

unD6IO-BT

Bluetooth® Multi-I/O Wall Plate



User Manual

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Revision 01

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614-00033

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,
19. This apparatus may be installed in an industry standard equipment rack. Use screws through all mounting holes to provide the best support.



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

LIMITED TWO YEAR WARRANTY

The equipment is warranted for two year from date of purchase from Attero Tech, LLC against defects in materials or workmanship. This warranty does not cover equipment which has been abused or damaged by careless handling or shipping. This warranty does not apply to used or demonstrator equipment. Should any defect develop, Attero Tech, LLC will, at our option, repair or replace any defective parts without charge for either parts or labor. If Attero Tech, LLC cannot correct the defect in the equipment, it will be replaced at no charge with a similar new item. Attero Tech, LLC will pay for the cost of returning your equipment to you. This warranty applies only to items returned to Attero Tech, LLC, shipping costs prepaid, within two year from the date of purchase. This Limited Warranty is governed by the laws of the State of Indiana. It states the entire liability of Attero Tech, LLC and the entire remedy of the purchaser for any breach of warranty as outlined above. NEITHER ATTERO TECH, LLC NOR ANYONE INVOLVED IN THE PRODUCTION OR DELIVERY OF THE EQUIPMENT SHALL BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THIS EQUIPMENT EVEN IF ATTERO TECH, LLC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE LIABILITY OF ATTERO TECH, LLC EXCEED THE PURCHASE PRICE OF ANY DEFECTIVE EQUIPMENT.

This warranty gives you specific legal rights. You may have additional legal rights which vary from state to state.

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.



This symbol means the product must not be discarded as household waste, and should be delivered to an appropriate collection facility for recycling. Proper disposal and recycling helps protect natural resources, human health and the environment. For more information on disposal and recycling of this product, contact your local municipality, disposal service, or the business where you bought this product.

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1 – Overview

The unD6IO-BT Dante™ Audio Interface with Bluetooth® is a cost effective multi-IO wall box. The unD6IO-BT features stereo Bluetooth® wireless audio input connectivity along with two RCA line level inputs and a 3.5mm TRS line level input. A 3.5mm TRS line level output on the front is also included.

The unD6IO-BT is designed to fit into most dual gang US junction boxes and is PoE enabled, so all connectivity (power, control and audio data) is provided by a single CAT-5e/6 cable. The unD6IO-BT's unique mix of consumer style wired and wireless connectivity allows easy connection of a wide variety of user devices to a Dante network with no concerns about ground loops or other audio problems common with consumer devices.

The unD6IO-BT includes the following features:

- Simple pairing one button pairing/connect process for standalone operation with LED indication of connection status
- Configurable pairing button for use with and without 3rd party control systems
- Customizable Bluetooth® friendly name in applications with co-located unD6IO-BTs
- Compatible with most smartphones, Apple iPads, and Android tablets
- Two RCA and one 3.5mm stereo input
- One 3.5mm stereo output with software volume control
- IEEE802.3af compliant PoE powered to work with any compliant PoE network switch
- RCA inputs and 3.5mm input (carried as stereo) can be selected individually or in combination as an audio flow via software (see Audio Flow diagram)
- Bluetooth® audio is carried as stereo onto the Dante network

1.1 – What's in the Box

The device comes supplied with the following:

- (1) unD6IO-BT
- (1) 2-gang Decora cover plate cover w/mounting screws

2 – Product Features

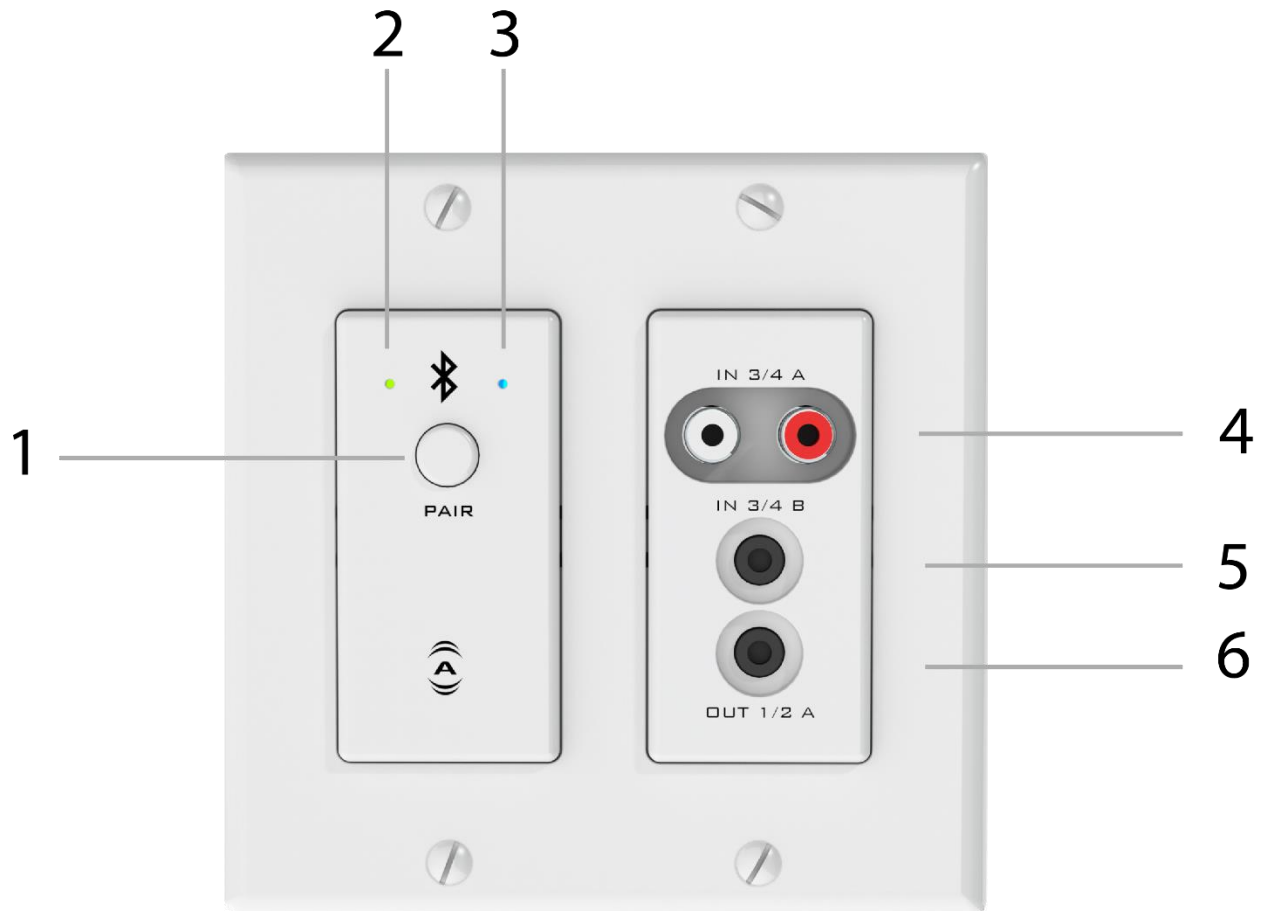


Figure 1 – unD6IO-BT Top Panel Features

1	Bluetooth® pairing/connect button
2	Bluetooth® status indicator
3	Power/ID/Error indicator (see note below)
4	Stereo RCA Inputs
5	Stereo 3.5mm Input
6	Stereo 3.5mm Output

**Note: The unD6IO-BT 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 Attero Tech technical support.*

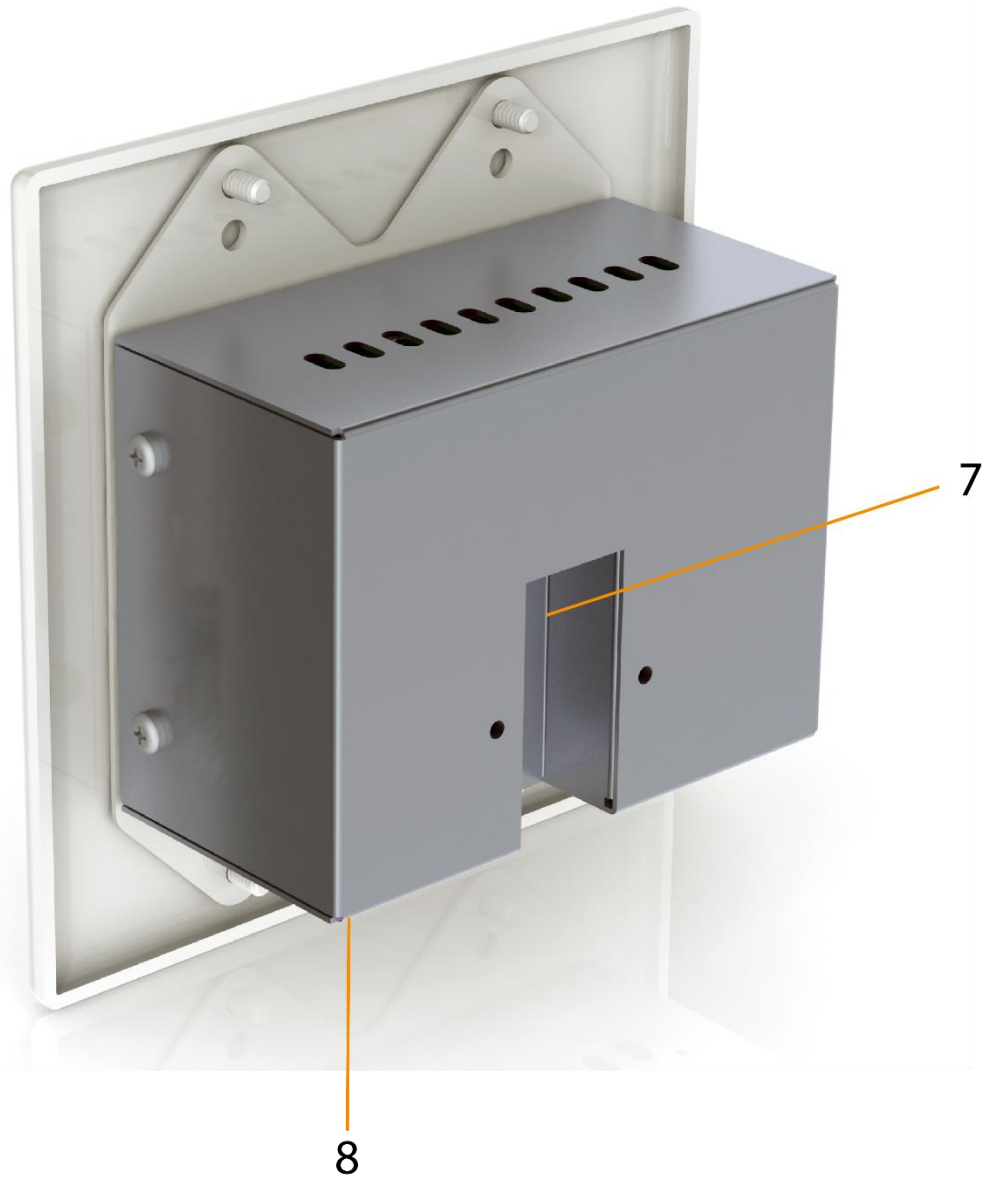


Figure 2 - unD6IO-BT Rear Panel Features

7	Recessed RJ-45 (Dante, Control and PoE)
8	Recessed Factory Reset switch

**Note: The unD6IO-BT has a label on the front of the metal housing at the top that shows the device's MAC address. This is important for initial device identification as the last six digits make up part of the device's default network name that is shown when the device is detected by Dante Controller. The full MAC address is also given on the back of the unit.*

2.1 - Audio Signal Flow

The following diagram depicts the internal signal flow for the unD6IO-BT.

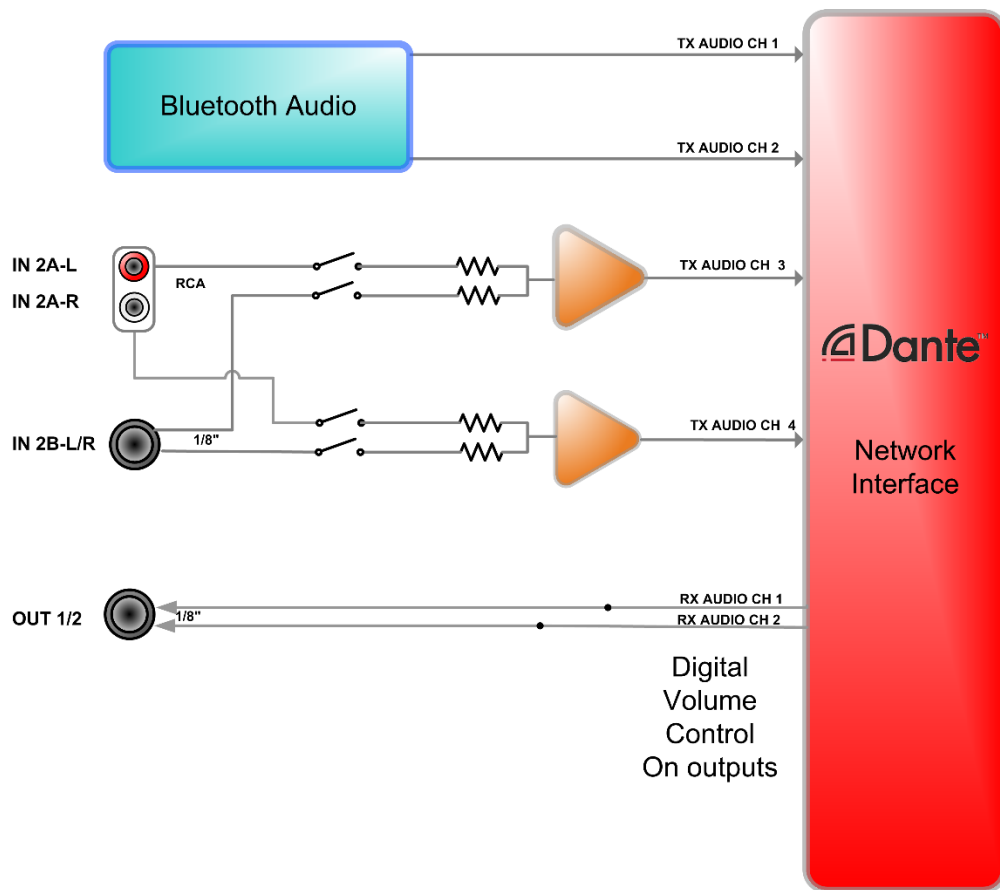


Figure 3 - unD6IO-BT Signal Flow

Dante Channel	I/O Function
TX 1	Bluetooth Receiver Left Channel
TX 2	Bluetooth Receiver Right Channel
TX3	RCA Left or 3.5mm In Left, or sum of both
TX4	RCA Right or 3.5mm In Right, or sum of both
RX1	3.5mm Out Left
RX2	3.5mm Out Right

Figure 4 - Dante Channel Mapping

3 – Mounting and Installation

A typical installation will involve mounting the wall plate into a pre mounted 2-gang or larger wall box, standard drywall bracket or mud ring. Before starting, make sure the wall box where the unD6IO-BT is to be installed is pre-wired with a suitable CAT5e or better 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 mid-span injectors manual if unsure which port is which). The unD6IO-BT packaging includes all of the necessary screws for mounting the product and the included Decora wall plate.

Attach the network cable from the switch/mid-span injector to the Dante I/F port of the unD6IO-BT. 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 unD6IO-BT into the wall box taking care to not trap the cabling. Once fully in place, secure it with the screws provided. Once the unit is secured in the wall box, fit the Decora plate over the front of the unit and secure it with the screws provided with it. It is recommended to not over-tighten the screws that attach the included Decora wall plate to prevent cracking it.

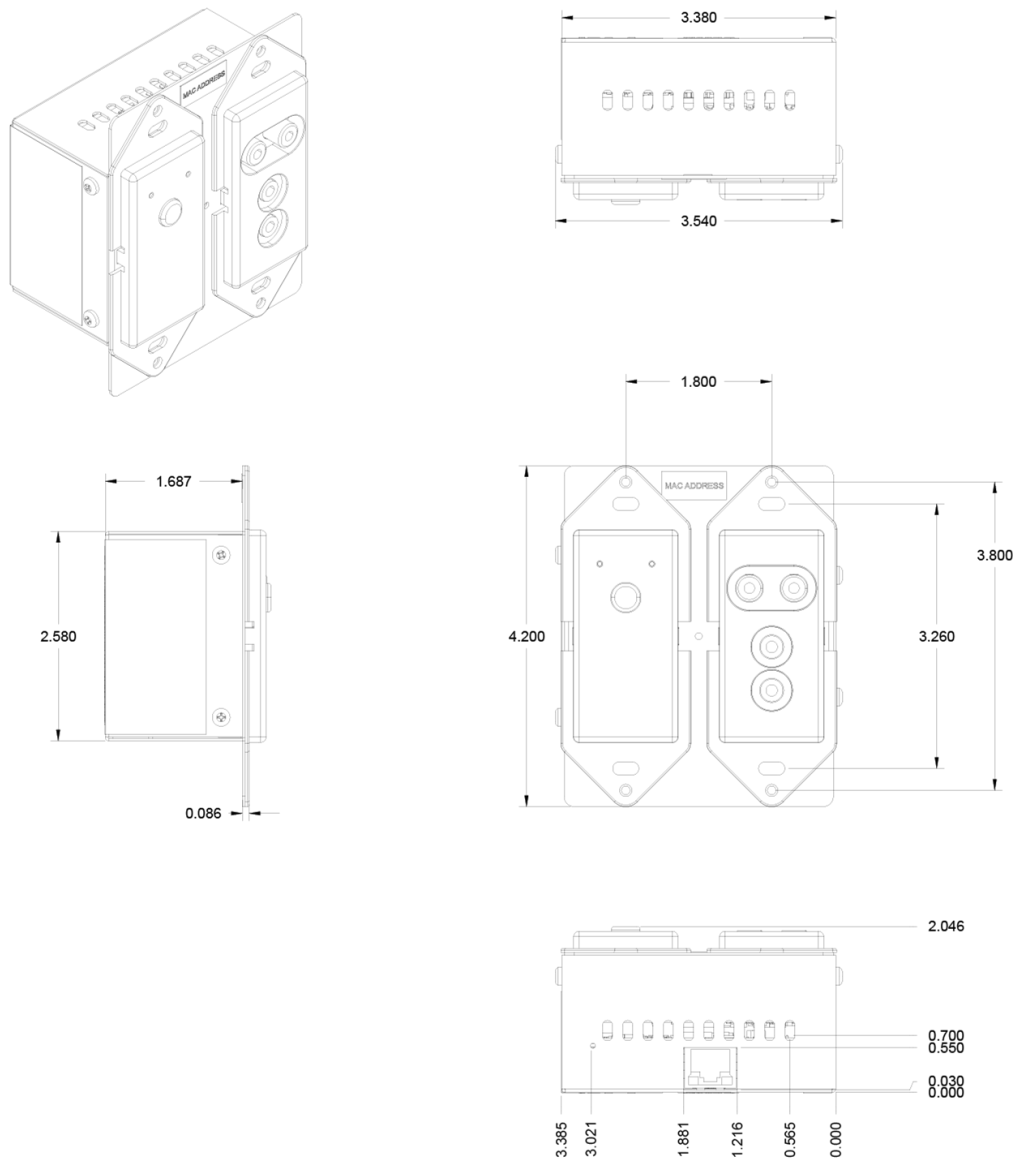


Figure 5 - unD6IO-BT Dimensioned Drawings

3.1 - Hardware Connections

The unD6IO-BT provides unbalanced analog audio inputs and outputs for connection to consumer style devices (smart phones, MP3 players, laptops etc). In most cases these sources already utilize unbalanced audio connections. However, if the source you are using utilizes balanced outputs, the following diagram shows the audio wiring for appropriately interfacing a mono source to the unbalanced inputs of the unD6IO-BT.

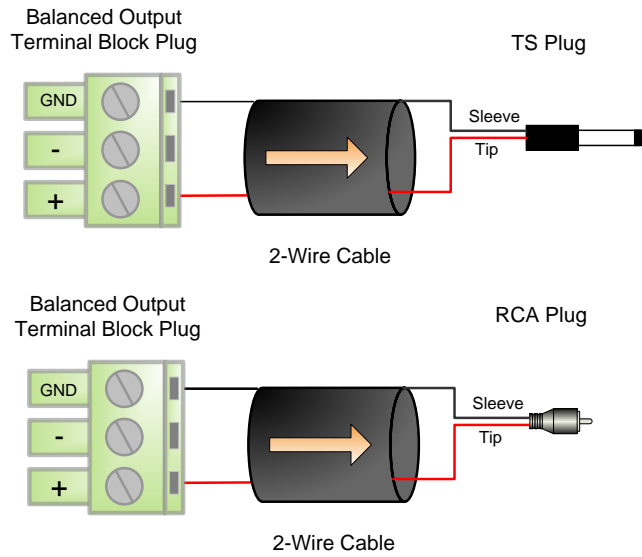


Figure 6 - Unbalanced Wiring Guide

4 – Bluetooth® Operation

The unD6IO-BT is designed for two primary usage modes to facilitate a number of professional AV applications.

Stand-alone mode:

This usage model is intended for applications where casual users of a public venue (sports bar, spa, stadium luxury box, fitness center) have access to connect their devices to the audio system but headaches are minimized by eliminating automatic reconnect and pairing history features.

In this mode, users connect their Bluetooth® audio enabled smart device by simply pressing the front panel “PAIR” button. The blue Bluetooth® status LED will begin flashing to indicate that the unD6io-BT is now visible to other Bluetooth® devices and accepting pairings. This pairing period lasts 30 seconds after which the status LED will stop flashing and turn off and the un6IO-BT will disable its Bluetooth® interface.

**Note: The default friendly name visible to other devices is “unD6IO-BT”. This name can be customized by the installer using the unIFY Control Panel software (v2.1 or greater).*

If a successful pairing is made during the pairing period, the status LED will stop flashing and turn constantly on.

To disconnect a Bluetooth device from the unD6IO-BT, press and hold the PAIR button for 5 seconds and then release it. The status LED will turn off, and the connection will be reset. Another device may now be connected by repeating the pairing process.

3rd Party Mode:

In this usage model, the unD6IO-BT is integrated into a large AV system that includes a 3rd party control system. Using the network and the 3rd party programming API, integrators can customize the usage of the unD6IO-BT. The control system can be used to configure the following functions:

- Limit errant connections by disabling the front panel pairing button
- Implement user privileges by only initiating the pairing/connect process remotely through the control system user interface.
- Report current unD6IO-BT Bluetooth® interface status to the control system.

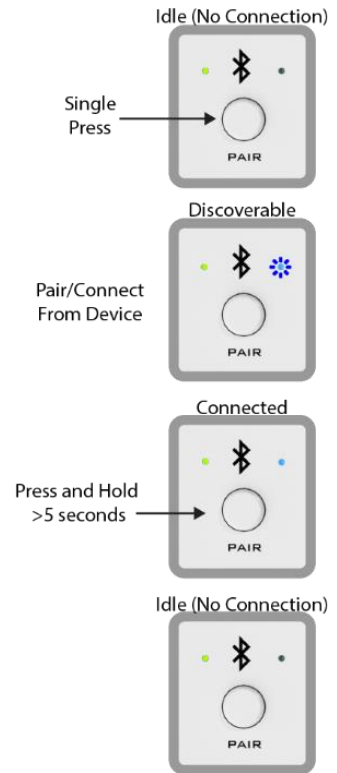


Figure 7 – Stand-alone Mode

5 – 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 (www.Audiante.com) 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 unD6IO-BT will be shown using a default device name of “D6IO-BT-#####” where ‘#####’ is the last six characters of the devices MAC address.*

5.1 – IP Address Setup

***** **IMPORTANT** *****
 Failure to correctly configure IP addresses will not allow an unD6IO-BT 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 unD6IO, 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 unD6IO-BT is set to get a dynamic IP address. As with all Dante devices, if the unD6IO-BT 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 in the FAQ’s on the Audinate website (<https://www.audinate.com/resources/faqs>).

5.2 – Software Control

The unD6IO-BT is fully supported in unIFY Control Panel v2.1 software and greater for a full description of the software and configuration features refer to the integrated help documentation within the unIFY Control Panel application.

5.3 – 3rd Party Control

The unD6IO-BT supports 3rd party control allowing external system to manage the unD6IO's settings such as phantom power, mic/line gain options and control of presets.

There are two control interface types available for the unD6IO. The first type is a Dante proprietary interface (-C) which is typically used by devices already that have built-in support for Attero Tech 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.

Information on the commands the unD6IO-BT supports as well as details of how to use the 3rd party UDP interface can be found in the unIFY 3rd party Software API document, available from the registered users section of the Attero Tech website (Go to www.atterotech.com and click on the log-in option).

5.3.1 – Control Interface Type

The type of control interface a specific unD6IO-BT supports is defined by the Dante firmware it has been loaded with. Refer to the Help documentation within the unIFY Control Panel software for details on how to determine the control interface type that your device actively supports.

A devices initial control interface is chosen when ordering the unit. However, it can be easily changed though once the unit is in the field by updating the device's Dante firmware. The tools and necessary firmware files for updating a device's control interface can be obtained from the registered users section of the Attero Tech website (Go to www.atterotech.com and click on the log-in option). The firmware files have an extension .DNT (otherwise known as "donut" files) and there is one for each control interface type.

5.3.2 – Using the Command interface

In order to make use of the control interface, regardless of type, the unD6IO-BT 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 unD6IO-BT without any further configuration necessary.

If control device is on a separate network to keep the Dante traffic separate, remote control of the unD6IO-BT can still be achieved by using Attero Tech's CommandHub product (see the Attero Tech website for more details).

6 – ARCHITECTS & ENGINEERING SPECIFICATION

6.1 – unD6IO-BT A&E Specifications

The Dante 2-gang wall plate interface unit shall provide a stereo Bluetooth® 3.0 compatible audio receiver in a Décora form factor. The Bluetooth® receiver shall be activated for pairing and connection by a single button on the wall plate. The Bluetooth® receiver shall also feature remote customization via a software control interface.

The device shall also provide two sets of unbalanced line level input connections: one on a set of RCA connectors, the other using a stereo 3.5mm TRS connection. These inputs are selectable for independent or summed operation via software and introduced to the Dante interface on Dante transmit channels 3 and 4. The internal analog to digital signal conversion shall be performed at 24-bit resolution with a sampling frequency of 48 kHz.

The two received Dante output channels shall also be converted and output on a front panel mounted 3.5mm stereo TRS connector. The internal digital to analog signal conversion shall be performed at 24-bit resolution with a sampling frequency of 48 kHz.

The Dante interface unit shall receive power over the Ethernet cable from an IEEE 802.3af PoE compliant network switch or midspan injector.

The Dante interface shall be compliant with the RoHS, WEEE and REACH directives. The Dante interface unit shall be Compliant with the EMI/EMC requirements for FCC and CE.

The Dante interface unit shall be the Attero Tech unD6IO-BT.

6.2 – Device Specifications

Audio Inputs	
Input Types:	Stereo Bluetooth® v3.0 audio receiver (A2DP Profile only) Stereo Unbalanced Inputs on RCA (<i>Inputs 3/4 A</i>) Stereo Unbalanced Inputs on 3.5mm TRS (<i>Inputs 3/4 B</i>)
Input Switching:	Software selectable line level input source on In 3 and In 4 <ul style="list-style-type: none"> • RCA L/R • 3.5mm L/R • RCA + 3.5mm L (3) and RCA + 3.5mm R (4)
Input Impedance:	>10k Ohms (<i>Input 3/4 A & B</i>)
Maximum Input Levels:	+12 dBu (<i>Input 3/4 A & B</i>)
Phantom Power:	+48V, software selectable (<i>Inputs 1/2 only</i>)
Audio Input Performance	
THD+N:	< 0.1% Bluetooth® Input @ -3dBFS <0.01% Line Inputs ¾ @ -3dBFS
Frequency Response	20Hz – 20kHz, +/- 3dB (Bluetooth® Input) 20Hz – 20kHz, +/- 1dB (<i>Inputs 3/4 A & B</i>)
Dynamic Range:	>95 dB (<i>Inputs 3/4 A & B</i>)

Audio Outputs	
Output Type:	Two unbalanced line level outputs on stereo 3.5mm TRS
Attenuation Range:	Software controlled volume (<i>0 to -60dB, 1dB increments</i>)
Output Impedance:	100 Ohms (unbalanced)
Maximum Output Levels:	+12 dBu at 0dB attenuation (<i>Output 1/2 A</i>)
Audio Output Performance	
Dynamic Range:	>80 dB
THD+N:	<0.01% @ 1kHz, input signal 3dB below maximum
Frequency Response	20Hz – 20kHz, +/- 1dB (<i>Outputs 1/2 A & B</i>)
Environmental Conditions	
Temperature:	0 – 40° C

Dante Network	
Physical Level:	Standard Ethernet
Connector:	Single RJ-45
Cable Quality:	CAT-5e or better
Transmission Speed:	100 Mbps
Supported Sample Rates	44.1kHz 48kHz
Minimum Dante Network Latency	1ms
Power Requirements	
PoE	802.3af PoE PD compliant
Power Consumption	5.5W Max
Cable Quality:	CAT-5e or better

Physical Dimensions	
Width	3.54"
Height	4.2"
Depth	2"
Weight	0.8 lbs.
Product Compliance	
FCC CFR 47 Parts 15B Class A ICES-003 CE (EN55022) RoHS REACH	

APPENDIX A – Reference Documents

The following table lists the relevant reference documents.

Document Title	Location
unIFY 3 rd Party Software API	Registered users area on website
Dante Firmware Update Quick Start	Registered users area on website