channel 2 + (Phase)
Pin 11: Channel 2 ground
Pin 12: Channel 1 – (Non-phase)
Pin 13: No connection
Pin 14: Channel 8 – (Non-phase)
Pin 15: Channel 7 + (Phase)
Pin 16: Channel 6 ground
Pin 17: Channel 6 – (Non-phase)
Pin 18: Channel 5 + (Phase)
Pin 19: Channel 5 ground
Pin 20: Channel 4 – (Non-phase)
Pin 21: Channel 3 + (Phase)
Pin 22: Channel 3 ground
Pin 23: Channel 2 – (Non-phase)
Pin 24: Channel 1 + (Phase)
Pin 25: Channel 1 ground

RJ45 Stereo Line Output Connections

The AVN-PA8 and AVN- PA8D have 8 female analogue RJ45 outputs. Analogue RJ45s connections for outputs use the StudioHub+ pinout, these connections are paralleled with the D-Sub (DB-25) connections. This has the following pinout.

StudioHub+ pinout.

Pin 1: I/O Left + (Phase)
Pin 2: I/O Left – (Non-phase)
Pin 3: I/O Right + (Phase)
Pin 4: Ground
Pin 5: Cough/Mute (Active low)
Pin 6: I/O Right – (Non-phase)
Pin 7: No connection
Pin 8: +12V

D-Sub (DA-15) GPIO Connection

The AVN-PA8 and AVN-PA8D have a single female D-Sub (DA-15) connection, this provides 10 configurable GPIO and a voltage free switching

relay contact. This has the following pinout.

Pin 1: GPIO Port 1
Pin 2: GPIO Port 2
Pin 3: GPIO Port 3
Pin 4: GPIO Port 4
Pin 5: GPIO Port 5
Pin 6: Relay – Normally Open Contact
Pin 7: Relay – Normally Closed Contact
Pin 8: Relay – Common
Pin 9: GPIO Port 6
Pin 10: GPIO Port 7
Pin 11: GPIO Port 8
Pin 12: GPIO Port 9
Pin 13: GPIO Port 10
Pin 14: Fused (200mA) +12VDC Supply
Pin 15: Ground

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the embedded web server.

AVN-PA8T/AVN-PA8TD 24-Pin Phoenix Style Stereo Line Input/ Output Terminal Connections, AES67 Portal

24-Pin Phoenix Style Stereo Line Input Terminal Connections

The AVN-PA8T and AVN-PA8TD have 2 female 24-pin Phoenix style terminal blocks used as analogue stereo line inputs. This has the following pinout.

L – Left

R – Right

Block 1

Pin 1: Channel 1L ground
Pin 2: Channel 1L + (Phase)
Pin 3: Channel 1L - (Non-phase)
Pin 4: Channel 1R ground
Pin 5: Channel 1R + (Phase)
Pin 6: Channel 1R - (Non-phase)
Pin 7: Channel 2L ground
Pin 8: Channel 2L + (Phase)
Pin 9: Channel 2L – (Non-phase)
Pin 10: Channel 2R ground
Pin 11: Channel 2R + (Phase)
Pin 12: Channel 2R – (Non-phase)

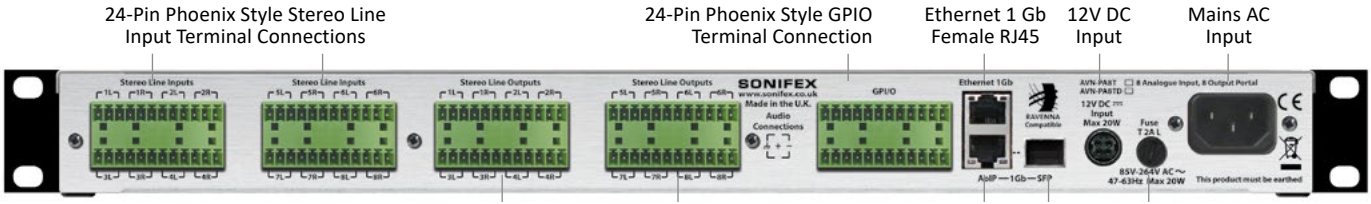


Fig 5-2: AVN-PA8T/AVN-PA8TD Rear Panel

Pin 13: Channel 3L ground
Pin 14: Channel 3L + (Phase)
Pin 15: Channel 3L – (Non-phase)
Pin 16: Channel 3R ground
Pin 17: Channel 3R + (Phase)
Pin 18: Channel 3R – (Non-phase)
Pin 19: Channel 4L ground
Pin 20: Channel 4L + (Phase)
Pin 21: Channel 4L – (Non-phase)
Pin 22: Channel 4R ground
Pin 23: Channel 4R + (Phase)
Pin 24: Channel 4R – (Non-phase)

Block 2

Pin 1: Channel 5L ground
Pin 2: Channel 5L + (Phase)
Pin 3: Channel 5L - (Non-phase)
Pin 4: Channel 5R ground
Pin 5: Channel 5R + (Phase)
Pin 6: Channel 5R - (Non-phase)
Pin 7: Channel 6L ground
Pin 8: Channel 6L + (Phase)
Pin 9: Channel 6L – (Non-phase)
Pin 10: Channel 6R ground
Pin 11: Channel 6R + (Phase)
Pin 12: Channel 6R – (Non-phase)
Pin 13: Channel 7L ground
Pin 14: Channel 7L + (Phase)
Pin 15: Channel 7L – (Non-phase)
Pin 16: Channel 7R ground
Pin 17: Channel 7R + (Phase)
Pin 18: Channel 7R – (Non-phase)
Pin 19: Channel 8L ground
Pin 20: Channel 8L + (Phase)
Pin 21: Channel 8L – (Non-phase)
Pin 22: Channel 8R ground
Pin 23: Channel 8R + (Phase)
Pin 24: Channel 8R – (Non-phase)

24-Pin Phoenix Style Stereo Line Output Terminal Connections

The AVN-PA8T and AVN-PA8TD have 2 female 24-pin Phoenix style terminal blocks used as analogue stereo line outputs.

L – Left

R – Right

Block 1

Pin 1: Channel 1L ground
Pin 2: Channel 1L + (Phase)
Pin 3: Channel 1L - (Non-phase)
Pin 4: Channel 1R ground
Pin 5: Channel 1R + (Phase)
Pin 6: Channel 1R - (Non-phase)
Pin 7: Channel 2L ground
Pin 8: Channel 2L + (Phase)
Pin 9: Channel 2L – (Non-phase)
Pin 10: Channel 2R ground
Pin 11: Channel 2R + (Phase)
Pin 12: Channel 2R – (Non-phase)
Pin 13: Channel 3L ground
Pin 14: Channel 3L + (Phase)
Pin 15: Channel 3L – (Non-phase)
Pin 16: Channel 3R ground
Pin 17: Channel 3R + (Phase)
Pin 18: Channel 3R – (Non-phase)

Pin 19: Channel 4L ground
Pin 20: Channel 4L + (Phase)
Pin 21: Channel 4L – (Non-phase)
Pin 22: Channel 4R ground
Pin 23: Channel 4R + (Phase)
Pin 24: Channel 4R – (Non-phase)

Block 2

Pin 1: Channel 5L ground
Pin 2: Channel 5L + (Phase)
Pin 3: Channel 5L - (Non-phase)
Pin 4: Channel 5R ground
Pin 5: Channel 5R + (Phase)
Pin 6: Channel 5R - (Non-phase)
Pin 7: Channel 6L ground
Pin 8: Channel 6L + (Phase)
Pin 9: Channel 6L – (Non-phase)
Pin 10: Channel 6R ground
Pin 11: Channel 6R + (Phase)
Pin 12: Channel 6R – (Non-phase)
Pin 13: Channel 7L ground
Pin 14: Channel 7L + (Phase)
Pin 15: Channel 7L – (Non-phase)
Pin 16: Channel 7R ground
Pin 17: Channel 7R + (Phase)
Pin 18: Channel 7R – (Non-phase)
Pin 19: Channel 8L ground
Pin 20: Channel 8L + (Phase)
Pin 21: Channel 8L – (Non-phase)
Pin 22: Channel 8R ground
Pin 23: Channel 8R + (Phase)
Pin 24: Channel 8R – (Non-phase)

24-Pin Phoenix Style GPIO Terminal Connection

The AVN-PA8T and AVN-PA8TD have a single female Phoenix style terminal block, this provides 10 configurable GPIO and a voltage free switching relay contact.

Pin 1: +12VDC
Pin 2: GPIO Port 1
Pin 3: GPIO Port 2
Pin 4: Ground
Pin 5: +12VDC
Pin 6: GPIO Port 3
Pin 7: GPIO Port 4
Pin 8: Ground
Pin 9: +12VDC
Pin 10: GPIO Port 5
Pin 11: GPIO Port 6
Pin 12: Ground
Pin 13: +12VDC
Pin 14: GPIO Port 7
Pin 15: GPIO Port 8
Pin 16: Ground
Pin 17: +12VDC
Pin 18: GPIO Port 9
Pin 19: GPIO Port 10
Pin 20: Ground
Pin 21: Relay – Normally Closed Contact
Pin 22: +12VDC
Pin 23: Relay – Common
Pin 24: Relay – Normally Open Contact

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the devices embedded web server.

Network Interfacing RJ45 Connections

In an ideal installation, the lower port should be connected to a dedicated network switch that handles audio and audio related traffic only. All other AoIP sources and destinations, and grandmaster clocks should be connected to this network. The upper port can then be connected to a separate network to provide access to the embedded web server. With this setup, potentially heavy network traffic on a company LAN does not affect the performance of the AoIP network.

Ethernet

All devices in the AVN portal series have a female RJ45 used for network interfacing, this is the top port and is used to access the devices embedded web server.

AoIP

All devices in the AVN portal series have a female RJ45 used for audio transfer and network interfacing, this is the bottom port and is used primarily to transfer audio across a network, however it can also be used to access the devices embedded web server.

SFP Interface

AoIP

All units in the portal series are fitted with an SFP (Small Form-factor Pluggable) port this allows the user to install a SFP transceiver of their choice such as a 1Gbit/s copper or optical SFP transceiver. The AoIP network interfacing RJ45 connection cannot be used at the same time as the SFP interface.

12V DC Input

This 4-pin connector allows an external +12V power supply to be used to power the unit. Both the 12V DC input and the mains AC input can be connected at the same time, this provides redundancy if needed.

Mains Fuse

This 20mm x 5mm anti-surge mains fuse is rated at 2A.

Mains AC Input

This universally filtered IEC is the mains AC input power supply to the unit.

6. AVN-PD8/T/D 8 Stereo Digital Line Inputs & Outputs, AES67 Portal

Rear Panel Connections

AVN-PD8/AVN-PD8D

D-Sub (DB-25) Stereo Digital Inputs And Outputs

The AVN-PD8 and AVN-PD8D have 2 female digital D-Sub (DB-25) inputs and outputs. These inputs and outputs are in parallel with the RJ45 stereo digital inputs and outputs.

TASCAM AES-59 digital pinout.

Pin 1: Out Channel 7/8 + (Phase)
Pin 2: Out Channel 7/8 ground
Pin 3: Out Channel 5/6 – (Non-phase)
Pin 4: Out Channel 3/4 + (Phase)
Pin 5: Out Channel 3/4 ground
Pin 6: Out Channel 1/2 – (Non-phase)
Pin 7: In Channel 7/8 + (Phase)
Pin 8: In Channel 7/8 ground
Pin 9: In Channel 5/6 – (Non-phase)
Pin 10: In Channel 3/4 + (Phase)
Pin 11: In Channel 3/4 ground
Pin 12: In Channel 1/2 - (Non-phase)
Pin 13: No connection
Pin 14: Out Channel 7/8 – (Non-phase)
Pin 15: Out Channel 5/6 + (Phase)
Pin 16: Out Channel 5/6 ground
Pin 17: Out Channel 3/4 – (Non-phase)
Pin 18: Out Channel 1/2 + (Phase)
Pin 19: Out Channel 1/2 ground
Pin 20: In Channel 7/8 – (Non-phase)
Pin 21: In Channel 5/6 + (Phase)
Pin 22: In Channel 5/6 ground
Pin 23: In Channel 3/4 – (Non-phase)
Pin 24: In Channel 1/2 + (Phase)
Pin 25: In Channel 1/2 ground

RJ45 Stereo Digital Inputs and Outputs

The AVN-PD8 and AVN-PD8D have 8 female digital RJ45 inputs and 8 digital RJ45 outputs.

StudioHub+ pinout.

Pin 1: I/O AES + (Phase)
Pin 2: I/O AES – (Non-phase)
Pin 3: No connection
Pin 4: Ground

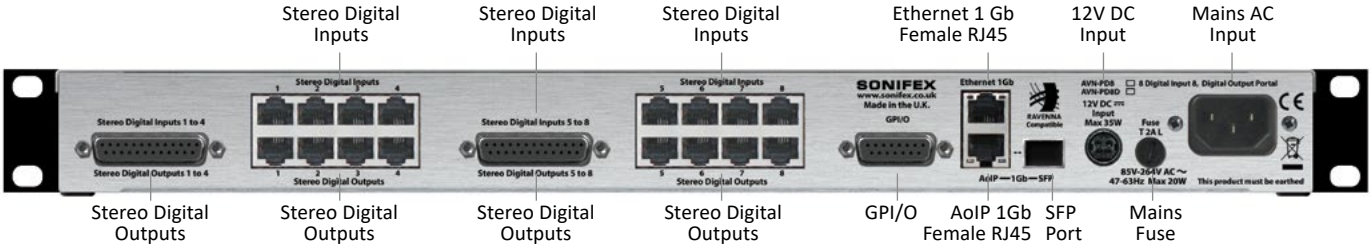


Fig 6-1: AVN-PD8/AVN-PD8D Rear Panel

Pin 5: Inputs - No connection. Outputs - Cough/Mute (Active Low)
Pin 6: No connection
Pin 7: No connection
Pin 8: +12V

D-Sub (DA-15) GPIO Connection

The AVN-PD8 and AVN-PD8D have a single female D-Sub (DA-15) connection, this provides 10 configurable GPIO and a voltage free switching relay contact.

Pin 1: GPIO Port 1
Pin 2: GPIO Port 2
Pin 3: GPIO Port 3
Pin 4: GPIO Port 4
Pin 5: GPIO Port 5
Pin 6: Relay – Normally Open Contact
Pin 7: Relay – Normally Closed Contact
Pin 8: Relay – Common
Pin 9: GPIO Port 6
Pin 10: GPIO Port 7
Pin 11: GPIO Port 8
Pin 12: GPIO Port 9
Pin 13: GPIO Port 10
Pin 14: Fused (200mA) +12VDC Supply
Pin 15: Ground

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the devices embedded web server.

AVN-PD8T/ AVN-PD8TD 24-Pin Phoenix Style Stereo Line Input/ Output Terminal Connections, AES67 Portal

24-Pin Phoenix Style Stereo Digital Input Terminal Connection

The AVN-PD8T and AVN-PD8TD use female Phoenix style terminal blocks.

Pin 1: Channel 1/2 ground
Pin 2: Channel 1/2 + (Phase)
Pin 3: Channel 1/2 - (Non-phase)
Pin 4: Channel 3/4 ground
Pin 5: Channel 3/4 + (Phase)
Pin 6: Channel 3/4 - (Non-phase)
Pin 7: Channel 5/6 ground
Pin 8: Channel 5/6 + (Phase)
Pin 9: Channel 5/6 – (Non-phase)
Pin 10: Channel 7/8 ground
Pin 11: Channel 7/8 + (Phase)
Pin 12: Channel 7/8 – (Non-phase)
Pin 13: Channel 9/10 ground

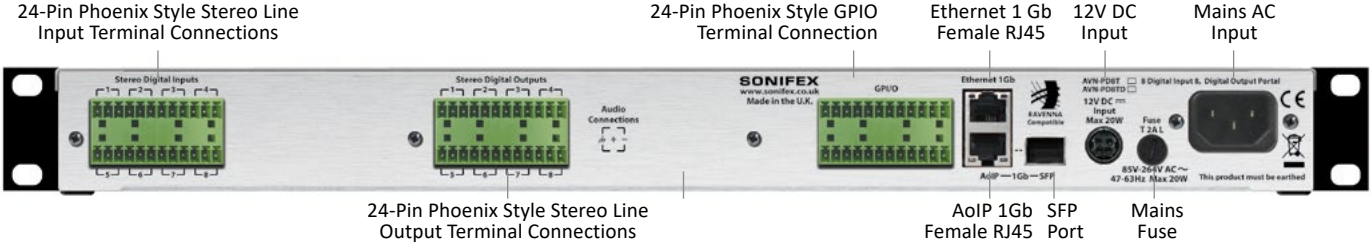


Fig 6-2: AVN-PD8T/AVN-PD8TD Rear Panel

Pin 14: Channel 9/10 + (Phase)
Pin 15: Channel 9/10 – (Non-phase)
Pin 16: Channel 11/12 ground
Pin 17: Channel 11/12 + (Phase)
Pin 18: Channel 11/12 – (Non-phase)
Pin 19: Channel 13/14 ground
Pin 20: Channel 13/14 + (Phase)
Pin 21: Channel 13/14 – (Non-phase)
Pin 22: Channel 15/16 ground
Pin 23: Channel 15/16 + (Phase)
Pin 24: Channel 15/16 – (Non-phase)

24-Pin Phoenix Style Stereo Digital Output Terminal Connection

The AVN-PD8T and AVN-PD8TD use female Phoenix style terminal blocks.

Pin 1: Channel 1/2 ground
Pin 2: Channel 1/2 + (Phase)
Pin 3: Channel 1/2 - (Non-phase)
Pin 4: Channel 3/4 ground
Pin 5: Channel 3/4 + (Phase)
Pin 6: Channel 3/4 - (Non-phase)
Pin 7: Channel 5/6 ground
Pin 8: Channel 5/6 + (Phase)
Pin 9: Channel 5/6 – (Non-phase)
Pin 10: Channel 7/8 ground
Pin 11: Channel 7/8 + (Phase)
Pin 12: Channel 7/8 – (Non-phase)
Pin 13: Channel 9/10 ground
Pin 14: Channel 9/10 + (Phase)
Pin 15: Channel 9/10 – (Non-phase)
Pin 16: Channel 11/12 ground
Pin 17: Channel 11/12 + (Phase)
Pin 18: Channel 11/12 – (Non-phase)
Pin 19: Channel 13/14 ground
Pin 20: Channel 13/14 + (Phase)
Pin 21: Channel 13/14 – (Non-phase)
Pin 22: Channel 15/16 ground
Pin 23: Channel 15/16 + (Phase)
Pin 24: Channel 15/16 – (Non-phase)

24-Pin Phoenix Style GPIO Terminal Connection

The AVN-PD8T and AVN-PD8TD have a single female Phoenix style terminal block, this provides 10 configurable GPIO and a voltage free switching relay contact.

Pin 1: +12VDC
Pin 2: GPIO Port 1
Pin 3: GPIO Port 2
Pin 4: Ground
Pin 5: +12VDC
Pin 6: GPIO Port 3
Pin 7: GPIO Port 4
Pin 8: Ground
Pin 9: +12VDC
Pin 10: GPIO Port 5
Pin 11: GPIO Port 6
Pin 12: Ground
Pin 13: +12VDC
Pin 14: GPIO Port 7
Pin 15: GPIO Port 8
Pin 16: Ground
Pin 17: +12VDC
Pin 18: GPIO Port 9
Pin 19: GPIO Port 10

Pin 20: Ground
Pin 21: Relay – Normally Closed Contact
Pin 22: +12VDC
Pin 23: Relay – Common
Pin 24: Relay – Normally Open Contact

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the devices embedded web server.

Network Interfacing RJ45 Connections

In an ideal installation, the lower port should be connected to a dedicated network switch that handles audio and audio related traffic only. All other AoIP sources and destinations, and grandmaster clocks should be connected to this network. The upper port can then be connected to a separate network to provide access to the embedded web server. With this setup, potentially heavy network traffic on a company LAN does not affect the performance of the AoIP network.

Ethernet

All devices in the AVN portal series have a female RJ45 used for network interfacing, this is the top port and is used to access the devices embedded web server.

AoIP

All devices in the AVN portal series have a female RJ45 used for audio transfer and network interfacing, this is the bottom port and is used primarily to transfer audio across a network, however it can also be used to access the devices embedded web server.

SFP Interface

AoIP

All units in the portal series are fitted with an SFP (Small Form-factor Pluggable) port this allows the user to install a SFP transceiver of their choice such as a 1Gbit/s copper or optical SFP transceiver. The AoIP network interfacing RJ45 connection cannot be used at the same time as the SFP interface.

12V DC Input

This 4-pin connector allows an external +12V power supply to be used to power the unit. Both the 12V DC input and the mains AC input can be connected at the same time, this provides redundancy if needed.

Mains Fuse

This 20mm x 5mm anti-surge mains fuse is rated at 2A.

Mains AC Input

This universally filtered IEC is the mains AC input power supply to the unit.

7. AVN-PM8/T/D 8 Mic/Line Inputs, 8 Line Outputs, Terminal Block, AES67 Portal

Rear Panel Connections

AVN-PM8/AVN-PM8D

XLR Mic/Line Inputs

The AVN-PM8 and AVN-PM8D have 8 female XLR connections used as microphone inputs.

Pin 1: Ground
Pin 2: Microphone Phase
Pin 3: Microphone Non-Phase

Phantom power and rear panel LEDs

Phantom power can be enabled on each of the microphone inputs, this is done through the devices embedded web server, if a microphone input has Phantom power enabled the corresponding LED will light up on the back panel of the device.

RJ45 Stereo Line Output Connections

The AVN-PM8 and AVN-PM8D have 8 female analogue RJ45 outputs. Analogue RJ45s connections for outputs use the StudioHub+ pinout, these connections are paralleled with the D-Sub (DB-25) connections.

StudioHub+ pinout.

Pin 1: I/O Left + (Phase)
Pin 2: I/O Left – (Non-phase)
Pin 3: I/O Right + (Phase)
Pin 4: Ground
Pin 5: Cough/Mute (Active low)
Pin 6: I/O Right – (Non-phase)
Pin 7: No connection
Pin 8: +12V

D-Sub (DA-15) GPIO connection

The AVN-PM8 and AVN-PM8D have a single female D-Sub (DA-15) connection, this provides 10 configurable GPIO and a voltage free switching relay contact.

Pin 1: GPIO Port 1
Pin 2: GPIO Port 2
Pin 3: GPIO Port 3
Pin 4: GPIO Port 4
Pin 5: GPIO Port 5
Pin 6: Relay – Normally Open Contact
Pin 7: Relay – Normally Closed Contact
Pin 8: Relay – Common

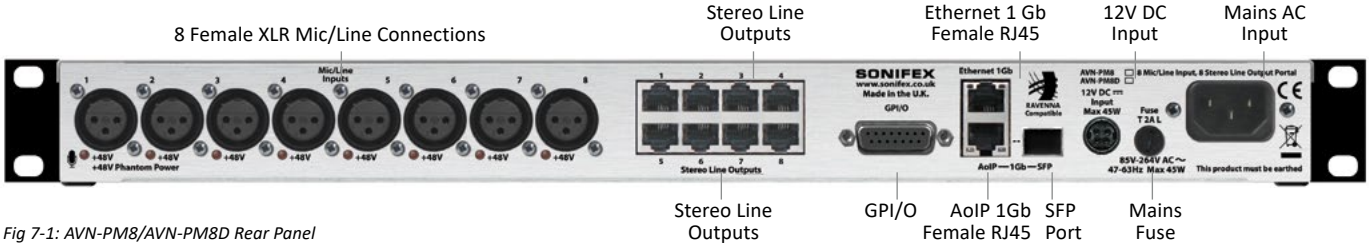


Fig 7-1: AVN-PM8/AVN-PM8D Rear Panel

Pin 9: GPIO Port 6
Pin 10: GPIO Port 7
Pin 11: GPIO Port 8
Pin 12: GPIO Port 9
Pin 13: GPIO Port 10
Pin 14: Fused (200mA) +12VDC Supply
Pin 15: Ground

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the devices embedded web server.

AVN-PM8T/ AVN-PM8TD 24-Pin Phoenix Style Stereo Line Input/ Output Terminal Connections, AES67 Portal

24-Pin Phoenix Style Stereo Line Input Terminal Connections

The AVN-PM8T and AVN-PM8TD have a female 24-pin Phoenix style terminal blocks used for analogue mono line inputs.

Pin 1: Channel 1 ground
Pin 2: Channel 1 + (Phase)
Pin 3: Channel 1 - (Non-phase)
Pin 4: Channel 2 ground
Pin 5: Channel 2 + (Phase)
Pin 6: Channel 2 - (Non-phase)
Pin 7: Channel 3 ground
Pin 8: Channel 3 + (Phase)
Pin 9: Channel 3 – (Non-phase)
Pin 10: Channel 4 ground
Pin 11: Channel 4 + (Phase)
Pin 12: Channel 4 – (Non-phase)
Pin 13: Channel 5 ground
Pin 14: Channel 5 + (Phase)
Pin 15: Channel 5 – (Non-phase)
Pin 16: Channel 6 ground
Pin 17: Channel 6 + (Phase)
Pin 18: Channel 6 – (Non-phase)
Pin 19: Channel 7 ground
Pin 20: Channel 7 + (Phase)
Pin 21: Channel 7 – (Non-phase)
Pin 22: Channel 8 ground
Pin 23: Channel 8 + (Phase)
Pin 24: Channel 8 – (Non-phase)

24-Pin Phoenix Style Stereo Line Output Terminal Connections

The AVN-PM8T and AVN-PM8TD have 2 female 24-pin Phoenix style terminal blocks used as analogue stereo line outputs.

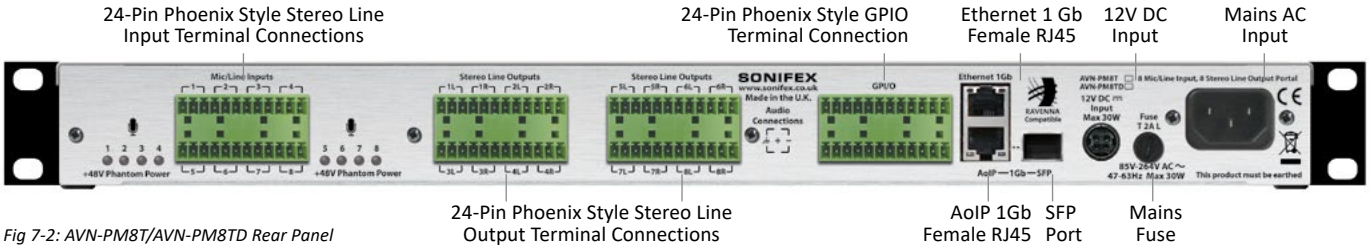


Fig 7-2: AVN-PM8T/AVN-PM8TD Rear Panel

L – Left
R – Right

Block 1

Pin 1: Channel 1L ground
Pin 2: Channel 1L + (Phase)
Pin 3: Channel 1L - (Non-phase)
Pin 4: Channel 1R ground
Pin 5: Channel 1R + (Phase)
Pin 6: Channel 1R - (Non-phase)
Pin 7: Channel 2L ground
Pin 8: Channel 2L + (Phase)
Pin 9: Channel 2L – (Non-phase)
Pin 10: Channel 2R ground
Pin 11: Channel 2R + (Phase)
Pin 12: Channel 2R – (Non-phase)
Pin 13: Channel 3L ground
Pin 14: Channel 3L + (Phase)
Pin 15: Channel 3L – (Non-phase)
Pin 16: Channel 3R ground
Pin 17: Channel 3R + (Phase)
Pin 18: Channel 3R – (Non-phase)
Pin 19: Channel 4L ground
Pin 20: Channel 4L + (Phase)
Pin 21: Channel 4L – (Non-phase)
Pin 22: Channel 4R ground
Pin 23: Channel 4R + (Phase)
Pin 24: Channel 4R – (Non-phase)

Block 2

Pin 1: Channel 5L ground
Pin 2: Channel 5L + (Phase)
Pin 3: Channel 5L - (Non-phase)
Pin 4: Channel 5R ground
Pin 5: Channel 5R + (Phase)
Pin 6: Channel 5R - (Non-phase)
Pin 7: Channel 6L ground
Pin 8: Channel 6L + (Phase)
Pin 9: Channel 6L – (Non-phase)
Pin 10: Channel 6R ground
Pin 11: Channel 6R + (Phase)
Pin 12: Channel 6R – (Non-phase)
Pin 13: Channel 7L ground
Pin 14: Channel 7L + (Phase)
Pin 15: Channel 7L – (Non-phase)
Pin 16: Channel 7R ground
Pin 17: Channel 7R + (Phase)
Pin 18: Channel 7R – (Non-phase)
Pin 19: Channel 8L ground
Pin 20: Channel 8L + (Phase)
Pin 21: Channel 8L – (Non-phase)
Pin 22: Channel 8R ground
Pin 23: Channel 8R + (Phase)
Pin 24: Channel 8R – (Non-phase)

24-Pin Phoenix Style GPIO Terminal Connection

The AVN-PM8T and AVN-PM8TD have a single female Phoenix style terminal block, this provides 10 configurable GPIO and a voltage free switching relay contact.

Pin 1: +12VDC
Pin 2: GPIO Port 1
Pin 3: GPIO Port 2
Pin 4: Ground
Pin 5: +12VDC
Pin 6: GPIO Port 3
Pin 7: GPIO Port 4

Pin 8: Ground
Pin 9: +12VDC
Pin 10: GPIO Port 5
Pin 11: GPIO Port 6
Pin 12: Ground
Pin 13: +12VDC
Pin 14: GPIO Port 7
Pin 15: GPIO Port 8
Pin 16: Ground
Pin 17: +12VDC
Pin 18: GPIO Port 9
Pin 19: GPIO Port 10
Pin 20: Ground
Pin 21: Relay – Normally Closed Contact
Pin 22: +12VDC
Pin 23: Relay – Common
Pin 24: Relay – Normally Open Contact

The +12V supply is fused and has a maximum output current of 200mA.

GPIO ports can be set up as GPO or GPI. GPO are open collector, this means the output pin is connected to ground when the GPO is active. GPI are active low this means they are triggered when pulled down to ground. GPIO configuration can be managed through the devices embedded web server.

Network Interfacing RJ45 Connections

In an ideal installation, the lower port should be connected to a dedicated network switch that handles audio and audio related traffic only. All other AoIP sources and destinations, and grandmaster clocks should be connected to this network. The upper port can then be connected to a separate network to provide access to the embedded web server. With this setup, potentially heavy network traffic on a company LAN does not affect the performance of the AoIP network.

Ethernet

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AoIP

All devices in the AVN portal series have a female RJ45 used for audio transfer and network interfacing, this is the bottom port and is used primarily to transfer audio across a network, however it can also be used to access the devices embedded web server.

SFP Interface

AoIP

All units in the portal series are fitted with an SFP (Small Form-factor Pluggable) port this allows the user to install a SFP transceiver of their choice such as a 1Gbit/s copper or optical SFP transceiver. The AoIP network interfacing RJ45 connection cannot be used at the same time as the SFP interface.

12V DC Input

This 4-pin connector allows an external +12V power supply to be used to power the unit. Both the 12V DC input and the mains AC input can be connected at the same time, this provides redundancy if needed.

Mains Fuse

This 20mm x 5mm anti-surge mains fuse is rated at 2A.

Mains AC Input

This universally filtered IEC is the mains AC input power supply to the unit.

8. Embedded Web Server

The AVN portals have an embedded web server which provides easy access to all the configuration options through a web browser. It also gives access to system information and allows the firmware to be easily updated when new releases are made available.

The device has two network interfacing RJ45 ports, these are located on the devices back panel, either one of these ports can be used to connect the device to a network, a computer on the same network can then access the devices embedded web server. The upper port is the general access '1Gb Ethernet' port and the lower port is the 'AoIP' port. By default, both ports are set to static address mode with the upper port IP address set to 192.168.0.100 and the lower port IP address set to 192.168.1.100. If the network address mode for the port to be used has been set to 'Dynamic', the unit will attempt to acquire an IP address from a DHCP server, or if no DHCP server is found an automatically generated IP address will be used.

The active IP address for the network port can be found using a service discovery tool such as the 'Discovery Application' which can be found on the Sonifex website (http://sonifex.co.uk/technical/software/index.shtml#sfxsrvdisc) or Bonjour Print Services. Alternatively, the user can display the IP address on the main display of the device by navigating to the 'Device Information' section using the controls on the front panel. If a port has yet to acquire an IP address or has failed to link, the corresponding IP address and subnet mask will show 0.0.0.0. Once the IP address of the required port is known, simply type this into the address bar of a web browser. The 'Device Information' page of the connected AVN portal will be displayed. This is the default page and will always be displayed first when connecting to the embedded web server. Each page of the web server shows the devices friendly name in the upper right-hand corner, under the product name. This makes it easier to identify the connected device, especially when configuring multiple devices at the same time. The right-hand side of each page has a brief help section that describes the content of each section.

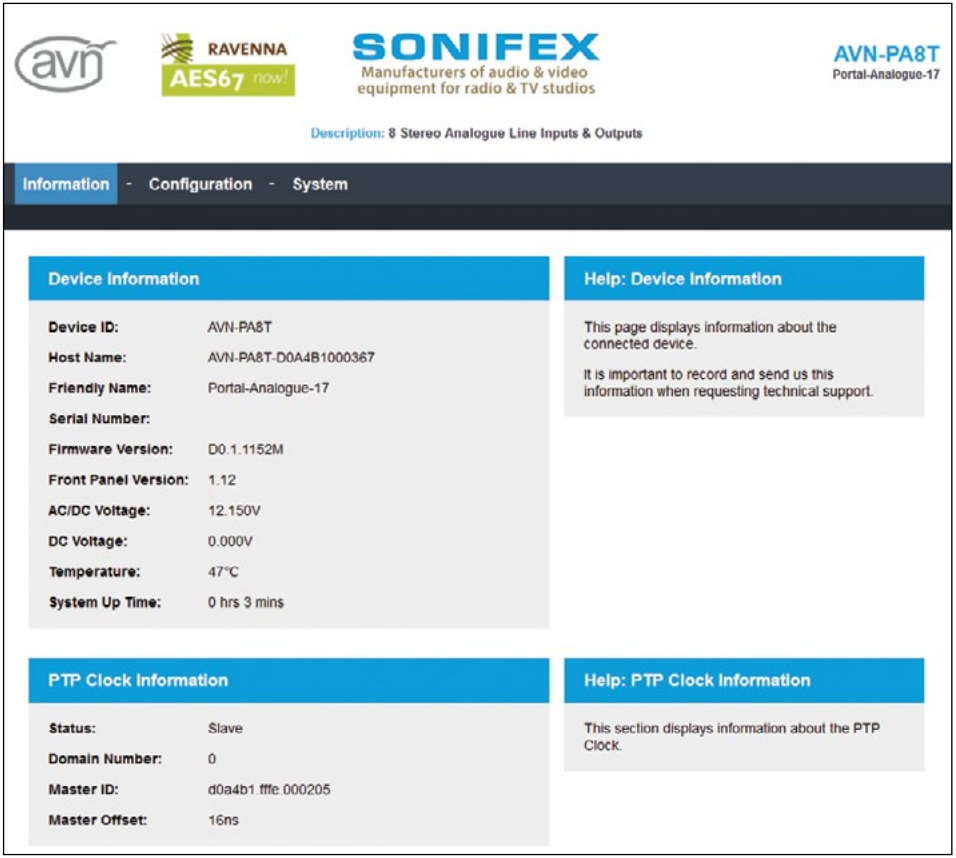


Fig 8-1: Upper Section of Device Information Web Page

Information

There are two pages under the 'Information' tab these are 'Device Information' and 'GPIO Assignments'. The 'Device Information' page provides useful information about the device which can help quickly diagnose any issues with the devices setup. The 'GPIO Assignments' page provides a summary of the configuration of each GPIO, Relay and vGPIO, it also automatically reports any issues in their configuration.

Device Information

The top part of this page shows details of the connected unit as shown:

This information shows the current status of the unit as well as the software versions of the various modules running on the unit. When contacting Sonifex technical support, it is important to provide the information shown on this page.

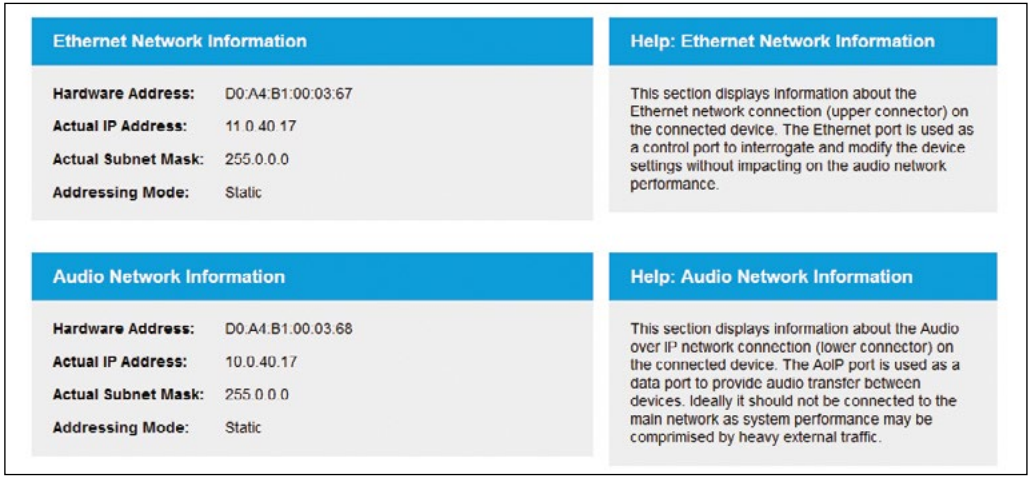


Fig 8-2: Lower Section of Device Information Web Page

The lower half of the page shows the status of the Precision Time Protocol (PTP) clock, as well as the configuration of the network ports as shown:

The network IP addresses and subnet masks shown are the actual values currently in use.

GPIO Assignments

The 'GPIO Assignments' web page contains three sections; these sections are as follows.

- GPIO Assignments
- User Button GPIO Assignments
- Virtual GPIO Assignments

GPIO Assignments

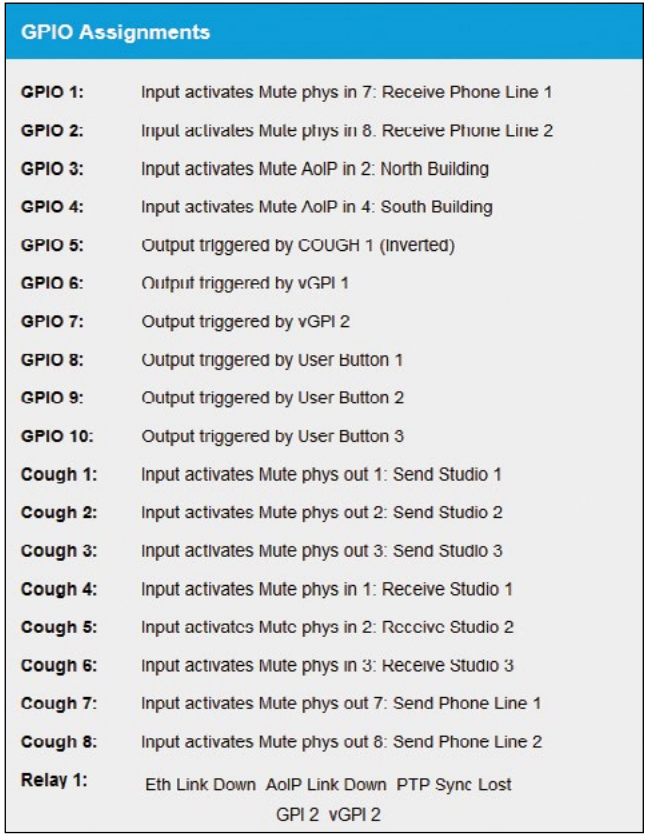


Fig 8-3: 'GPIO Assignments' Section of 'GPIO Assignments' Webpage (RJ45 Version)

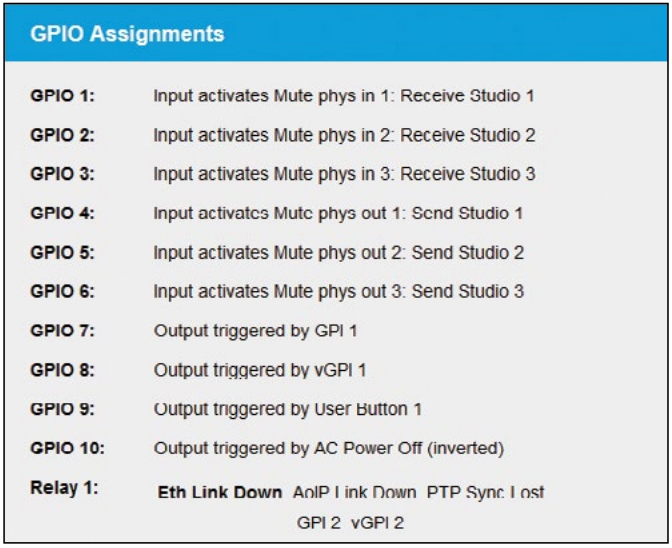


Fig 8-4: 'GPIO Assignments' Section of 'GPIO Assignments' Webpage (Terminal Version)

This section displays information about the physical GPIO port assignments. Each port can be an input or an output or it can be disabled. Inputs can activate local functions and trigger virtual GPO. Outputs can be triggered by local functions, virtual GPI and Ember+ consumers. This section also shows, a list of triggers assigned to the relay, with the triggers that are currently active shown in bold. Any errors in the configuration of the physical GPIO will be displayed in red text next to the associated GPIO. The cough ports can only be seen on devices with RJ45 type connectors on their outputs.

User Button GPIO Assignments

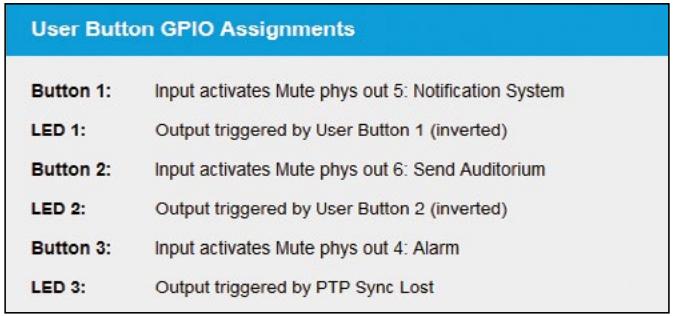


Fig 8-5: 'User Button GPIO Assignments' Section of 'GPIO Assignments' Webpage

This section displays information about the user buttons on the front panel of the devices and their corresponding LEDs.

Virtual GPIO Assignments

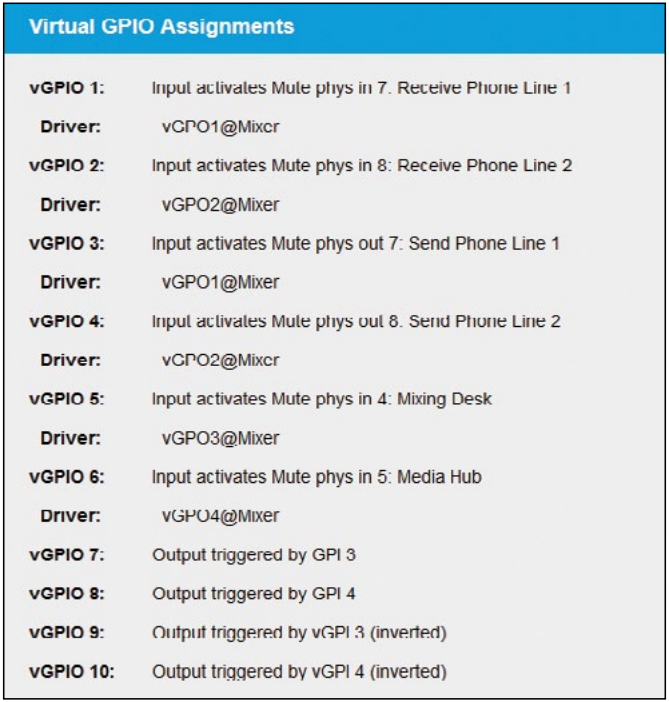


Fig 8-6: 'Virtual GPIO Assignments' Section of 'GPIO Assignments' Webpage

This section displays information about the virtual GPIO assignments. Each port can be set up as an input or output, or if the port isn't used it can be disabled. If a port is configured as an input, the remote virtual output driving the port will also by shown.

Configuration

There are five sections under the 'Configuration' tab, these are as follows.

- Network
- PTP
- Display Settings
- Audio Routing
- GPIO Settings

Each settings page has a 'Submit' button, this is initially greyed out and disabled when the page is loaded. After changes are made to the web page, the 'Submit' button is enabled and change to a green colour, pressing this button will then save any changes made to the page. If the user tries to navigate to another webpage when changes have been made an alert box will be displayed asking the user if they would like to save the change made, if the user selects 'OK' the changes are saved before moving to the new page, if 'Cancel' is selected, any changes made are discarded before moving to the new page.

Network

The Network page shows the current configuration of the Ethernet and AoIP network ports. The friendly name is also set here.

Friendly Name – The friendly name identifies the unit on the network. It is a good idea to assign a user name or location as this is easily recognised by other users. The default friendly name is made from the device ID and the 7-digit product serial number i.e. AVN-PA8-1234567. The friendly name can only contain letters, numbers and hyphens although it cannot start or end with a hyphen.

Address Mode – Each network port has its own independent address mode which determines how the port obtains its IP address. When set to dynamic, the unit will attempt to acquire an IP address automatically from either a DHCP server or via auto configuration if no DHCP server is found. The actual IP address will be shown on the device information page. When static mode is used, the IP address and subnet mask values entered will be assigned to the corresponding network port.

Static IP Address – This is the IP address that will be assigned to the corresponding network port when static address mode is selected. It is important to ensure that this IP address is not currently in use on the network. These values are not used when the address mode is dynamic.

Static Subnet Mask – This is the subnet mask that will be used for the corresponding network port when static address mode is selected. These values are not used when the address mode is dynamic.

Auto Multicast – When this option is enabled and the address mode of the AoIP port is set to static, the AoIP transmit multicast IP addresses, shown on the Audio Routing Web Page, are automatically configured based on the AoIP port IP address. If the IP address of the AoIP port is changed, the multicast addresses are updated. This simplifies configuration and ensures the multicast addresses are unique on the network.

If any of the network configuration options are changed, the unit will automatically restart to implement the new settings. If the IP address of the network port that is currently being used to access the web server is changed, a new connection will need to be made once the unit has restarted. Otherwise, the new page will be shown automatically once the restart is complete.

Network Defaults

Friendly Name:	AVN-PA8-xxxxxxx
	Where xxxxxxx is the product serial number
Ethernet Port:	
Address Mode:	Static
Static IP Address:	192.168.0.100
Static Subnet Mask:	255.255.255.0
Audio over IP Port:	
Address Mode:	Static
Static IP Address:	192.168.1.100
Static Subnet Mask:	255.255.255.0
Auto Multicast:	Enabled

PTP Profiles Web Page

The PTP Profiles page shows the currently selected PTP profile. It also allows the parameters in each profile to be edited.

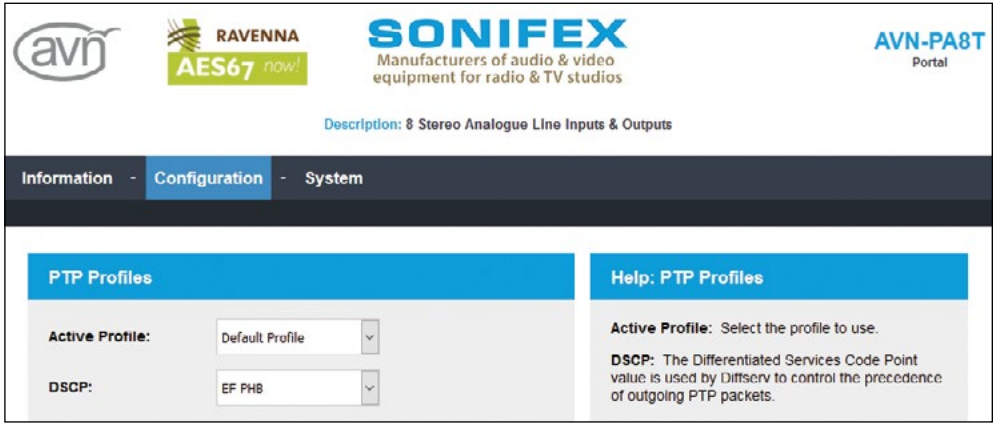


Fig 8-7: Upper Section of PTP Profiles Web Page

Active Profile – There are 3 PTP profiles available: Default, AES67 Media and Custom. This dropdown list selects which of the profiles will be active.

DSCP – The DSCP (or Differentiated Services Code Point) value is used by DiffServ to control the precedence of outgoing PTP packets. Network hardware can use this value to ensure PTP data has higher priority over any other network traffic. See Table 12 1 – DSCP Names & Their Corresponding IP Precedence for more information.

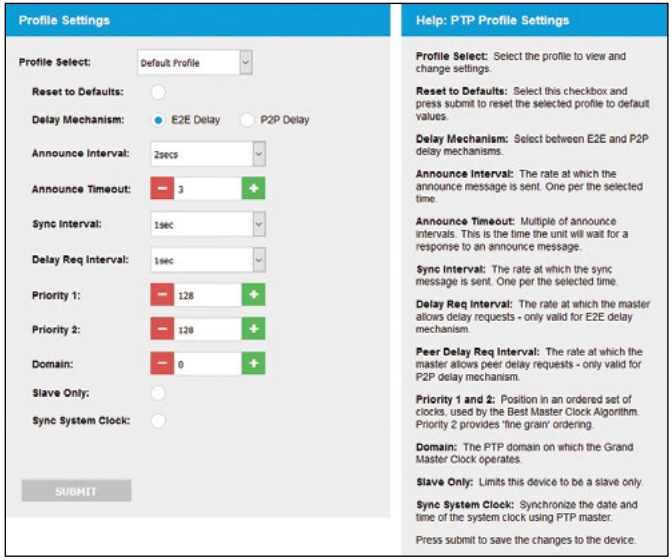


Fig 8-8: Upper Section of PTP Profiles Web Page

Profile Select – This dropdown list selects the profile to view and change settings. All of the available profiles can be edited.

Reset to Defaults – Selecting this checkbox and pressing the submit button resets the selected profile to the default settings for that profile.

Delay Mechanism – This selects the method for calculating and maintaining the clock synchronisation communication delay between master and slave devices. Both P2P (Peer to Peer) and E2E (End to End) methods are supported. The best method for a particular installation will depend on the type of network hardware used. If all the switches are known to be IEEE 1588 capable, P2P should be used. Otherwise it is best to use E2E.

Announce Interval – This is the rate at which the announce message is sent, one per the selected time. The announce message forms part of the Best Master Clock Algorithm (BMCA) and contains the properties of the clock which sends it. If a device receives an announce message from a better clock, it will enter the slave state.

Announce Timeout – This is the time the unit will wait for an announce message and is a multiple of announce intervals. If no announce messages are received within the timeout interval, the unit will assume the role of grandmaster.

Sync Interval – This is the rate at which the sync message is sent, one per the selected time. The sync and follow up messages are sent from the master to the slave to determine the difference in clock frequency. This information is used in conjunction with the network delay to synchronise the clocks.

Delay Request Interval – This defines the rate at which a slave clock sends delay request messages to the master. The delay request message allows a slave device to calculate the network delay from the slave to the master. This option is only valid when using the E2E delay mechanism.

Peer Delay Request Interval – This is the rate at which a device exchanges peer delay measurement messages. This allows each unit to track the network delays between itself and its connected neighbours. This option is only valid when using the P2P delay mechanism.

Priority 1 & Priority 2 – These values define a precedence setting used by the best master clock algorithm when selecting a grandmaster clock. Priority 2 defines a fine tune setting when multiple clock sources have similar ordering criteria.

Domain – This defines the group of PTP devices that the unit will communicate with.

Slave Only – This option limits the unit to being a slave PTP clock only.

Sync System Clock – When this option is selected, the system clock (i.e. the date and time) of the unit is synchronised with the PTP master.

PTP Profiles Defaults

Active Profile: Default
DSCP: AF PHB
Default Profile:
- Delay Mechanism: E2E
- Announce Interval: 2 secs
- Announce Timeout: 3 secs
- Sync Interval: 1 sec
- Delay Req Interval: 1 sec
- Peer Delay Req Interval: 1 sec
- Priority 1: 128
- Priority 2: 128
- Domain: 0
- Slave Only: Disabled

AES67 Media Profile:
- Delay Mechanism: E2E
- Announce Interval: 2 secs
- Announce Timeout: 3 secs
- Sync Interval: 1/8 sec
- Delay Req Interval: 1 sec
- Peer Delay Req Interval: 1 sec
- Priority 1: 128
- Priority 2: 128
- Domain: 0
- Slave Only: Disabled

Custom Profile:
- Delay Mechanism: E2E
- Announce Interval: 2 secs
- Announce Timeout: 3 secs
- Sync Interval: 1 sec
- Delay Req Interval: 1 sec
- Peer Delay Req Interval: 1 sec
- Priority 1: 128
- Priority 2: 128
- Domain: 0
- Slave Only: Disabled

Display Settings

On all devices the ‘Front Panel Settings’ section should be available, on devices with a meter panel the ‘Meter Panel Settings’ section should also be available.

The following devices have a metering panel.

AVN-PA8D
AVN-PA8TD
AVN-PD8D
AVN-PD8TD
AVN-PM8D
AVN-PM8TD

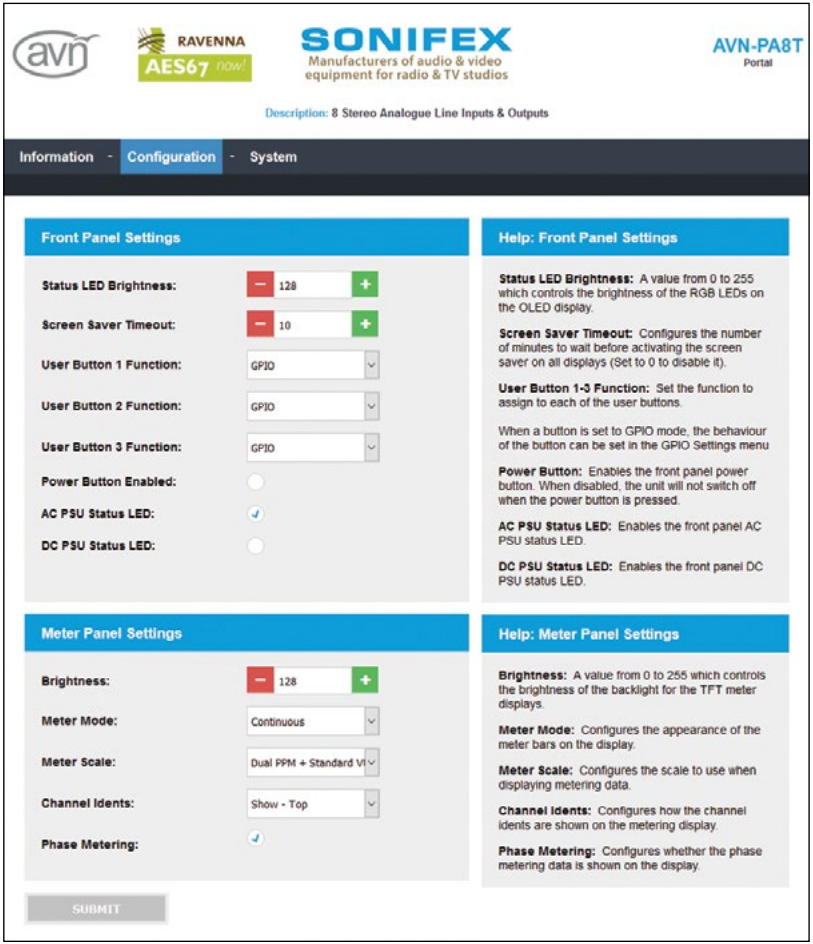


Fig 8-9: Image of ‘Display Settings’ Webpage

Front Panel Settings

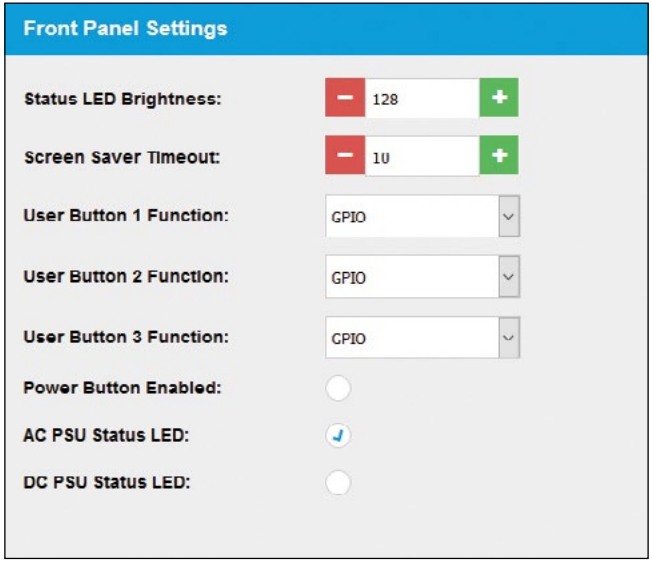


Fig 8-10: 'Front Panel Settings' Section of 'Display Settings' Webpage

Status LED Brightness

Click on the '+' or '-' button, or type in a value, to change the brightness of the status LEDs on the front panel of the device, the brightness can be set to any value from 0 to 255 with 0 being the dimmest setting and 255 being the brightest.

Screen Saver Timeout

Click on the '+' and '-' buttons or type in a value, to set the time until the screen saver is activated on the OLED and meter displays (if fitted). This is measured in minutes and can be any whole number from 0 to 60, setting it to 0 disables the timeout.

User Button 'N' Function

This allows the user to perform a function when button 'n' on the front panel is pressed, where 'n' is 1, 2 or 3, the options available are 'None', 'GPIO', 'Input Menu Shortcut' and 'Output Menu Shortcut'.

'None' – Pressing the associated user button does nothing.

'GPIO' – Allows the button to be configured in the 'GPIO Settings' webpage, for example the button could be used to mute and output.

'Input Menu Shortcut' – Allows the user to jump into the 'Input Channel' menu on the OLED display which allows the user to select an input channel to be shown in full-screen mode on the TFT metering display.

'Output Menu Shortcut' – Allows the user to jump into the 'Output Channel' menu on the OLED display which allows the user to select an input channel to be shown in full-screen mode on the TFT metering display.

Power Button Enabled

This option enables the power button on the front panel of the unit. When enabled, pressing the power button will switch the unit on and off.

AC PSU Status LED

This option enables or disables the AC PSU status LED on the front panel.

DC PSU Status LED

This option enables or disables the DC PSU status LED on the front panel.

Meter Panel Settings

This section is only available on devices with a ‘Meter Display’ (device ID ends in a ‘D’)

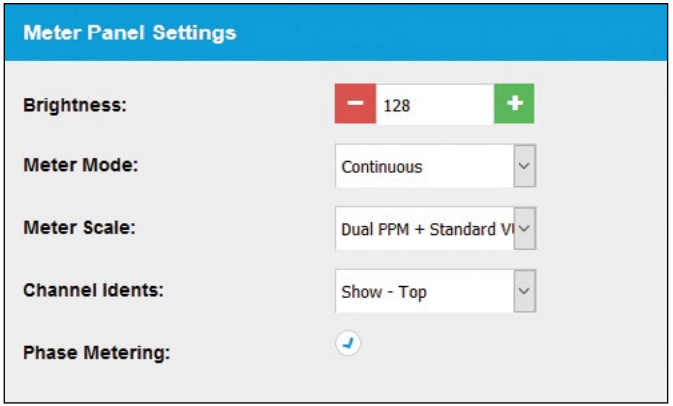


Fig 8-11: ‘Meter Panel Settings’ Section of ‘Display Settings’ Webpage

Brightness

Click on the ‘+’ and ‘-’ buttons, or type in a value, to change the brightness of the backlight for the meter displays, the brightness can be set to any value from 0 to 255 with 0 being the dimmest setting and 255 being the brightest.

Meter Mode

This can be set to either ‘Discrete’ or ‘Continuous’ and changes the appearance of the meter bar of the meter display.

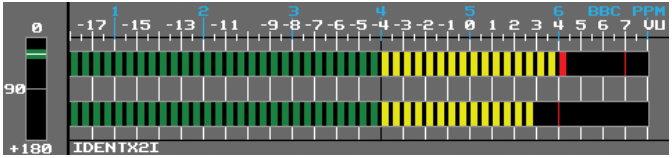


Fig 8-12: Discrete Meter Mode Image

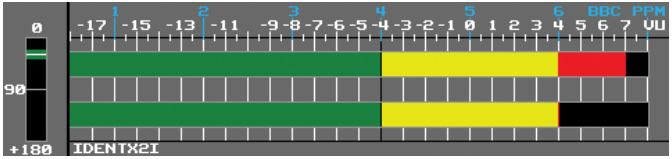


Fig 8-13: Continuous Meter Mode Image

Meter Scale

Many different types of scale can be selected to display alongside metering, the available options are as follows.

The characteristics in the following tables are true when there is 0dB of input gain. (See Table 8-1 and 8-2 on page 35).

Normal Layout

Meter Characteristics	Scale Range Without Phase Meter	Scale Range with Phase Meter	0dBFS Reference	Start of Amber Section	Start of Red Section
Dual PPM + Standard VU	-8 to +12dBu	-2 to +12dBu	+18dBu	0dBu	+8dBu
EBU PPM	-9 to +12 dBu	-7 to +12 dBu	+18dBu	0dBu	+8dBu
BBC PPM	-8 to +12 dBu	-5 to +12 dBu	+18dBu	0dBu	+8dBu
Nordic PPM	-30 to +12 dBu	-26 to +12 dBu	+18dBu	0dBu	+6dBu
AES Digital PPM	-42 to 0 dBFS	-38 to 0 dBFS	+18dBu	-18dBFS	0dBFS
DIN PPM	-23 to +11 dBu	-19 to +11 dBu	+18dBu	-3dBu	+4dBu
German PPM	-32 to +15 dBu	-26 to +15 dBu	+15dBu	-32dBu	+7dBu
SMPTE RP.0155	-42 to 0 dBFS	-38 to 0 dBFS	+18dBu	-20dBFS	0dBFS
Standard VU	-18 to +3 VU	-16 to +3 VU	+18dBu	-4VU	0VU
Extended VU	-16 to +15 VU	-12 to +15 VU	+18dBu	-4VU	0VU

Table 8-1: Normal Layout.

Detailed View

Meter Characteristics	Scale Range Without Phase Meter	Scale Range with Phase Meter	0dBFS Reference	Start of Amber Section	Start of Red Section
Dual PPM + Standard VU	-17 to +12 dBu	-14 to +12 dBu	+18dBu	0dBu	+8dBu
EBU PPM	-17 to +12 dBu	-14 to +12 dBu	+18dBu	0dBu	+8dBu
BBC PPM	-16 to +12 dBu	-13 to +12 dBu	+18dBu	0dBu	+8dBu
Nordic PPM	-47 to +12 dBu	-41 to +12 dBu	+18dBu	0dBu	+6dBu
AES Digital PPM	-59 to 0 dBFS	-53 to 0 dBFS	+18dBu	-18dBFS	0dBFS
DIN PPM	-48 to +11 dBu	-42 to +11 dBu	+18dBu	-3dBu	+4dBu
German PPM	-64 to +15 dBu	-58 to +15 dBu	+15dBu	-54dBu	+7dBu
SMPTE RP.0155	-59 to 0 dBFS	-53 to 0 dBFS	+18dBu	-20dBFS	0dBFS
Standard VU	-26 to +3 VU	-23 to +3 VU	+18dBu	-4VU	0VU
Extended VU	-68 to +15 VU	-56 to +15 VU	+18dBu	-4VU	0VU

Table 8-2: Detailed View.

Channel Idents

The identities of channels can be displayed either above the metering when 'Show -Top' is selected, below the metering when 'Show – Bottom' is selected or hidden by selecting 'Hidden'.

Phase Metering

This shows the phase difference of the signal on the left and right channel of an input or output. Selecting the checkbox enables this functionality. This is unavailable on the inputs of the AVN-PM8D and AVN-PM8TD as they have mono inputs. Phase metering is shown on a scale from +180 to 0.

Audio Routing

On this page inputs, outputs, AoIP streams and routing can all be configured. This is done through the use of pop-up windows and a routing grid.

Add AoIP In Stream

Clicking on the button 'Add AoIP In Stream' brings up a menu entitled 'Add New AoIP Input Stream', the window has three tabs 'General', 'AoIP' and 'EQ', the selected tab is shown with a blue background. When the window is first loaded the 'AoIP' tab is selected.

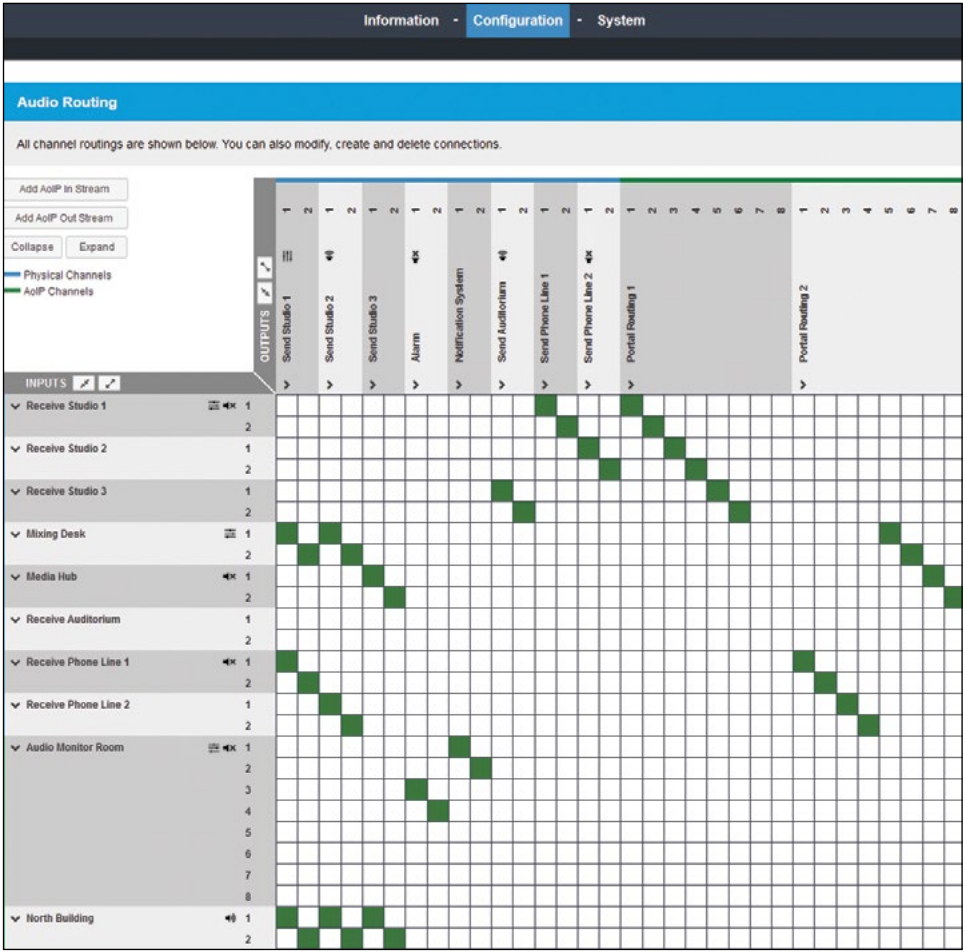


Fig 8-14: Image of 'Audio Routing' Webpage

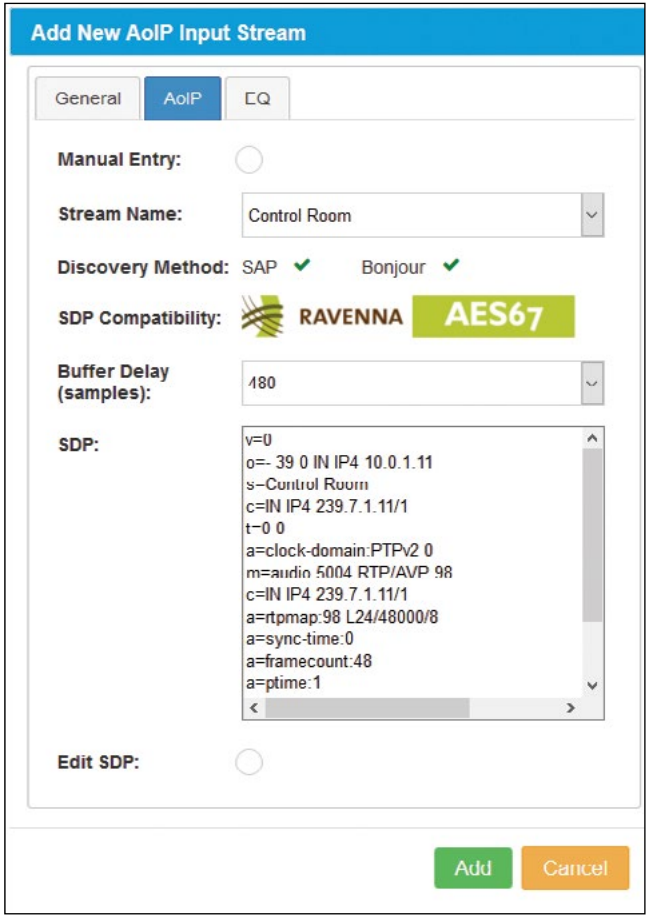


Fig 8-15: 'AoIP' Tab of 'Add New AoIP Input Stream' Window

In the 'AoIP' tab, the "Stream Name" drop-down box contains a list of all the streams that have been discovered on the network when a stream is selected in this drop-down, information about the stream is shown. The information shown includes:

- Discovery Method – Streams are discovered using SAP or Avahi/Bonjour. A green tick will be shown to indicate how the selected stream was discovered.
- SDP Compatibility – AES67 and RAVENNA logos are shown here when the SDP of a discovered stream contains the parameters required for each standard. It the logo is not shown, then the SDP that has been discovered does not contain all the necessary parameters.
- SDP – The SDP that was discovered for the selected stream is shown in the SDP box.
- SDP Errors – If there are any errors with the SDP then another textbox will be shown giving details of these.

A 'Buffer Delay' can also be set for the selected stream, this allows for smooth playback of digital streams in a high latency network, the buffer delay is measured in samples with a choice of 0, 96, 144, 192, 240, 480, or 960 samples of delay.

It is also possible to edit the SDP of a discovered stream (for example to add a parameter that was missing from the SDP which meant that the stream was not recognised as being RAVENNA compatible). This can be done by clicking the "Edit SDP" checkbox which allows the text in the SDP text box to be modified.

To add a stream to the grid, click the Add button.

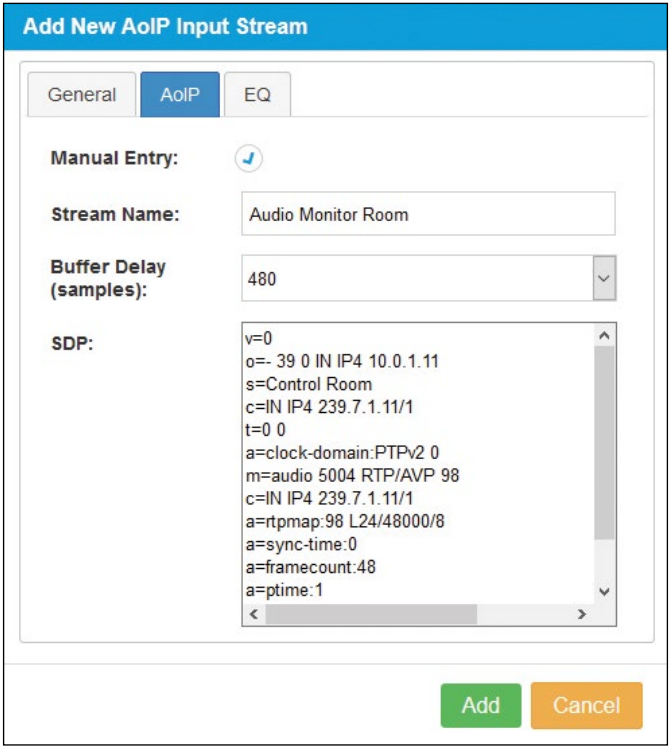


Fig 8-16: 'AoIP' Tab of 'Add New AoIP Input Stream' Window, with Manual Entry Checkbox Selected

If a particular AoIP stream is not discoverable via SAP or Avahi/Bonjour then it is possible to add the SDP manually by selecting the "Manual Entry" checkbox. When selected, the user can enter a custom "Stream Name" and an SDP for the custom stream.

As with the discovered streams, a "Buffer delay" can be set before clicking the Add button to add the stream to the grid.

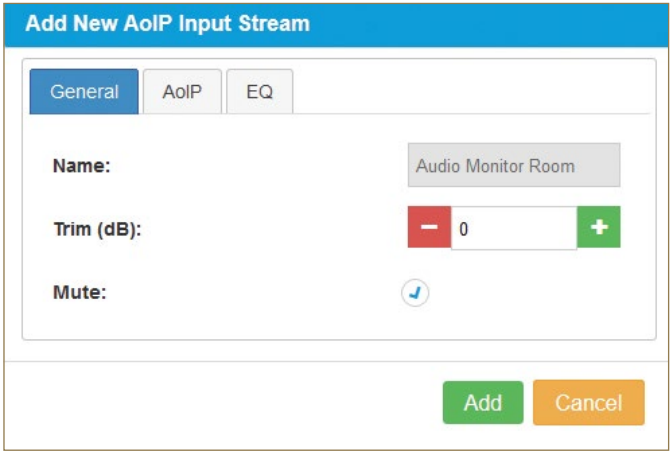


Fig 8-17: 'General' Tab of the 'Add New AoIP Input Stream' Window

In the 'General' tab the value in the 'Stream Name' field of the stream you have selected in the 'AoIP' tab is displayed in the 'Name' text field. The Trim level of the stream can also be modified by using the '+' and '-' buttons or typing a value in the text field of the 'Trim' section, the increase or decrease in the level of the stream is measured in 'dB' and can be any whole number from -12 to +12. If the trim is adjusted an icon will be shown next to the name of the stream in the grid (or) depending on the trim level set). A stream can be muted by selecting the 'Mute' checkbox before adding it, this is useful if you want to pre-configure a streams routing. If a stream is muted, a icon will be shown next to the stream name in the grid.

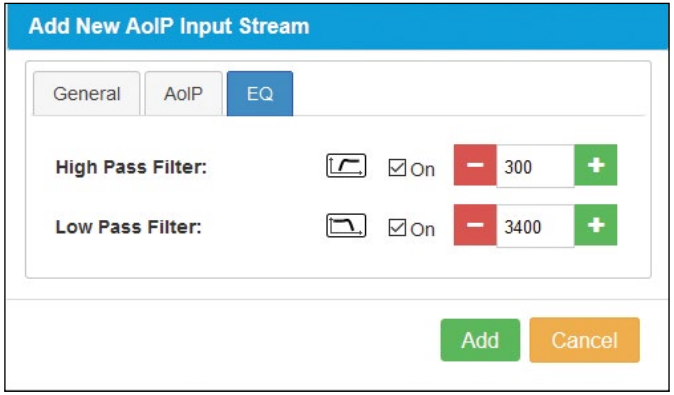


Fig 8-18: 'EQ' Tab of the 'Add New AoIP Input Stream' Window

The last tab available is the 'EQ' tab which allows a high pass filter and low pass filter to be applied to a stream.

- The 'High Pass Filter' can be enabled by selecting the 'On' checkbox. This removes low frequency components from a signal. The frequency of the lowest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The 'Low Pass Filter' can be enabled by selecting the 'On' checkbox. This removes high frequency components from a signal. The frequency of the highest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The value in these two fields can be any whole number from 40 to 10000Hz.
- If a filter is set up for a stream, a icon will be shown next to the stream name in the grid.

By pressing the green 'Add' button the stream is then added to the grid.

To modify the configuration of an AoIP input stream that has already been added to the grid, click on the name of the AoIP input stream in the "INPUTS" list to bring up the same menu described above. In this menu, it is also possilbe to remove the AoIP input stream from the grid list by clicking the "Remove" button.

Add AoIP Out Stream

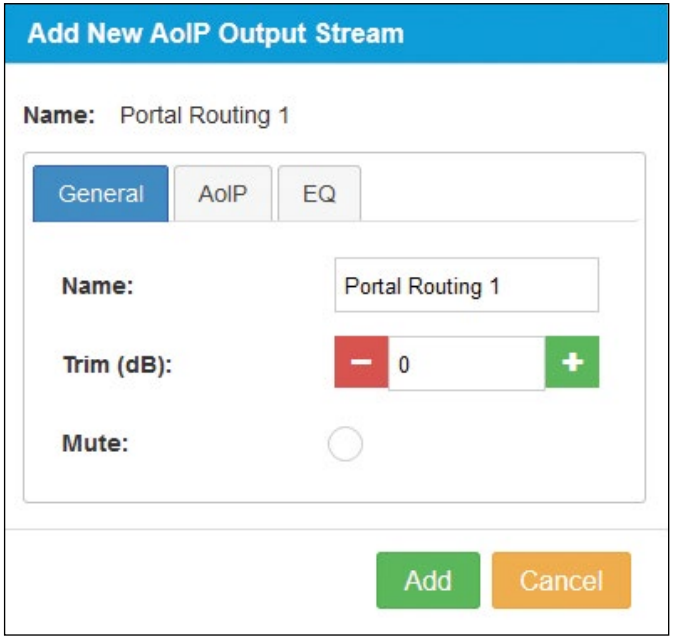


Fig 8-19: 'General' Tab of the 'Add New AoIP Out Stream' Window

Clicking on the button 'Add AoIP Out Stream' brings up a window with the title 'Add New AoIP Output Stream', the window has three tabs 'General', 'AoIP' and 'EQ', the selected tab is shown with a blue background. When the window is first loaded the 'General' tab is selected.

By default, the 'Name' field has the friendly name of the unit followed by a hyphen and the stream number, this can be changed by modifying the text in the field, the name of the AoIP stream should be between 1 and 31 characters long. The level of the signal being output can be increased or decreased using the value in the 'Trim' field. The value in this field can be modified by pressing the '+' and '-' buttons or manually entering a value into the input field. The value can be any whole number from -12 to 12 and is measured in dB. If the trim is adjusted an icon will be shown next to the name of the stream in the grid (🔈 or 🔊) depending on the trim level set).

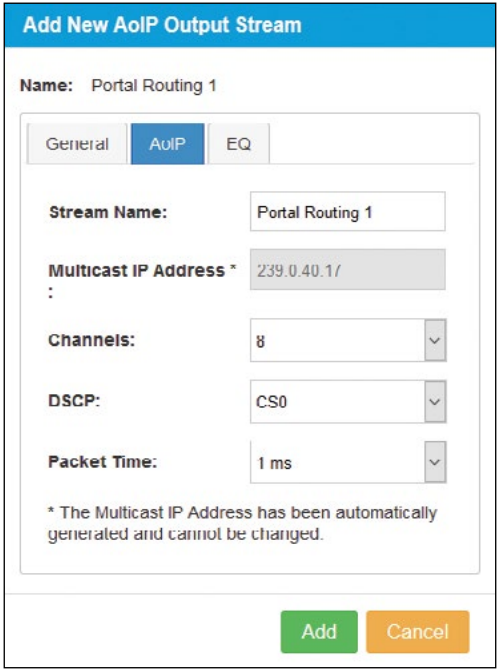


Fig 8-20: 'AoIP' Tab of the 'Add New AoIP Out Stream' Window

In the 'AoIP' tab the stream name can again be seen in the 'Stream Name' field. The multicast address IP address can be seen in the 'Multicast IP Address' field, this cannot be changed when 'Auto Multicast' is enabled within the 'Network' web page, however if 'Auto Multicast' is not enabled, an alternative Multicast address value can be entered into this field.

The number of channels the AoIP stream consists of can be selected from the 'Channels' dropdown menu this can be set to either 2, 4 or 8, this can be modified later if required. The DSCP of the stream can be set to allow the precedence of the stream packets to be modified. The different values this field can be set to is covered in the 'Additional Information' section of this booklet.

The 'Packet Time' of an AoIP output stream can be changed. The time between packets and the size of the packets both decrease as the value of 'Packet Time' decreases. Therefore, decreasing the packet time will result in smoother audio streaming on higher latency networks. Not all devices can handle lower packet times, if this is the case, the packet time will need to be adjusted in order to be compatible with those devices. This packet time can be set to either 125 µs, 250 µs, 333 µs, 1 ms or 4 ms. The 'Packet Time' can only be set to 4 ms when the number of 'Channels' is set to 2.

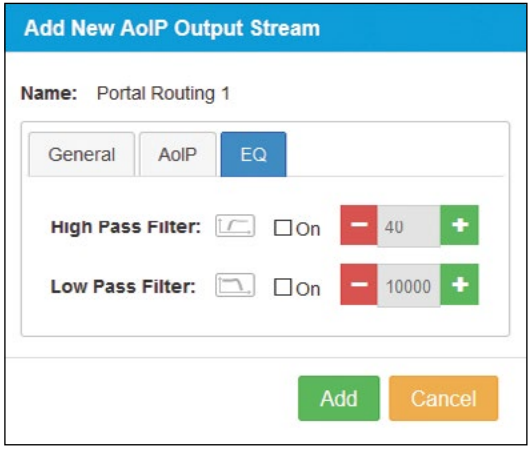


Fig 8-21: 'EQ' Tab of the 'Add New AoIP Out Stream' Window

The last tab available is the 'EQ' tab which allows a high pass filter and low pass filter to be applied to a stream.

- The 'High Pass Filter' can be enabled by selecting the 'On' checkbox. This removes low frequency components from a signal the frequency of the lowest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The 'Low Pass Filter' can be enabled by selecting the 'On' checkbox. This removes high frequency components from a signal the frequency of the highest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The value in these two fields can be any whole number from 40 to 10000Hz.
- If a filter is set up for a stream, a ⇶ icon will be shown next to the stream name in the grid.

Collapse

When the 'Collapse' button is pressed the routing grid is minimised. Each channel is hidden and instead, an overview of the routings is shown. If any channels from an input stream are routed to any channels of an output stream, the corresponding grid box will be coloured in light green.

There is also the option to minimise individual inputs and outputs by pressing the downwards pointing arrow next to the inputs/outputs name, and an option to minimise all inputs or all outputs by pressing the inwards pointing arrows next to the inputs/outputs section headers.

Expand

When the 'Expand' button is pressed the routing grid is maximised and all channels are displayed. This will show exactly which input channels are routed to which output channels. The boxes for each routing are shown in a darker green when maximised.

There is also the option to maximise individual inputs and outputs by pressing the sideways pointing arrow next to the inputs/outputs name, and an option to maximise all inputs or all outputs by pressing the outwards pointing arrows next to the inputs/outputs section headers.

Physical Inputs

All Devices

Clicking the name of a physical input, located to the left of the routing grid, opens a window with the title 'Configure Physical Input', this window contains two tabs 'General' and 'EQ'. The window opens with the 'General' tab selected, the tab that is currently selected has a blue background.

The window has two buttons at the bottom 'Save' and 'Cancel', pressing 'Save' submits the current configuration, whereas selecting 'Cancel' discards changes. Pressing either button causes the window to close.

The options available in the 'General' tab vary depending on which device from the AVN portal series is used. The following options are present on all prtal types:

- Name
- Trim (dB)
- Mute

The 'Name' input field allows the name of the physical input to be changed, the input name can be up to 64 characters long. The audit input level can be increased or decreased using the value in the 'Trim' field the value in this field can be modified by pressing the '+' and '-' buttons or manually entering a value into the input field. The value can be any whole number from -12 to 12 and is measured in dB. If the trim is adjusted an icon will be shown next to the name of the stream in the grid (or) depending on the trim level set). An input can be muted by selecting the 'Mute' checkbox. If a stream is muted, a icon will be shown next to the stream name in the grid.

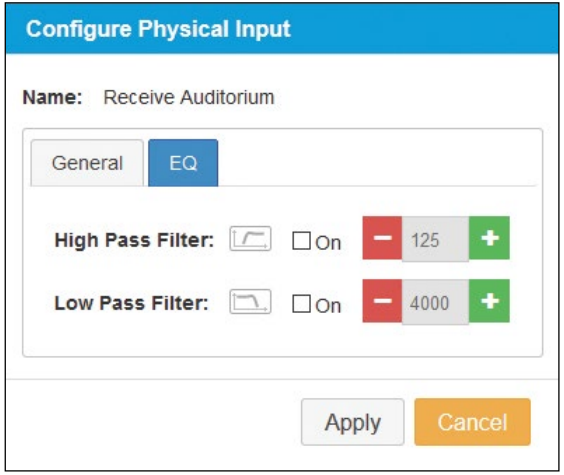


Fig 8-22: 'EQ' Tab of the 'Configure Physical Input' Window

The last tab available is the 'EQ' tab which allows a high pass filter and low pass filter to be applied to an input.

- The 'High Pass Filter' can be enabled by selecting the 'On' checkbox. This removes low frequency components from a signal. The frequency of the lowest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The 'Low Pass Filter' can be enabled by selecting the 'On' checkbox. This removes high frequency components from a signal. The frequency of the highest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The value in these two fields can be any whole number from 40 to 10000Hz.
- If a filter is set up for a stream, a icon will be shown next to the stream name in the grid.

AVN-PA8, AVN-PA8D, AVN-PA8T and AVN-PA8TD

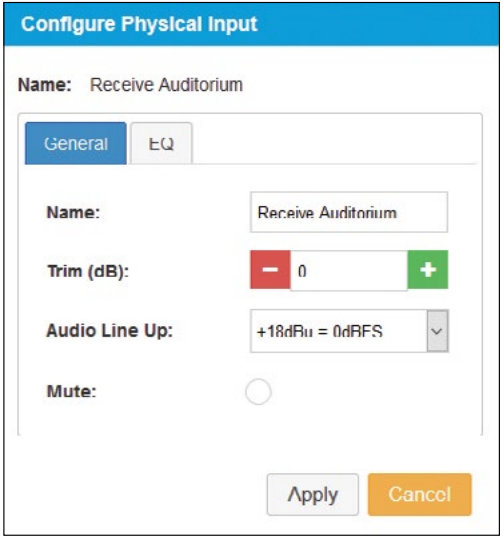


Fig 8-23: 'General' Tab of the 'Configure Physical Input' Window on the AVN-PA8

AVN-PA8 devices also have an audio line up configuration option using the 'Audio Line Up' dropdown menu. The line-up level can be set to determine the analogue audio level that is equal the 0dBFS full scale digital value. This can be set to either 15, 18, 20, 22, or 24 dBu. The audio line-up level will depend on the minimum and maximum audio levels that need to be provided, this will vary depending on the standard used geographically.

AVN-PM8, AVN-PM8D, AVN-PM8T and AVN-PM8TD

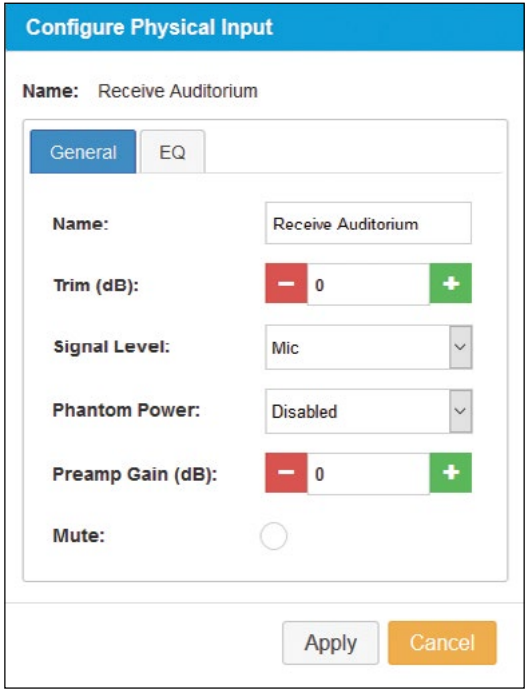


Fig 8-24: 'General' Tab of the 'Configure Physical Input' Window on the AVN-PM8 (Signal Level: Mic)

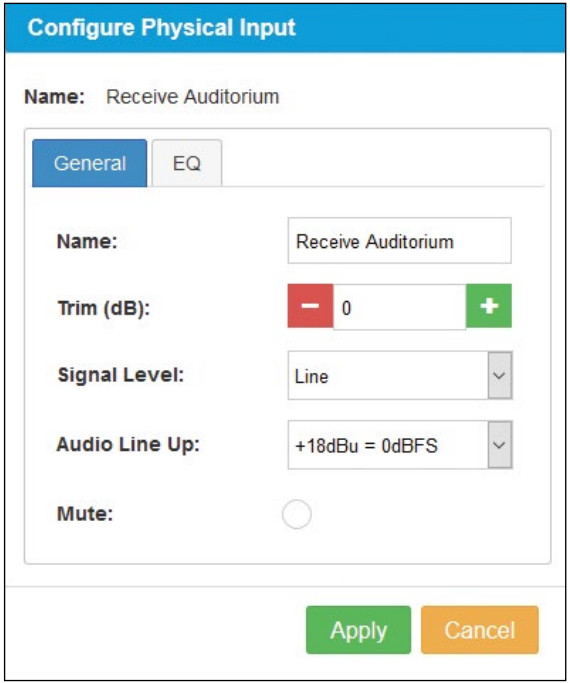


Fig 8-25: 'General' Tab of the 'Configure Physical Input' Window on the AVN-PM8 (Signal Level: Line)

AVN-PM8 devices also have the following options available when configuring an input.

- Signal Level
- Phantom Power
- Preamp Gain (dB)
- Audio Line Up

The ‘Signal Level’ can be set to either ‘Mic’ or ‘Line’. Selecting ‘Mic’ displays the options for ‘Phantom Power’ and ‘Preamp Gain’ whereas selecting ‘Line’ displays the ‘Audio Line Up’ option. When an input is set to mic level a icon will be shown next to the input name.

Each of the devices inputs supports ‘Phantom Power’ this can be enabled or disabled using the dropdown menu. When Phantom power is enabled a +48V DC supply is provided to the microphone, some microphones require this to power any active electronic circuitry they contain. When phantom power is enabled, the icon will be coloured green.

The user can add from 0 to 60 dB of gain to the microphone input by pressing the ‘+’ and ‘-’ buttons or manually entering a value into the ‘Preamp Gain’ input field.

The line-up level can be set under the ‘Audio Line Up’ dropdown menu. This determines the analogue audio level that is equal the 0dBFS full scale digital value. This can be set to either 15, 18, 20, 22, or 24 dBu. The audio line-up level will depend on the minimum and maximum audio levels that need to be provided, this will vary depending on the standard used geographically.

AVN-PD8, AVN-PD8D, AVN-PD8T and AVN-PD8TD

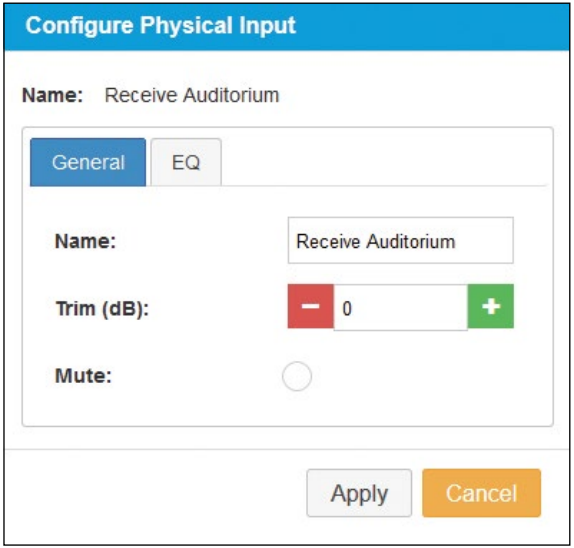


Fig 8-26: ‘General’ Tab of the ‘Configure Physical Input’ Window on the AVN-PD8

AoIP Inputs

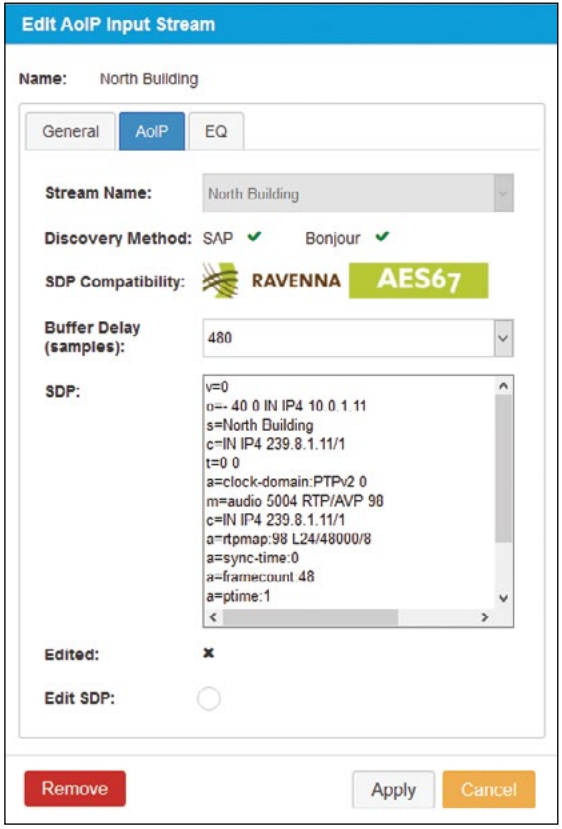


Fig 8-27: 'AoIP' Tab of 'Edit AoIP Input Stream' Window

Clicking the name of an AoIP input, located to the left of the routing grid, opens a window entitled 'Edit AoIP Input Stream', this window is essentially the same as the window that opens up when 'Add AoIP In Stream' is pressed, however there are a couple of extra features under the 'AoIP' tab.

If the stream was added manually, by clicking 'Manual Entry', at the top of the 'AoIP' tab will be a label 'Manual Entry' with a green tick next to it.

An option to edit the SDP of an AoIP input stream is also available, this is done by selecting the 'Edit SDP' checkbox, this then allows the 'SDP' information input field to be edited. There is also a label 'Edited' with a black cross next to it, when the SDP for a stream that was automatically discovered has been edited, the black cross next to the label changes to a green tick.

A 'Remove' button is also available at the bottom of an edit window. When pressed the AoIP input stream is removed from the grid.

Physical Outputs

All Devices

Clicking the name of a physical output, located to the top of the routing grid, opens a window entitled 'Configure Physical Output', this window contains two tabs 'General' and 'EQ'. The window opens with the 'General' tab selected, the tab that is currently selected has a blue background.

The window has two buttons at the bottom 'Save' and 'Cancel', pressing 'Save' submits the current configuration, whereas selecting 'Cancel' discards changes. Pressing either button causes the window to close.

The options available in the 'General' tab vary depending on which device from the AVN portal series is used. Some options remain available regardless of the device however, these are the following options.

- Name
- Trim (dB)
- Mute

The 'Name' input field allows the name of the physical output to be changed, the output name can be up to 64 characters long. The level of

the signal being output can be adjusted using the value in the 'Trim' field. The value in this field can be modified by pressing the '+' and '-' buttons or manually entering a value into the input field. The value can be any whole number from -12 to 12 and is measured in dB. If the trim is adjusted an icon will be shown next to the name of the stream in the grid (or depending on the trim level set). An output can also be muted by selecting the 'Mute' checkbox. If a stream is muted, a icon will be shown next to the stream name in the grid.

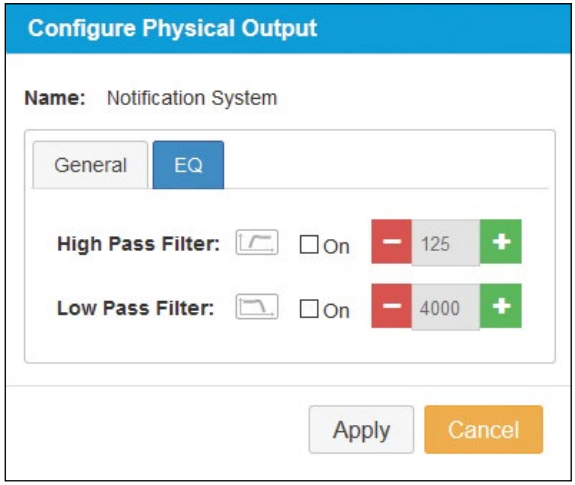


Fig 8-28: 'EQ' Tab of 'Configure Physical Output' Window

The last tab available is the 'EQ' tab which allows a high pass filter and low pass filter to be applied to an input.

- The 'High Pass Filter' can be enabled by selecting the 'On' checkbox. This removes low frequency components from a signal. The frequency of the lowest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The 'Low Pass Filter' can be enabled by selecting the 'On' checkbox. This removes high frequency components from a signal. The frequency of the highest components to be allowed can be set using the '+' and '-' buttons or by typing in a value in the input field.
- The value in these two fields can be any whole number from 40 to 10000Hz.
- If a filter is set up for a stream, a icon will be shown next to the stream name in the grid.

AVN-PA8, AVN-PA8D, AVN-PA8T and AVN-PA8TD

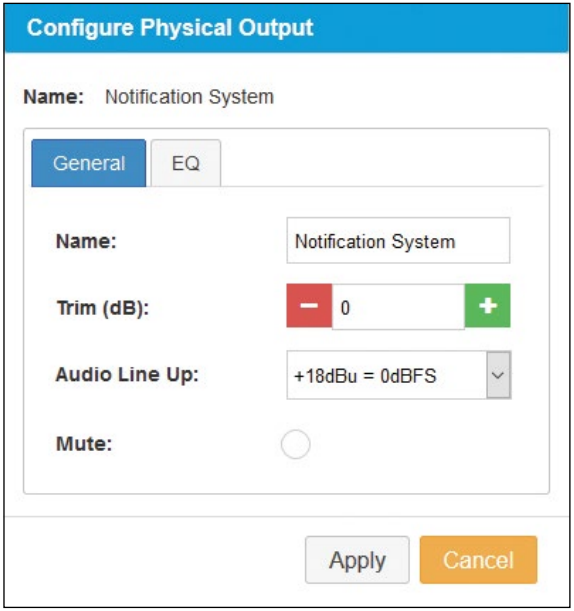


Fig 8-29: 'General' Tab of 'Configure Physical Output' Window, AVN-PA8

AVN-PA8 devices also have an audio line up configuration option using the 'Audio Line Up' dropdown menu. The line-up level can be set to determine the analogue audio level that is equal the 0dBFS full scale digital value. This can be set to either 15, 18, 20, 22, or 24 dBu. The audio line-up level will depend on the minimum and maximum audio levels that need to be provided, this will vary depending on the standard used geographically.

AVN-PD8, AVN-PD8D, AVN-PD8T and AVN-PD8TD

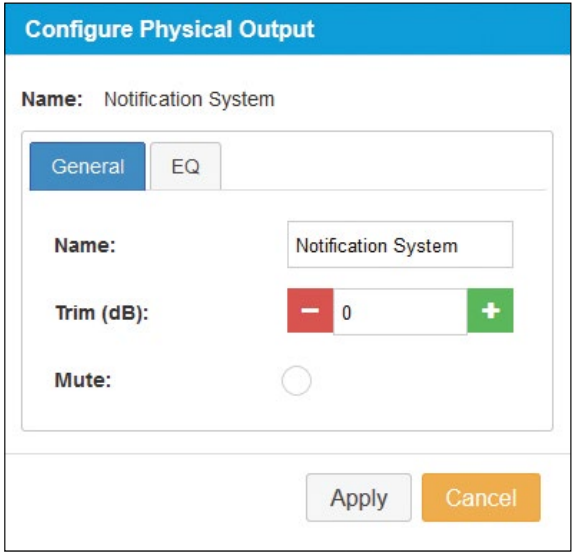


Fig 8-30: 'General' Tab of 'Configure Physical Output' Window, AVN-PD8

AVN-PD8 devices have no extra options.

AVN-PM8, AVN-PM8D, AVN-PM8T and AVN-PM8TD

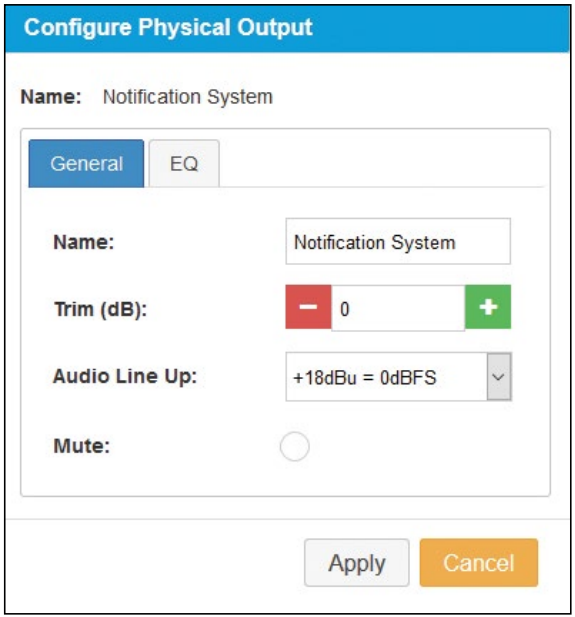


Fig 8-31: 'General' Tab of 'Configure Physical Output' Window, AVN-PM8

AVN-PM8 devices also have an audio line up configuration option. The line-up level can be set under the 'Audio Line Up' dropdown menu. This determines the analogue audio level that is equal the 0dBFS full scale digital value. This can be set to either 15, 18, 20, 22, or 24 dBu. The audio line-up level will depend on the minimum and maximum audio levels that need to be provided, this will vary depending on the standard used geographically.

AoIP Outputs

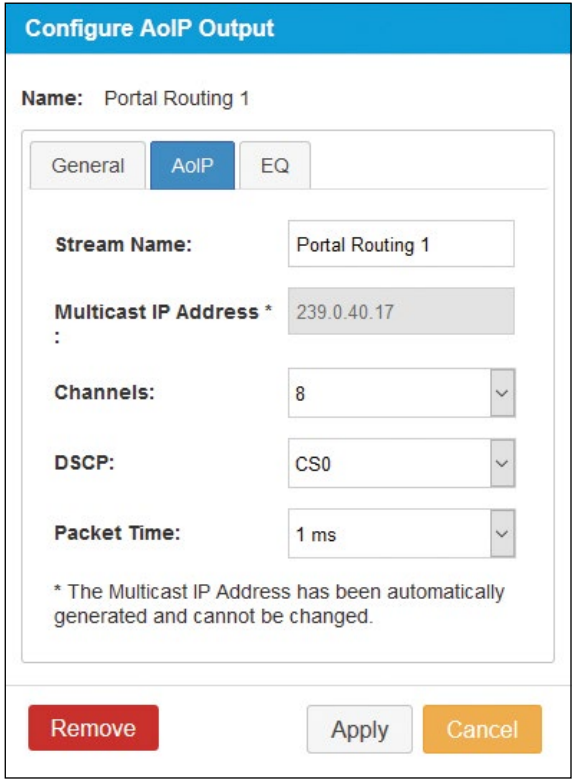


Fig 8-32: 'Configure AoIP Output' Window of 'Audio Routing' Webpage

Clicking the name of an AoIP output stream, located along the top of the routing grid, opens a window entitled 'Configure AoIP Output', this window is essentially the same as the window that opens up when 'Add AoIP Out Stream' is pressed, however a 'Remove' button is also available at the bottom of an edit window. When pressed, it removes the AoIP output stream from the device.

Routing

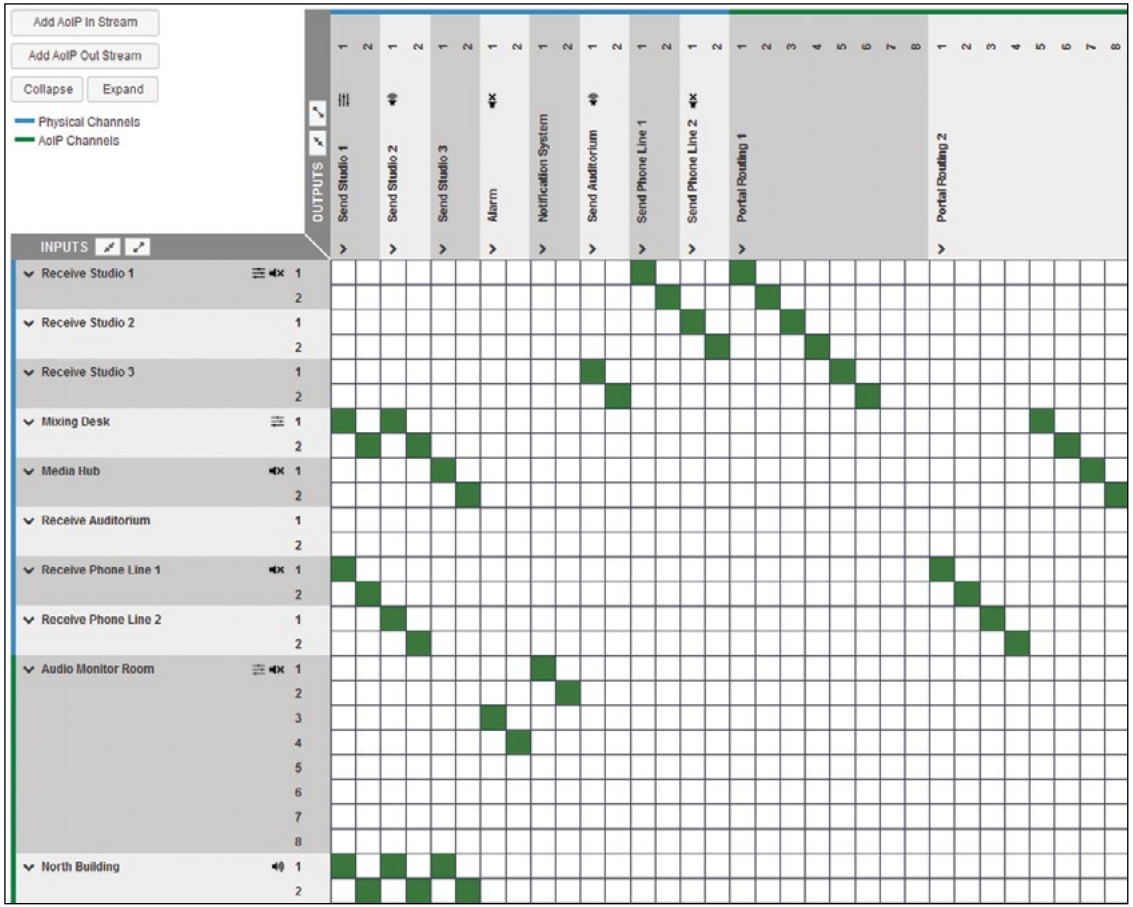


Fig 8-33: Image of 'Routing Grid' of 'Audio Routing' Webpage

Clicking on a box in line with an input/output when that input/output is minimised will maximise that input/output, this then allows the routing of individual channels between that input/output. Routing is achieved by clicking on a box which is in line with an input/output channel, this will cause the audio from the input channel to be routed to the selected output channel. When an input/output channel is routed, the corresponding box will become a dark green colour, clicking on the box when it is this dark green colour will open up another window entitled 'Configure Connection'. If the user holds down the Ctrl key and clicks on a dark green box, the routing is deleted without having to use the 'Configure Connection" window to do so.

The 'Configure Connection' window lists the connected input and output channels next to the labels 'Input' and 'Output'. This window has one 'General' tab. The tab provides an option to adjust the level of the audio going through this connection, this is done by entering a value into the 'Mix Level' input field or by clicking the '+' and '-' buttons either side of this, the value is measured in dB and can be any integer value from -100dB (completely muted) to +10dB.

At the bottom of this window are the options to 'Save' and 'Cancel' changes made to the connection configuration and the option to 'Delete' the connection, this removes the routing between the input and output channel.

GPIO Settings

On the 'GPIO Settings' webpage an overview of connections between logical inputs and logical outputs can be seen, this web page allows the device to be configured to perform actions when a particular event or set of events occurs.

On the input side we have the following options;

- Physical GPI
- Virtual GPI
- Cough GPI
- Events
- User buttons

On the output side we have these options instead;

- Physical GPO
- Virtual GPO
- Events
- User LEDs
- Relays

An example scenario of when these logical connections might be useful is as follows;

In a particular setup the user would like to mute all the physical outputs when a user button is pressed, the corresponding user buttons LED should also be on when it is active. After setting up 'User Button 1 Function' to 'GPIO' within the 'Display Settings' webpage, they add 'User Button 1' as an input, they then add to 'Mute phys out' output for each of the physical outputs, they also add the 'User LED 1' output. They then click on the white square between the input and the outputs on the routing grid and a connection is made. Now when user button 1 is pressed all physical outputs will be muted and the user buttons LED will be turned on.

Below is an image showing an example GPIO settings setup.

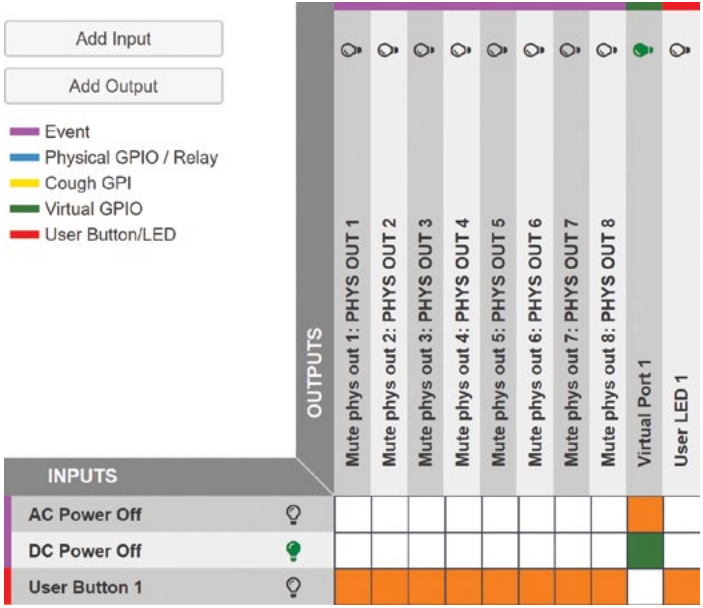


Fig 8-34: The 'GPIO Routing Grid' of the 'GPIO Settings' webpage

On the left-hand side of the routing grid the inputs are shown, these can be events, physical GPI, virtual GPI, cough GPI, or user buttons. Above the routing grid the outputs are shown, these can be events, physical GPO, virtual GPO, user LEDs, or relays.

When first started the device will have no inputs or outputs setup, to add an input or an output to the grid click on the 'Add Input' and 'Add Output' buttons. After adding inputs and outputs to the GPIO grid they can then be routed to each other. Routings in green are active routings and routings in orange are inactive routings.

In the image Fig 8-34 we can see that the DC power off event is active as the lightbulb is green, this then means the routing between DC power off and virtual port 1 becomes active as shown by the green box, finally we see the lightbulb on virtual port 1 is green which shows that the virtual port is active.

Add Input

Clicking on the button 'Add Input' brings up a window with the title 'Add Input' the window has one tab 'General'. The selected tab is represented with a blue background, when the window is opened the 'General' tab is selected by default. At the bottom of this window are the 'Add' and 'Cancel' buttons. Pressing 'Add' will add the input to the GPIO grid. Pressing 'Cancel' at any time will close the window without making any changes.

General Tab

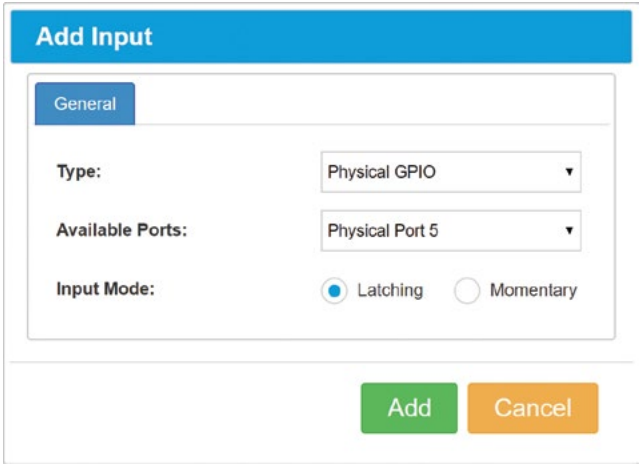


Fig 8-35: The 'General' tab of the 'Add Input' window

Type
The type drop-down menu allows the user to configure how the input will operate, the options available are described below.

Physical GPIO
Allows a general-purpose input on the rear panel of the device to be used as a trigger for an output.

When selected the following options are also displayed:

- Available Ports
- Input Mode

Virtual GPIO
Allows a virtual general-purpose input to be created using a source from the network, this can then be as a trigger for an output.

When selected the following options are also displayed:

- Available Ports
- vGPIO Source

Cough
Allows a cough input to be created this cough port can be activated by connecting an AVN-HA1 or AVN-HD1 to an output connection of the portal, this can then be used as a trigger for an output.

When selected the following options are also displayed:

- Available Ports

Event
Allows an input event to be selected which will then cause an output to be triggered, for example an input event could be set when DC power is lost.

When selected the following options are also displayed:

- Available Events

User Button
Allows a user button on the front panel of the device to be setup to trigger an output, note that the user button will only work as an input if it is set up as a 'GPIO' within the 'Front Panel Settings' section of the 'Display Settings' web page.

When selected the following options are also displayed:

- Available Buttons

Available Ports
This drop-down menu allows the user to select which of the available physical ports or virtual ports to setup, this is dependent on the type of port selected.

There are ten physical ports available and ten virtual ports available.

Input Mode (Physical GPI only)
The input mode can be set to either 'Momentary' or 'Latching'.

Momentary
When the input mode is set to 'Momentary', the input function is enabled only whilst the input is active.

Latching
When the input mode is set to 'Latching', making the input active briefly will toggle whether the input function is enabled or disabled.

vGPIO Source (Virtual GPI only)
The 'vGPIO Source' drop-down window allows the user to select a virtual general-purpose output port from another device that is available on the network and use that to set the state of the virtual input

Available Events
This drop-down menu allows an event to be selected that can then be used as an input to drive the state of another output the list of options are as follows:

Eth Link Down
Active when no connection is available via the ethernet network port on the device.

AoIP Link Down
Active when no connection is available via the AoIP network port on the device.

AC Power Off
Active when the status of the AC port is in fault condition (red AC status LED).

DC Power Off
Active when the status of the DC port is in fault condition (red DC status LED).

PTP Sync Lost
Active when the connection to the PTP master is lost.

Digital Lock Lost n (AVN-PD8 Only)
Active when no digital input signal is available on the physical digital input selected.

Available Buttons
The 'Available Buttons' drop-down menu allows the user to select which of the available user buttons to setup, there are 3 user buttons available on the AVN-Portal, these can be found on the front panel of the device.

Add Output
Clicking on the button 'Add Output' brings up a window with the title 'Add Output' the window has one tab 'General'. The selected tab is represented with a blue background, when the window is opened the 'General' tab is selected by default. At the bottom of this window are the 'Add' and 'Cancel' buttons. Pressing 'Add' will add the output to the GPIO grid. Pressing 'Cancel' at any time will close the window without making any changes.

General Tab

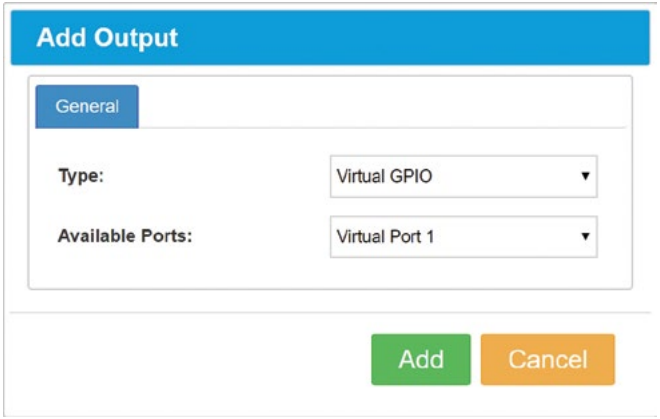


Fig 8-36: The 'General' tab of the 'Add Output' window

Type
The type drop-down menu allows the user to configure how the output will operate, the options available are described below.

Physical GPIO
Allows a general-purpose output on the rear panel of the device to be enabled when any of the inputs routed to this output are active.

When selected the following options are also displayed:

- Available Ports

Virtual GPIO
Creates a virtual general-purpose output on the network, this virtual general-purpose output becomes active when any of the inputs routed to this output are active.

When selected the following options are also displayed:

- Available Ports

Event
Allows an event to be activated when any of the inputs routed to this output are active.

When selected the following options are also displayed:

- Available Events

User LED
Allows the user LED to be toggled between its on colour and its off colour, the on colour is displayed when any of the inputs routed to this output are active, note that the user LED will only work as an output if it is set up as a 'GPIO' within the 'Front Panel Settings' section of the 'Display Settings' web page.

When selected the following options are also displayed:

- Available LEDs

Relay
Allows the relay available on the 'GPIO' connector, to be toggled on and off when any of the inputs routed to this output are activated.

When selected the following options are also displayed:

- Available Relays

Available Ports
This drop-down menu allows the user to select which of the available physical ports or virtual ports to setup, this is dependent on the type of port selected.

There are ten physical ports available and ten virtual ports available.

Available Events

This drop-down menu allows the event to be triggered when any input routed to this output is active, the list of options are as follows.

Mute phys in n
Mute the audio on physical input 'n'.

Mute phys out n
Mute the audio on physical out 'n'.

Mute AoIP in n
Mute the audio on AoIP output 'n'.

Mute AoIP out n
Mute the audio on AoIP output 'n'.

Stop AoIP out n
Stop AoIP output 'n' completely, this takes down the AoIP output stream so that no audio packets are sent at all as appose to mute which still sends packets but with no audio in.

Available LEDs
The 'Available LEDs' drop-down menu allows the user to select which of the available user LEDs to setup, there are 3 LED's available on the AVN-Portal, these can be found on the front panel of the device.

Available Relays
The 'Available Relays' drop-down menu allows the user to select which of the available relays on the device is to be setup as an output, there is one relay available on an AVN-Portal.

Routing Grid
The routing grid uses coloured routing squares to show the status of a routing within the grid.

Creating Routings

Normal un-routed squares will be displayed in white, this represents a potential connection between an input and output that has not yet been routed but is allowed to be, when one of these squares is hovered over the square changes to the following grey colour. In conjunction with this a series of blue squares in line with that square appear, with the input and output labels also being highlighted in blue.



Fig 8-37: Normal un-routed square



Fig 8-38: Hovered square

This gives the final overall layout,

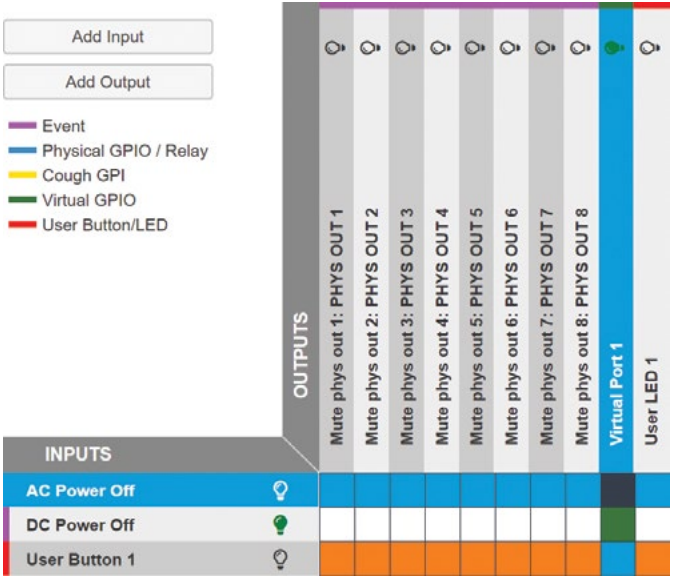


Fig 8-39: Potential routing

Clicking on the square then causes a routing to be made between that input and output. In the example above clicking would connect the input AC Power Off event to the output Virtual Port 1.

A routed inactive connection is displayed using an orange square, where as an active connection is displayed using a dark green square.



Fig 8-40: Routed inactive connection square



Fig 8-41: Routed active connection square

When a connection is active the output connected will become active.

Lightbulbs

Alongside inputs and outputs on the grid are light-bulb symbols, these are normally a dark grey colour but become green when the input or output is activated.



Fig 8-42: Inactive Lightbulb



Fig 8-43: Active Lightbulb

Quick Delete

Routing can also be quickly removed without entering the 'Configure Connection' window for each routing. Instead the user can hold 'Ctrl' on the keyboard and hover over a routing, a red square is displayed.



Fig 8-44: Delete routing square

This shows that the routing can be deleted. In order to delete the routing, click on the routing whilst it is red.

Un-routable Squares

If an input can't be routed to an output a grey square is shown and clicking on the square does nothing. Upon hovering over these un-routable squares, the cursor is changed to a 'not-allowed' type cursor.



Fig 8-45: Un-routable square



Fig 8-46: Routing not allowed square and cursor

Configure Connection

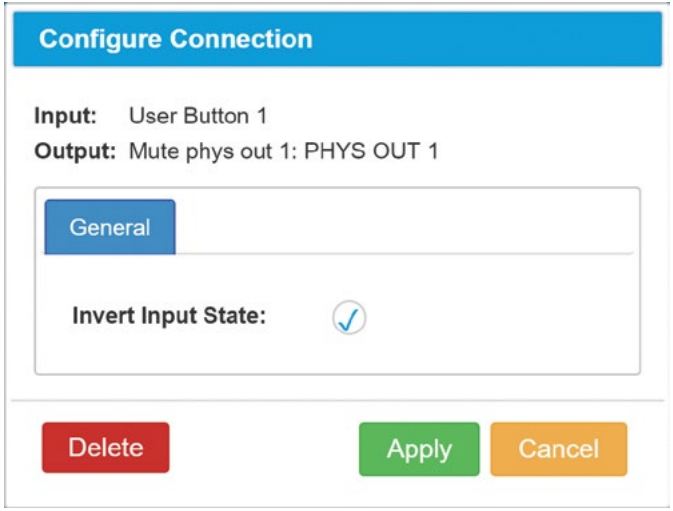


Fig 8-47: Configure connection window/Invert input state

The configure connection window is displayed when a routing is clicked, by default this opens up on the 'General' tab which is highlighted in blue. At the top of the window the input and output being configured is displayed at the bottom of the window the 'Delete', 'Apply', and 'Cancel' buttons are displayed, pressing the 'Delete' button will remove the routing, pressing the 'Apply' button will apply any changes, and pressing the 'Cancel' button will close the window without applying any changes.

Invert Input State

This option inverts the input state, this means that if the input is inactive the output routing will be active and if the input is active the routing will become inactive. For example, if the connection between user button 1 and the event mute phys out 1 is inverted, physical output 1 will be activated whenever the button is not active.

9. Front Panel System Menu

The system menu, accessed via the front panel, offers alternative access to a limited set of options and information. Each layer of the menu structure, apart from the main menu, has a 'BACK' option which ascends to the parent menu. All layers have a 'CLOSE' option which exits the current menu and returns to the main screen.



Fig 9-1: Main System Menu

To access the system menu, press and hold the navigation centre button until the menu appears or press the 'Menu' button. The left side of the screen shows the current position within the menu structure. The right side shows the available menu selections or the options related to the current menu item. To navigate through the menu, use either the navigation outer up/down buttons or the inner rotary control to highlight the required item and then press either the centre button or the right button to confirm. The configuration settings within the menu structure are presented either as a list of options with a tick to show the current selection, or in a dialog which allows the value to be changed. For listed options, highlight the required setting and press the centre button to select. Options presented in a dialog give guidance on how to change the current setting. To ascend up the menu structure, press either the navigation outer left button, or select the option 'back'.

All AVN portal series devices have the following options available in their 'Main Menu';

→ System Info
→ Network
→ Display
→ Close

Devices with a 'Meter Panel' (those with a 'Device ID' ending in a 'D') such as the 'AVN-PA8D' also have the following options available in their 'Main Menu';

→ Meters

System Info

The read only System Info menu item shows important information about the unit. In particular, it shows the current IP addresses for the 2 network ports which will be required when accessing the embedded web server. The PTP clock information is dynamic and shows the current status, whether Listening, Master or Slave. The ID of the current master is shown as well as the clock offset from the master clock if the unit is currently a slave. The state of the AC-DC power supply and DC power input is also dynamic and shows the voltage level of each supply.

Main Menu → System Info
→ Device
→ Host Name
→ Friendly Name
→ Ethernet Port
  → Network Mode
  → IP Address
  → Subnet Mask
  → MAC Address
→ AoIP Port
  → Network Mode

- → IP Address
- → Subnet Mask
- → MAC Address

→ PTP Clock
- → Status
- → Domain Number
- → Master Offset
- → Profile

→ AC-DC Voltage
→ DC Voltage
→ Version
→ FP Version
→ Serial
→ SOM Serial

Network

The Network menu area allows the settings for the Ethernet and AoIP network ports to be edited. These settings correspond to the options shown on the Network web page on page 28. For a description of these items, please refer to that section.

→ Network
- → Friendly Name
- → Ethernet Port
  - → Address Mode
  - → Static Settings
    - → IP Address
    - → Subnet Mask
    - → Back
    - → Close
  - → Back
  - → Close
- → AoIP Port
  - → Address Mode
  - → Static Settings
    - → IP Address
    - → Subnet Mask
    - → Back
    - → Close
  - → Back
  - → Close
- → Auto Multicast
- → Back
- → Close

Display

The Display menu area allows the screen contrast and LED brightness to be adjusted. These settings correspond to the options shown on the Display Settings webpage on page 33. For a description of these items, please refer to this section. For the screen contrast and LED brightness options, a dialog will be shown on the display and the current setting is changed by turning the navigation rotary control. The value is represented on screen with a sliding scale.

→ Display
- → Screen Contrast
- → LED Brightness
- → Back
- → Close

Meters

The ‘Meters’ sub-menu allows the type of scale used on the meter display to be selected, it also allows adjustment of the meter displays brightness and allows any of the input or output channels to be selected and displayed full size on the input or output display.

→ Meters
  → Input Channel
  → Output Channel
  → Scale Selection
  → Displays Brightness

The ‘Input Channel’ sub-menu displays a list of the input channels and allows a stereo pair of channels or mono channel to be selected anddisplayed full size on the input display.

The ‘Output Channel’ sub-menu displays a list of the output channels and allows a stereo pair of channels to be selected and displayed full size on the output display.

The ‘Scale Selection’ sub-menu provides a list of different scale standards, selecting a standard applies that scale to the monitor panel, the list of scale standards and their properties is available in the ‘Display Settings’ sub-section of the ‘Embedded Web Server’ section.

The ‘Display Brightness’ setting allows the user to modify the brightness of the backlight on the TFT meter displays.

10. Ember+ Interface

Each device in the AVN portal series has an Ember+ provider interface that exposes various configuration options. It also allows the GPIO, virtual GPIO and the relay to be controlled and monitored by an external Ember+ consumer.

Connecting to The Ember+ Interface

The Ember+ interface is available on the AoIP network connection using port 9000. The structure of the provider tree is similar to the system menu on the front panel. Each of the configuration options are arranged in branches grouped by function. Fig 10 1 shows a graphical representation of the root structure.

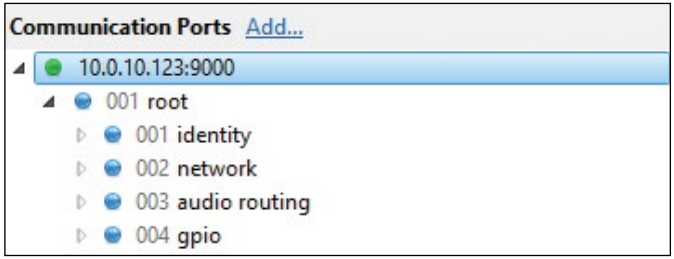


Fig 10-1: Ember+ Root Structure

The configuration options are presented as either string or integer types. Where possible, integer type options are enumerated to indicate what each of the available setting values are. A full list of the options and values associated with each of the Ember+ parameters can be found in the 'Parameter Value Specification' sub-section of this handbook.

To read and write to the various parameters, the Ember+ protocol can be used. The screenshots in this section are obtained using the Ember+ Viewer tool which provides a graphical user interface (GUI) that can be used to view and manipulate the various parameters that are made available in the Ember+ provider tree. In Ember+ viewer, nodes are identified by a blue dot and parameters are indicated by a green leaf icon. Parameters whose names are shown in blue text can be modified by the user, all other parameters are read only.

Identity Node



Fig 10-2: Ember+ Identity Branch Structure

Product

This specifies the type of product.

Company

This specifies the manufacturer of the product.

Serial

This specifies the serial number of the device.

Version

This specifies the current firmware version on the device.

Network Node

The network node contains information on the network configuration of the unit.

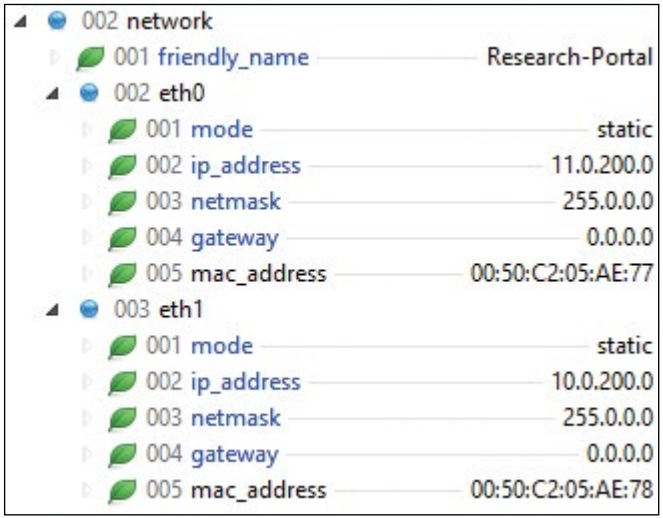


Fig 10-3: Ember+ Network Branch Structure

Friendly name

The name given to the device by the user. In Ember+ Viewer, this can be edited by selecting it from this menu. And clicking 'Change…'.

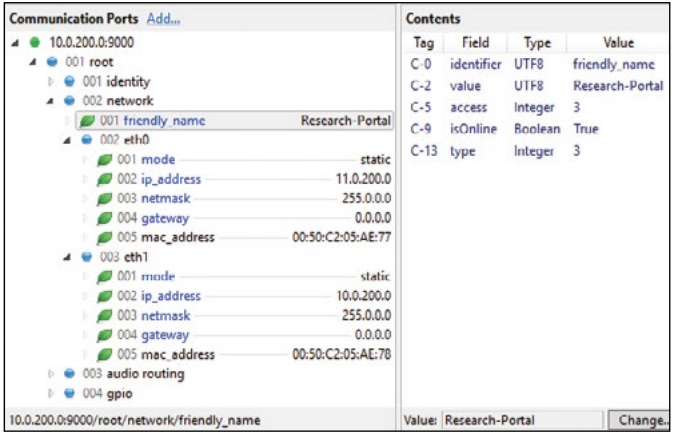


Fig 10-4: Options available after selection

Eth0

Mode

Allows the user to select between 'Static' and 'Dynamic' addressing modes.

IP Address

Allows the user to enter an IP address for the device which is used when the device is in the 'Static' addressing mode.

Netmask

Allows the user to enter a subnet mask for the device which is used when the device is in the 'Static' addressing mode.

Gateway

Allows the user to enter a gateway address for the device which is used when the device is in the 'Static' addressing mode.

MAC Address
This specifies the MAC address of the port.

Eth1

Mode
Allows the user to select between ‘Static’ and ‘Dynamic’ addressing modes.

IP Address
Allows the user to enter an IP address for the device which is used when the device is in the ‘Static’ addressing mode.

Netmask
Allows the user to enter a subnet mask for the device which is used when the device is in the ‘Static’ addressing mode.

Gateway
Allows the user to enter a gateway address for the device which is used when the device is in the ‘Static’ addressing mode.

MAC Address
This specifies the MAC address of the port.

Audio Routing Node

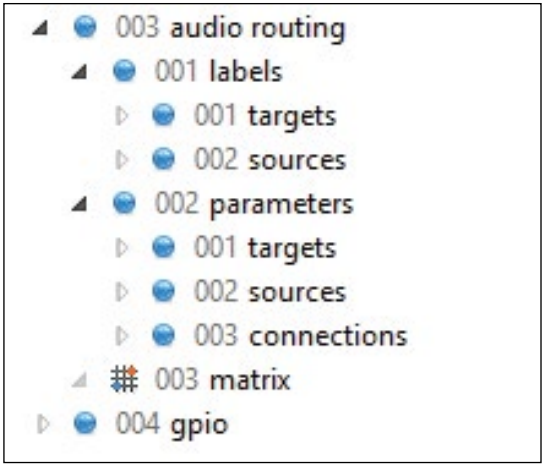


Fig 10-5: Ember+ Audio Routing Structure

Labels Node

Targets
A list of all the devices outputs, each of these outputs can be selected and the name of output changed.

Sources
A list of all the devices inputs, each of these inputs can be selected and the name of input changed.

Parameters Node

Targets

A list of all the devices outputs, each of the outputs can have their specific settings changed. For example, a physical output on the PA8;

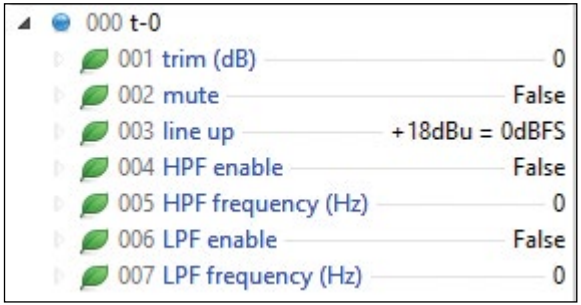


Fig 10-6: Options available on a PA8 physical output

Each of these options can be selected and adjusted.

Sources

A list of all the devices inputs, each of the inputs can have their specific settings changed. For example, a physical input on the PA8;

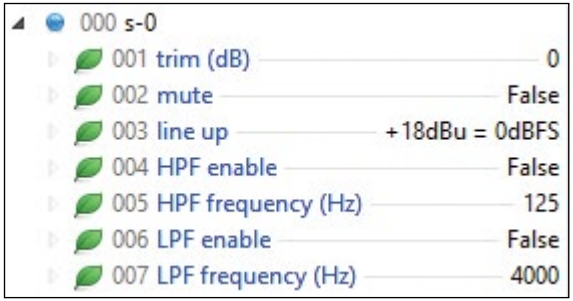


Fig 10-7: Options available on a PA8 physical input

Each of these options can be selected and adjusted.

Connections

This shows connections between input and output channels, for example the following shows a connection between the left channel of the first physical input and the left channel of the first physical output;



Fig 10-8: Mix level option of a connection

Each of these connections provide the option to modify their ‘mix level’, this is how much the level of audio from the input channel is increased or decreased before reaching the output channel.

Matrix

Selecting matrix from the list bring up the following display;

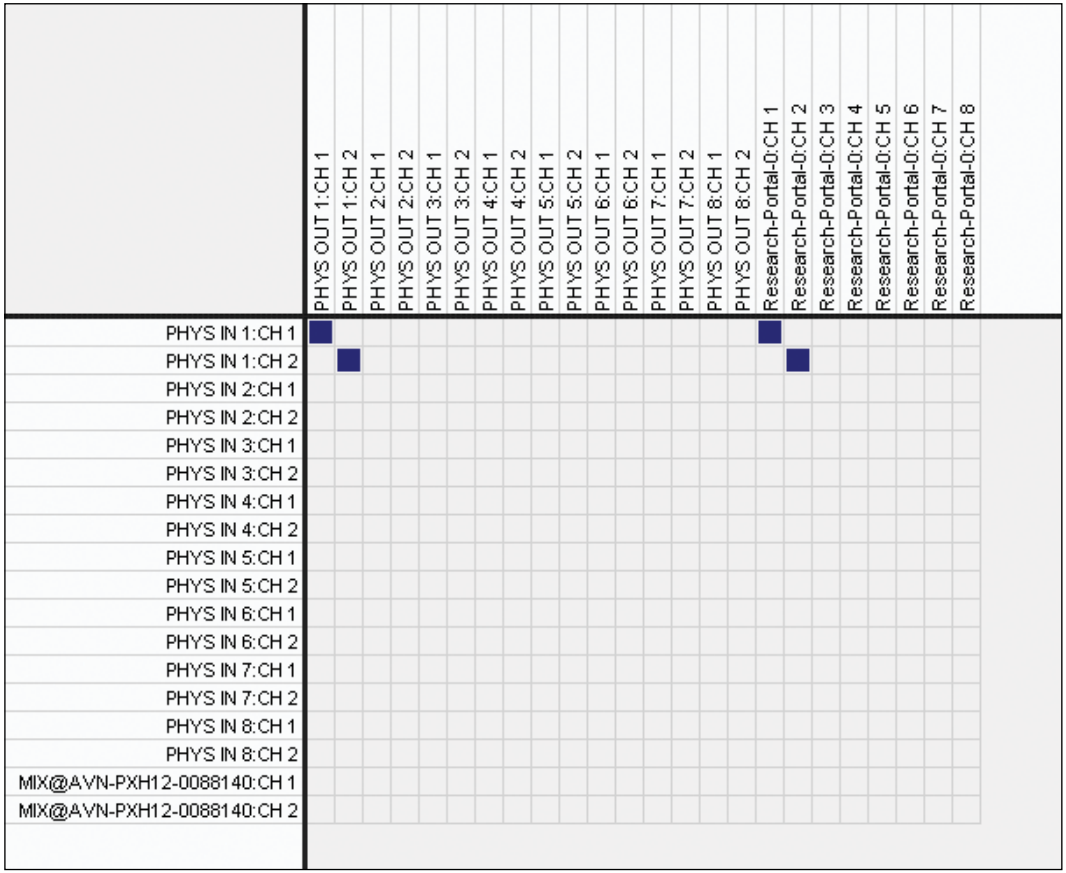


Fig 10-9: Matrix used for routing audio

This shows all of the devices input channels down the left-hand side and all the devices output channels along the top of the matrix, by clicking on a box where an input channel and an output channel intersect, the audio from the input channel is routed the output channel. This routing can be removed by clicking on the same box. Right clicking on a routing or name allows parameters to be viewed or changed.

GPIO Node

The GPIO node branch of the Ember+ provider tree interface allows monitoring and control of the GPIO ports. Fig 10 10 shows the structure of each GPIO child node.

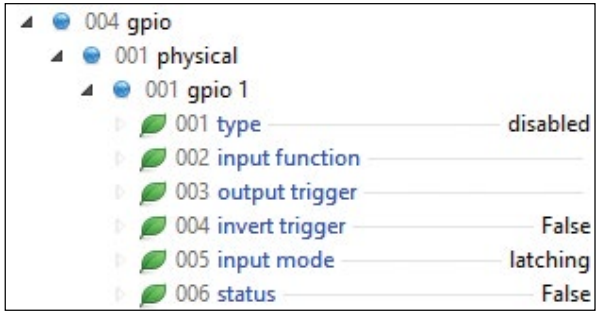


Fig 10-10: Ember+ GPIO Branch Structure

Each GPIO node has a similar set of parameters and functions;

Type Parameter

This enumerated integer parameter is the current port type. This parameter indicates whether the GPIO is disabled, or set to be an input or an output.

Input Function Parameter

This string parameter is the function that will be activated when the GPIO port, when configured as an input, is asserted. The values that this parameter can be set to are listed under the “Handlers” node see page 68.

Output Trigger Parameter

This string parameter is the function that triggers the GPIO port when it is configured as an output. The values that this parameter can be set to are listed under the “Triggers” node see page 68.

Invert Trigger Parameter

When this boolean parameter is set to true, the status of the GPIO when it is configured as an output is the inverse of the configured trigger. When this parameter is set to false, the output status matches the state of the configured trigger.

Input Mode Parameter

When the GPIO is configured as an input, this enumerated parameter configures whether the GPIO works in a latching or momentary mode.

Status Parameter

The status parameter shown in Fig 10 10 represents the current state of the GPIO port regardless of whether the port is set as an input or an output. A value of False indicates the port is inactive and True indicates the port is active. When the GPIO is configured as an output, a connected Ember+ consumer can modify the value of this parameter.

Relay Node

The relay node of the Ember+ provider interface allows the relay to be controlled by an Ember+ consumer. Fig 10-11 shows the structure of the relay node.



Fig 10-11: Ember+ Relay Branch Structure

Output Triggers Parameter

String parameter with comma separated list of assigned triggers. The names of the triggers that can be added to the list are available under the Triggers Node, see page 68.

Active Triggers Parameter

If the relay is currently active, this read-only string parameter gives a comma separated list of the configured triggers that are currently active.

Status Parameter

The status parameter shown in Fig 10 11 represents the current state of the relay. A value of False indicates the relay is inactive and True indicates the relay is active.

Virtual GPIO Node

The virtual GPIO branch of the Ember+ provider interface allows monitoring and control of the virtual GPIO ports. Fig 10 12 shows the structure of each virtual GPIO child node.

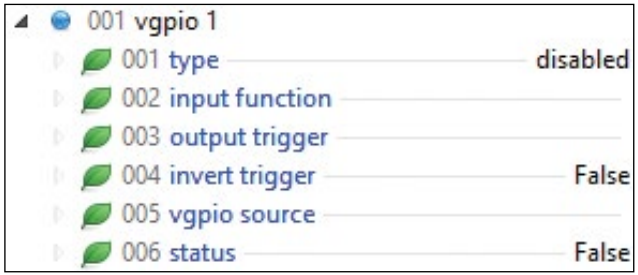


Fig 10-12: Ember+ Virtual GPIO Branch Structure

Type Parameter

This enumerated integer parameter is the current port type. This parameter indicates whether the virtual GPIO is disabled, or set to be an input or an output.

Input Function Parameter

This string parameter is the function that will be activated when the virtual GPIO, when configured as an input, is asserted. The values that this parameter can be set to are listed under the “Handlers” node, see page 68.

Output Trigger Parameter

This string parameter is the function that triggers the virtual GPIO when it is configured as an output. The values that this parameter can be set to are listed under the “Triggers” node, see page 68.

Invert Trigger Parameter

When this boolean parameter is set to true, the status of the GPIO when it is configured as an output is the inverse of the configured trigger. When this parameter is set to false, the output status matches the state of the configured trigger.

Vgpio Source Parameter

This string parameter lists the name of the remote unit that is assigned to control this virtual GPIO when it is configured as an input. The values that this parameter can be set to are listed under the “Vgpio Sources” Node, see page 68.

Status Parameter

The status parameter shown in Fig 10 12 represents the current state of the virtual GPIO port regardless of whether the port is set as an input or an output. A value of False indicates the port is inactive and a True indicates the port is active. When the virtual GPIO is configured as an output, a connected Ember+ consumer can modify the value of this parameter.

Handlers Node

The parameters under the handlers node contain the names of all the handlers that can be assigned to GPIO inputs. The names can be used with the “Input Function” parameters described above.

Triggers Node

The parameters under the triggers node contain the names of all the triggers that can be assigned to GPIO outputs. The names can be used with the “Output Trigger” parameters described above.

Vgpio Sources Node

Each parameter under the vgpio sources node contain the names of the vgpio sources that have been discovered on the network. These names can be used with the vgpio source parameter described above.

Parameter Value Specification

This section provides a full list of the possible parameter values for the Ember+ interface. Integer values with a prefix of ‘0x’ are in hexadecimal format.

- → Identity (Read only leaves that describe the unit)
  - → Product
  - → Company
  - → Serial
  - → Version
- → Network
  - → Friendly Name (String, max length 23-characters)
  - → Port (Eth0 is upper port and Eth1 is lower port)
    - → Mode (Integer)
      - → 0 (Disabled)
      - → 1 (Static)
    - → IP Address (String, max length 15-character)
    - → Netmask (String, max length 15-character)
    - → Gateway (String, max length 15-character)
    - → MAC Address (Read only)
- → Audio Routing
  - → Labels (View the name given to each input and output channel)
    - → Targets
      - → T-* and label (Values cannot be changed via Ember+)
    - → Sources
      - → S-* and label (Values cannot be changed via Ember+)
  - → Parameters
    - → Targets
      - → T-*
      - → Trim (Integer)
        - → -12 (Min)
        - → 12 (Max)
      - → Mute (Boolean)

- → False (Off)
- → True (On)
- → Line-up (Integer)
  - → 0 (+15 dBu)
  - → 1 (+18 dBu)
  - → 2 (+20 dBu)
  - → 3 (+22 dBu)
  - → 4 (+24 dBu)
- → HPF Enable (Boolean)
  - → False (Off)
  - → True (On)
- → HPF Frequency (Integer)
  - → 40 (Min)
  - → 10000 (Max)
- → LPF Enable (Boolean)
  - → False (Off)
  - → True (On)
- → LPF Frequency (Integer)
  - → 40 (Min)
  - → 10000 (Max)

→ Sources
- → S-*
  - → Trim (Integer)
    - → -12 (Min)
    - → 12 (Max)
  - → Mute (Boolean)
    - → False (Off)
    - → True (On)
  - → Line-up (Integer)
    - → 0 (+15 dBu)
    - → 1 (+18 dBu)
    - → 2 (+20 dBu)
    - → 3 (+22 dBu)
    - → 4 (+24 dBu)
  - → HPF Enable (Boolean)
    - → False (Off)
    - → True (On)
  - → HPF Frequency (Integer)
    - → 40 (Min)
    - → 10000 (Max)
  - → LPF Enable (Boolean)
    - → False (Off)
    - → True (On)
  - → LPF Frequency (Integer)
    - → 40 (Min)
    - → 10000 (Max)
  - → Connections
    - → T-* (Target channel)
    - → S-* (Source channel)
      - → Mix Level (Integer)
        - → -100 (Min)
        - → 10 (Max)
- → Matrix
  - → Click in grid to create a connection between two channels

→ GPIO
- → Physical
  - → GPIO *
    - → Type (Integer)
      - → 0 (Disabled)
      - → 1 (Input)

- → 2 (Output)
- → Input Function (String)
  - → Handler leaf value found in handler section (Example: Mute phys out 1: PHYS OUT 1)
- → Output Trigger (String)
  - → Trigger leaf value found in trigger section (Example: Eth Link Down)
- → Input Mode (Integer)
  - → 0 (Latching)
  - → 1 (Momentary)
- → Status (Boolean)
  - → False (Inactive input/output)
  - → True (Active input/output)

→ Cough *
- → Type (Integer)
  - → 0 (Disabled)
  - → 1 (Input)
- → Input Function (String)
  - → Handler leaf value found in handler section (Example: Mute phys out 1: PHYS OUT 1)
- → Output Trigger (String)
  - → Trigger leaf value found in trigger section (Example: Eth Link Down)
- → Input Mode (Read only, Latching)
- → Status (Boolean)
  - → False (Inactive input/output)
  - → True (Active input/output)

→ Relay *
- → Output Triggers (String)
  - → Trigger leaf value found in trigger section (Example: Eth Link Down) for multiple triggers follow this value with a comma and another trigger leaf value from the trigger section (Example: Eth Link Down, AoIP Link Down)
- → Active Triggers (String)
  - → Trigger leaf values of active triggers (Example: Eth Link Down) for multiple triggers follow this value with a comma and another trigger leaf value from the trigger section (Example: Eth Link Down, AoIP Link Down)
- → Status (Read only, Boolean)
  - → False (Inactive input/output)
  - → True (Active input/output)

→ Virtual
- → vGPIO *
  - → Type (Integer)
    - → 0 (Disabled)
    - → 1 (Input)
    - → 2 (Output)
  - → Input Function (String)
    - → Handler leaf value found in handler section (Example: Mute phys out 1: PHYS OUT 1)
  - → Output Trigger (String)
    - → Trigger leaf value found in trigger section (Example: Eth Link Down)
  - → vGPIO Source (String)
    - → The name of any other devices vGPIO (Example: vGPO1@Friendly-Name
  - → Status (Boolean)
    - → False (Inactive input/output)
    - → True (Active input/output)

→ User Buttons
- → Button *
  - → Type (Integer)
    - → 0 (Disabled)
    - → 1 (Input)

- → Input Function (String)
  - → Handler leaf value found in handler section (Example: Mute phys out 1: PHYS OUT 1)
- → Input Mode (Integer)
  - → 0 (Latching)
  - → 1 (Momentary)
- → Status (Boolean)
  - → False (Inactive input/output)
  - → True (Active input/output)

→ LED *

- → Type (Integer)
  - → 0 (Disabled)
  - → 2 (Output)
- → Output Trigger (String)
  - → Trigger leaf value found in trigger section (Example: Eth Link Down)
- → Status (Boolean)
  - → False (Inactive input/output)
  - → True (Active input/output)

→ Handlers

- → H-* and value, used to perform functions on the device using GPIO.

→ Triggers

- → T-* and value, used to set triggers on the device when configuring GPIO.

→ vGPIO Sources

- → vGPIO*@Friendly-Name list of vGPIO outputs from other devices, these can be used as triggers for vGPIO inputs.

Where * is an integer for settings with multiple similar nodes or leaves.

11. Technical Specifications

AVN-PA8/T/D 8 Stereo Analogue Line Inputs & Outputs, AES67 Display Portal

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD), SAP
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Web server/Ember+
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	Up to 8
Packet Time:	125µs, 333µs, 250µs, 1ms, 4ms (2 Channel Streams Only)
Transmit Streams:	Up to 8
Sample Rate:	48 kHz

Ember+ Interface Connection	
Interface Type:	Provider
Network Interface:	AoIP port
Port:	9000

Timing Synchronisation	
Profile Support:	Default, AES67 Media & Custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Balanced Line Inputs	
Input Impedance:	> 20kΩ balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	< -100dB
Common Mode Rejection:	> 70dB @ 1kHz

Balanced Line Outputs	
Output Impedance:	< 50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω

Connections	
AVN-PA8/D	
Inputs:	2 D-Sub (DB-25) connections (TASCAM AES-59 analogue pinout) paralleled with 8 RJ45 connections (StudioHub+ pinout).
Outputs:	2 D-Sub (DB-25) connections (TASCAM AES-59 analogue pinout) paralleled with 8 RJ45 connections (StudioHub+ pinout).
GPIO:	1 D-Sub (DA-15) connections.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.
Power:	Mains AC Input: Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W.
DC Input:	4-pin 7.5A power jack socket, 10-14VDC.
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm.
AVN-PA8T/D	
Inputs:	2 24-Pin Phoenix style terminal blocks (Analogue pinout)

Outputs:	2 24-Pin Phoenix style terminal blocks. (Analogue pinout)
GPIO:	1 24-Pin Phoenix style terminal blocks.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.
Power:	Mains AC Input: Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W.
DC Input:	4-pin 7.5A power jack socket, 10-14VDC.
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm.

Equipment Type	
AVN-PA8:	Advanced audio routing, metering and equalisation unit with analogue inputs, analogue outputs, and RAVENNA AoIP.
AVN-PA8D:	Advanced audio routing, metering and equalisation unit with analogue inputs, analogue outputs, RAVENNA AoIP, and a detailed customisable display.
AVN-PA8T:	Advanced audio routing, metering and equalisation unit with terminal type analogue inputs, terminal type analogue outputs, and RAVENNA AoIP.
AVN-PA8TD:	Advanced audio routing, metering and equalisation unit with terminal type analogue inputs, terminal type analogue outputs, RAVENNA AoIP, and a detailed customisable display.

Physical Specification	
Dimensions (Raw):	48.3cm (W) x 17.5cm (D) x 4.4cm (H) (1U) 19" (W) x 6.9" (D) x 1.8" (H) (1U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 11cm (H) 23" (W) x 11" (D) x 4.3" (H)
Weight:	Nett: 3.0kg Gross: 3.7kg Nett: 6.6lbs Gross: 8.1lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug.
AVN-HA1:	Analogue Headphone Amplifier.

AVN-PD8/T/D 8 Stereo Digital Line Inputs & Outputs, AES67 Portal

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD), SAP
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Web server/Ember+
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	Up to 8
Packet Time:	125µs, 333µs, 250µs, 1ms, 4ms (2 Channel Streams Only)
Transmit Streams:	Up to 8
Sample Rate:	48 kHz

Ember+ Interface Connection	
Interface Type:	Provider
Network Interface:	Ethernet port and AoIP port
Port: 9000	

Timing Synchronisation	
Profile Support:	Default, AES67 Media & Custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Balanced Digital Inputs	
Input Impedance:	> 20kΩ balanced

0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	< -100dB
Common Mode Rejection:	> 70dB @ 1kHz

Balanced Digital Outputs

Output Impedance:	< 50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω

Connections

AVN-PD8/D

Inputs:	1 D-Sub (DB-25) connection (TASCAM AES-5 digital pinout) paralleled with 8 RJ45 connections (StudioHub+ pinout).
Outputs:	1 D-Sub (DB-25) connection (TASCAM AES-59 digital pinout) paralleled with 8 RJ45 connections (StudioHub+ pinout).
GPIO:	1 D-Sub (DA-15) connections.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.
Power:	Mains AC Input: Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W.
DC Input:	4-pin 7.5A power jack socket, 10-14VDC.
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm.

Physical Specification

Dimensions (Raw):	48.3cm (W) x 17.5cm (D) x 4.4cm (H) (1U) 19" (W) x 6.9" (D) x 1.8" (H) (1U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 11cm (H) 23" (W) x 11" (D) x 4.3" (H)
Weight:	Nett: 3.0kg Gross: 3.7kg Nett: 6.6lbs Gross: 8.1lbs

Accessories

AVN-DC150:	150W DC power supply with KPJX-4S plug.
AVN-HA1:	Analogue Headphone Amplifier.
AVN-HD1:	Digital Headphone Amplifier.

AVN-PD8T/D

Inputs:	2 24-Pin Phoenix style terminal blocks. (Digital pinout)
Outputs:	2 24-Pin Phoenix style terminal blocks. (Digital pinout)
GPIO:	1 24-Pin Phoenix style terminal blocks.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.
Power:	Mains AC Input: Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W.
DC Input:	4-pin 7.5A power jack socket, 10-14VDC.
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm.

Equipment Type

AVN-PD8:	Advanced audio routing, metering and equalisation unit with digital inputs, digital outputs, and RAVENNA AoIP.
AVN-PD8D:	Advanced audio routing, metering and equalisation unit with digital inputs, digital outputs, RAVENNA AoIP, and a detailed customisable display.
AVN-PD8T:	Advanced audio routing, metering and equalisation unit with terminal type digital inputs, terminal type analogue outputs, and RAVENNA AoIP.

AVN-PD8TD:	Advanced audio routing, metering and equalisation unit with terminal type digital inputs, terminal type analogue outputs, RAVENNA AoIP, and a detailed customisable display.

Physical Specification	
Dimensions (Raw):	48.3cm (W) x 17.5cm (D) x 4.4cm (H) (1U) 19” (W) x 6.9” (D) x 1.8” (H) (1U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 11cm (H) 23” (W) x 11” (D) x 4.3” (H)
Weight:	Nett: 3.0kg Gross: 3.7kg Nett: 6.6lbs Gross: 8.1lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug.
AVN-HD1: Digital Headphone Amplifier.	

AVN-PM8/T/D 8 Mic/Line Inputs, 8 Line Outputs, Terminal Block, AES67 Portal

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD), SAP
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Web server/Ember+
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	Up to 8
Packet Time:	125µs, 333µs, 250µs, 1ms, 4ms (2 Channel Streams Only)
Transmit Streams:	Up to 8
Sample Rate:	48 kHz

Ember+ Interface Connection	
Interface Type:	Provider
Network Interface:	Ethernet port and AoIP port
Port:	9000

Timing Synchronisation	
Profile Support:	Default, AES67 Media & Custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Microphone Inputs	
Input Impedance:	> 2.5kΩ balanced
Gain Range:	0dB to +60dB
0dBFS Line-Up:	Adjustable in steps of 3dB from -58dBu to +2dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
Noise:	-127dBu, 20kHz BW, Rs=200Ω ref. 76dB gain

Balanced Line Inputs	
Input Impedance:	> 20kΩ balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	< -100dB
Common Mode Rejection:	> 70dB @ 1kHz

Balanced Line Outputs	
Output Impedance:	< 50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	< -110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω

Connections	
AVN-PM8/D	
Inputs:	XLR connectors with phantom power (toggle).
Outputs:	RJ45 connections (StudioHub+ pinout).
GPIO:	1 D-Sub (DA-15) connections.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.
Power:	Mains AC Input: Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W.
DC Input:	4-pin 7.5A power jack socket, 10-14VDC.
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm.
AVN-PM8T/D	
Inputs:	1 24-Pin Phoenix style terminal blocks. (Analogue pinout)
Outputs:	2 24-Pin Phoenix style terminal blocks. (Analogue pinout)
GPIO:	1 24-Pin Phoenix style terminal blocks.
Network:	2 x Gigabit Ethernet, RJ45's. 1 x SFP fibre.

Equipment Type	
AVN-PM8:	Advanced audio routing, metering and equalisation unit with analogue mic/line inputs, analogue outputs, and RAVENNA AoIP.
AVN-PM8D:	Advanced audio routing, metering and equalisation unit with analogue mic/line inputs, analogue outputs, RAVENNA AoIP, and a detailed customisable display.
AVN-PM8T:	Advanced audio routing, metering and equalisation unit with terminal type analogue mic/line inputs, terminal type analogue outputs, and RAVENNA AoIP.
AVN-PM8TD:	Advanced audio routing, metering and equalisation unit with terminal type analogue mic/line inputs, terminal type analogue outputs, RAVENNA AoIP, and a detailed customisable display.

Physical Specification	
Dimensions (Raw):	48.3cm (W) x 17.5cm (D) x 4.4cm (H) (1U) 19" (W) x 6.9" (D) x 1.8" (H) (1U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 11cm (H) 23" (W) x 11" (D) x 4.3" (H)
Weight:	Nett: 3.0kg Gross: 3.7kg Nett: 6.6lbs Gross: 8.1lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug.
AVN-HA1:	Analogue Headphone Amplifier.

12. Additional Information

DSCP Name	DS Field Value	IP Precedence (Description)
CS0		0: Best Effort
CS1, AF11-AF13	8, 10, 12, 14	1: Priority
CS2, AF21-AF23	16, 18, 20, 22	2: Immediate
CS3, AF31-AF33	24, 26, 28, 30	3: Flash (mainly used for voice signalling)
CS4, AF41-AF43	32, 34, 36, 38	4: Flash Override
CS5, EF PHB	40, 46	5: Critical (mainly used for RTP)
VOICE ADMIT	44	5: Critical (uses Call Admission Control)
CS6	48	6: Internetwork Control
CS7	56	7: Network Control

Table 12-1: DSCP Names & Their Corresponding IP Precedence

Table 12-1 shows the corresponding IP precedence for the DSCP names used in the PTP Profiles and AoIP Stream Settings. For more information on the types of DSCP name, see the following documents;

- CS: Class Selector (RFC 2474)
- AFxy: Assured Forwarding (x= class, y = Drop Precedence) (RFC 2597)
- EF: Expedited Forwarding (RFC 3246)

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