Glensound

INFERNO

DANTE® NETWORK AUDIO SINGLE USER COMMENTARY BOX

PRODUCT DETAILS

6 BROOKS PLACE, MAIDSTONE, KENT, ME14 1HE. ENGLAND. TEL: +44 (0)1622 753662
Visit our Website at www.glensound.com

Glensound Electronics Ltd

Thank you for choosing a new Glensound product.

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:

Glensound Electronics Ltd
1 – 6 Brooks Place
Maidstone
Kent
ME14 1HE
United Kingdom

Telephone: +44 (0) 1622 753662

Fax: +44 (0) 1622 762330

EMAIL ADDRESSES

General enquires: office@glensound.co.uk

Technical enquires: techinfo@glensound.co.uk

Sales enquires: sales@glensound.co.uk

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.

CE

EU DECLARATION OF CONFORMITY FOR:

MINFERNO

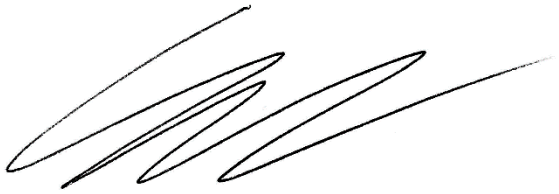
Dante®/ AES67 Network Commentary Box

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 CE marked and conforms to the following Union harmonisation legislation:

Low Voltage Directive:	EN60065 and EN62368-1:2014
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: 26/09/2019

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 this 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)

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

WEE/JJ0074UR

GLENSOUND MINFERNO

Handbook Contents

Issue 5

Description Page No.

Contents

OVERVIEW

The Glensound MMinferno is a single user commentary box designed to connect to a Dante® audio network. The MMinferno provides all the talkback and monitoring circuits required by a commentator whilst incorporating a very high quality microphone amplifier and compressor limiter circuit designed specifically for the requirements of commentators equipment.

The audio inputs and outputs of the Minferno are Dante® network audio circuits. Dante® network audio is a common protocol for distributing high quality linear audio over standard IP networks and it is widely used by many audio equipment manufacturers. The Glensound Minferno's Dante® audio interface will be compatible with any other manufacturers Dante® audio interface. Further details of Dante® network audio can be found at www.audinate.com

Being designed for live on-air broadcast applications the Glensound Minferno has been designed with multiple redundancy capabilities. It has 3 possible sources of power (2 x PoE & 1 external DC) and it also has fully redundant network connections for both Copper & Fibre circuits.

IP ADDRESSES

IMPORTANT

The Minferno uses a different IP address for the webserver than the Dante® interface.

Changing/ setting an IP address in Dante® controller will NOT change the IP address of the webserver

See Page 13 for further details

REAR PANEL LAYOUT & FUNCTIONS

PLEASE NOTE AS THE UNIT IS CONFIGURABLE IT IS POSIBLE TO CHANGE THE OPERATION OF SOME OF THE CONTROLS SHOWN HERE. THEREFORE THE FOLLOWING IS MEANT AS A GUIDE ONLY.

1. **Mic/ Line Select**

Pressing the switch toggles the coarse input gain between mic and line as indicated by the LEDs

2. **Phantom Power (48V) Select**

This switch turns the phantom power on/off. Phantom power cannot be turned on if the input mode is set to 'Line'

3. **Input Gain**

The up/ down push buttons increase/ decrease the units gain. Each time a button is pressed the gain increases/ decreases by about 0.33 dB.
The 'LINEUP' LED indicates when the gain is in the factory pre-set lineup condition which is:

INPUT SELECTED	GAIN OF MIC AMP	OUTPUT LEVEL

MIC	58dB	0dB
MIC + PH PWR	35dB	0dB
LINE	0dB	0dB

The 'HIGHER' / 'LOWER' LEDS indicate where the current gain setting is in relation to line up

Holding BOTH up/ down gain controls for a few seconds returns the input gain to factory lineup levels.

4. Power Status LEDs

For redundancy purposes the Minferno can be powered from multiple power sources. It can be powered from any of the following.

A. EXT DC (12V)
B. Power Over Ethernet (PoE) on the primary Ethernet network connection
C. Power Over Ethernet (PoE) on the secondary Ethernet network connection

The LEDs indicate which power sources are currently available.

5. Primary & Secondary Ethernet Network Ports

These 2 standard network ports can be connected to your IP network. By default the Minferno is shipped with these ports set to switch mode.

6. Primary & Secondary SFP Fibre Network Ports

Standard SFP Fibre network interface modules can be fitted in these 2 ports. SFP modules are available in many different formats, if required Glensound can supply suitable SFP modules, contact sales@glensound.co.uk for further information.

7. 12V DC Power Inlet

This is a 2 pin barrel type DC input connector. The centre pin is 2.5mm. It is wired centre pin + Volts. It is designed to accept a + volt DC input between 9 and 15 volts. The connector has a barrel locking mechanism allowing specialist locking barrel connectors to be used, a suitable mating part is manufactured by KYCON and their part number is KLDX-PA-0202-B-LT

8. USB Socket

This is used for connecting a PC to the Minferno for updating its firmware.

9. Reset Switch

Only use if advised to by support

10. Identify Switch

Currently used as an aid to updating software, only use if advised to by support.

11. Mic / Line Input

This standard 3 pin XLR socket is the commentators microphone input.

12. 3.5mm & 6.35mm Headphone Jack Outputs

A standard 3 pin stereo 3.5mm jack socket and 6.35mm jack socket are provided for connecting the commentator's headphones to.

FRONT PANEL LAYOUT & FUNCTIONS

13. Headphone Routing Indication

This picture/ LEDs indicate the selection choice of the routing of a source to the commentator's headphones. The first time one of the L-Both -R switches are pressed the LEDs illuminate to show the current routing state of that source. Each subsequent

time that the L-Both -R switch is pressed the routing state is toggled to the next available state.

14. L-Both-R Controls

Left-Both-Right headphone routing. This control routes the associated headphone source to either the left only, right only or both (centre) of the commentator's headphones. The first time the switch is pressed the 'Headset' picture (see no 16) illuminates to indicate the current routing state. The next time the switch is pressed the source is toggled to the next available state.

15. Peak Programme Meter (PPM)

An accurate 15 LED PPM indicating the output level of the main on-air circuit. The 1 – 7 scale is a traditional BBC PPM scale used extensively throughout Europe and the -12 to +12 scale shows the output level in dBs. Each LED covers a 2dB range.

16. Power On LED

There is no power on/ off switch on the Minferno and it is safe to leave it on 24/7. The front panel power on LED provides a confidence indication that the unit is powered on and working correctly.

17. Sidetone Level Control

This volume pot adjusts the audio level of the commentators' microphone in the commentators' ear. It has no effect on the outgoing audio level and is used just for confidence monitoring.

18. On-Air Switch

Like the talkback switches this large square illuminated switch routes the output of the commentators' mic to the Dante® network.
The operation of this switch (momentary, latching, intelligent lever key etc) can be set using the units' web page interface.

19. Talkback Switches

Up to 3 (depending upon the version of the Minferno that you have) illuminated talkback switches are provided to route the commentator's mic to the talkback outputs of the Minferno i.e. 2 – 4 channels of the Dante® network.
The operation of these talkback switches (momentary, latching, intelligent lever key etc) can be set using the unit's web page interface.

20. Level Controls

These rotary audio volume controls adjust the output level of the talkback circuits to the commentator's headphones.

WEB PAGE FOR SETTINGS

1. General

The Minferno has a built in web server to allow an operator to control the unit remotely and to change the units settings. To access the web page a web browser running on a computer on the same network as the Minferno is connected to just needs to connect using the unit's web page IP address or its DNS name.

2. DNS Name

The DNS (Domain Name System) name allows a name to be inserted in a web browser rather than an ip address for navigation to the Minfernos web page. Each Minferno has 2 names associated with it.

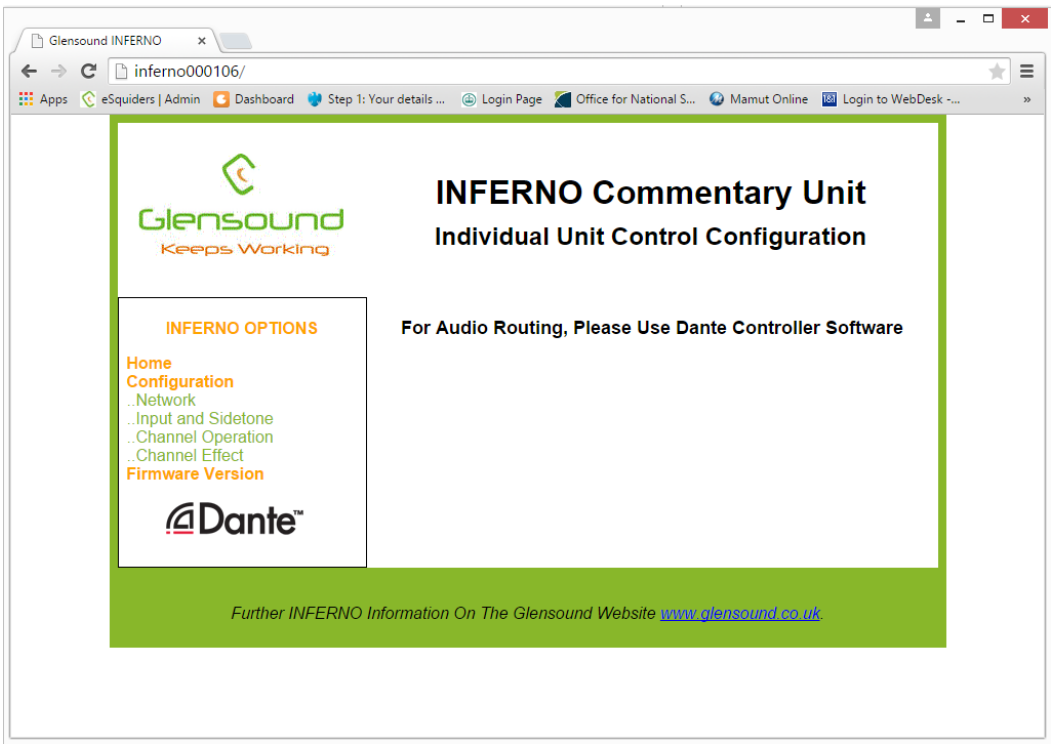
a. Factory default DNS name:

This is set as 'Minferno000xxx' where xxx is the units serial no (printed on the rear panel). This factory default DNS name cannot be changed and is useful for accessing the Minfernos web page for settings if the IP address or custom DNS name is not known.

b. Custom DNS name:

Via the web page it is possible to set a specific custom DNS name that will be easy for you to remember and help identify multiple Minfernos on your network.

As per the screenshot below to access the Minfernos web page the factory default DNS name can be inserted in a web browsers address bar followed by a forward slash '/'. If you are using a web browser with auto search facility then add http:// to the start of the Minfernos address to stop the browser from auto searching the net.



APPLE COMPUTERS

Please note that when using a browser on an Apple Mac or a Macbook, '.local' must be added to the end of the name in the browser's bar, to access the Minferno's web server. For example, 'Minferno000106.local'.

IP ADDRESSES

1. General

The Minferno uses two IP addresses on the primary Dante® network. The first is the standard Dante® IP address, the second is the Minferno web interface IP address. These addresses must be different.

2. Setting a static IP address for the Dante® Interface

In Dante® Controller, use the 'Network Config' tab of the 'Device View' window to set the required IP address.

3. Setting a static IP address for the Minferno web Interface

On the 'Network' page of the Minferno web interface, set the required IP address and untick the DHCP tickbox.

RESETTING AN MINFERNO THAT HAS A WEBPAGE STATIC IP

1. General

It is possible to set static IP addresses on the internal web server. If this has been set and the Minferno moved to a different network with different subnet range then it is not easy to find the Minferno on the new network.

2. Reset to DHCP

To disable a preset static IP address and re-enable DHCP do the following:

A) Start with the Minferno turned off.
B) While turning on (applying power) press and hold talkback buttons PGM and TB1
C) All the front panel switch lights will flash
D) Wait until just PGM and TB1 lights are on and all others are off (about 20 seconds)
E) Turn the Minferno off (remove the power source).
F) DHCP will now be enabled when you next power the unit up.

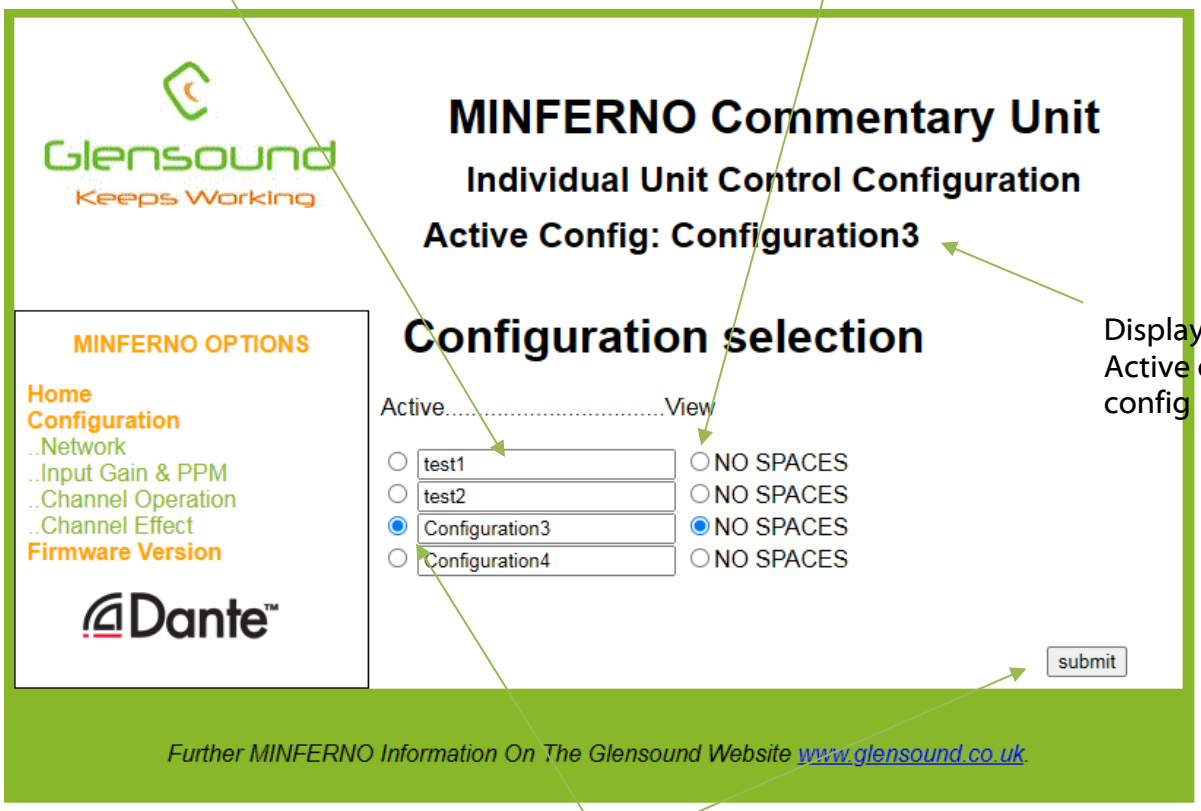
CONFIGURATIONS

The Minferno can store 4 different device configurations.

Making and submitting any change to any configurable settings of a Minferno automatically stores that saved setting in the active configuration.

Name your configurations

To view-only another configuration to see it's settings before committing, tick the 'View' circle and hit 'submit'.
This configuration is now being viewed but is not active



Displays the Active or Viewed config

To change configurations, tick the circle of the configuration you want to apply, and hit submit
(The device must reboot to apply the new configuration)

CONNECTING THE MINFERNO TO A DANTE® NETWORK

The Minferno is a network audio device 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

Getting Dante® Controller

If you are connecting the Minferno 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

Connecting Minfernos To The Network

Minfernos can be connected to the network that you are going to use for your audio distribution simply by plugging in either, and, or any of the network connections on the rear. Once connected to the network it will be possible to see the Minferno from within the Dante® controller and route its' audio circuits.

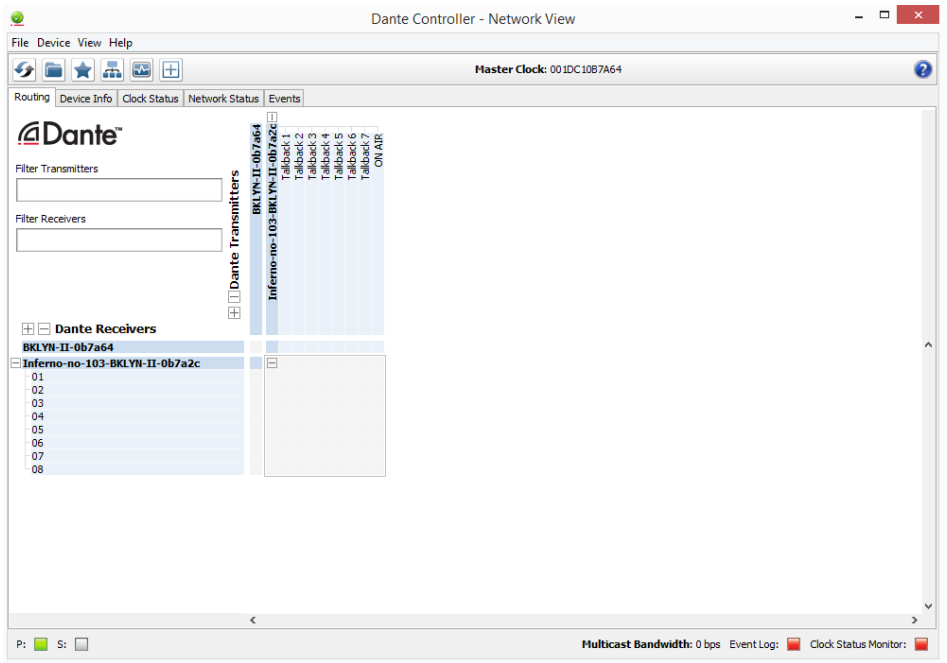
Audio Over IP Network

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

Running Dante® Controller

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



The Minfernos 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:

'Minferno-sedrial-103-II-ob7a2c'

Where 'Minferno-serial-103' refers to the Glensound product i.e. Minferno and its serial no (in this case 103) and 'II-ob7a2c' refers to the units Dante® Brooklyn II module 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.

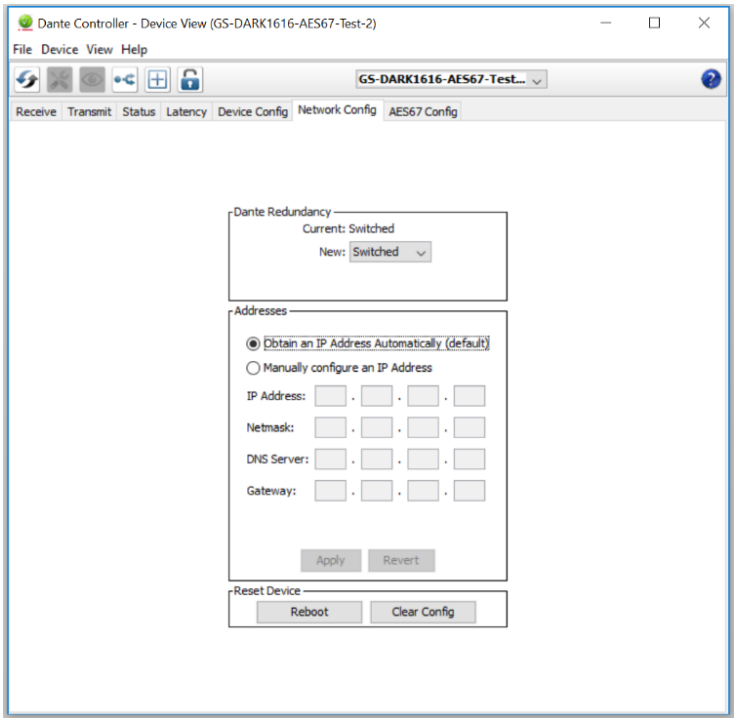
Device Not Showing Up In Dante® Controller

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

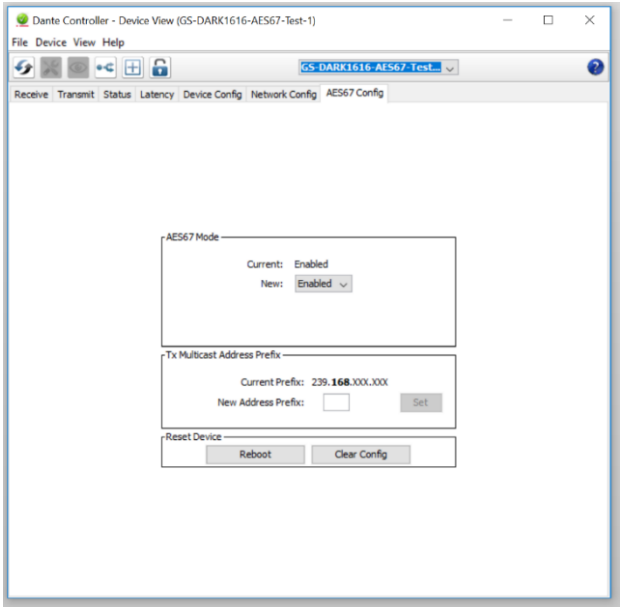
The Minferno uses a module from Audinate called a Brooklyn Module for its network audio interface. Audinate are the company behind Dante®™ and as such the module's primary network audio protocol is Dante®, however Audinate have enabled their module to comply with AES67 and therefore the Minferno can 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.

1. Turning On AES67 Mode

If you want to use your Minferno 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 Minferno to open the Device View window where you will find an AES67 tab to enable AES67 support.

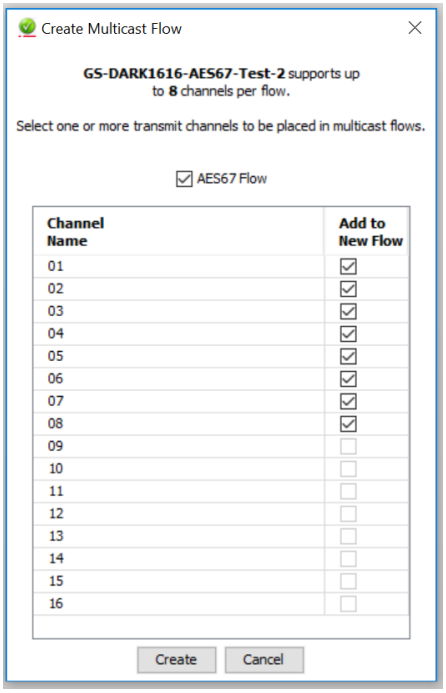
Once the AES67 drop down box has been enabled you'll have to reboot the Minferno for the change to take effect. After the reboot go back to the AES67 tab and set the multicast prefix address to one that is suitable for your newtork.



2. Sending AES67 Audio

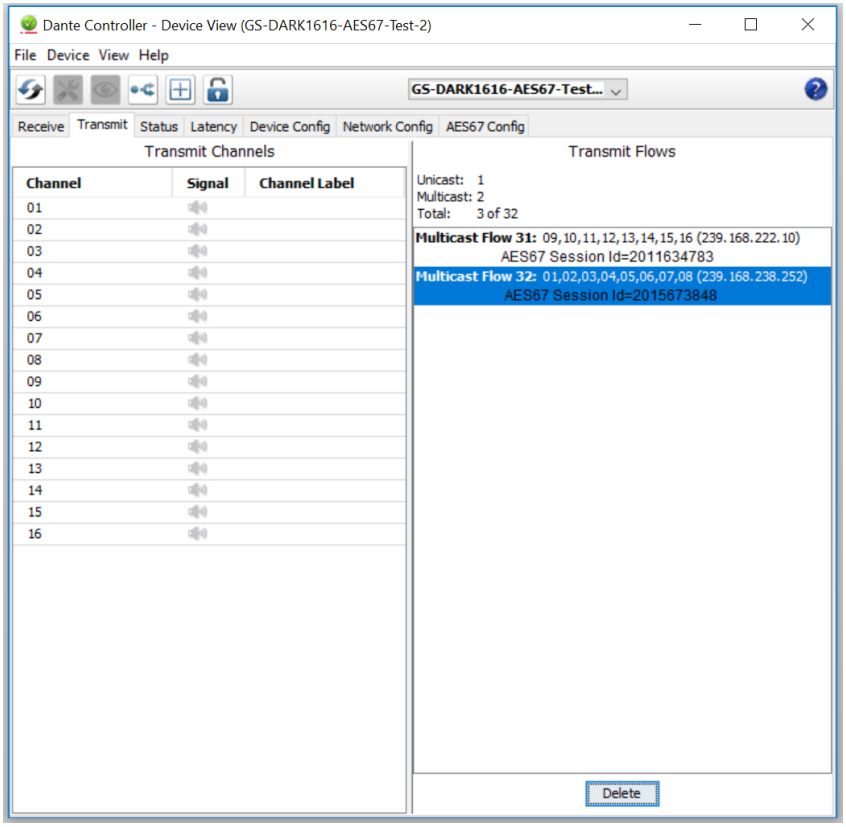
To transmit AES67 audio to the network a multicast flow must first be setup.

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.



3. 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.

4. 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 destinatio address range.
- 48kHz sampling rate
- L16 or L24 encoding
- 125usec, 250usec, 333usec, 1 msec packet time
- Up to 8 channels per stream

UPDATING FIRMWARE

It may be necessary to install the latest version of Minferno Firmware from time to time.

The DFU firmware is the code that runs internally in the Minferno microcontroller.

To find out the version you are currently using: connect to the Minferno via its webpage interface and click on the link for the 'Firmware Version' page.

Equipment needed

- A windows based PC
- USB cable (type depends on product's USB port)
- A copy of 'DfuSe Demo' software
- The latest firmware from Glensound
- A Minferno and a power source

1. Download and install DfuSE Demo

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

   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 Minferno can obtained from Glensound Support. Once you have downloaded the file, place it in a folder or location of your choice.

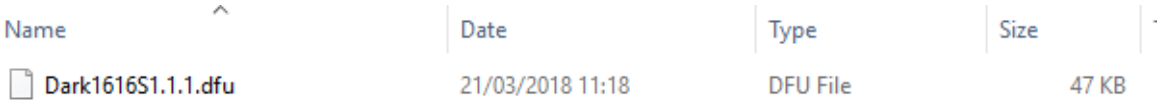


Figure 1 Example filename

3. Connect To A PC

Connect the Minferno to the PC via the USB cable. The Mini USB connector is located on a panel of the Minferno.

Figure 2 Front panel USB connector

4. Firmware update preperation

   To prepare the Minferno for a firmware update;

   1. Power on the unit
   2. Press and hold down the identify button
   3. Press and release the reset button and then release the identify button a second after

   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 Minferno successfully entered DFU mode then it will appear as 'STM Device in DFU Mode' under the 'Available DFU Devices tab'.

   If you do not see the device appear please jump to the end of this document.

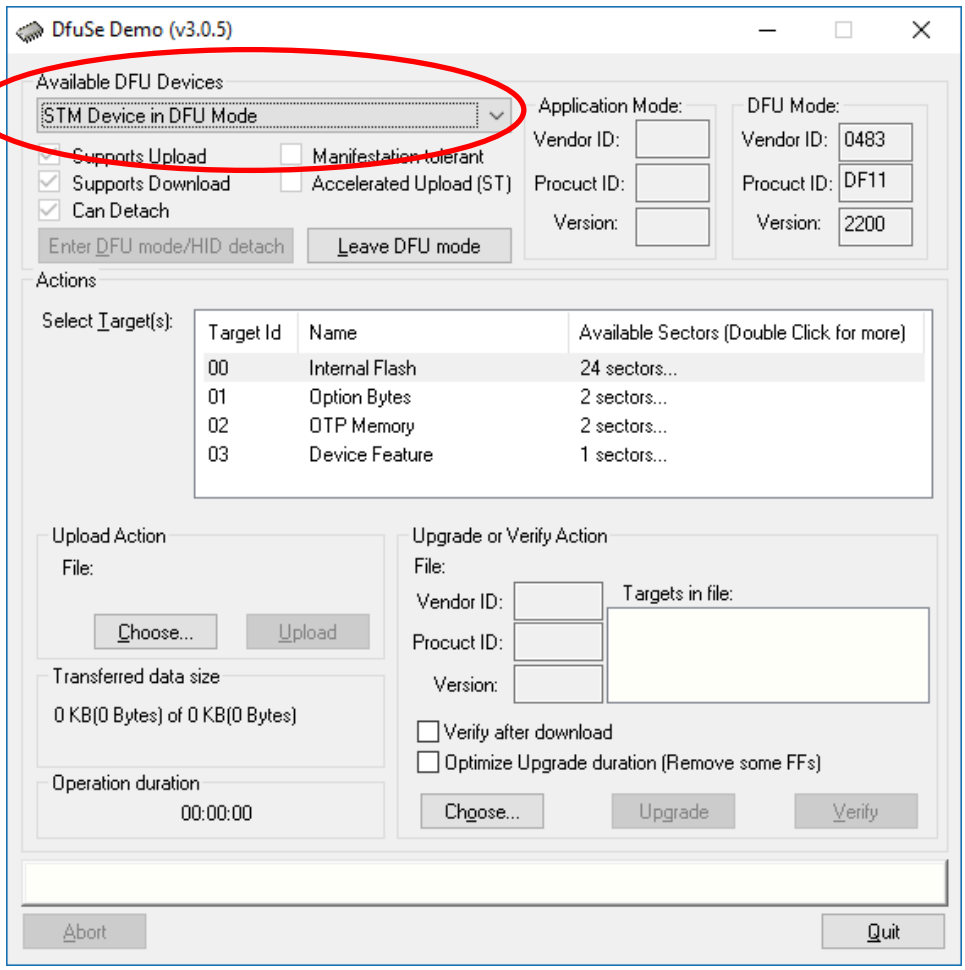


Figure 3 Device successfully recognised

Now the .dfu file needs to be selected so that DfuSe Demo knows the correct firmware to put on to the Minferno.

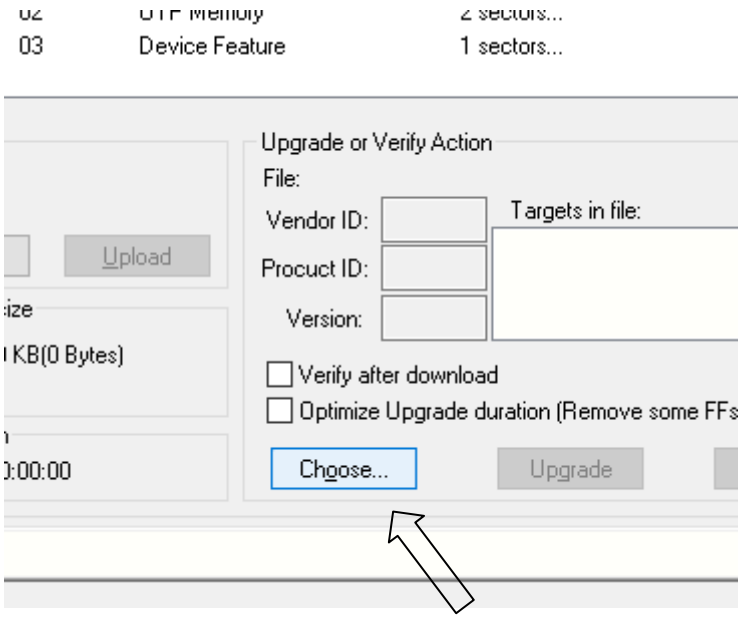


Figure 4 Choose .dfu file

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'.

6. <u>Upgrading the Minferno firmware</u>

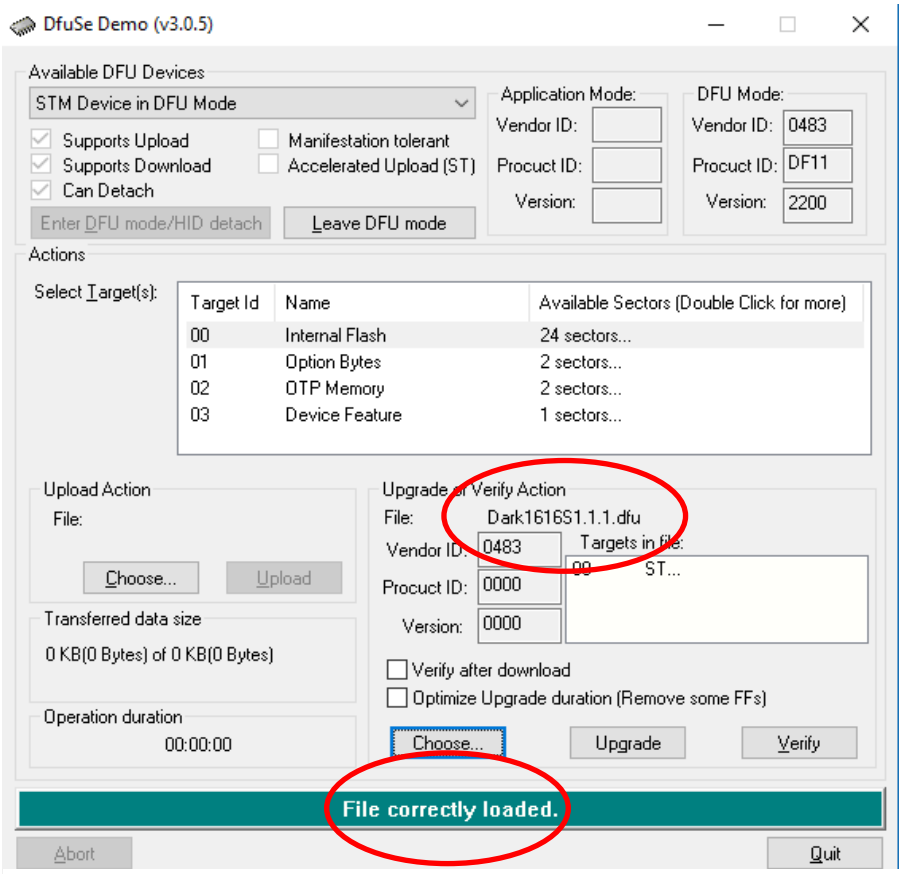


Figure 5 .dfu successfully loaded

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

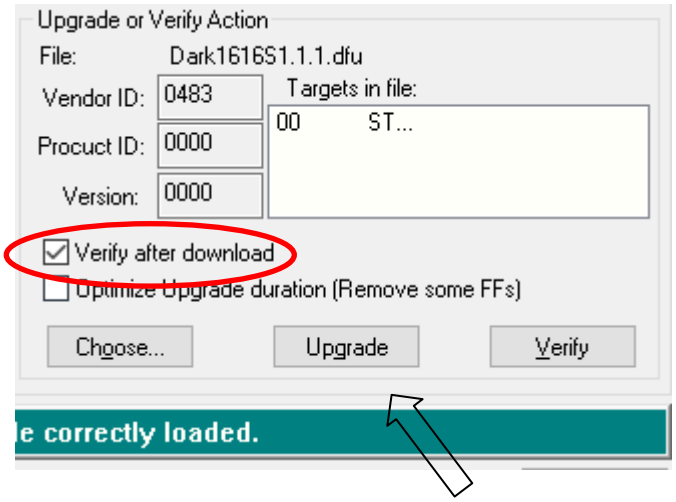


Figure 6 Upgrade

Click yes to proceed.

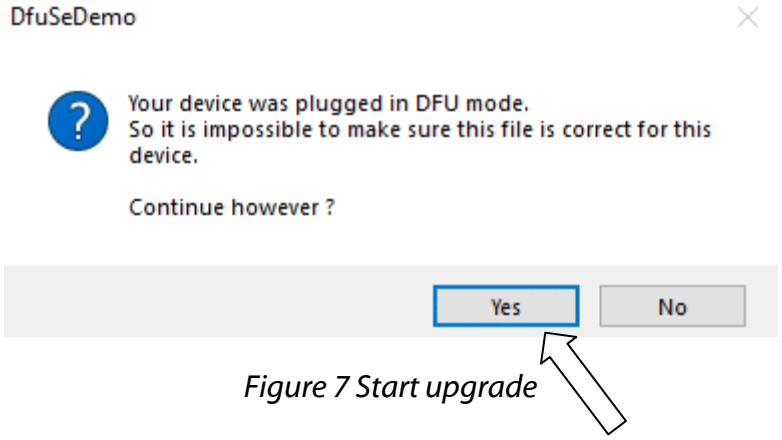


Figure 7 Start upgrade

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

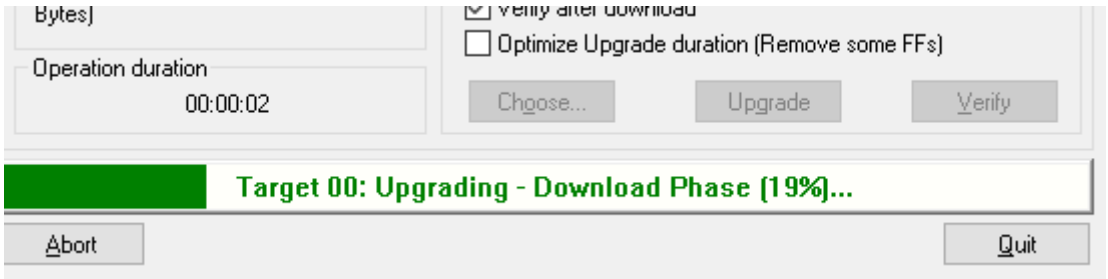


Figure 8 Upgrade status

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

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

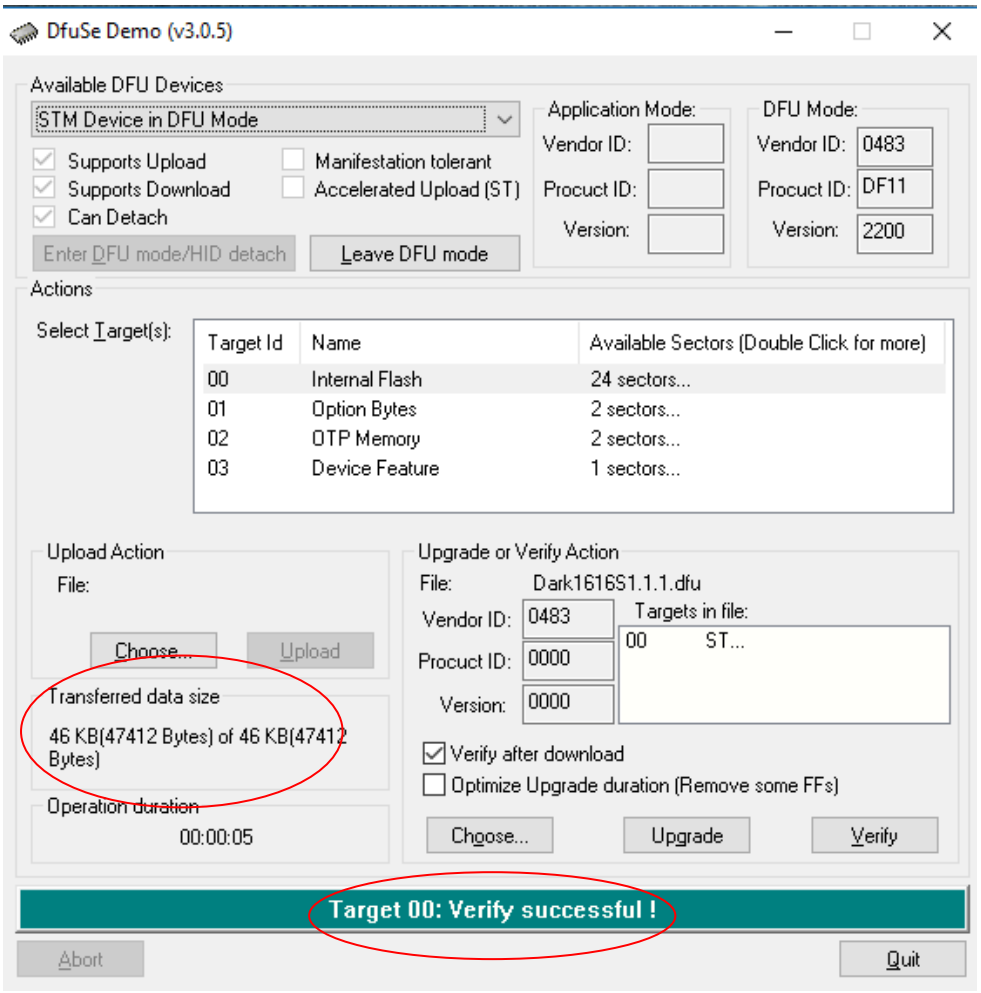


Figure 9 Successful upgrade!

7. Final steps

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

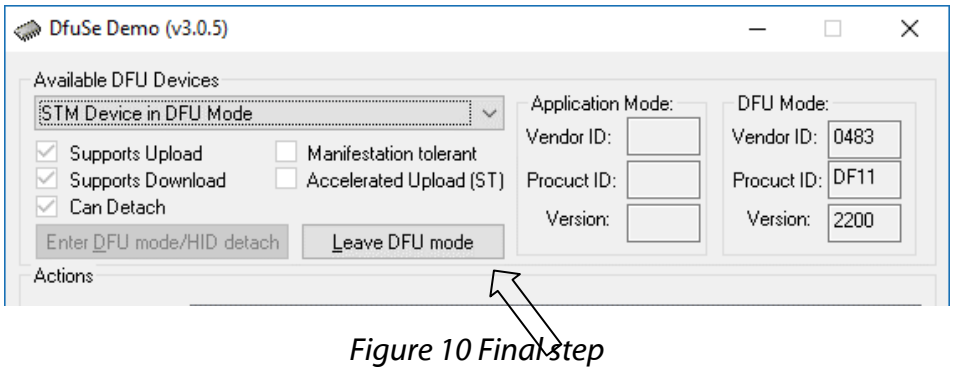


Figure 10 Final step

You may now disconnect the USB cable and continue to use the Minferno with the freshly updated firmware!

Device did not appear in DfuSe Demo

If the device did not appear in DfuSe Demo then manually installing a driver may be required.

After installing DfuSe Demo navigate to:

C:\Program Files (x86)\STMicroelectronics\Software\DfuSe v3.0.6\Bin\Driver\Win10

If you machine is 64 bit run dpinst_amd64.exe

If 32 bit run dpinst_x86.exe

This should install the driver you need. You may need to close and reopen DFuSe Demo after installing this driver.

UPDATING THE DANTE FIRMWARE

Dante specific firmware runs on the Dante chipset in the device. This is updated seperately from the main device firmware.

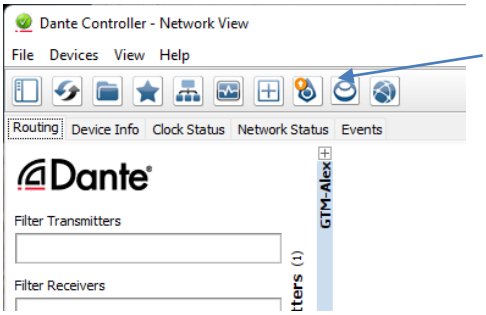
Updating the device

The firmware that runs in the Dante Chipset can be updated using the built-in Dante Updater in Dante Controller. Please ensure you have a connection to the internet.

If you want to update devices on a Dante network that is not connected to the Internet, you can download the files ahead of time to your computer, move the computer to the offline network, and then update the devices using the downloaded files.

Dante Updater displays a list of all online firmware files in the Library tab, so you can choose which files to download, or even download the entire database if you are not sure which files you will need. For further details please visit www.audinate.com

1.

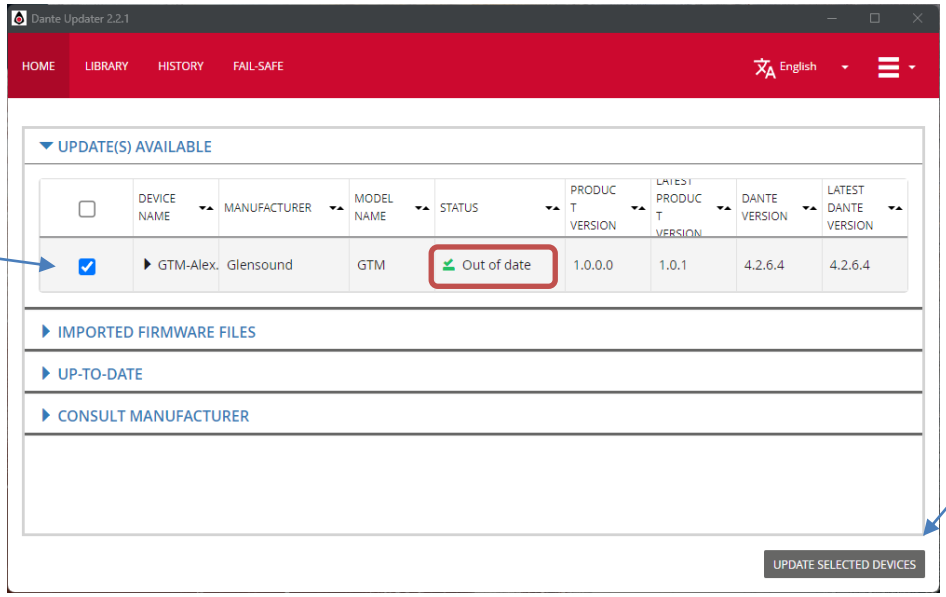


Dante controller notifies you if a device on your network is out of date.

Click the icon

2.

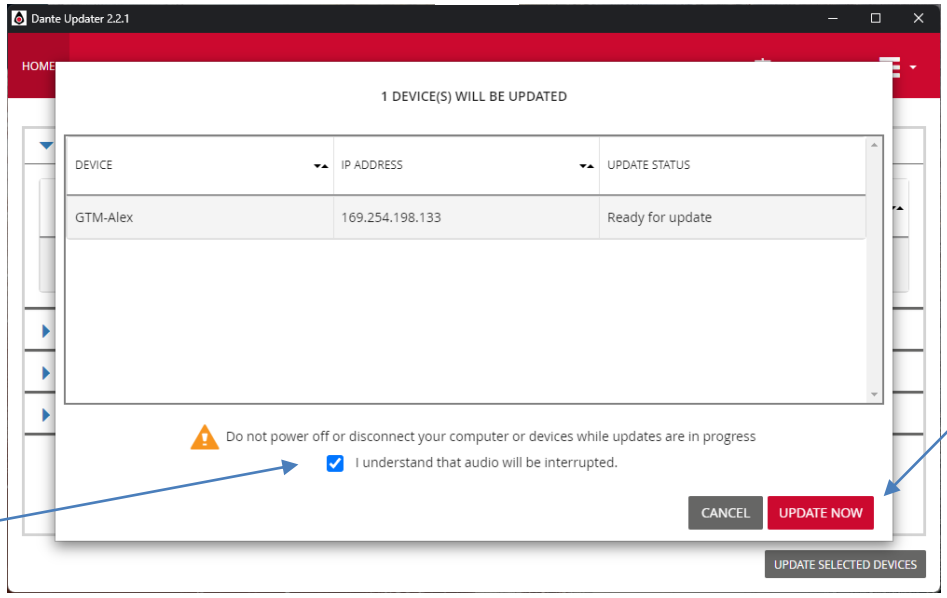
A. Tick the box to choose your unit for updating



B. Press to update device

3.

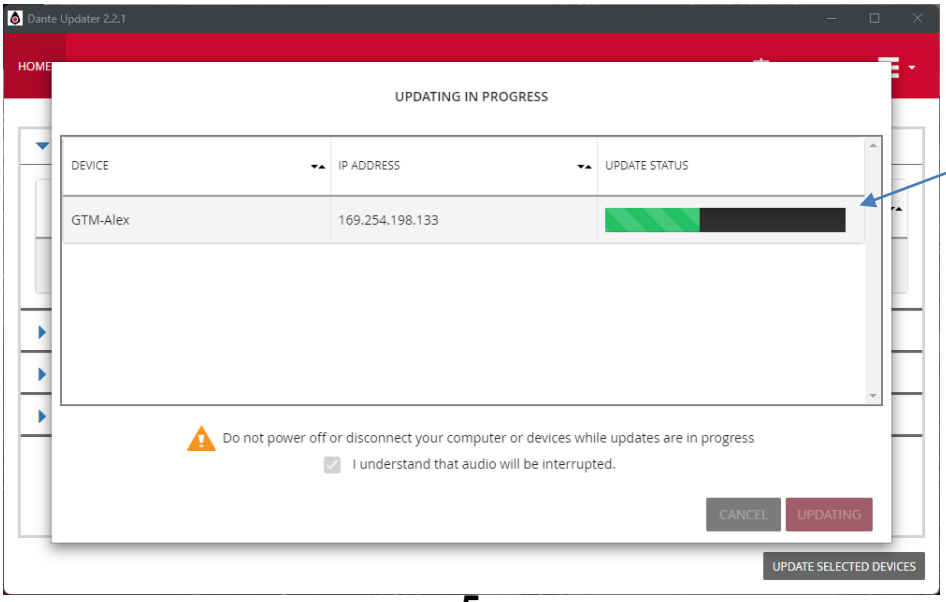
Caution! Audio will be interrupted during the device update



A. Tick box to confirm

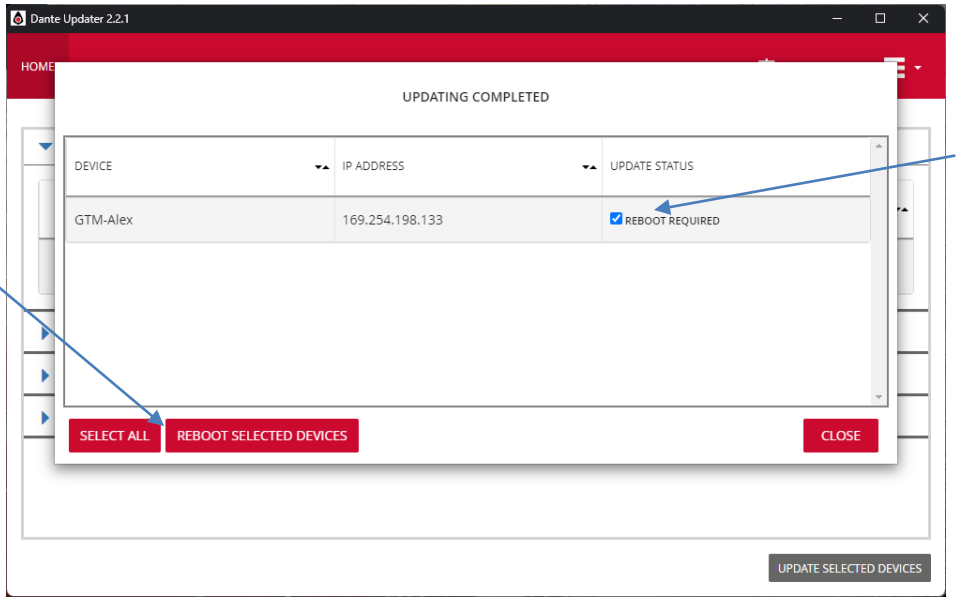
B. Press to update device

4.



Update is in progress

5.

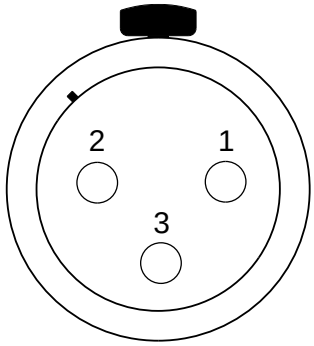


A. Update finished. Tick box to continue

B. Press to reboot device

Update finished, device will now reboot

WIRING INFORMATION



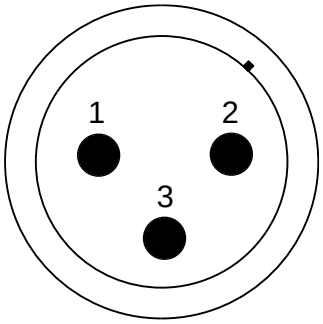
XLR SOCKET (FEMALE)

STANDARD XLR AUDIO PINOUTS:

1: Ground/ Earth

2: INPHASE/ POSITIVE/ MIC +

3: MATE/ NEGATIVE/ MIC -



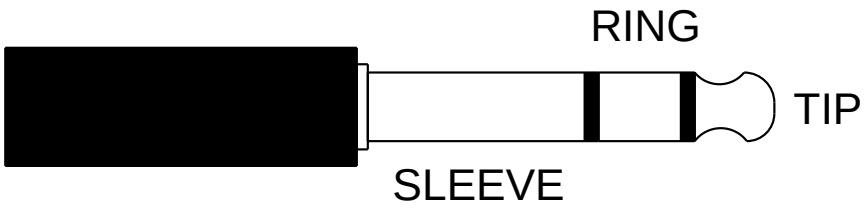
XLR PLUG (MALE)

STANDARD HEADPHONE WIRING:

TIP: A/ LEFT Ear

RING: B/ RIGHT Ear

SLEEVE: Common/ Earth



Minferno External DC power input: 2.5mm Barrel, Centre +Ve, 9 to 15 Volts, 1 Amp