DARK8O

DANTE® NETWORK AUDIO
8 LINE LEVEL ANALOGUE OUTPUTS

PRODUCT DETAILS

THE DESIGN BUILDINGS, 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.

All rights reserved.

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
The Design Buildings
1 – 6 Brooks Place
Maidstone
Kent
ME14 1HE
United Kingdom

Telephone: +44 (0) 1622 753662

EMAIL ADDRESSES

General enquires: office@glensound.com

Technical enquires: techinfo@glensound.com

Sales enquires: sales@glensound.com

IMPORTANT SAFETY INSTRUCTIONS

Read this safety sheet prior to installation or initial use. This generic safety sheet covers multiple product configurations across our range. The full operating & installation manual and model-specific technical specifications are available online at: www.glensound.com

 DANGEROUS VOLTAGE: This symbol is intended to warn that dangerous voltages within the product are present and constitute a risk of electric shock.	 IMPORTANT INSTRUCTIONS: This symbol is intended to highlight that there are important operating, installation, and maintenance instructions in the literature accompanying this unit.
 **THIS UNIT MUST BE EARTHED (Class I Mains Models):** English: This symbol highlights that the equipment must have a valid earth connection with the protective earthing conductor. Danish: *Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.* Finnish: *Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.* Norwegian: *Apparatet må tilkoples jordet stikkontakt.* Swedish: *Apparaten skall anslutas till jordat uttag.*	 **CAUTION – SHOCK HAZARD: DISCONNECT ALL POWER SOURCES:** This symbol warns that the product can be energised simultaneously from more than one power source (e.g., dual AC mains supplies, external DC power, and/or PoE). Care must be taken if accessing internal components. Ensure that ALL connected power supplies are fully disconnected.

1. Read & Keep Instructions: Read these instructions, keep these instructions, heed all warnings, and follow all instructions.

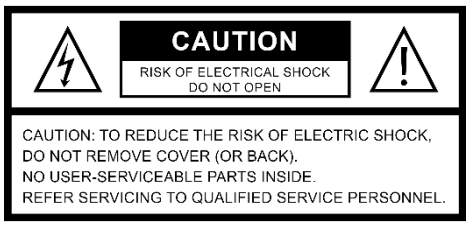
2. Indoor Use & Moisture: Unless otherwise specified in the model-specific manual, this product is intended for indoor use only. Do not use this apparatus near water, and do not expose this product to rain or moisture.

3. Ambient Temperature: The intended ambient operating temperature of this product is 0°C to 40°C (or 0°C to 50°C where specified in the model-specific technical specifications in the online user manual).

4. Cleaning & Heat Sources: Clean only with a dry cloth. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

5. Cable & Cord Protection: Protect all power cords and network cables from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

6. Attachments & Lightning: Only use attachments/accessories specified or supplied by the manufacturer. Unplug this apparatus during lightning storms or when unused for long periods of time.



WARNING:

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.

7. Servicing & No User-Serviceable Parts: The product contains no user-serviceable parts and must not be disassembled or modified in any way. Doing so could result in personal injury and/or product failure. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when a 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.

8. Professional Environment: This equipment is not suitable for use in locations where children are likely to be present.

POWER SUPPLY & DISCONNECT INSTRUCTIONS (APPLICABLE BY MODEL CONFIGURATION)

9. Simultaneous / Redundant Power Sources (Mains, DC & PoE): Depending on the model, this product may be powered by a single source or simultaneously by multiple redundant power sources (dual AC mains inlets, an AC mains inlet, an external DC power input, and/or Power over Ethernet [PoE]). Disconnecting a single power lead will NOT isolate the unit if another power source remains connected. To completely de-energize the equipment, unplug ALL connected AC mains cords, DC barrel jack/external DC connectors, and PoE RJ45/etherCON network cables.

10. AC Mains Disconnect Devices (Single or Dual IEC Inlets): Where AC mains inlets are fitted, the mains plug(s) and rear-panel IEC appliance coupler(s) serve as the disconnect device(s). On dual-mains models, both mains' cords must be unplugged to isolate the unit from AC mains power. The socket-outlet(s) used for mains power must be installed near the equipment and be easily accessible.

11. Plug Grounding & Polarization (AC Mains Models): Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has 2 blades with one wider than the other. A grounding-type plug has 2 blades and a third grounding prong provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

12. Approved Detachable Earthed Mains Cords (Class I AC Mains Models): Use only approved detachable 3-core earthed mains cords (minimum H05VV-F 3G0.75 mm² with IEC 60320-1 C13 connector) rated for the country of installation: • United Kingdom: Use a BS 1363-1 approved molded plug fitted with a 5 A ASTA-approved BS 1362 fuse. • European Union: Use a CEE 7/7 (Schuko/French) earthed plug. • Denmark: When connecting to wall socket-outlets in Denmark, use an approved 3-pin earthed plug complying with DS 60884-2-D1 (Standard Sheet DK 2-1a) to ensure protective earthing is maintained. • USA/Canada: Use a UL-listed / CSA-certified 3-conductor grounding power cord [minimum 18 AWG, SVT/SJT] with a NEMA 5-15P plug. • All other regions: Use a nationally safety-approved 3-core earthed mains cord rated for the country of installation.
13. Internal Primary Fusing & Neutral Fusing Warning (AC Mains Models – Service Personnel Only): Internal primary fuse(s) are located between the Live terminal of the IEC inlet and the Live input of the power supply and should only be changed by a qualified service engineer using a correctly rated replacement as specified in the product handbook. WARNING – Neutral Fusing: Because the AC mains plug may be reversible in some electrical distribution systems, the internal primary fuse may be located in the neutral conductor. Always disconnect all AC mains power cords completely from the IEC inlet(s) to de-energize all phase conductors before opening the enclosure or servicing the unit.

14. Power over Ethernet (PoE) Models: Unplugging the RJ45 / etherCON network cable disconnects PoE power from the unit. The Ethernet cable intended to be connected to the unit is for indoor building routing only and must not exit the building structure without appropriate primary surge protection.

15. External DC / USB Power Input Models: Connect only the manufacturer-supplied AC/DC power adaptor (where provided), or a safety-approved external DC or USB power supply complying with BS EN IEC 62368-1 (classified as ES1 and PS2/Limited Power Source [LPS]) that matches the voltage, minimum current rating, and pin polarity marked adjacent to the DC/USB input connector or specified in the product manual. The external power adaptor plug and the DC/USB input connector serve as the DC disconnect devices and must remain readily accessible; unplugging the DC/USB connector disconnects external DC power only and will not isolate the unit if AC mains or PoE remains connected.

INSTALLATION, THERMAL, MECHANICAL & OPTICAL SAFETY (APPLICABLE BY MODEL CONFIGURATION)

16. Ventilation & Sealed Heatsink Enclosures: Do not block any ventilation openings; install in accordance with the manufacturer's instructions. On models where the aluminum enclosure acts as the units heatsink, do not cover the unit or speaker grille with soft furnishings, cloths, or curtains, and allow free airflow around the housing.

17. 19-Inch Equipment Rack Installation (Rack-Mount Models): Rack-mounted models are designed for stationary installation in a standard 19-inch equipment rack. Secure the unit to the front rack rails using all four mounting holes on the integral rack ears with appropriate rack screws (e.g., M6 screws and cage nuts). Ensure that ventilation openings on the chassis are not obstructed by rack walls or cabling.



18. Carts, Stands, Brackets & Tip-Over Hazard: Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

19. Optical SFP Transceiver Modules (Where fitted): Any optical SFP transceiver modules installed in this product must be certified Class 1 Laser Products in accordance with IEC/EN 60825-1. Do not look directly into open optical ports or fiber-optic cable ends while the equipment is energized.



Disposal (WEEE): the crossed-out wheeled bin symbol means this product must not be disposed of with household waste. Take it to an approved electrical and electronic equipment recycling point, or contact Glensound for advice.
Declaration of conformity: Glensound declares that this product complies with the applicable UK and EU legislation. The full declaration of conformity is available at www.glensound.com.
Manufacturer: Glensound Electronics Ltd, The Design Buildings, 6 Brooks Place, Maidstone, Kent, ME14 1HE, UK · Tel: +44 (0)1622 753662 · Email: sales@glensound.com · www.glensound.com

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:

DARK8O

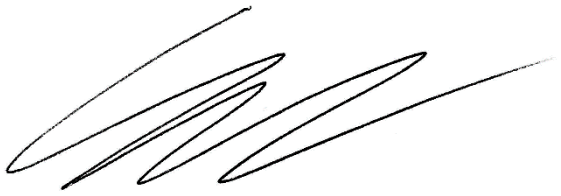
8 Channel Portable PoE Powered Network Audio Output Unit

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: 04/02/2020

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)

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

WEE/JJ0074UR

GLENSOUND DARK8O

Handbook Contents

Issue 1

Description Page No.

Contents

PRODUCT WARRANTY: 2
OVERVIEW 8
SIMPLIFIED BLOCK DIAGRAM 9
DARK8MAI CONNECTIONS 9
CONNECTING THE DARK8O TO A DANTE® NETWORK 10
- Getting Dante Controller 10
- Connecting DARK8Os To The Network 10
- Audio Over IP Network 10
- Running Dante® Controller 11
- Dante Controller TIP 12

UPDATING FIRMWARE 12
UPDATING THE BROOKLYN MODULE 14
AES67 MODE 15
WIRING INFORMATION 17
- XLR Wiring 17
- OPTIONAL 4 PIN DC XLR Wiring 18

OVERVIEW

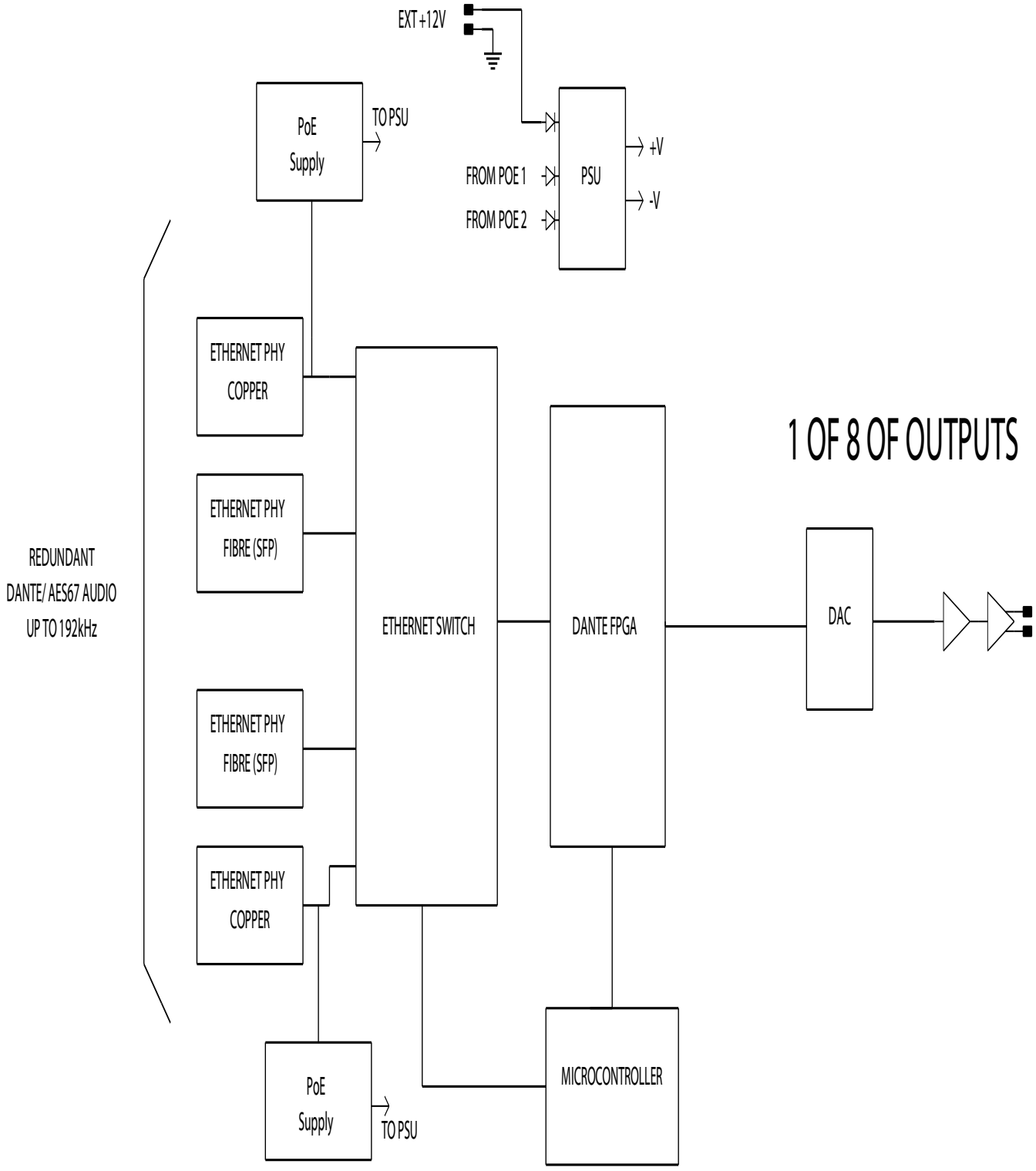
The Glensound DARK8O is a digital to analogue converter designed to connect Dante® / AES67 audio networks to line level analogue audio input circuits.

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 DARK8O 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 unit has been designed with multiple redundancy capabilities. It features fully redundant network connections for both Copper & Fibre circuits. It can be powered by Power Over Ethernet (PoE) from either copper network port, additionally it can be powered from an external 12V DC source.

The DARK8O provides 8 balanced analogue audio outputs from the Dante® network and feature low noise digital to analogue converters.

SIMPLIFIED BLOCK DIAGRAM



DARK8O CONNECTIONS





CONNECTING THE DARK8O TO A DANTE® NETWORK

The DARK8O is a network audio device utilising 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 DARK8O 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 DARK8Os To The Network

DARK8Os 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 front. Once connected to the network it will be possible to see the DARK8O from within the Dante® controller and route its' audio circuits.

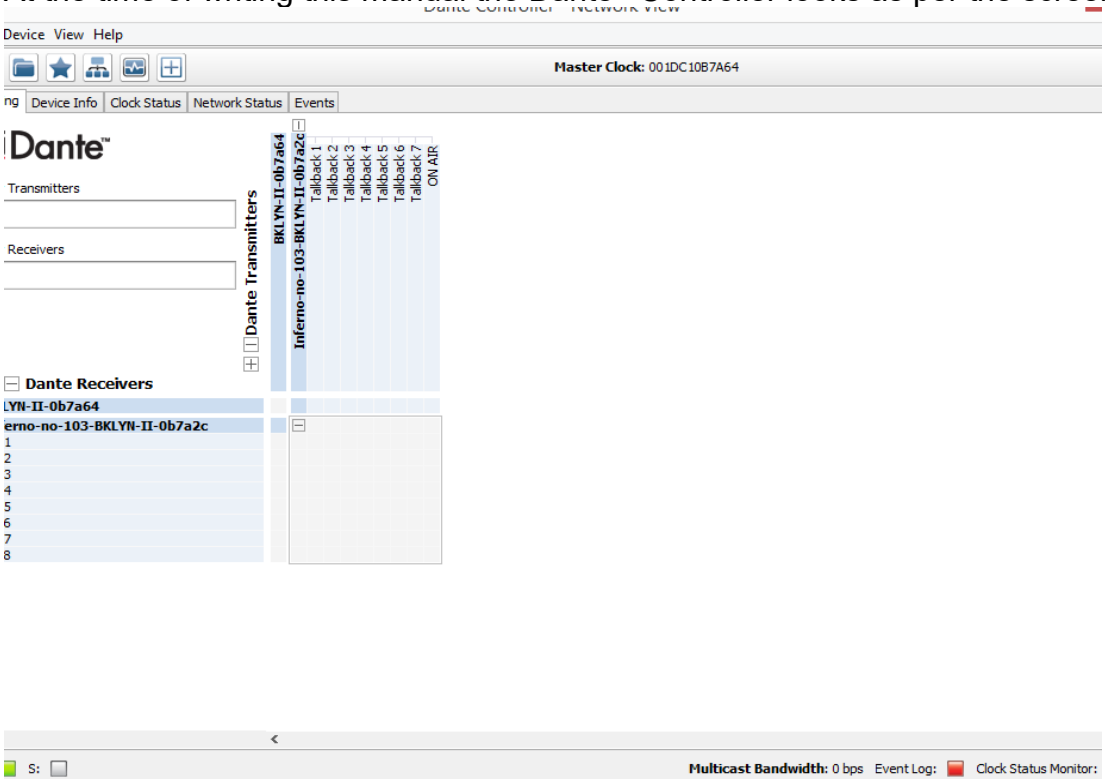
Audio Over IP Network

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 DARK8O 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:

‘GLENSOUND-DARK8O-SNxxx’

Where ‘GLENSOUND-DARK8O’ refers to the Glensound product i.e. DARK8O and ‘SNxxx’ its serial no.

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.

UPDATING FIRMWARE

The DARK8O is a network audio device utilizing the reliable and versatile Dante
It may be necessary to install the latest version of DARK8O Firmware for the Paradiso App to work or for other general updates.

The firmware is the code that runs internally in the DARK8O and provides the structure for the Microcontroller. The firmware can be updated without the need to return the unit to Glensound.

1. **Finding Out Current Installed Version**

There is currently unfortunately no way of displaying what version of firmware is installed in the DARK8O.
We suggest making a note of the date that the firmware was last updated to compare to the release date of our firmware versions.

2. **Finding Out What The Latest Available Version Is**

Contact Glensound to find the latest available version. sales@glensound.com

3. **How to Update the Firmware**

1) Get the new firmware from Glensound's web site.
Using your browser download the .dfu from the following location: (Note the following locations were correct at the time of writing this manual but will change as the firmware is updated please see above).

http://www.glensound.co.uk/Software/Dante/DARK8AO.dfu

Note: The above address is just a file location. There is no web page associated with it, so you may see 'page not found' but your browser should still download the file.
Make sure you know where your browser has downloaded and saved the file to as you'll need it in a minute.

2) Install on a pc a program called Dfuse. This is a program that is supplied by ST Microelectronics who are the manufacturer of the intelligent microprocessor that we use in the DARK8MAI. Just googling Dfuse should provide the link to ST Microelectronics Dfuse download page. The programme to download is 'DFUSE DEMO'. Follow the download instructions to download and install Dfuse on your PC.

3) Make sure you know where the latest version of the DARK8O's firmware is located on your pc (this is a .dfu file). This is a file that you downloaded in step 1.

4) Connect the USB 1 port on the front of the DARK8O that you want to update to a USB port on your PC.

5) Press and hold the 'IDENTIFY' button. While pressing the 'IDENTIFY' button press and release the recessed 'RESET' button (you'll need a pencil or pointed object to push the recessed reset button. Do not press too hard, it only moves a small amount).

6) If this is the first time you have connected the DARK8O to the PC then windows will load drivers for it.

7) Open the Dfuse software and in the top drop down list select the device shown (there should only be one device available called something like '*STM device in DFU Mode'*

8) Under the 'Upgrade or Verify Action' box at the bottom right area of the Dfuse software use the 'choose' button to locate the downloaded .dfu file.

9) Tick the 'Verify after download' box

10) Use the 'update' button (next to the choose button) in the Dfuse software to start the update.

11) Wait for the update to be completed.

12) Press the recessed 'RESET' button on the front panel (or turn the DARK8O on/off)….the new firmware will now be loaded.

UPDATING THE BROOKLYN MODULE

The Brooklyn module is a device supplied by Audinate that does most of the processing for the actual Dante/ AES67 network audio streams. There is one Brooklyn module in each DARK8O. We supply special code (a .dnt file) that sets up/ initiates the Brooklyn module and makes it work in particular way and we also run extra code on its internal microprocessor to make it work correctly with the DARK8MAI.

1. **Finding Out Current Installed Version**

Open Dante Controller.
Open Device Info tab.
Double Click in the device that you are working with….a new window will open called 'Device View (name of device'
Open the status tab.
The Firmware Version (of the Brooklyn module) will be found under the 'Device Information' heading.

2. **Finding Out What The Latest Available Version Is**

Contact Glensound to find the latest available version. sales@glensound.com

3. **Updating the Brooklyn Module**

The firmware that runs on the Brooklyn module 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

The actual firmware to install using the above tool can currently be downloaded from:

http://www.glensound.co.uk/Software/Dante/DARKAO_v1.0.0.dnt

When downloading the above file please make sure that you know where your computer has saved it.

Please note we strongly advise that when you do the update that only your PC and the DARK8O that you want to update are on the network to save accidental updating the wrong Dante device.

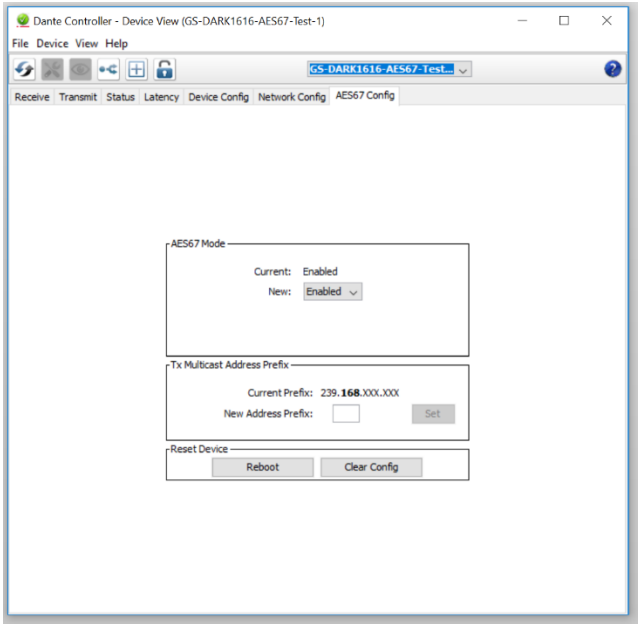
AES67 MODE

The DARK8O 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 DARK8O 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 DARK8O 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 DARK8O 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 DARK8O 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.

2. 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.

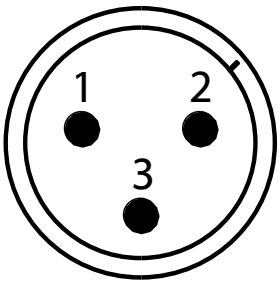
3. AES67 Restrictions

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

WIRING INFORMATION

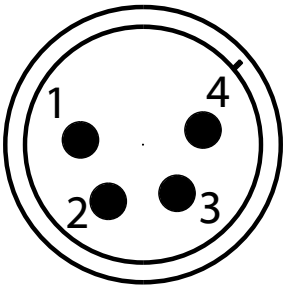
XLR Wiring



3 PIN XLR PLUG (MALE)

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

OPTIONAL 4 PIN DC XLR Wiring



4 PIN XLR PLUG (MALE)