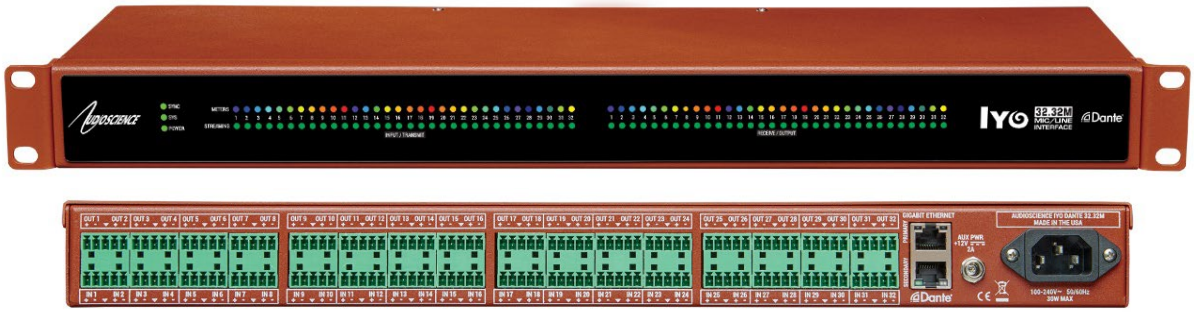
AUDIOSCIENCE Sound Engineering Sonic Excellence

Iyo Dante®

DANTE® MICROPHONE/LINE INTERFACES



1 DESCRIPTION

The Iyo Dante® is a cost-effective family of microphone/line Dante audio-over-IP (AoIP) interfaces in a 1U rack mount format.

Several models provide various configurations of balanced analog audio inputs and outputs. Each input accommodates microphone through line level signals with a range of -60 to +24dBu. +48V phantom power is individually switchable on each input. Output levels are configurable up to +24dBu.

RGB LEDs on the Iyo's front panel show per channel audio levels and streaming status.

The Iyo family feature an embedded web server, allowing configuration and monitoring of input and output levels. Routing is achieved using the Dante Controller.

Power is provided from a built-in universal AC power supply. Redundant power is available using an external 12VDC supply via a locking 2.1mm jack.

All units can also be operated in AES67 interoperability mode.

2 FEATURES

- From 8x8 to 32x32 channels of Dante® audio-over-IP with AES67 interoperability
- 44.1, 48 or 96kHz sample rates with 32bit A/D and D/A conversion
- Balanced microphone/line level inputs with level range of -60 to +24dBu
- Switchable +48V phantom power on each input
- Balanced line outputs with level of 0 to +24dBu.
- 3.81mm Terminal Block terminations, DB-25 or RJ-45/StudioHub+GPIO.
- RGB front panel LEDs provide per channel metering and stream status
- Built-in web server for configuration and monitoring
- Dual RJ-45 network jacks can be operated in redundant or switched mode.
- Built-in universal 90-260VAC 50/60Hz power supply.
- Auxiliary +12VDC input for redundant power supply
- GPIO units provide 5 relay isolated outputs and 5 opto-isolated inputs

3 MODEL INFORMATION

The following Iyo Dante models are available

Terminal block			DB-25			RJ-45 + GPIO		
Model Name	**Mic/Line Inputs**	**Line Outputs**	**Model Name**	**Mic/Line Inputs**	**Line Outputs**	**Model Name**	**Mic/Line Inputs**	**Line Outputs**
Iyo Dante 8.8M	8	8	Iyo Dante 8.8MD	8	8	Iyo Dante 8.8MR	8	8
Iyo Dante 16.16M	16	16	Iyo Dante 16.16MD	16	16	Iyo Dante 16.16MR	16	16
Iyo Dante 32.32M	32	32	Iyo Dante 32.32MD	32	32	Iyo Dante 32.32MR	32	32
Iyo Dante 16.0M	16	0	Iyo Dante 16.0MD	16	0	Iyo Dante 16.0MR	16	0
Iyo Dante 32.0M	32	0	Iyo Dante 32.0MD	32	0	Iyo Dante 32.0MR	32	0
Iyo Dante 0.16L	0	16	Iyo Dante 0.16LD	0	16	Iyo Dante 0.16LR	0	16
Iyo Dante 0.32L	0	32	Iyo Dante 0.32LD	0	32	Iyo Dante 0.32LR	0	32

4 SPECIFICATIONS

DANTE INPUT/OUTPUT	
Type	100/1000Mb Ethernet
Connector	Dual RJ-45 operable as redundant Dante or as a network switch
Channels	8.8M – 8 input and 8 output channels 16.16M – 16 input and 16 output channels 32.32M – 32 input and 32 output channels 16.0M – 16 input and 0 output 0.16L – 0 input and 16 output 32.0M – 32 input and 0 output 0.32L – 0 input and 32 output
Audio formats	16, 24 and 32 bits per sample
Sample Rate	44.1kHz, 48kHz, 96kHz
Latency	0.15, 0.25, 0.5, 1.0 and 5.0ms
ANALOG MIC/LINE INPUT	
Type	Balanced
Input Level	-60 to +24dBu in 1dBu steps
EIN	-126 dBu Equivalent Input Noise @ -26dBu level setting
Phantom Power	+48V @ 10mA per channel max , software switchable
A/D converter	32 bit over sampling
Input Impedance	10K ohms
Dynamic Range [1]	>114dB
THD+N [2]	< -97dB
Frequency Response	@ 48kHz Sample Rate: 20Hz to 20kHz +0.1/-3.0dB @ 96kHz Sample Rate: 20Hz to 40kHz +0.1/-3.0dB
Connectors	3.81mm Terminal Block, DB-25 or RJ-45/StudioHub+GPIO
ANALOG LINE OUTPUT	
Type	Balanced
Output Level	-10 to +24dBu in 1dBu steps
D/A converter	32 bit over sampling
Load Impedance	2K ohms or greater
Dynamic Range [1]	>114dB
THD+N [2]	< -100dB
Frequency Response	@ 48kHz Sample Rate: 20Hz to 20kHz +0.1/-0.25dB @ 96kHz Sample Rate: 20Hz to 40kHz +0.1/-3.0dB
Connectors	3.81mm Terminal Block, DB-25 or RJ-45/StudioHub+GPIO
GPIO	
Opto-isolated Inputs	
Isolation	2,500 VAC_{RMS}
Input Drive	4mA typical with internal 5V supply and internal 1K current limiting resistor
Input Voltage Range	Between 3V and 24V. Add external resistor above 24V to limit current.
Relay-isolated Outputs	
Isolation	1,500 VAC
Contact Rating	Up to 60 VDC/60VAC and 350mA, 600mW maximum
LATENCY (48kHz, L24)	
Analog Input to Dante Transmit	770.21 µs
Dante Receive to Analog Output	713.05 µs
POWER	
Built in Power supply	90-260VAC, 47-63Hz with IEC C-14 AC inlet
Redundant Power supply (Optional)	Supplied using an external +12VDC, 60W power supply with 2.1mm locking plug
	ASI part number for power supply: PWR1101
Power supplies function independently; use DC only, AC only or both at the same time for fail-over redundancy.	
REGULATORY	
FCC Part 48 Class A (US)	
CE Mark (EN55022 Class A EN55024) RoHS Compliant	
GENERAL	
Dimensions	1 RU, 19”(482mm) W x 6”(152mm) L x 1.75”(44mm) H
Weight	5 lb (2.2kg) max (32.32M)
Operating Temperature	0C to 50C in free air

5 REVISIONS

Date	Description
July 2018	1st Draft
Aug 2018	Added web interface and connectors section and initial About Dante
Sep 2018	Added front panel display section
Sep 2018	Added firmware download section
Oct 1 2018	Merged various drafts
Oct 2 2018	Updated screenshots of WebUI
Oct 11 2018	Added new model numbers
Feb 13 2019	Add Settings tab, update Meters and Inputs strip for Mute
June 12 2019	Updated block diagram to include mute icons
June 26 2019	Added DB-25 and RJ-45 connector options.
Aug 28 2019	Add GPIO documentation
Dec 17 2019	Corrected GPIO output error
Jan 15 2020	Expanded info on Ethernet connections
Jan 30 2020	Updates to GPIO documentation & new section on usage
Mar 2 2020	Added 44.1kHz to sample rate
June 10 2020	New meter indicator for phantom power/mute
July 10 2020	Added note to specs re: power supply redundancy
Aug 8 2020	Added Troubleshooting section
May 10 2021	Update input frequency response specs
Jan 7 2022	Added Security section information
April 15 2024	Updated page 1 features section
Feb 12 2025	Updated firmware update section
Mar 14 2025	Updated Meter LED info

6 CONTENTS

7 IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Head all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plug ends, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personal. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans

This symbol is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

CAUTION: To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside.

WARNING:

1. To prevent fire or electric shock, do not expose this apparatus to rain or moisture.

2. This apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as a vase, shall be placed on the apparatus.

3. This is a Class 1 apparatus, and as such must be connected to a mains socket outlet with a protective earthing connection.

4. The mains plug is used as the disconnect device and shall remain readily operable.

8 NOTICES

FEDERAL COMMUNICATIONS COMMISSION (FCC) INFORMATION

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

9 ARCHITECTS & ENGINEERS SPECIFICATION

10 INTRODUCTION

10.1 About Dante

Based on industry standards, Audinate created Dante, an uncompressed, multi-channel digital media networking technology, with near-zero latency and synchronization. Dante is the preferred audio networking solution that has been adopted by more pro-audio AV manufacturers than any other networking technology. Interoperability is not a dream of the future, but a reality today. Hundreds of Dante-enabled products are available from the world's leading manufacturers, enabling you to mix devices from multiple manufacturers.

One cable does it all. Dante does away with heavy, expensive analog or multicore cabling, replacing it with low-cost, easily-available CAT5e, CAT6, or fiber optic cable for a simple, lightweight, and economical solution. Dante integrates media and control for your entire system over a single, standard IP network.

Dante systems can easily scale from a simple pairing of a console to a computer, to large capacity networks running thousands of audio channels. Because Dante uses logical routes instead of physical point-to-point connections, the network can be expanded and reconfigured at any time with just a few mouse clicks.

11 HARDWARE INSTALLATION

11.1 Rack Mounting

The Iyo is 1 RU (1 rack unit/space) high and mounts in a standard 19-inch equipment rack.

- Use four mounting screws to fasten the front panel of the Iyo to the 19-inch rack rails.
- Support any cables that are attached to the back of the Iyo so that their weight does not put undue stress on the unit's connectors.
- **The Iyo has cooling vents on the side of the unit. Be careful not to obstruct these.**

11.2 Network Connections

There are 2 RJ-45 Ethernet jacks on the rear of the Iyo, a Primary and a Secondary. A CAT-6 or better network cable is required for 1000baseT Ethernet operation. For initial setup, connect your Dante network to the Primary Ethernet jack. See Section on Ethernet connections for information on utilizing the Secondary jack. The cable length between the Iyo and a network switch should not exceed 100 meters (328 feet)

11.3 AC Power

The detachable AC power cord that comes with the Iyo plugs into the IEC connector on the chassis.

The Iyo operates with AC voltages from 90 to 260VAC, 47 to 63Hz. No selection of voltage or frequency is required, the Iyo's power supply will automatically adjust.

Use only an AC power source with a protective earth ground.

The Iyo has no power switch. Detach the AC power cord to remove power

11.4 Redundant Power Supply

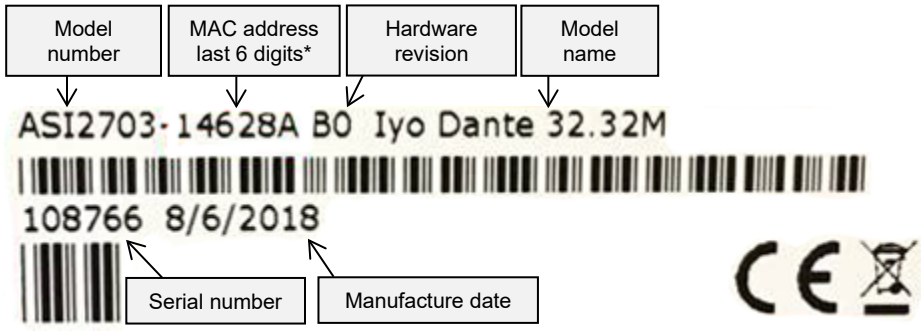
The Iyo can optionally be connected to a second power supply to offer redundancy. The +12VDC power supply (AudioScience p/n PWR1101) is connected to the Iyo using a locking 2.1mm plug.

11.5 Power Supply operation

AC power with the internal power supply and DC power through the redundant power supply can be used either together for fail-over redundancy or separately as either AC only or DC only.

11.6 Hardware Label

All AudioScience products are shipped with a label showing various hardware specifications. This information can be helpful in configuring your unit and you will need it if you ever need to return your unit for service.



*MAC address information can be used to help identify your unit in Dante Controller. It will be displayed in the Device Name field along with the model name.

Iyo3232M-146288	Iyo Dante 32.32M
Iyo3232M-14628a	Iyo Dante 32.32M
Iyo3232M-1462be	Iyo Dante 32.32M

11.7 Audio Connections

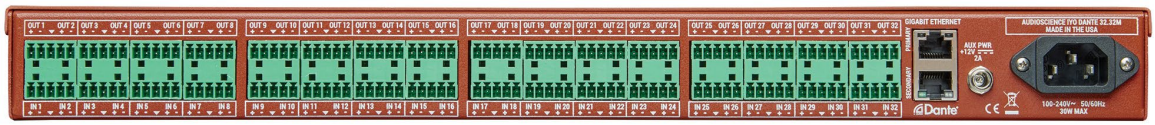
The Iyo Dante family of interfaces use either 3.81mm Terminal Block terminations, DB-25 connectors or RJ-45/StudioHub+GPIO connectors to make audio connections to your input and output devices.

11.7.1 3.81mm Terminal Block options

When viewed from the back, output jacks are located in the top row, starting with Out 1 at the far left. Input jacks are located in the bottom row and also start at Input 1 on the far left.

Iyo Dante 8.8M

Iyo Dante 16.16M



Iyo Dante 32.32M

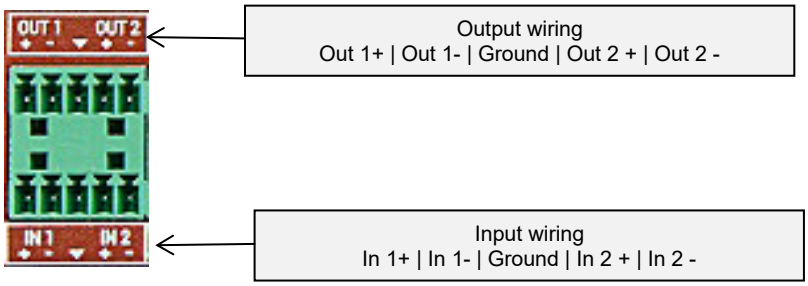
Iyo Dante 16.0M

Iyo Dante 0.16L

Iyo Dante 32.0M

Iyo Dante 0.32L

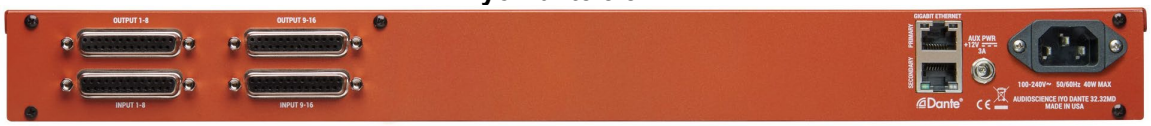
11.7.1.1 Terminal Block Connector close-up



Each individual 3.81mm Terminal Block accommodates 2 audio channels with a shared ground.

11.7.2 DB-25 options

Iyo Dante 8.8MD



Iyo Dante 16.16MD

Iyo Dante 32.32MD

Iyo Dante 16.0MD

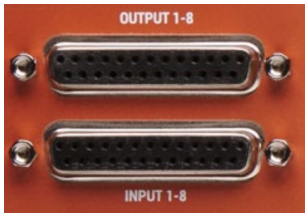
Iyo Dante 0.16LD

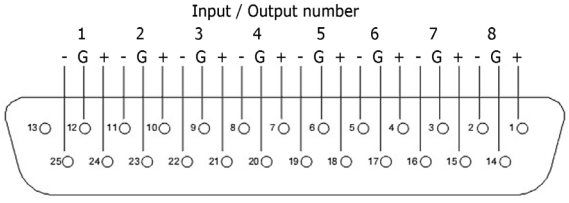
Iyo Dante 32.0MD

Iyo Dante 0.32LD

11.7.2.1 DB-25 Connector close-up

The DB-25 pinouts correspond to the AES59-2012 standard.



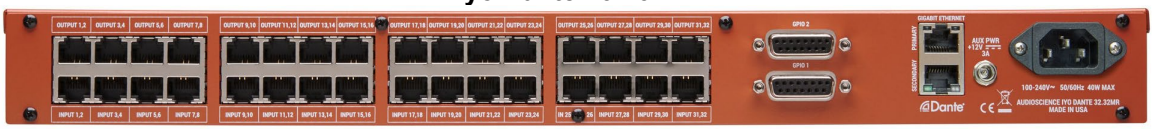


The DB-25 models are easy to wire up. Search for "DB-25 audio snake" at your favorite retailer, select the length and audio ends you need to connect to your gear (XLR male/female or TRS) and you're ready to go.

11.7.3 RJ-45/StudioHub + GPIO options

Iyo Dante 8.8MR

Iyo Dante 16.16MR



Iyo Dante 32.32MR

Iyo Dante 16.0MR

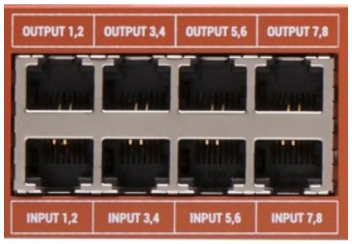
Iyo Dante 0.16LR

Iyo Dante 32.0MR

Iyo Dante 0.32LR

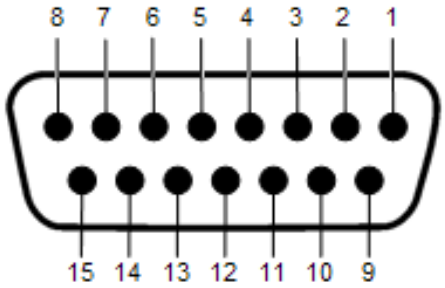
11.7.3.1 RJ-45/StudioHub + GPIO Connector close-up

The RJ45 pinouts follow the StudioHub format. More information can be found at www.studiohub.com



11.8 GPIO (RJ-45 models only)

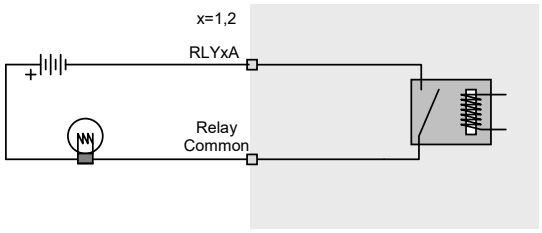
The Iyo features 2 DB-15 ports for GPIO – each with 5 relay isolated outputs and 5 opto-isolated inputs. The illustration below shows the connector pinouts.

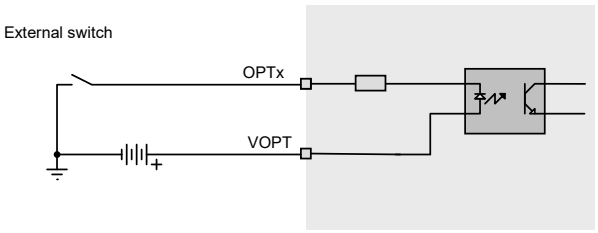


1. Relay 1
2. Relay 2
3. Relay 3
4. Relay 4
5. Relay 5
6. Unused
7. Relay Common
8. GND -> GNDOPT
9. +5V
10. VOPT
11. Opto 1
12. Opto 2
13. Opto 3
14. Opto 4
15. Opto 5

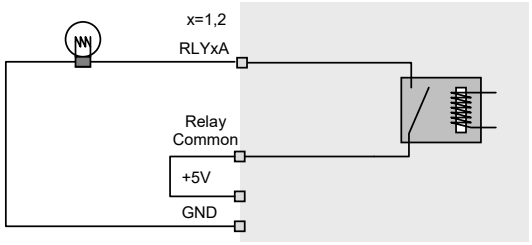
The following diagrams show how to connect the GPIO for isolated and non-isolated cases

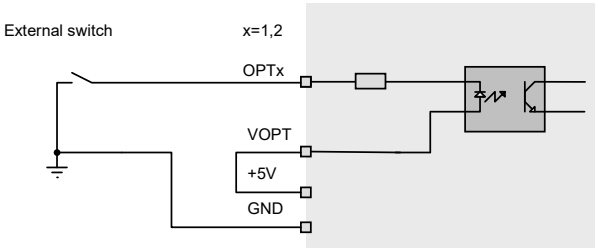
Isolated





TTL Compatible Non-isolated

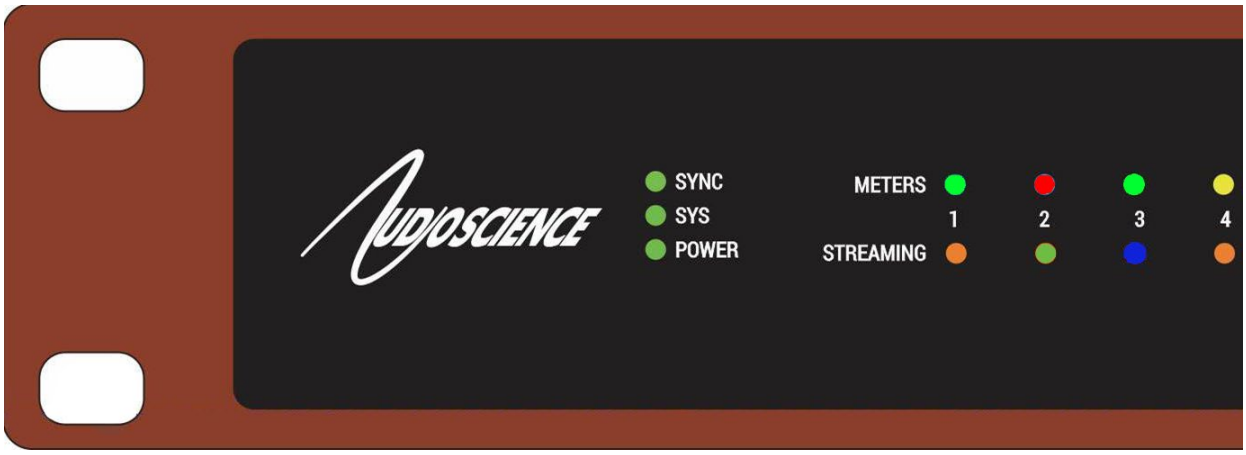




12 OPERATION

12.1 Front Panel Display

The front panel LED display shows status and meter readings from the Iyo Dante



12.1.1 System info

The system info section consists of 3 LED indicators, SYNC, SYS and POWER. This section gives you an at-a-glance indication of the status of a few key parameters

SYNC: Displays the status of the IEEE1588 Precision Time Protocol (PTP) condition of the unit.
- Blue indicates this unit is the elected PTP Master Clock.
- Green indicates the Iyo is a PTP Slave.
- Orange indicates the Iyo is in the process of synchronizing.
- Red indicates there is a PTP error.

SYS: Displays the system operating status.
- Green indicates the Iyo is functioning normally
- Flashing Green indicates the configuration is being saved
- Orange means the Iyo is in a transient waiting state, e.g. pending reboot.
- Red indicates a critical hardware error. Contact support@audioscience.com for help.

POWER: Displays power status
- Green indicates the Iyo is powered on
  Off indicates no power to unit

12.1.2 Meters

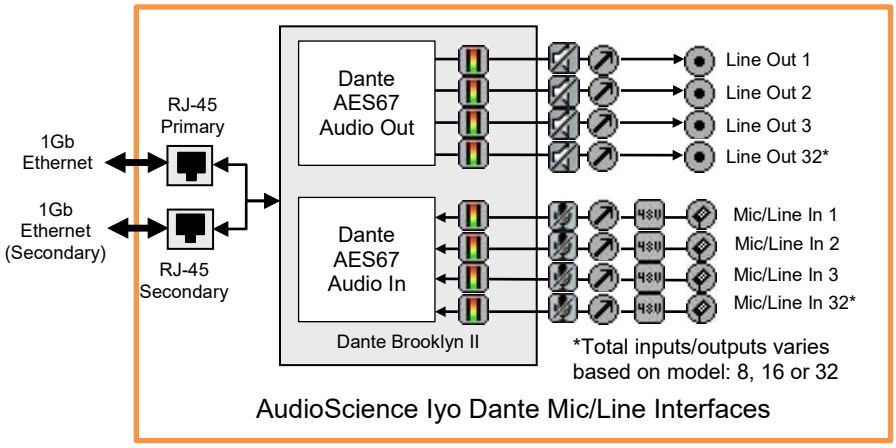
The meter section gives you a quick indicator of the current audio levels being passed through the unit on a color scale from green (low signal) to bright red (indicating clipping or very high level). The color scale follows the same intervals as the color scale shown in the web interface section below.

- Red (flashing): Input channel is muted
- Blue (flashing): Input channel has phantom power on (optional, see section 15.4)
- / Blue/Red (flashing): Input channel is muted AND has phantom power ON (optional, see section 15.4)

12.1.3 Streaming

The streaming section displays status for each channel Dante interface.
- Green: Input/Output – Streaming Dante – unicast
- Blue: Input/Output – Streaming Dante and/or AES67 – multicast
- Yellow: Output only – Streaming Dante – Loop back to receiver (shown on Receive LED only)
- Orange: Output only – Setting up flow
- Red: Output only – Stream error – RX status is not one of the following:
  NONE | LOOPBACK | IN_PROGRESS | DYNAMIC | STATIC | MANUAL

13 BLOCK DIAGRAM



AudioScience Iyo Dante Mic/Line Interfaces

14 ETHERNET CONNECTIONS

The Iyo Dante series of interfaces are equipped with 2 RJ-45 Ethernet connectors labeled “Primary” and “Secondary”. In most installations you would simply use the Primary jack to connect to your Dante network.

The Primary Gigabit Ethernet connector should always be used first: this is the main avenue for Dante traffic into and out of the unit.

The Secondary Gigabit Ethernet connector is optional and has 2 different modes of operation. It can act as a “Redundant” failover for the Primary connector or as a “Switched” (default) Ethernet connector to allow you to attach additional Dante units in a “daisy chain” fashion. See below

14.1 Primary Gigabit Ethernet Connector

The Primary Gigabit Ethernet must be connected to your Dante network, this is the default path for Dante traffic into and out of the unit.

14.2 Secondary Gigabit Ethernet Connector

The Secondary Gigabit Ethernet Connector has 2 software selectable operating modes.

14.2.1 Switched (default)

From the factory the Secondary port is set to act as a single port network switch. This allows you to attach a second Dante unit to this port in a “daisy chain” fashion if you need to expand your network in a location that does not provide multiple Ethernet drops. If you have multiple Iyo Dante devices you can continue to add additional units using each device’s secondary port. While there is no technical limit to how many units you can add in this manner, bandwidth concerns limit you to about 10.

14.2.2 Redundant

The secondary port can also be used as a redundant connection to provide you with a failover option in case your main Dante network is out of service. To change this mode, you need to use Dante Controller.

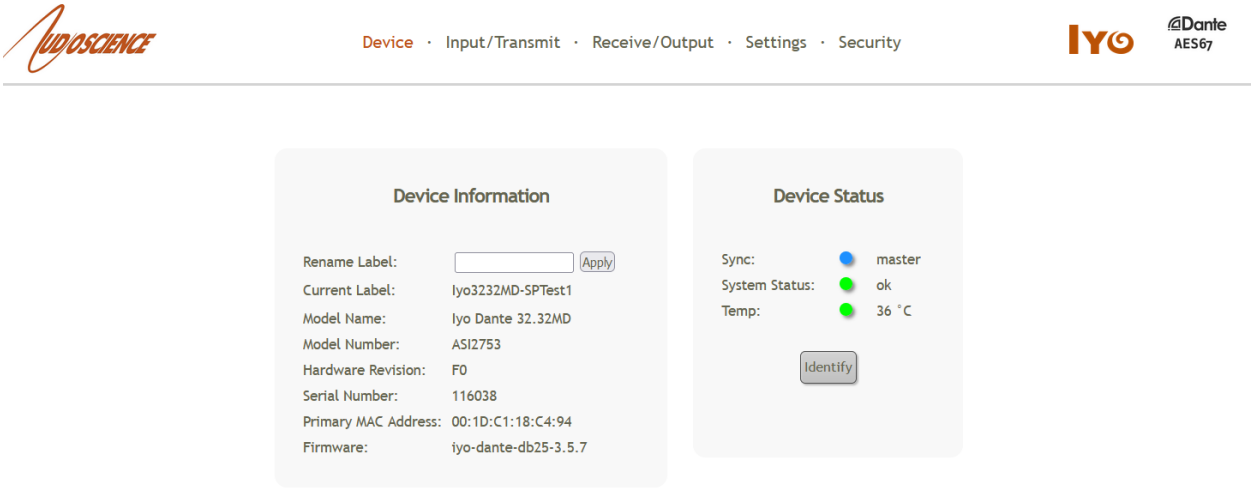
1. Open Dante Controller and double click the unit you wish to change.
2. From the Device View page, open the “Network Config” tab.
3. In the “Dante Redundancy” section use the drop down box to choose the mode you need.
4. Click the “Reboot” button at the bottom to reboot the unit into the new mode.

15 WEB INTERFACE

The Iyo family feature an embedded web server, allowing configuration and monitoring of input and output levels. To access the web interface, open your browser and type in your device's IP address.

To find your unit's IP address open Dante Controller and go to the Device Info tab. The IP address will be shown in the Primary Address field as seen below

You will be presented with the following screen:



Select from the available tabs across the top, they are Device – Input/Transmit – Receive/Output – Settings – Security. The Device tab as shown above is selected by default when you first open the web interface.

15.1 Device tab

15.1.1 Device Information

The Device Information section details the specific hardware information.

Model Name: The exact model type you are accessing
Model Number: Model number of this device
Hardware Revision: Hardware version of this device
Serial Number: Specific serial number for this device
Primary MAC Address: This unit's Media Access Control Address
Firmware: Currently loaded AudioScience firmware version

15.1.2 Software Information

The Software Information section details the specifics of the software and firmware installed.

AudioScience: Version of AudioScience firmware installed
XMOS: Version of code running on the embedded XMOS device

15.1.3 Device Status

The Device Status section gives you an at-a-glance indication of the status of a few key parameters

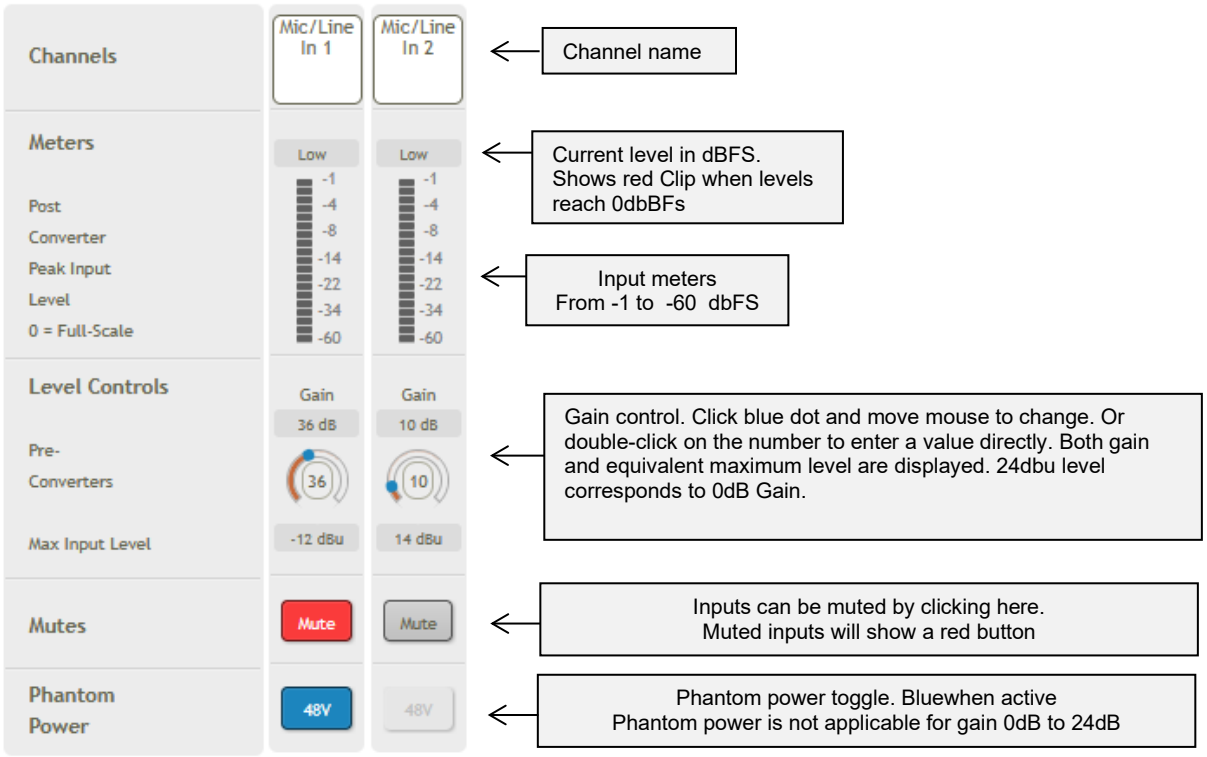
Sync: Displays the status of the IEEE1588 Precision Time Protocol (PTP) condition of the unit.
- Blue indicates this unit is the elected PTP Master Clock.
- Green indicates the Iyo is a PTP Slave.

- Orange indicates the Iyo is in the process of synchronizing.
- Red indicates there is a PTP error.

Sys: Displays the system operating status.
- Green indicates the Iyo is functioning normally
- Orange means the Iyo is in a transient waiting state, e.g. pending reboot.
- Red indicates a hardware error. Hoover the mouse over the LED to read more error details.

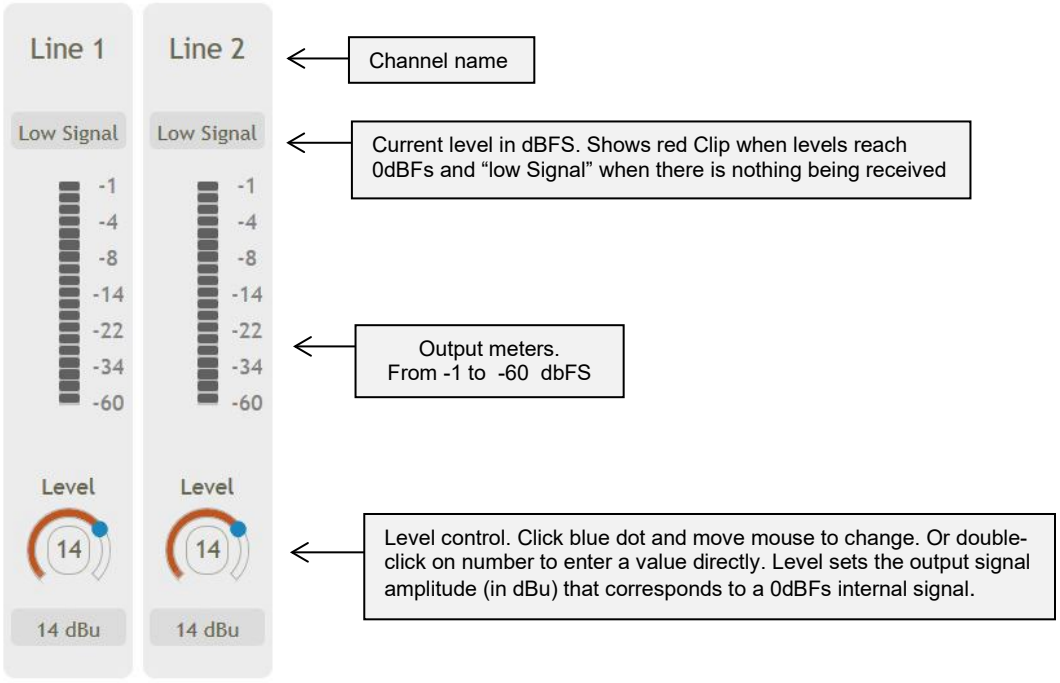
Identify: This will cause all of the LEDs on the front panel to flash to help you identify a particular hardware unit.

15.2 Input/Transmit tab



The Input/Transmit tab shows a channel strip for each microphone/line input. Each input becomes a Dante transmit channel that is available for routing in the Dante Controller. The channel strip has a peak meter, input level control and a toggle button to enable 48V phantom power. Gain must be set higher than 24dB in order to use phantom power.

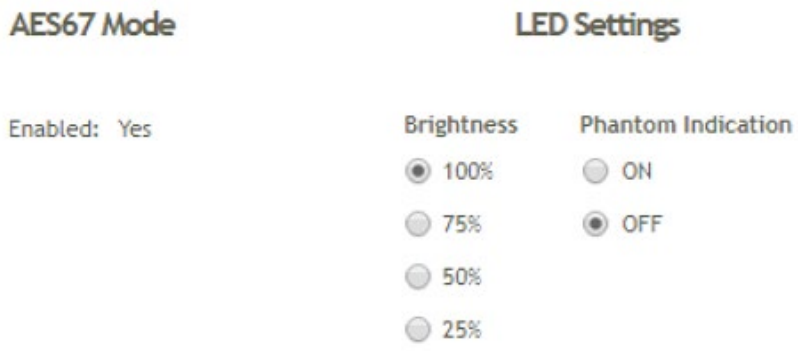
15.3 Receive/Output tab



The Receive/Output tab show audio levels for signals being received from other Dante units on the network that are then routed to the physical outputs of the Iyo.

15.4 Settings tab

The settings tab displays LED settings and indicates whether AES67 mode is active. Decrease the LED settings “Brightness” to dim the front panel LEDs. To indicate phantom power status on the front panel LEDs, switch the “Phantom Indication” from OFF to ON. When ON, the front panel Meter LEDs will flash red when phantom is active. (See Section 12.1.2)

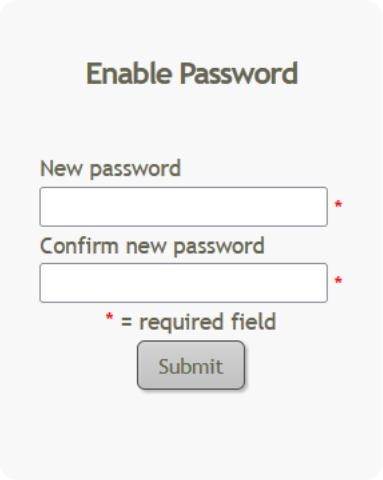


15.5 Security tab

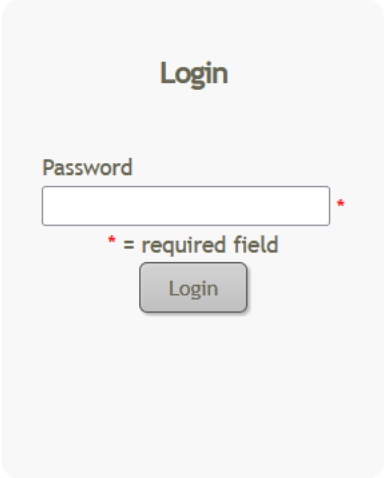
The security tab allows you to turn on/off the login options. By default no password should be set and the unit will start up showing the “Device” tab. This requires firmware version 3.5.7 or later.

15.5.1 Setting password

Click the “Security” tab at the top of the screen, if no password is currently active, you will see this:



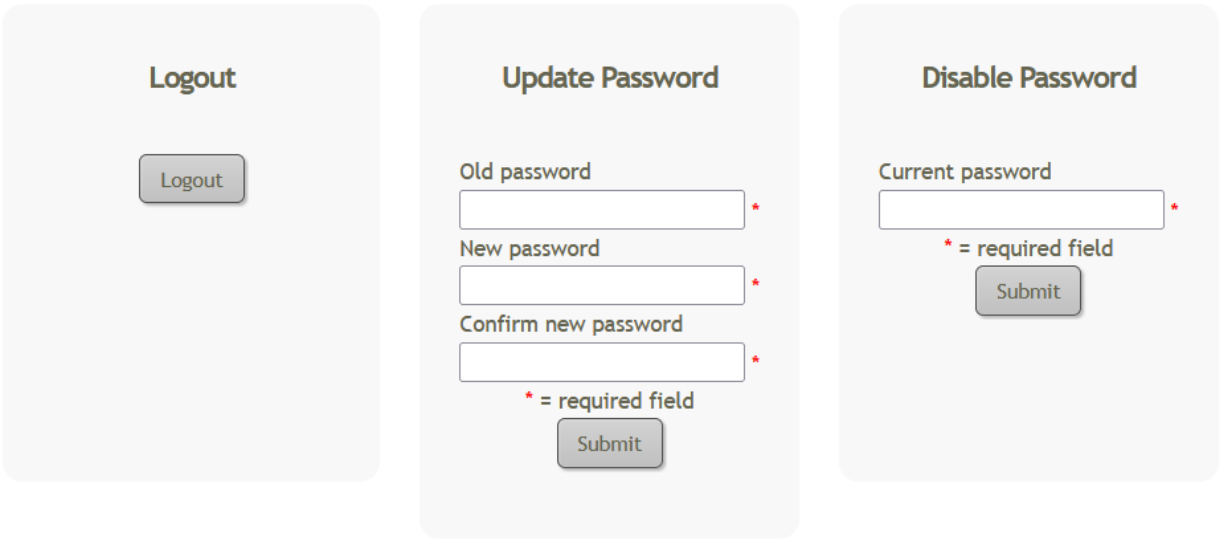
If you wish to require a password for access to the unit, enter it here in both boxes and click submit. You will see a confirmation box and then be logged out of the unit and returned to the main screen and see the login screen below:



Enter your password to proceed to the Device tab.

15.5.2 Logout or Update/Disable password

If security is enabled, when you click the “Security” tab at the top of the screen, you will see the screen below:

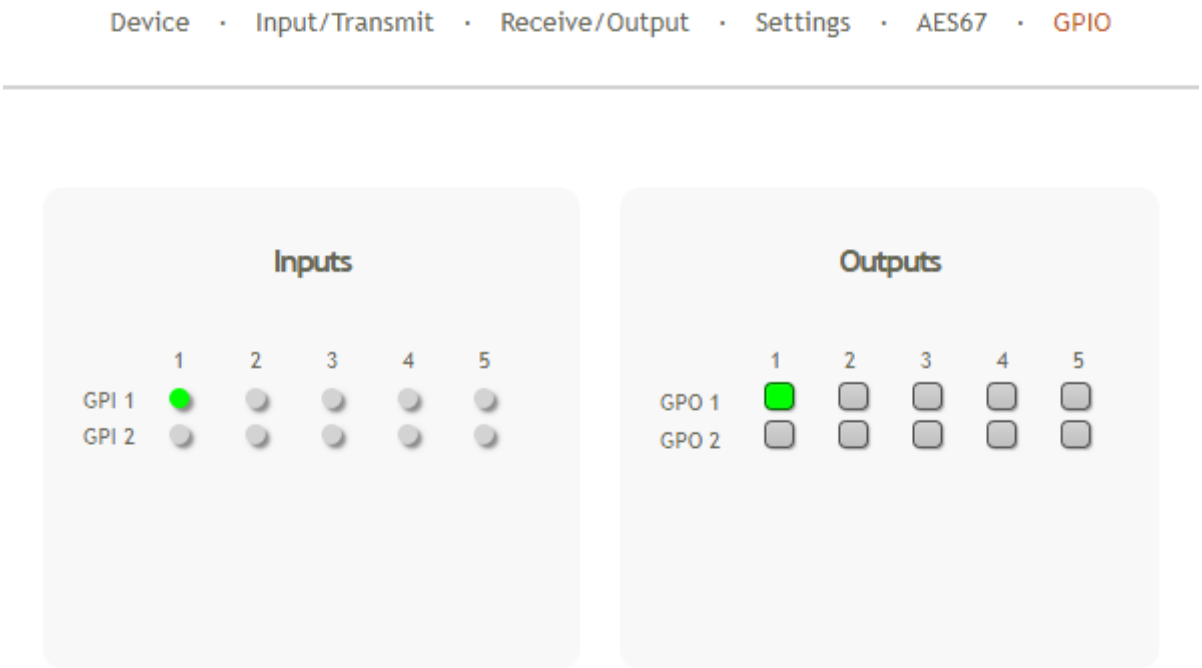


From here you can Logout of the unit. You can also update the password by entering the current password followed by the new password (in both boxes) or you can remove the password all together by typing it in the “Disable Password” section and clicking “Submit”. You should see a confirmation box when the change is successful.

15.6 GPIO tab (RJ-45 models only)

The GPIO tab provides an interface for controlling GPIO on the Iyo – 2 DB-15 ports, each with 5 opto-isolated inputs and 5 relay isolated outputs.

Buttons are provided for toggling the outputs (Green = ON, Gray = OFF) and LEDs indicate the state of the inputs (Green = ON, Gray = OFF).



16 FIRMWARE UPDATES

The Iyo Dante firmware is updated using the Dante Firmware Update Manager. Info on this can be found here:

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

Audinate no longer provides a link to the software, we have included it on our website here:

https://www.audioscience.com/internet/products/dante/iyo_dante.htm

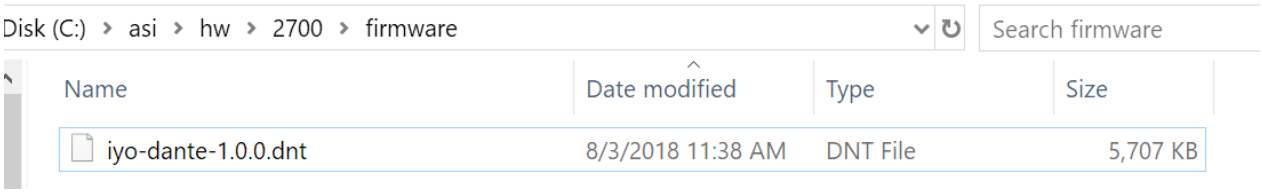
The latest firmware file for the Iyo Dante can be found on AudioScience's website here:

http://www.audioscience.com/internet/download/firmware/iyo/dante/

There is one version of the firmware that runs on all Iyo Dante units.

To load new firmware onto the Iyo Dante:

1. Download the version of the Iyo Dante firmware you wish to install to a local directory



2. Run the Dante Firmware Manager
3. Select the Ethernet interface to use
4. Select "Update Dante Firmware"
5. Browse for the file you downloaded in step 1
6. Wait while the Update Manager searches for Iyo Dante devices on the network
7. Select the device that you wish to upload the firmware to
8. Start the upload process, it will take several minutes
9. When the firmware update is complete, the device will automatically reboot with the new version

Current versions of Dante Controller also offer an option to update directly from the program. Due to some issues with the current embedded Dante Updater, we do not recommend this method at this time. This Tech Note explains the issues with this method:

https://www.audioscience.com/internet/download/notes/note_47_Iyo_Dante_Updater_incorrect_model.pdf

17 USAGE DOCUMENTATION

The Iyo Dante line of network audio products offers a simple yet powerful option when expanding your existing AoIP environment. AudioScience has developed several tools and work flows to help you get the most out of your Iyo Dante. Consult the documentation below for information on integrating the Iyo with your existing infrastructure.

17.1 Livewire+ AES67

Iyo Dante & Livewire+AES67

17.2 QSC Q-SYS

Iyo Dante with QSC Q-SYS

17.3 BiAmp

Iyo Dante with BiAmp

17.4 Symetrix Composer

Iyo Dante in Symetrix Composer

18 TROUBLESHOOTING

For help with Dante Controller issues, check out this helpful guide from Audinate:

Troubleshooting Dante IP Address Configuration