



# BEATRICE P1 & P2

Phone handset Dante network intercom

## PRODUCT DETAILS





# GlenSound Electronics Ltd

Thank you for choosing a new GlenSound product.

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Information contained in this manual is subject to change without notice, if in doubt please contact us for the latest product information.

If you need any help with the product then we can be contacted at:

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# PRODUCT WARRANTY

All equipment is fully tested before dispatch and carefully designed to provide you with trouble free use for many years.

We have a policy of supporting products for as long as possible and guarantee to be able to support your product for a minimum of 10 years.

For a period of one year after the goods have been despatched the Company will guarantee the goods against any defect developing after proper use providing such defects arise solely from faulty materials or workmanship and that the Customer shall return the goods to the Company's works or their local dealer.

All non-wear parts are guaranteed for 2 years after despatch and any defect developing after proper use from faulty materials or workmanship will be repaired under this warranty providing the Customer returns the goods to the Company's works or their local dealer.




## EU DECLARATION OF CONFORMITY

### **GS-BEATRICE P1 & P2**

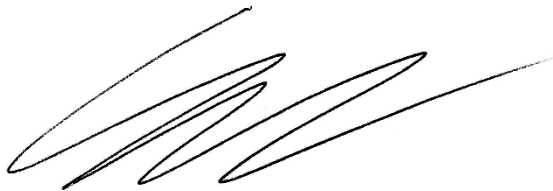
*Phone handset Dante intercom*

This declaration of conformity is issued under the sole responsibility of the manufacturer.

This equipment is manufactured by Glensound Electronics Ltd of Brooks Place Maidstone Kent ME14 1HE is  marked and conforms to the following Union harmonisation legislation:

Emissions:	BS EN55032:2015
Immunity:	BS EN55035:2017

Signed for and on behalf of Glensound Electronics Ltd.



Gavin Davis, Managing Director  
Maidstone, Kent, England

Date: 03/09/2019

## RoHS DIRECTIVE

RoHS 2 Directive 2011/65/EU restricts the use of the hazardous substances listed below in electrical and electronic equipment.

This product conforms to the above directive and for these purposes, the maximum concentration values of the restricted substances by weight in homogenous materials are:

Lead	0.1%
Mercury	0.1%
Hexavalent Chromium	0.1%
Polybrominated Biphenyls	0.1%
Polybrominated Diphenyl Ethers	0.1%
Cadmium	0.01%

# **WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT REGULATIONS 2006 (WEEE)**

Glen sound Electronics Ltd is registered for business to business sales of WEEE in the UK our registration number is:

**WEE/JJ0074UR**

# GLENSOUND BEATRICE P1 & P2

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## **OVERVIEW**

The BEATRICE range of IP intercoms was designed for broadcast, theatre and professional audio applications.

Our Beatrice intercom system utilises the reliable and proven Dante™ network audio transmission protocol to allow real time distribution of uncompressed audio across standard networks. As such the BEATRICE P1 & P2 units are also fully compatible with other manufacturers' equipment using the Dante™ protocol. The Beatrice P1 & P2 are also both AES67 compliant.

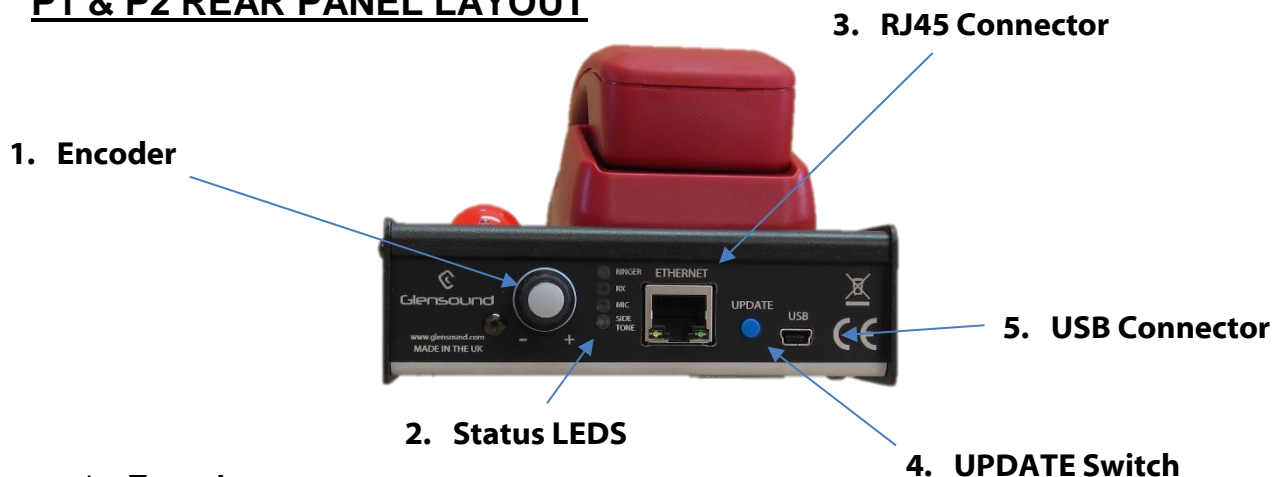
All units in the system are designed to be very easy to use for the operator and simple to setup for the technician. They includes all the basic functionality required for small intercom systems and none of the overly complex installation requirements normally associated with large systems.

The name Beatrice was chosen for our intercom range as she was the love of Dante Alighieri:

*'Dante had fallen in love with another, Beatrice Portinari (known as Bice), whom he first met when he was only nine.'* Source Wikipedia.



## P1 & P2 REAR PANEL LAYOUT



### 1. Encoder

This encoder is used to control parameters for the config settings of the device.

### 2. Status LEDs

These LEDs indicate which setting the encoder is adjusting whilst changing config levels.

### 3. RJ45 Connector

This is a 100M/bit standard IP network connection. The amber status LED flashes to show when data is being correctly communicated with the attached switch. The green LED illuminate to show PoE power is received. The PoE source can be a mid-span source or a network switch with PoE.

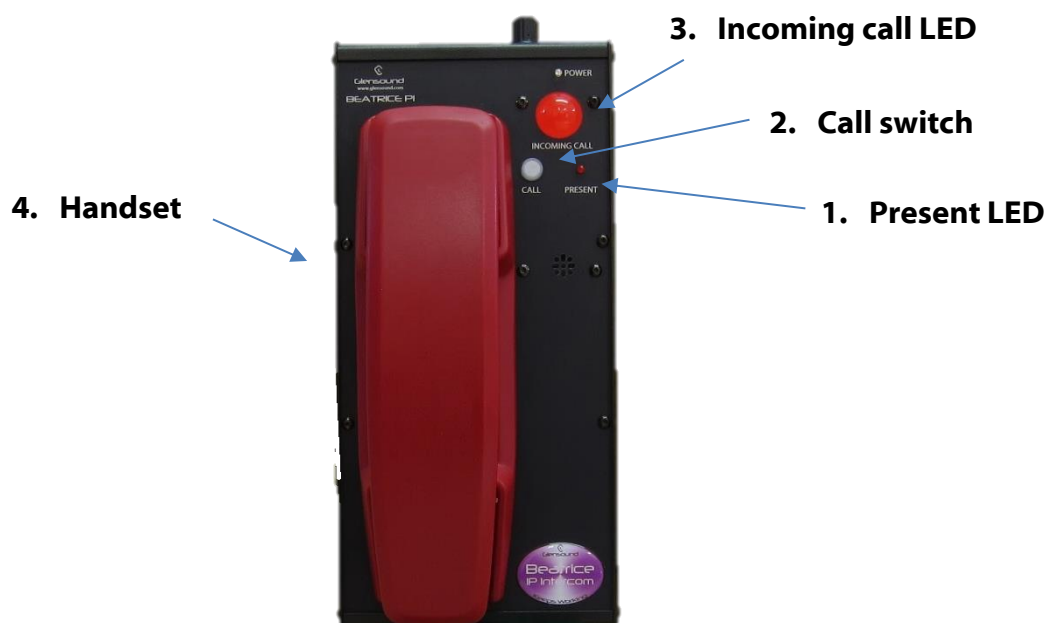
### 4. Update switch

Holding down this switch for 11 seconds will reset the device to factory default settings.

### 5. USB connector

Allows the local device firmware to be updated.

## P1 FRONT PANEL LAYOUT



### 1. Handset

The handset connects to the device via the 4P4C RJ connector on the front of the device. Please refer to the end of the manual for wiring information.

When the handset is picked up the microphone audio is sent to the Dante network and muted when placed back. Picking the handset up will stop the device ringing when receiving a call. On the P2 you can receive calls from both channels when talking to a channel.

### 2. Incoming call LED

The Call LED indicates the presence of an incoming audio from the Dante network by flashing when the audio goes above a threshold of -30dBFS. The Call LED will flash for a few seconds upon receiving a call.

### 3. Call switch

This switch is used to send a call to the network output. Double press to send the call. An audible beep will sound from the sounder when a call is sent.

On the P2, these switches can be toggled to choose which or both Dante channels you wish to speak to. The switch will illuminate to show that you are talking to that channel.

### 4. Present LED

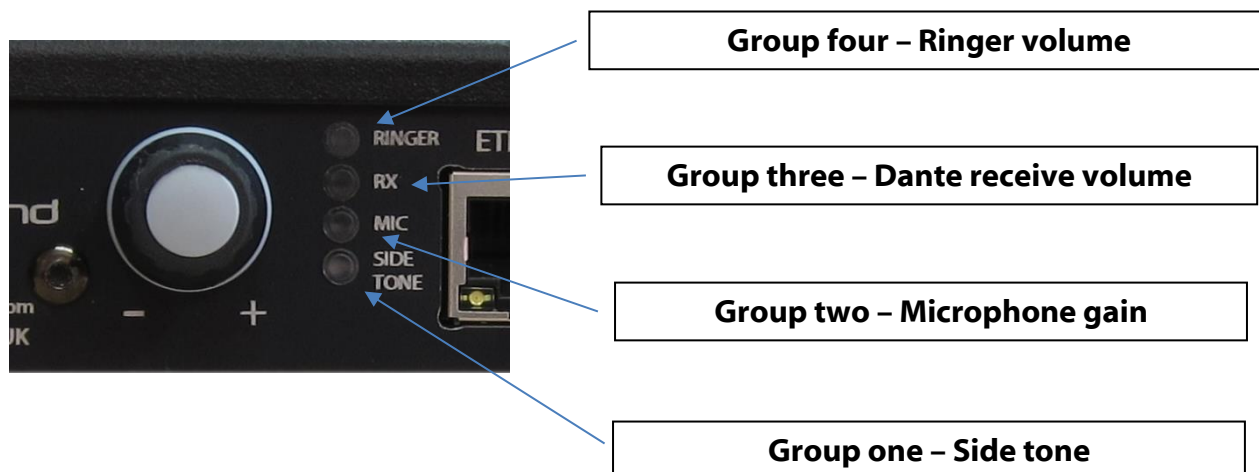
This LED will illuminate to show audio presence from the Dante network.

## **CONFIG MODE**

The Beatrice P1 and P2 have a configuration mode that allows the user to adjust certain settings and parameters of the device.

To enter config mode, press the encoder switch for 3 seconds.

Config mode is linear, where settings are changed in groups that are cycled through.



Once config mode is entered, the LEDs will illuminate to indicate which group of the config mode the device is currently in. To cycle through to the next group, simply press the encoder switch.

### **1. Side tone**

In this first config mode, turning the encoder will adjust the sidetone; the level of your own voice that is sent into your earpiece.

### **2. Microphone gain**

In the second config mode, turning the encoder will adjust your handset microphone gain level.

### **3. Dante receive volume**

In the third config mode, turning the encoder will adjust the volume level of the incoming Dante audio. On the Beatrice P2, select which channel you want to adjust by selecting the channel with the talk switches.

### **4. Ringer volume**

Turning the encoder adjusts ringer volume. The ringer has 10 steps of level adjustment. When the level is turned fully off to 0, all calling functionality is disabled.

To leave config mode, simply push the encoder switch again to return to normal usage.

The device will exit config mode automatically after a few minutes.

## **RESET TO FACTORY DEFAULT SETTINGS**

To reset the device to a base default configuration simply hold down the update button continuously for 11 seconds. The device will beep on success.

The default settings are as follows:

Mic gain level	28 / 31
Sidetone level	11 / 31
Dante receive level	27 / 31
Call ring level	10 / 10
Calling	enabled

## **CALLING OTHER BEATRICE DEVICES**

The Beatrice uses a standardised calling method that allows it to send and receive calls to and from other Beatrice devices. A 20kHz tone is sent to alert the recipient of an incoming call.

When the Beatrice P1 or P2 receives a call, the channel specific call led will flash and the device will ring for a few seconds.

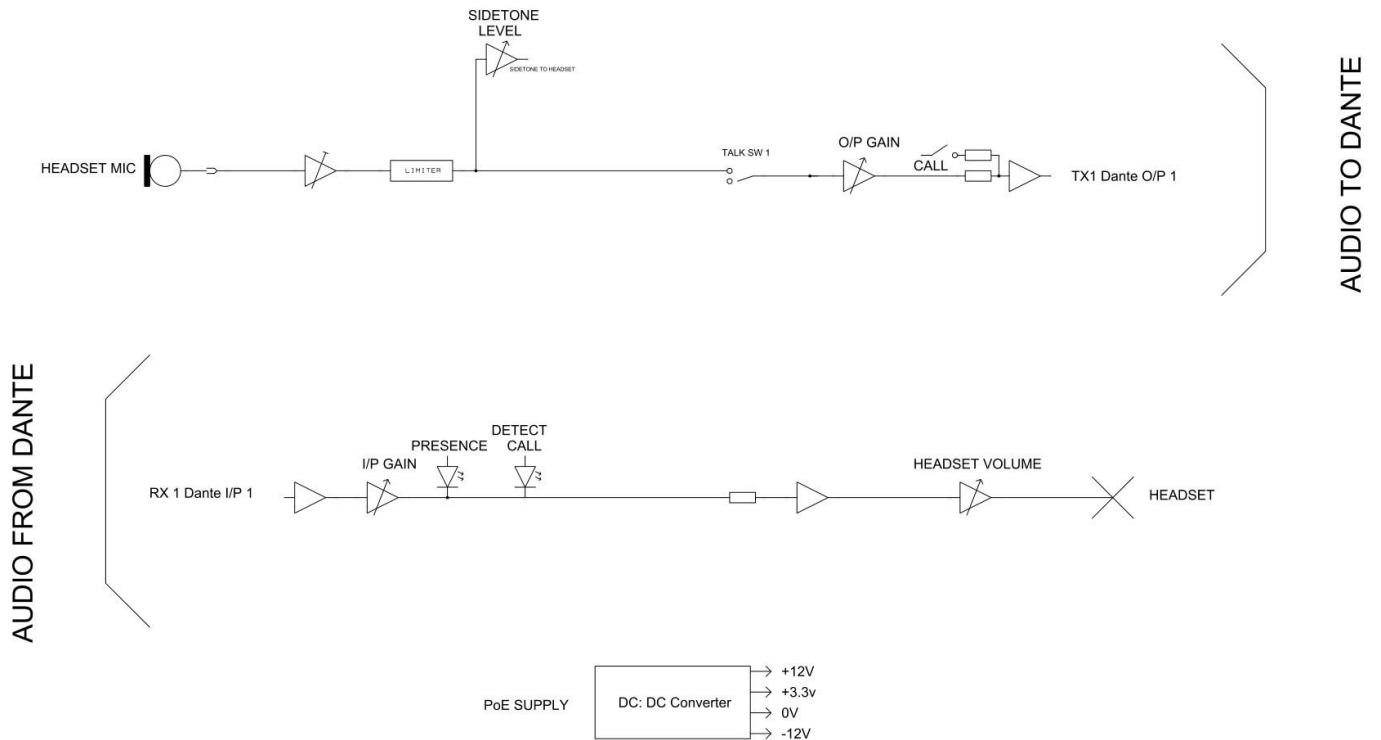
To send a call to another device, quickly double press the call switch for the channel you want to call. An audible beep will sound when a call is successfully sent. There is a 5 second cooldown after sending a call before another call can be sent.

Note: If you have muted the calling volume in config mode then all call functionality is disabled. This does not mean that you cannot send and receive normal audio, it means that the device will not send a 20kHz tone or react to receiving a 20kHz tone.

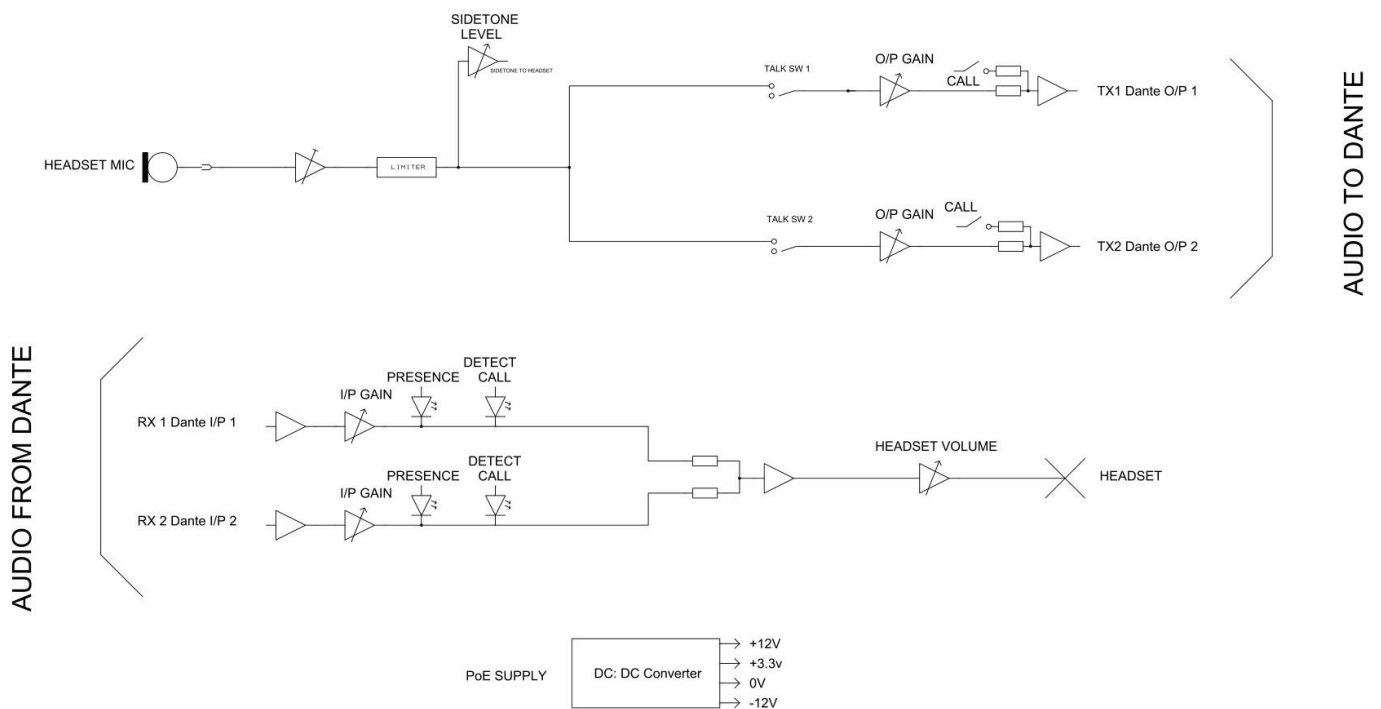
# AUDIO BLOCK DIAGRAM (analogue representation of digital circuits)

## Audio Circuits TO and FROM Dante/ AES67

### P1 Block diagram



### P2 Block diagram



## **CONNECTING THE BEATRICE UNITS TO A DANTE NETWORK**

The Beatrices are network audio devices utilizing the reliable and versatile Dante audio over IP protocol. Dante is a proprietary system (although very widely used) the originators of which are Audinate.

The information below is only meant as a very basic guide. Full details of the power of Dante network audio and instructions for using it can be found at [www.audinate.com](http://www.audinate.com)

### **Getting Dante Controller**

If you are connecting the Beatrice to a new Dante network the first thing you will need to do is to get the free Dante controller software from Audinate. This can be downloaded by visiting Audinate's web site at [www.audinate.com](http://www.audinate.com)

### **Connecting Beatrice device to the network**

The Beatrice can be connected to the network that you are going to use for your audio distribution simply by plugging in to the RJ45 network connections on the rear. Once connected to the network it will be possible to see the Beatrice from within the Dante controller and route its' audio circuits.

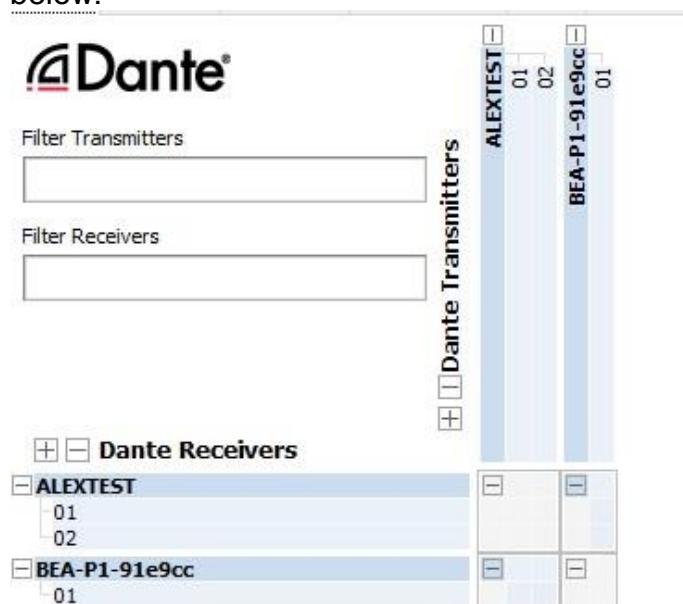
### **Audio Over IP Network**

We strongly recommend that you consider your network topology carefully and would not recommend sharing broadcast audio and general data on the same network.

For more details of audio over IP network structure please visit [www.audinate.com](http://www.audinate.com)

## Running Dante Controller

At the time of writing this manual the Dante Controller looks as per the screenshot below:



The Beatrice P1 and Beatrice P2 will have been named at the factory during test to allow them to be identified by the Dante controller.

The format used for the factory name is:

'BeatriceP1-snXXX'

Where 'BeatriceP1' refers to the Glensound product i.e. BeatriceP1.

The '-snXXX' refers to the serial number of the BeatriceD8 which can be found printed on the rear or side of the unit.

The unit may be renamed in Dante controller by opening the 'Device view' window and selecting BeatriceP1 in the drop-down menu. Go to the 'Device Config' tab and change the name with the Rename Device box.

Note if you upload a new DNT file or clear the devices config then the name will change to BeatriceP1-xxXxXx whereby the 'X's refer to the devices MAC address.

### Dante Controller TIP

If you have never run Dante controller before then make sure that on the bottom left of the Dante controllers' screen 'P' or 'S' is next to a green square as this indicates that it is connected to a network. By clicking 'P' or 'S' a pop up box opens to allow you to set what network interface the controller is using.

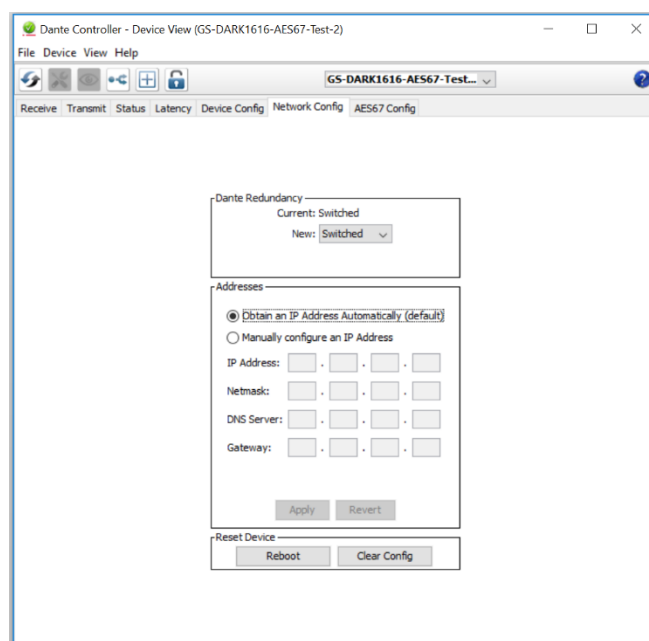
## Device not showing up in Dante Controller

If your Dante™ device does not show up in Dante™ Controller then the most likely issue is that the device's IP Address is not appropriate for your network.

- A) It maybe that the device is set to obtain an IP address automatically using DHCP (this is the default configuration) and your network is setup for fixed IP addresses only and does not have a DHCP server.
- B) It maybe that the device has had a fixed IP address assigned but that this address is not suitable for your network.

The solution to both scenarios is basically the same.

- 1) You must connect your Dante™ device directly to the Ethernet port of your computer using an Ethernet cable.
- 2) Make sure that your computer is set to 'Obtain an IP address automatically'
- 3) After a few minutes the Dante™ device should now appear in Dante™ Controller.
- 4) Double click the device name to open up device view.
- 5) Open up the 'Network Config' tab
- 6) Either turn on 'Obtain an IP Address Automatically' or correctly configure the 'Manually configure an IP Address' options for your network.
- 7) Click on 'Apply' to confirm the new settings, then disconnect the computer and reconnect the Dante™ device to your network.





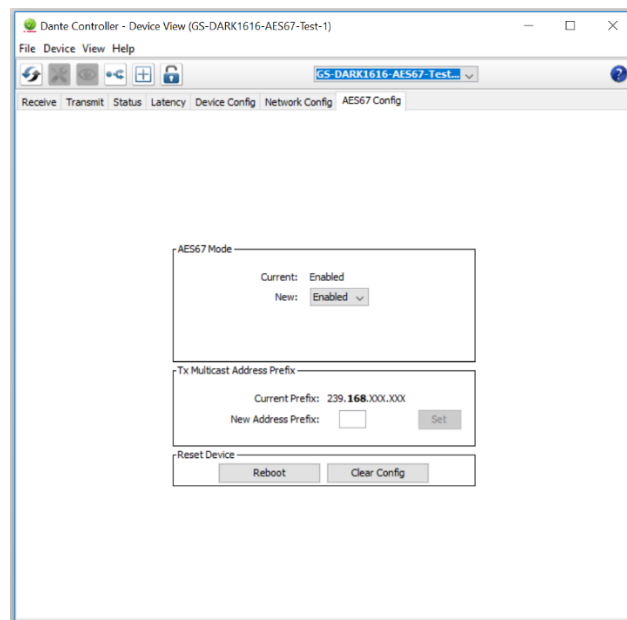
## **AES67 MODE**

The Beatrice uses a chipset from Audinate called the Ultimo for its network audio interface. Audinate are the company behind Dante™ and as such the primary network audio protocol is Dante, however Audinate have enabled their chip to comply with AES67 and therefore the Beatrice can be set to AES67 mode for interaction with other AES67 devices.

Please note however that Glensound are relying on Audinate's AES67 interface and are unfortunately not able to provide full AES67 support for the unit. AES67 support should be sought directly from Audinate.

### **Turning On AES67 Mode**

If you want to use your Beatrice on an AES67 network and it has not been set to AES67 mode then this can be set in Dante controller by double clicking the Beatrice to open the Device View window where you will find an AES67 tab to enable AES67 support.

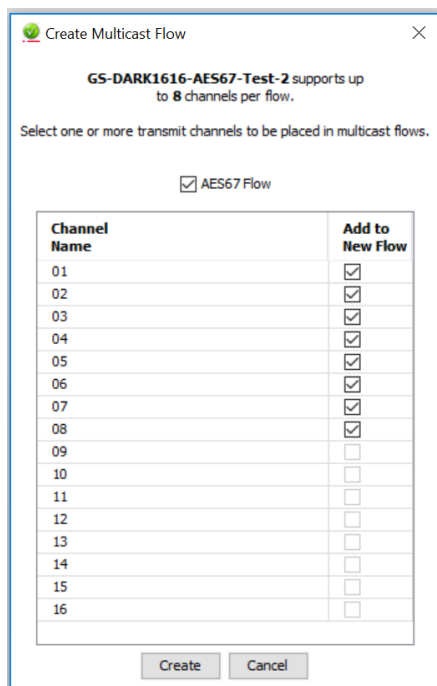


Once the AES67 drop down box has been enabled you'll have to reboot the Beatrice for the change to take effect. After the reboot go back to the AES67 tab and set the multicast prefix address to one that is suitable for your network.

## Sending AES67 Audio

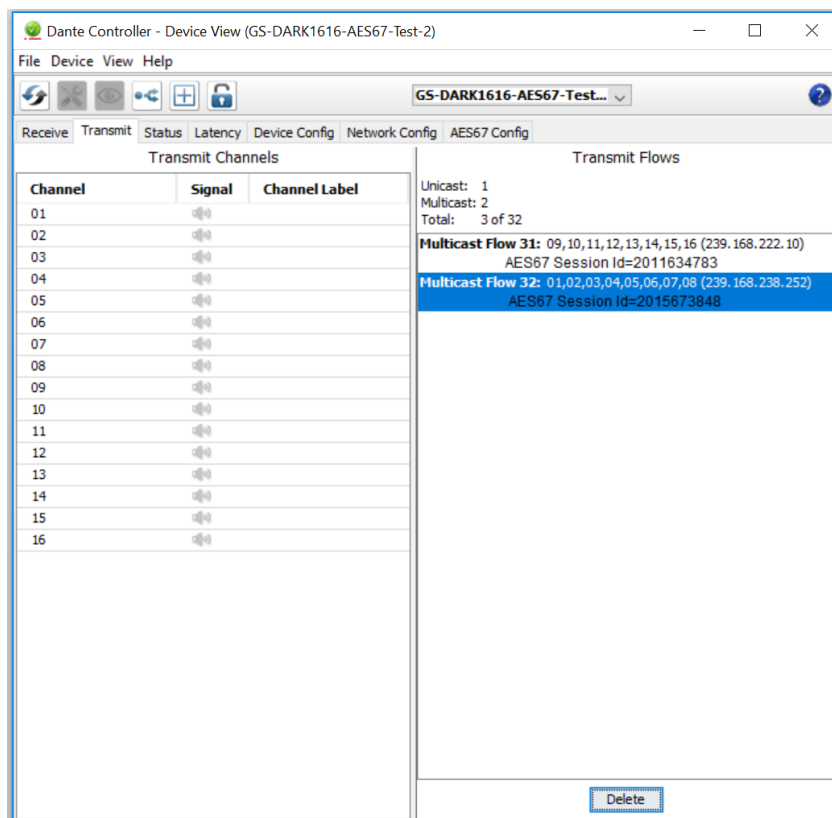
To transmit AES67 audio to the network a multicast flow must first be setup.

This is done by selecting the 'Create New Multicast Flow' Icon  in the Device View.



Tick the AES67 Flow check box, then select up to 8 channels to be included in the flow then click 'Create'

Once set the flows can be seen in the transmit tab of the device view.



## **Receiving AES67 Audio**

Once a compatible AES67 stream is detected on the network by Dante Controller the AES67 flows will appear in the Dante Transmitters section in the Routing tab.

## **AES67 Restrictions**

AES67 flows can only be generated with the following constraints:

- Multicast Only
- Non-redundant
- Destination address in range 239.nnn.0.0 to 239.nnn.255.255 (239.nnn/16), port 5004
- 48kHz sampling rate
- 24 bit linear (L24) encoding
- 1 msec packet time
- Up to 8 channels per stream

Received AES67 flows have the following constraints:

- Multicast Only
- Non-redundant
- Destination address in range 239.nnn.0.0 to 239.nnn.255.255 (239.nnn/16), port 5004. Must match destination address range.
- 48kHz sampling rate
- L16 or L24 encoding
- 125usec, 250usec, 333usec, 1 msec packet time
- Up to 8 channels per stream

# UPDATING FIRMWARE

## Equipment needed

- A windows based PC
- USB Type A to Micro B cable
- A copy of 'DfuSe Demo' software
- The latest firmware from GlenSound
- A Beatrice P1/2 and a PoE source

## Instructions

### 1. Download and install DfuSE Demo

'DfuSE Demo' is a firmware updating tool that is required for loading new firmware on to the STM32 Device.

It can be downloaded from the STMicroelectronics website found here: <https://goo.gl/AbzhsA>. It is the file named "STSW-STM32080".

Once you have downloaded this file you will need to extract the .exe "DfuSe\_Demo\_V3.0.5\_Setup.exe", then run and install it.

### 2. Download firmware

The latest firmware for the Beatrice P1/2 can be found on the GlenSound website, under the respective product page. Once you have downloaded the file, place it in a folder or location of your choice.



Figure 1 Example filename

### 3. Connect To A PC

Connect the Beatrice P1/2 to the PC via the USB cable. The micro USB connector is located on the side panel of the Beatrice P1/2.



Figure 2 USB connector

#### 4. Firmware update preparation

To prepare the Beatrice P1/2 for a firmware update;

1. Make sure the device is connected with USB
2. Press and hold down the UPDATE button
3. Power on the unit
4. Release the UPDATE button after a few seconds

Your PC should make an audible sound when this process is successful as windows is detecting a new USB device.

#### 5. Loading the firmware

Now open DfuSe Demo.

If the Beatrice P1/2 successfully entered DFU mode then it will appear as 'STM Device in DFU Mode' under the 'Available DFU Devices tab'.

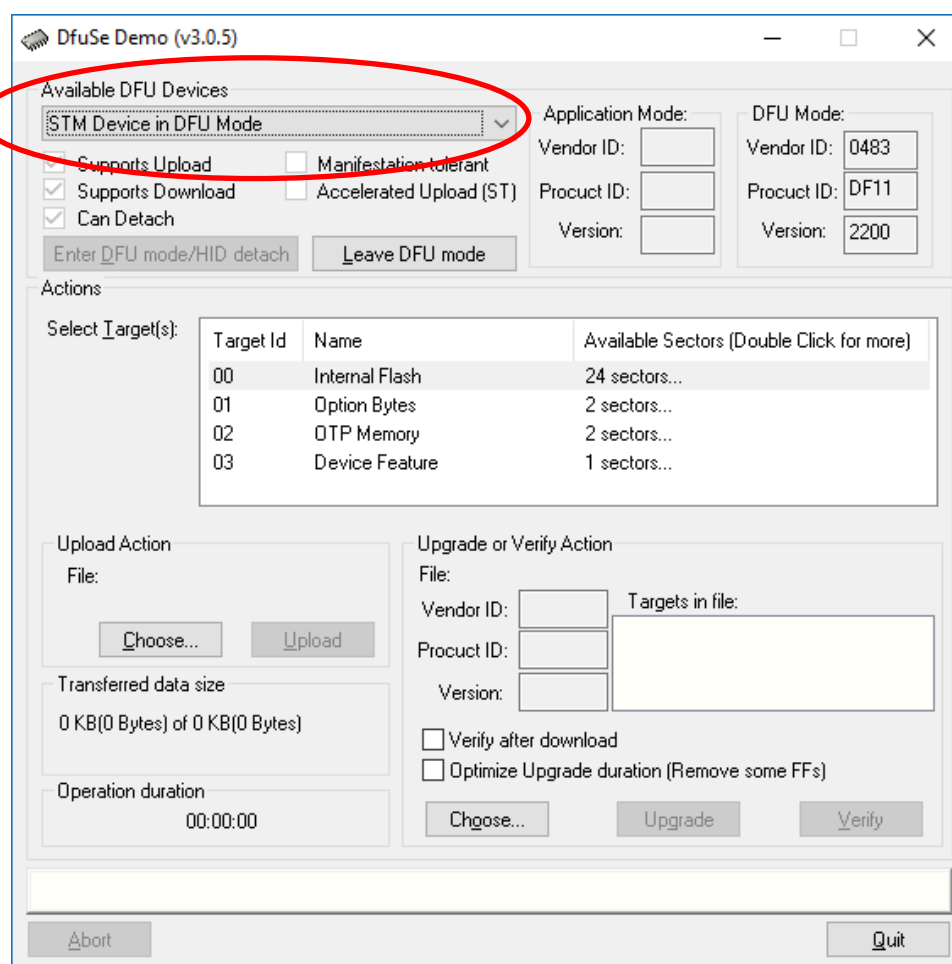


Figure 3 Device successfully recognised

Now the .dfu file needs to be selected so that DfuSe Demo knows the correct firmware to put on to the Beatrice P1/2.

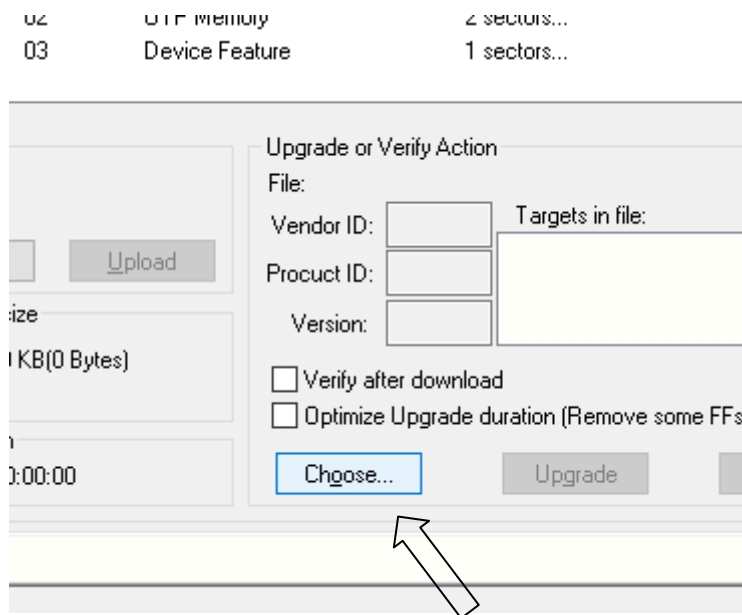


Figure 4 Choose .dfu file

Click choose and then select the .dfu file that you downloaded from the GlenSound website. This will be located in your downloads folder by default.

If the file loads successfully then it will read along the bottom 'File correctly loaded'.

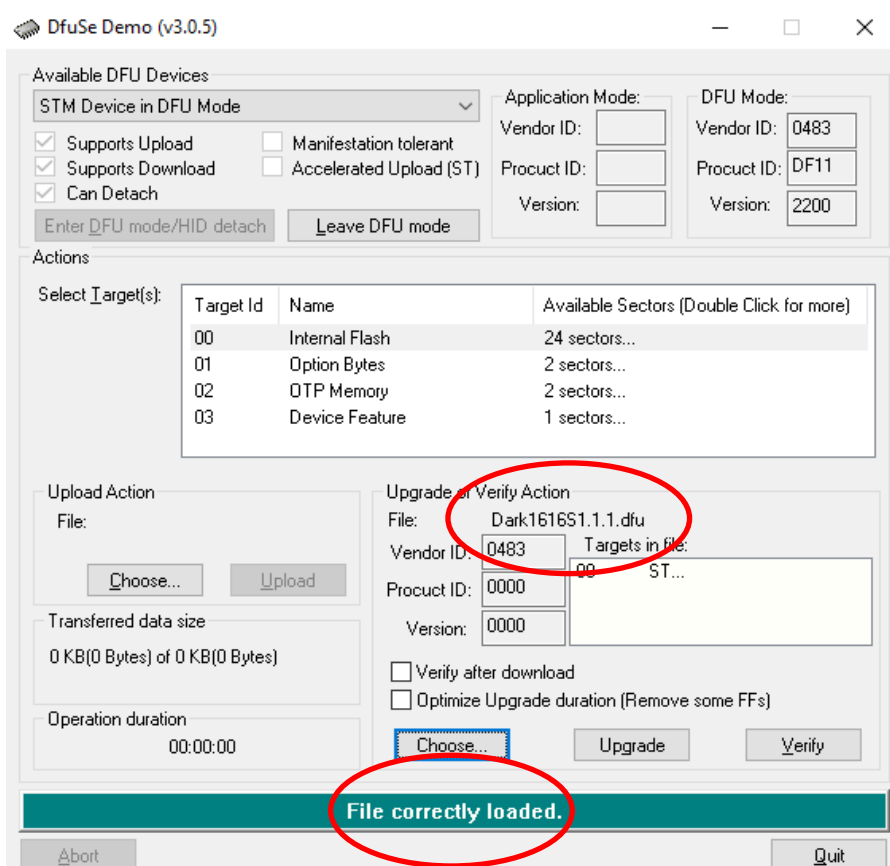


Figure 5 .dfu successfully loaded

## 6. Upgrading the Beatrice P1/2 firmware

The firmware is now ready to be put on to the Beatrice P1/2. Tick the 'Verify after download' box first and then click 'Upgrade'.

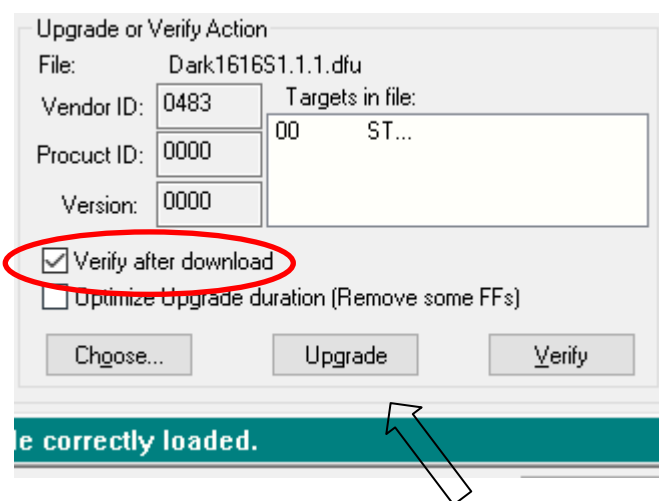


Figure 6 Upgrade

Click yes to proceed.

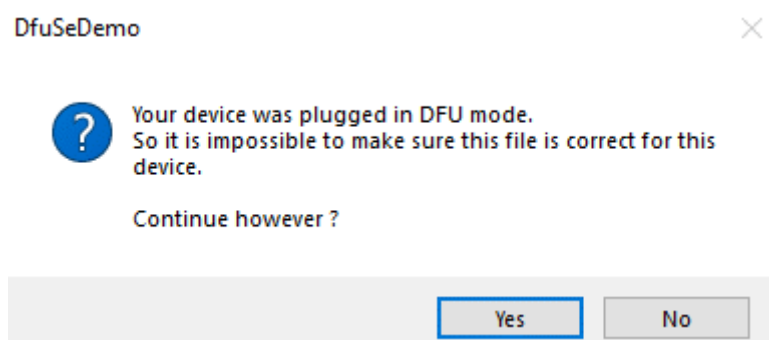


Figure 7 Start upgrade

The progress bar along the bottom will show the status of the operation.

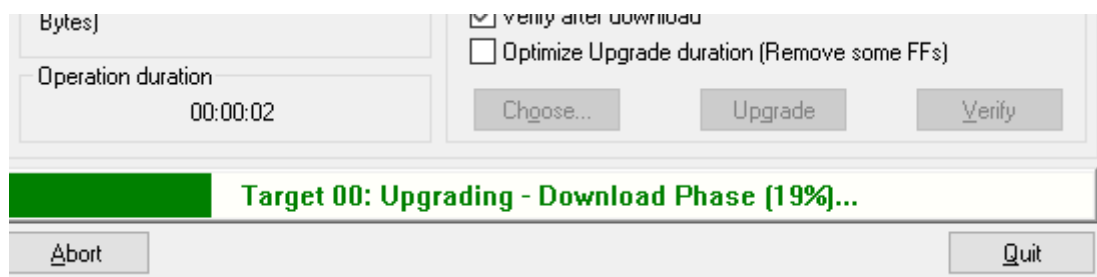


Figure 8 Upgrade status

If the operation was successful, DfuSe Demo will report that “Targety 00: Verify Successful!”.

You may also see that it will report how much data was successfully transferred.

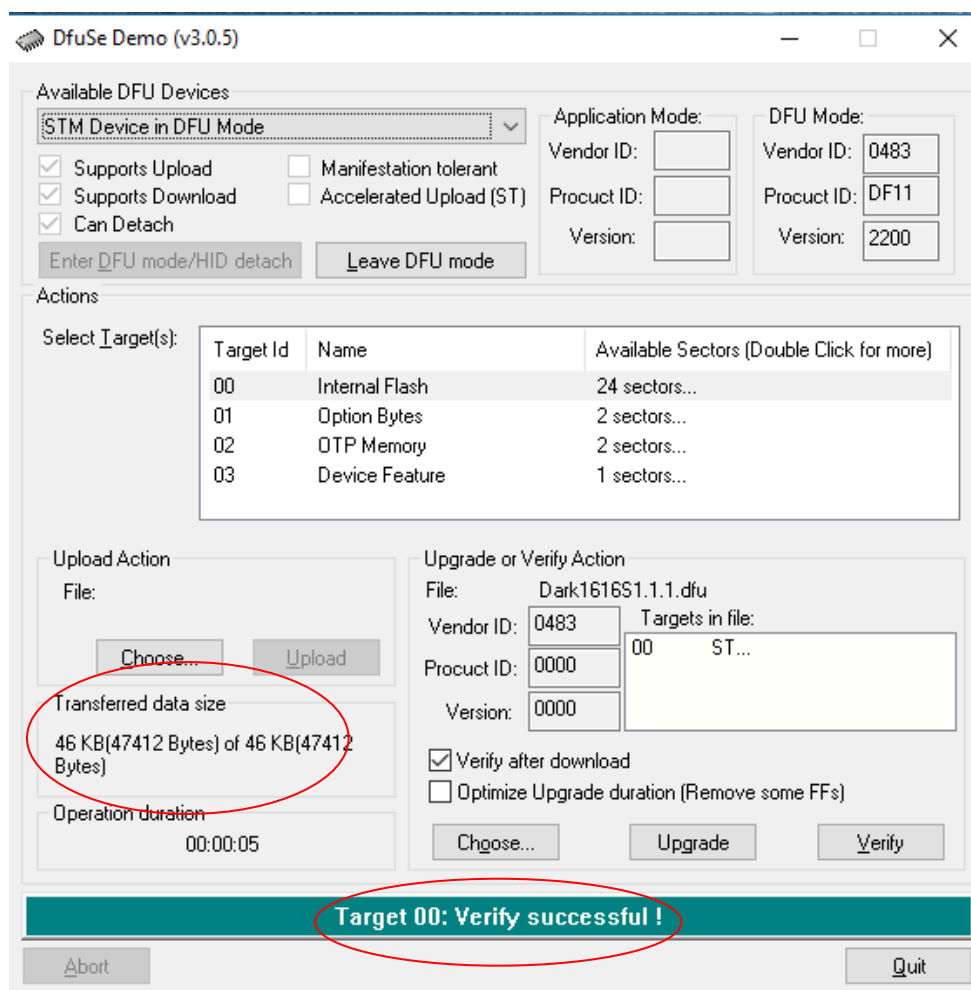


Figure 9 Successful upgrade!

## 7. Final steps

Now click “Leave DFU mode” to finish the procedure.

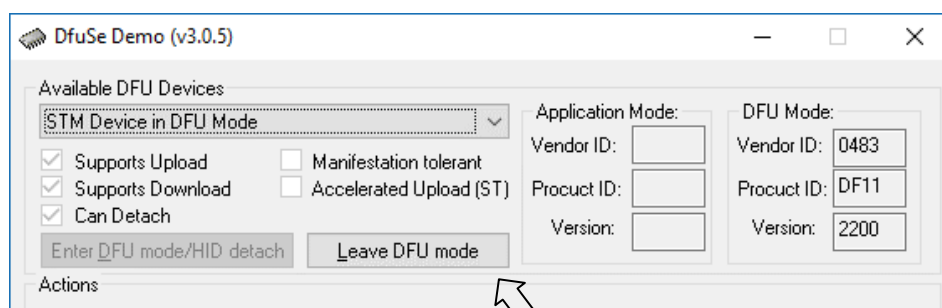


Figure 10 Final step

You may now disconnect the USB cable and continue to use the Beatrice P1/2 with the freshly updated firmware!



## **UPDATING THE ULTIMO CHIPSET**

The Ultimo Chipset is a device supplied by Audinate that does most of the processing for the actual Dante/ AES67 network audio streams. There is one Ultimo Chipset in each Beatrice. We supply special code (a .dnt file) that sets up/ initiates the Ultimo Chipset and makes it work in particular way that is compatible to the Beatrice.

### **Finding Out Current Installed Version**

Using Dante® controller double click on the Beatrice device name in the routing tab to open the Device View box.  
In the Device View box open the Status Tab.

The 'Product Version:' shows the currently installed version of Ultimo Chipset dnt code.

### **Finding Out What The Latest Available Version Is**

Go the Beatrice's web page at GlenSound.com and open the 'Firmware Latest Version' Tab.

This will give both the latest version numbers/ file names and also the location to download the file from.

### **Updating the device**

The firmware that runs in the Ultimo Chipset is updated using Audinate's Firmware updating tool. The updating tool and a user guide can be downloaded from Audinate's website:

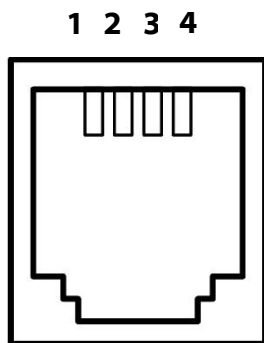
<https://www.audinate.com/products/firmware-update-manager>

### **NOTE:**

Please note we strongly advise that when you do the update that only your PC and the Dante device that you want to update are on the network to save accidentally updating the wrong Dante device.

## WIRING INFORMATION

### Headset Wiring



#### **4P4C RJ AUDIO PINOUTS:**

**1: MATE/ NEGATIVE/ MIC -**

**2: EARPIECE +**

**3: EARPIECE -**

**4: INPHASE/ POSITIVE/ MIC +**