



unDX2IO+

4 x 2 Input Dante® Wallplate Interface



User Manual

Date 2/21/2020

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614-00036

IMPORTANT SAFETY INSTRUCTIONS

The symbols below are internationally accepted symbols that warn of potential hazards with electrical products.



This symbol, wherever it appears, alerts you to the presence of un-insulated dangerous voltage inside the enclosure -- voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

1. Read these instructions.
2. Keep these instructions.
3. Heed 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 third grounding prong. The wider 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 plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by Attero Tech
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
13. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
14. Unplug this apparatus during lightning storms or when unused for long periods of time.
15. Refer all servicing to qualified service personnel. 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.
16. This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
17. When permanently connected, on all-pole mains switch with a contact separation of at least 3mm in each pole shall be incorporated in the electrical installation of the building.
18. If rack mounting, provide adequate ventilation. Equipment may be located above or below this apparatus but some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this apparatus,



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.



WARRANTY INFORMATION

For a copy of the QSC Limited Warranty, visit the QSC website at www.qsc.com

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 and EN55022. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.





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1 – Overview

The unDX2IO+ Dante™ Audio Interface is a cost effective XLR-IO wall plate solution. The unDX2IO+ features two balanced mic/line XLR inputs, two balanced XLR line outputs, and a further two balanced line inputs on de-pluggable connectors on the side of the unit. All inputs and outputs can be used simultaneously and all audio channels are available separately on the Dante network. The unDX2IO+ is designed to fit into all dual gang US junction boxes, mud rings, and old work brackets. The unDX2IO+ is PoE enabled, so all connectivity (power, control and data) is provided by a single CAT-5/6 cable. The unDX2IO+'s size and I/O density make it easy to put Dante connectivity wherever it's needed.

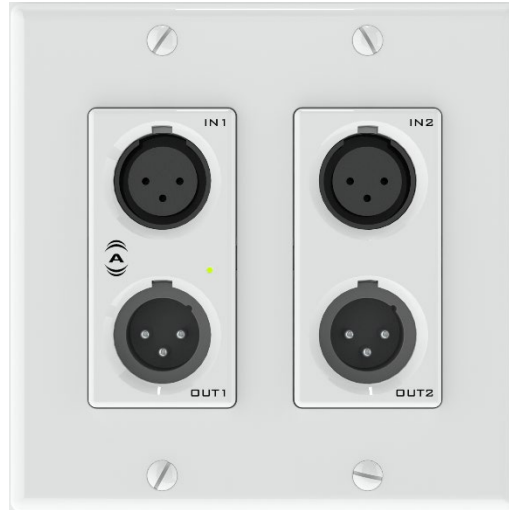


Figure 1 - unDX2IO+ Front Panel

1.1 – What's in the Box

The unDX2IO comes supplied with the following

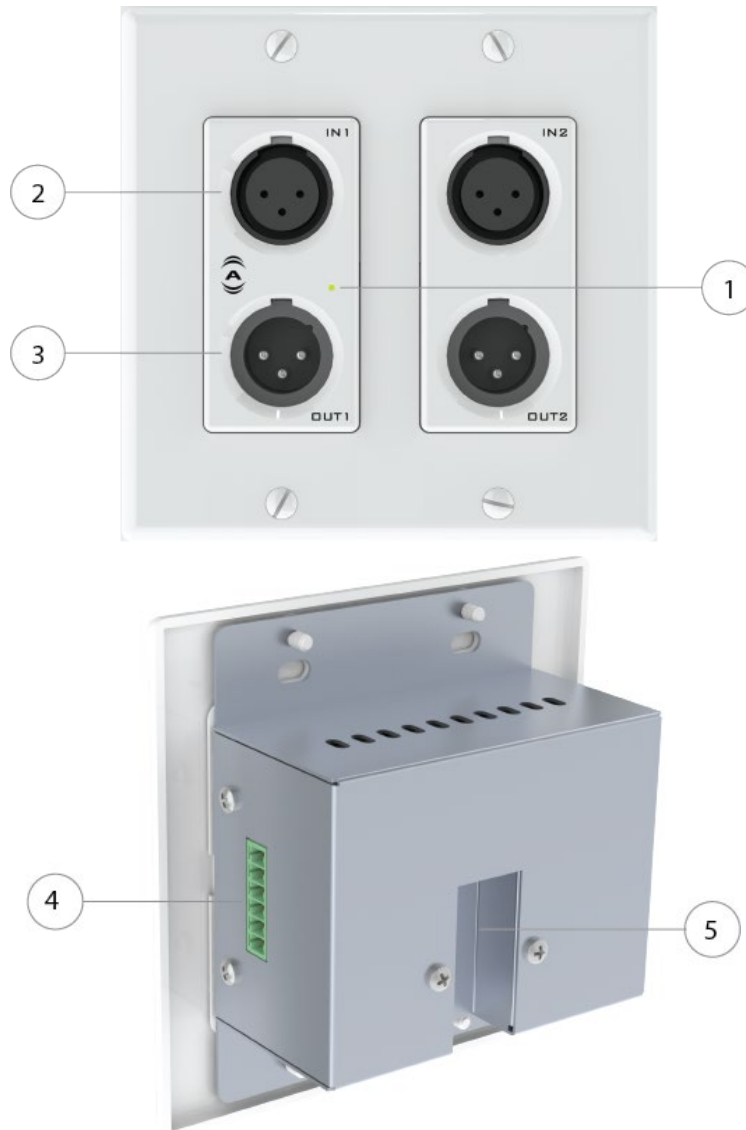
- unDX2IO+ device
- Mounting kit
- Decora plate

1.2 – Optional Extras

The following are available as options for the unDX2IO+ and that may be ordered separately:

- unXP2I - Passive Dual XLR-F single gang Decora wall plate - P/N: 900-00204-01 (Comes with 3-gang Decora cover plate).

2 – Device Installation



1	Power/ ID LED
2	2 x Mic/Lin Balanced audio inputs on XLR
3	2 x Balanced Line Audio outputs on XLR
4	2 x Balanced Line inputs on De-pluggable terminal block
5	Dante / Control / PoE Port

***Note:** The unDX2IO+ has a label on the front of the metal housing at the top that shows the devices MAC address. This is important for initial device identification as these digits make up part of the devices default network name that is shown when the device is detected by Dante Controller. The MAC address is also given on the back of the unit.

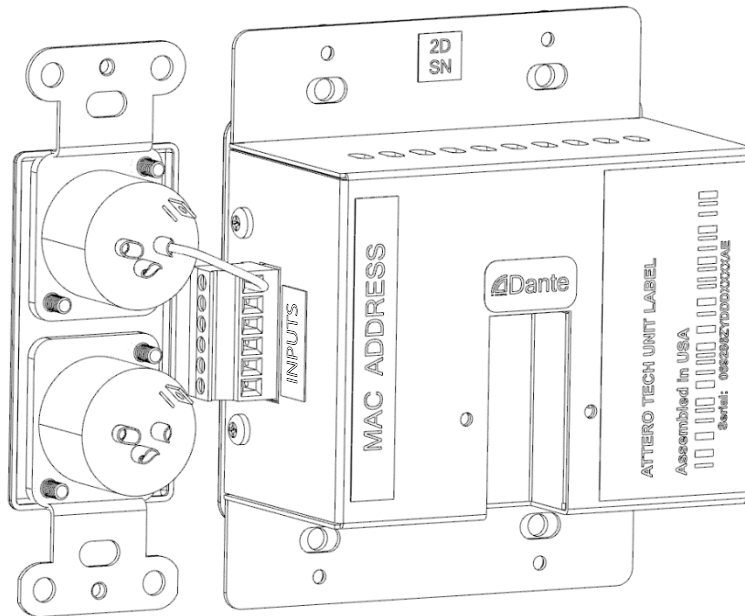
A typical installation will involve mounting the wall plate into a pre mounted wall box or mounting bracket. Before starting, make sure the wall box where the unDX2IO+ is to be installed is pre-wired with a suitable cable back to a PoE-enabled network switch or mid-span injector. If a mid-span injector is being used, the cable should be connected to the port that supplies both Ethernet and power (refer to the devices manual if unsure which port is which).

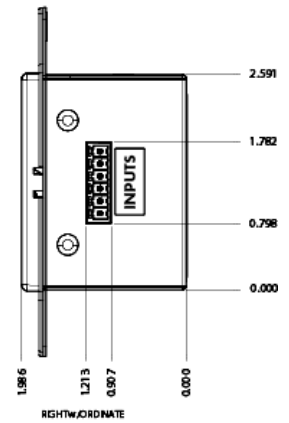
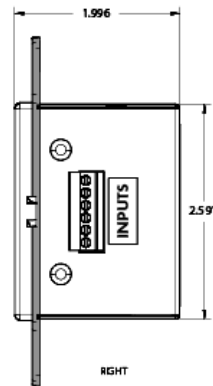
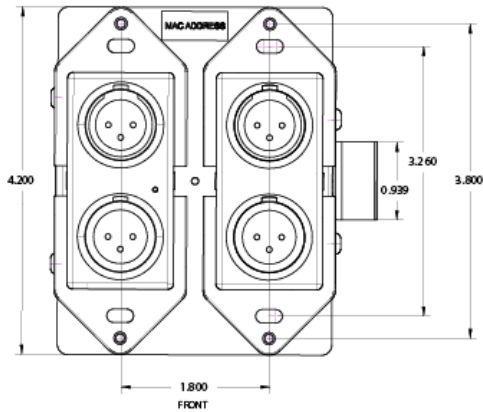
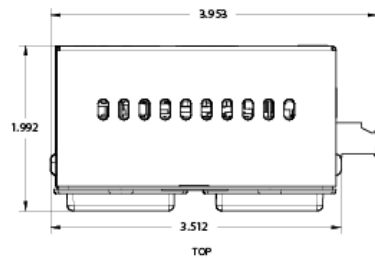
***Note:** All Attero Tech by QSC products are tested using UTP cabling and it is recommended that UTP cabling be used when installing them. STP cabling can be used for installation though care must be taken not introduce grounding issues into the system by doing so.

Attach the network cable from the switch/mid-span injector to the Dante port of the Dante unDX2IO+. If the switch or mid-span injector is already running and PoE is enabled, the unit should power up and the green ID LED on the front of the device should turn on.

With the cable attached, carefully place the unDX2IO+ into the wall box taking care to not trap the cabling. Once full in place, secure it with the screws provided. Once the unit is secured in the wall box, fit the Decora plate and secure it with the screws provided with it.

The figure below shows the installation of the companion passive XLR audio input plate and the unDX2IO+.





**Note: 2D and 3D CAD models can be downloaded from the QSC website. Please contact QSC for any further product related information that is not accessible on the website.*

2.2 – Error Reporting

The unDX2IO+ is equipped with error reporting features. Upon power up, the front panel power LED will briefly light red and then change to green if the device boots successfully. If the LED remains on solid red, this indicates a device failure. If power cycling the unit does not correct this problem, contact QSC technical support.

2.3 – Hardware Connections

The unDX2IO+ provides balanced audio outputs to external analog audio equipment. Refer to the following diagrams and instructions for connecting different types of audio devices to the outputs of the unDX2IO+. Professional grade audio cabling is recommended to achieve the best audio performance throughout the system.

2.3.1 – Balanced Output to a Balanced Input

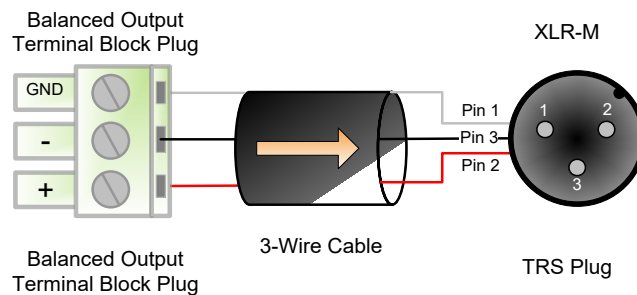


Figure 4 - Balanced Wiring Guide

2.3.2– Unbalanced Output to an Balanced Input

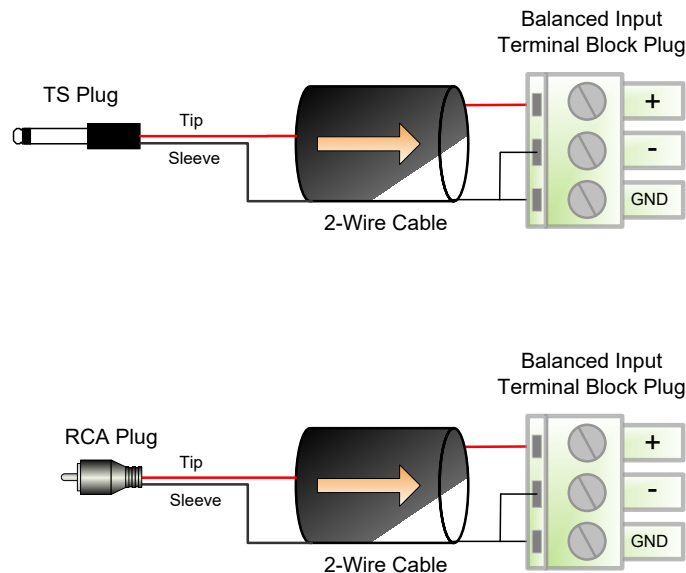
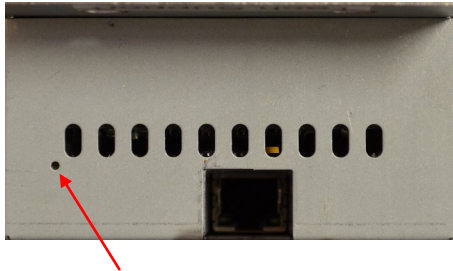


Figure 5 – Unbalanced Wiring Guide

2.4 – Factory Reset

The unDX2IO+ has a factory reset option. Using it will reset all the devices parameters back to their factory defaults including all the Dante settings such as device name, channel names as well as the device settings such as input select. The devices IP address mode is also reset back to getting a dynamic IP.



Access to the factory reset button is through a small circular hole on the underside of the unit, next to the ventilation cutouts.

To use the factory reset, insert a small screwdriver or paperclip into the hole to activate the factory reset switch. There should be a noticeable “click” when it’s activated. Hold the switch in for 5 to 10 seconds then release. If the factory reset was successful, the unit will actually reset indicated by the power LED will turning red.

3 – Device Configuration

Certain 3rd party manufacturers provide audio routing functionality from within their own configuration application. Check the applications manual/help or contact the manufacturer in question to see if this is supported. If not supported by a 3rd party tool, the audio routing may be carried out using Audinate's Dante Controller. Dante Controller can be obtained from the [Audinate website](#) and is available for both Mac and PC. Instructions on how to use this application and about setting up routes on a Dante network can also be found on Audinate's website.

****Note:** When using Dante controller, the unDX2IO+ will be shown using a default device name of "unDX2IO-#####" where '#####' is the last six characters of the devices MAC address.*

3.1 – IP Address Setup

***** **IMPORTANT** *****
Failure to correctly configure IP addresses will not allow an unDX2IO+ device to correctly authenticate in the unIFY Control Panel software and while it will show up in Dante Controller, the devices parameters will not be available, the input and output channels also won't be visible and routing of audio to and from the device will not be possible.

In order to configure an unDX2IO+, both to set up internal parameters and also setup audio routing, the PC/Mac will need to be able to communicate with the devices over the network. While all Dante devices will be discovered regardless of the IP address setup on the PC or Mac, communication can only occur if the PC/Mac and the device have compatible IP addresses.

By default, the unDX2IO+ is set to get a dynamic IP address. As with all Dante devices, if the unDX2IO+ does not find a DHCP server to retrieve an IP address from, it will give itself an local link address sometimes also known as an automatic private IP address (APIPA) instead. A local link IP address is always in the range 169.254.x.y.

To ensure communication, the PC/Mac can either be set to get a dynamic IP address, or be given a static IP address in the range 169.254.x.y. The PC may require a restart if its IP address is changed for the change to take effect.

In some applications, IP addresses of devices may need to be set to something specific and that can be done once initial communication has been established. Bear in mind however that if a static IP address is assigned to a device and that static IP address is in a different range to the IP it was previously using to communicate with the PC/Mac, the PC/Mac will lose communication with the device until such time as the PC/Mac IP address is also changed to an IP in range of the devices new IP address.

Further information on IP setup for an audio system using Dante can be found on [Audinate's FAQ page](#) on the Audinate website.

3.2 – Software Configuration and Control

The unDX2IO+ device parameters such as preamp control and input switching are fully supported in Attero Tech's unIFY Control Panel software (V2.2 or later). Refer to the Help documentation within the unIFY application for support.

3.3 – 3rd Party Control

The unDX2IO+ supports 3rd party control allowing external system to manage the unDX2IO+'s settings such as phantom power, mic/line gain options and control of presets.

3.4 – Control Interface Type

There are two control interface types available for the unDX2IO+. The first type is a Dante proprietary interface (-C) which is typically used by devices already that have built-in support for Attero Tech by QSC devices. The second type supports a 3rd party UDP interface (-U) and is available to anyone to use with any device capable of sending and receiving UDP messages.

The type of command interface a specific device supports is defined by the Dante™ firmware it has been loaded with. There are two methods to determine which Dante™ firmware and thus which command interface that is:

- 1) unIFY Control Panel V2.0 or later: Right-clicking on the device in the device list, mouse over the "Device Info" option and then look for the "Control Type" option. A "-C" means the device is using the Dante™ Proprietary interface. A "-U" means the device is using the Direct UDP interface.
- 2) Dante™ Controller: Double-click on the device in question in the routing grid to display the "Device View" form, select the "Status" tab and look for the "Product Version" and "Firmware Version" parameters in the "Device Information" section.

Product Version	Firmware Version	Control Interface
V4.x.x	V1.0.0	Dante™ Proprietary (-C)
V4.x.x	V2.0.0	Direct UDP (-U)

All Attero Tech by QSC "un" devices ship with the -U control option. However, this control option can be easily changed in the field by updating the device's firmware. Firmware updates can be done within [unIFY Control Panel Software](#) (v2.3 and later). The latest firmware .SFU files can be downloaded from the [Attero Tech Product Firmware](#) page on the QSC website.

3.4.1 – API Documentation

Information on the commands the unDX2IO+ supports, as well as details of how to use the 3rd party UDP interface are available for download from [unDX2IO+ product page](#) on the QSC website.

3.4.2 – Using the Command interface

In order to make use of the control interface, regardless of type, the unDX2IO+ and the controlling device need to be on the same physical subnet and need to have IP addresses in the same range. The control devices should then be able to converse with the unDX2IO+ without any further configuration necessary.



ARCHITECTS & ENGINEERS SPECIFICATION

The Dante wall plate interface shall provide two XLR balanced mic/line level analog inputs, two XLR balanced line level outputs on the front panel and two balanced line inputs accessible on the side of the unit's depluggable terminal block connector.

Each XLR input shall have selectable gain options of 0dB, +25 dB and +40dB with a selectable input pad to accommodate up to +20dBu line level inputs. The inputs shall have +48V phantom power. Input gain and phantom power shall be selectable via software.

The internal analog to digital conversions shall be performed at 24-bit resolution with a 44.1 kHz or 48kHz sampling rate.

The Dante interface shall receive power over the Ethernet cable from an IEEE802.3af PoE compliant network switch or mid-span injector. The Dante interface shall be in-wall mounting in a standard US dual gang junction box.

The Dante interface shall be compatible with Attero Tech by QSC unIFY software for flexible control and monitoring in systems applications. The Dante interface shall be compliant with the RoHS directive. The Dante interface shall be compliant with FCC Part 15 Class A, and CE (E60950 and EN55022 Class A) requirements.

The unit shall be the Attero Tech by QSC unDX2IO+.



Device Specifications

Audio Inputs:	
Input Type:	Balanced and RF filtered 3-pin depluggable
Gain:	-18dB, -3dB, +25dB, +40dB, software selectable
Input Impedance:	>1.8K ohms at any gain setting
Maximum Input Levels: 1 & 2	+20dBu @ 0dB w/ -15dB Pad +5dBu @ 0dB gain, -22dBu @ +25dB gain, -38dBu @ +40dB gain
Maximum Input Levels: 3 & 4	+4dBu Mode - +20dBu -10dBV Mode - +12dBu
Phantom Power:	+48V, software selectable
Audio Outputs:	
Output Type:	Balanced line level with automatic muting on loss of Dante signal
Output Gain	0dB
Maximum output level:	+20dBu
Audio Performance:	
EIN	-115dBu (+40dB gain)
Output Noise:	<-85dBu @ 0dB gain
System THD:	<0.05% at any gain, input signal 3dB below maximum

Dante Network:	
Physical Level:	Standard Ethernet
Connector:	Single RJ-45
Cable Quality:	CAT-5e or better
Transmission Speed:	100 Mbps
Supported Sample Rates	44.1 kHz 48kHz
Minimum Dante Network Latency	1ms
Power Requirements	
PoE	802.3af PoE PD compliant
Power Consumption	< 5W Max
Cable Quality:	CAT-5e or better
Physical Dimensions	
Width	3.54"
Height	4.2"
Depth	2"
Weight	0.6 lbs.
Product Compliance	
FCC CFR 47 Parts 15B Class A, EN55011 ICES-003 CE (EN55022 / EN55024) RoHS REACH	