BELLA 4

4 INPUT 4 LOUDSPEAKER NETWORK AUDIO MONITOR

PRODUCT DETAILS

THE DESIGN BUILDINGS, 6 BROOKS PLACE, MAIDSTONE, KENT, ME14 1HE. ENGLAND.
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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:

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EMAIL ADDRESSES

General enquires: sales@glensound.com

Technical enquires: techinfo@glensound.com

Sales enquires: sales@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:

BELLA 4

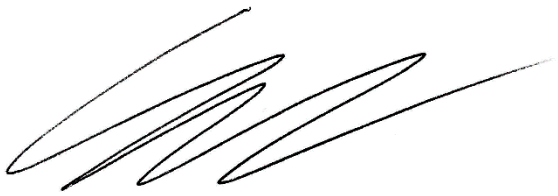
4 Input 4 Loudspeaker Network Audio Monitor

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: 28/10/2019

RoHS DIRECTIVE

RoHS 2 Directive 2011/65/EU restrict 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 BELLA 4

Handbook Contents

Issue 1

Description Page No.

Contents

OVERVIEW

Bella 4 is a network audio monitoring subrack designed for speech and confidence monitoring of signals.

It features 4 x front panel loudspeakers, each driven from its own class D amplifier. Each speaker/ amplifier combination has its own Dante (AES67 Compliant) network audio input.

Utilising 4 front panel loudspeakers provides an effective sound stage for close field monitoring of 4 different audio sources and provides much improved cognative recognition for an operator of the 4 different audio circuits than if the 4 sources were monitored on a single loudspeaker driver.

Each loudspeaker has it's own front panel volume control, illuminated mute switch and peak and presence indicators. The mute switches allow a quick and easy way of turning a source on/ off whilst the presence indicators help an operator clarify which of their 4 audio sources are currently active. The peak LEDs indicate an overload of the input signal and provide a useful reference to potential issues with the incoming audio circuits.

The Bella 4 was designed in 2019 and utilises all the very latest technological advancements. It features high output, flat response, low distortion drive units with low telsa (gauss) neodymium magnets. It also features the latest low noise class D amplifiers.

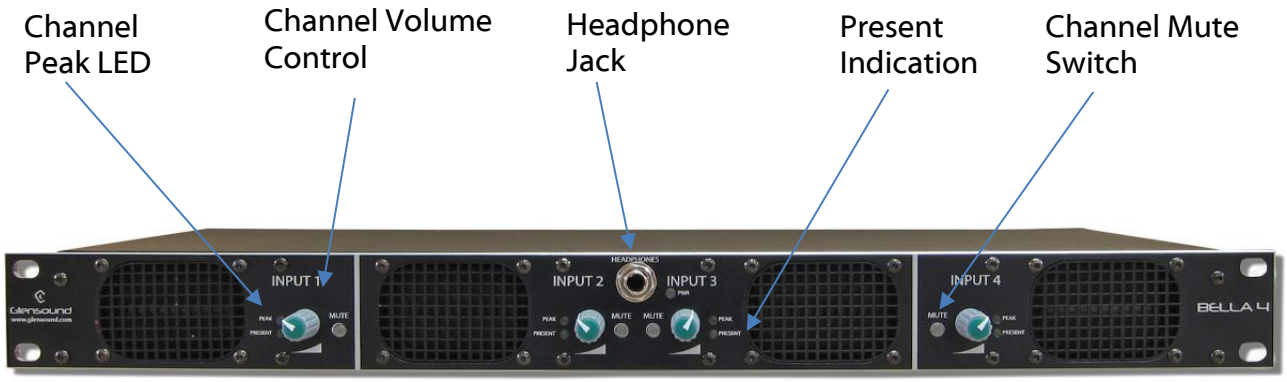
A front panel headphone socket is also provided (inserting a headphone jack cuts the front panel loudspeakers), this allows an operator to continue monitoring the sources in very high ambient noise levels.

To protect the loudspeakers from damage from sudden high peak audio levels compressor/ limiter circuits are fitted for each loudspeaker. This compressor has been carefully designed not to taint the monitoring audio at normal listening levels.

The GS-MON004 is 19" 1RU and is mains powered from an internal filtered switch mode power supply, making it suitable for use around the World.

BELLA 4 PANEL LAYOUT

Front Panel



Front Panel Features

1. **Channel Peak LED**

   Peak LEDS are provided (1 for each channel) to indicate an overly high audio input signal. The peaks LEDs are monitoring a point in the audio chain prior to the front panel volume controls.

2. **Channel Volume Control**

   The rotary channel volume controls adjust the audio level of the associated channel to its associated loudspeaker/ channel of the headphone amplifier. Turning the control clockwise increases the audio level and turning it anti-clockwise reduces the audio level.

3. **Headphone Jack**

   This is a stereo 6.35mm (1/4") jack socket for headphones.

   Plugging a jack plug into the socket will cut the 4 internal loudspeakers.

   The 4 incoming audio circuits are mixed to the headphones as two pairs of stereo, such that Inputs 1 & 3 are routed to the left ear and Inputs 2 & 4 are routed to the right ear.

4. **Present Indication**

   The present LEDs are taken from a point in the audio chain prior to the front panel volume controls and the front panel channel mute switches. Therefore they will illuminate if a signal is present on a channel even if its volume control is turned down or its mute switch is operated.

   The present (presence) indicators are used to provide a visual indication audio being present on a particular channel.

   The LEDs illuminate at a threshold of -20dB and have a hold time of a few seconds, so stay illuminated for a short while after an audio source disappears.

5. **Channel Mute Switch**

   The channel mute push switch latches on/ off and is used for turning off the audio to a channel.

   If the internal LED in the switch is illuminated then the mute is active and no audio will be monitored on either the loudspeaker or in the headphones from the associated input channel.

Rear Panel

Rear Panel Features

6. **Mains Input**

   The standard IEC mains plug is filtered and accepts external AC voltages of 100 - 240 VAC +/- 10%.

   There is an internal fuse and maximum current consumption is 25 Watts.

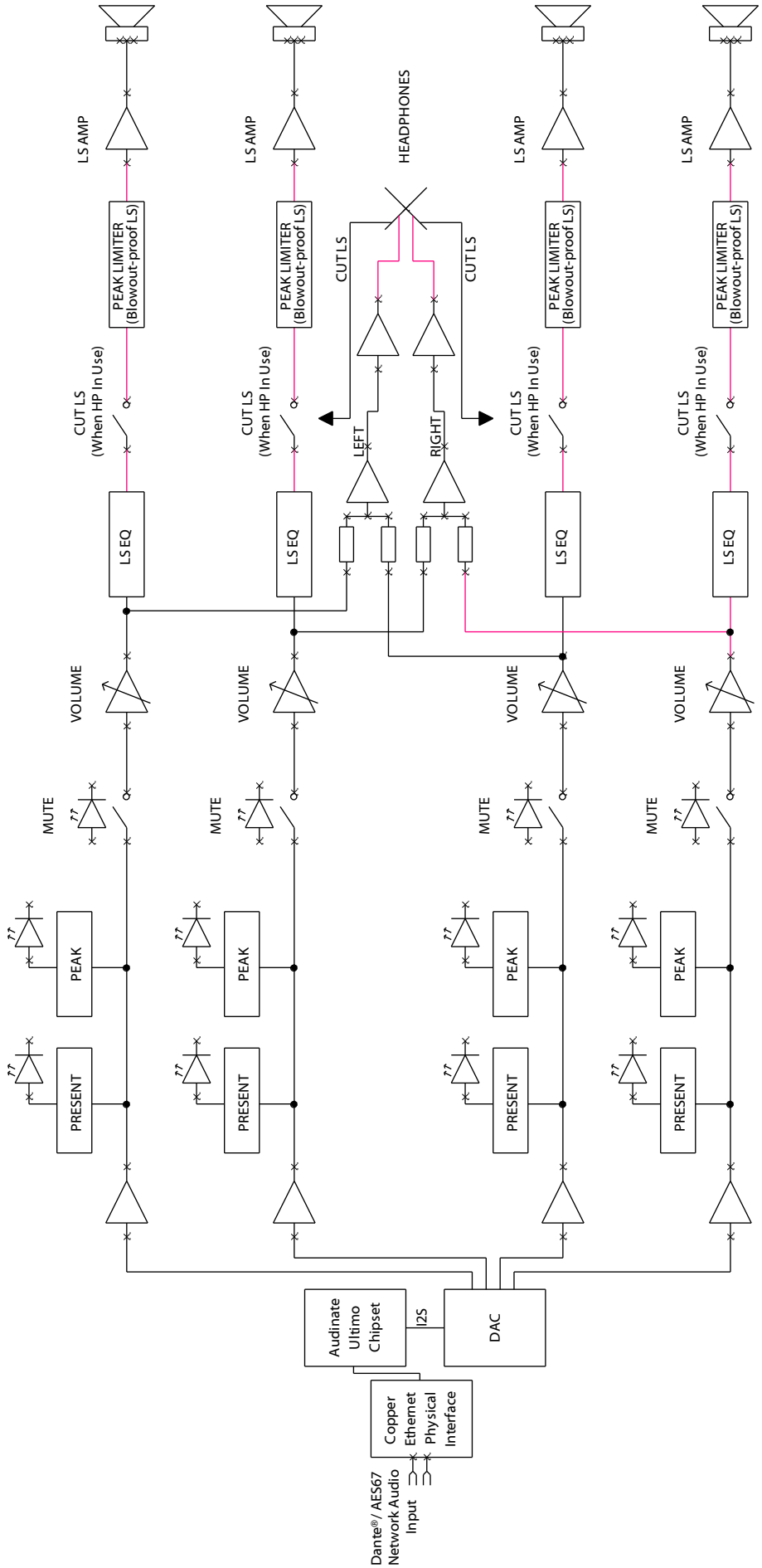
7. **Network Audio Inputs**

   The Ethercon connector can mate with Neutrik XLR based network cables and standard RJ45s.

   It is a 100Mb connection.

   Internally the Bella 4 uses the Ultimo chipset from Audinate for its Dante network audio interface. The Ultimo chipset can receive 4 audio channels but importantly it can only receive 2 network flows, meaning that these 4 audio channels can only originate from 2 different network locations.

AUDIO BLOCK DIAGRAM



CONNECTING THE BELLA 4 UNITS TO A DANTE NETWORK

The BELLA 4s 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

Getting Dante Controller

If you are connecting the BELLA 4 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 BELLA 4s To the Network

The BELLA 4 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 BELLA 4 from within the Dante controller and route its' audio circuits.

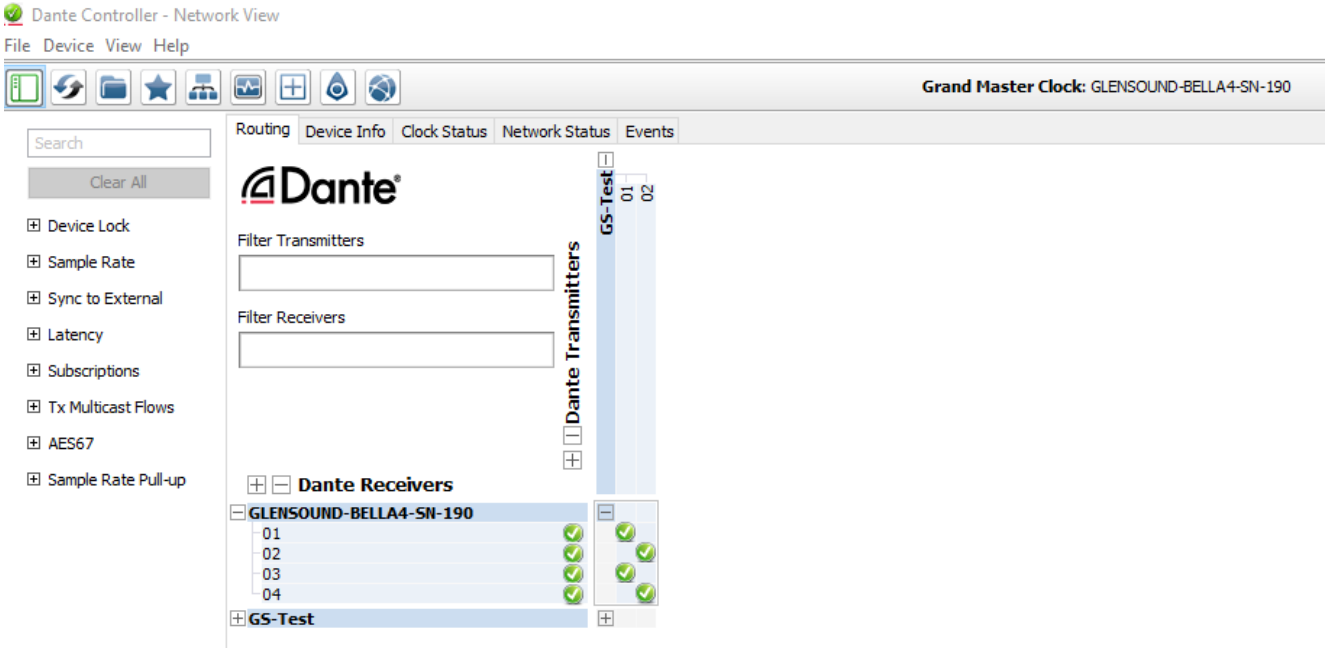
Audio Over IP Network

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 BELLA 4 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:

'BELLA 4-snXXX'

Where 'BELLA 4' refers to the Glensound product i.e. BELLA 4B.

The '–snXXX' refers to the serial number of the BELLA 4 which can be found printed on the rear of the unit.

The unit may be renamed in Dante controller by opening the 'Device view' window and selecting BELLA 4 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 BELLA 4-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.

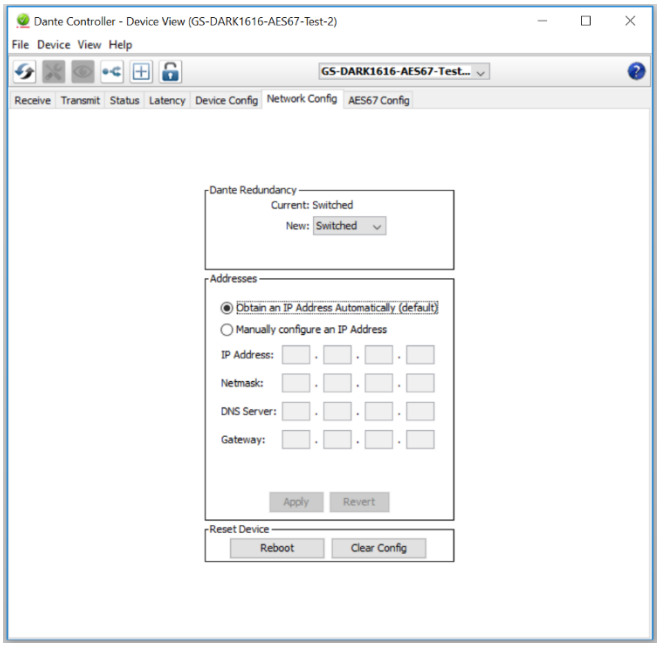
Device not showing up in Dante Controller

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.



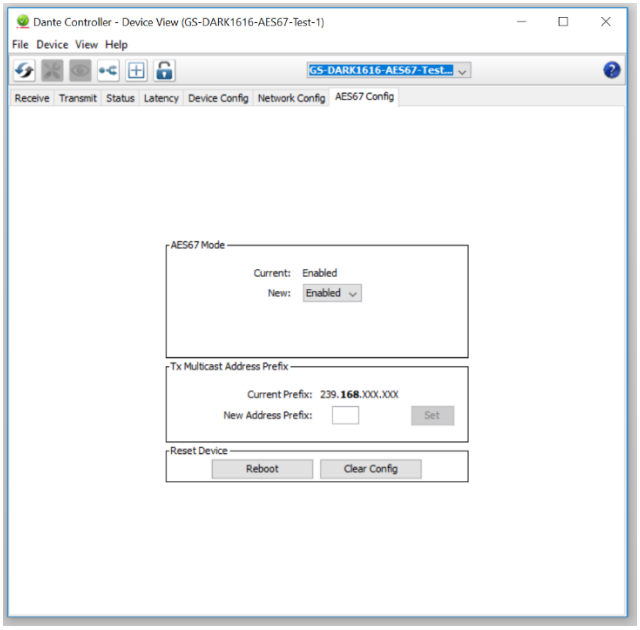
AES67 MODE

The BELLA 4 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 BELLA 4 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 BELLA 4 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 BELLA 4 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 BELLA 4 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.

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

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 BELLA 4. 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 BELLA 4.

Finding Out Current Installed Version

Using Dante® controller double click on the BELLA 4 device name in the routing tab to open the Device View box.
Ion 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 BELLA 4'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 accidently updating the wrong Dante device.

SPECIFICATIONS

NETWORK

Physical Interface
1 off Rj45 Neutrik Ethercon

Audio Sample Frequency
48kS/s

Transfer Rate
100 Mbps

Dante™ Chipset
Ultimo UXT-01-004
Note: Audiante recommend no more than 10 Ultimo chipsets on one network **UNLESS** another Dante™ device such as the Brooklyn Module (found in 8 channel Beatrice/ Dark units), is on the same network

AES67 Compliant
The Audinate Ultimo chipset is AES67 compliant

AUDIO - General

Volume Control Gain Range
+10/ Off

Present Indicator Threshold
-18dB

Present Indicator Hold Time
3 seconds

Peak LED Threshold
+10dB

AUDIO - Loudspeaker

Maximum Power RMS
4 Watts (per loudspeaker)

Peak Power (per loudspeaker)
5 Watts (limited by compressor circuit)

Amplifier Type
Class D

Noise @ Lineup (measured at I/P to LS)
> -61.5dB

THD + N (measured at input to LS)
> 0.18% @ 1kHz ref +8dB

Acoustic Frequency Response
120Hz to 22kHz +/- 9dB

Maximum Acoustic Level (1 Loudspeaker)
88dB SPL @ 0.61 Meters (2 Feet)

Maximum Acoustic Level (4 Loudspeakers)
98dB SPL @ 0.61 Meters (2 feet)

Loudspeaker Magnet Type
Neodymium

Magnetic Induction
1.15 T (per loudspeaker)

* FOUR INCOMING AUDIO CIRCUITS

This device uses Audinate's Ultimo Chipset. This chipset can receive 4 incoming audio channels each at 48kHz. However this chipset can only receive these 4 audio channels from a maximum of 2 network locations.

AUDIO - Headphones

Connector
6.35mm (1/4") TRS Jack Socket

Maximum Output Before clipping
+18dB into 600 Ohms

Noise @ Lineup (22hz to 22kHz RMS)
> -88 dB

THD + N
> 0.0025% @1kHz ref +8dB

Headphone Impedance
32 - 1000 Ohms

POWER

Input Voltage
100 - 240 VAC +/-10%

Frequency
50 / 60 Hz

Input Connector
Filtered IEC (Internally fused)

Consumption
25 Watts (Maximum)

PHYSICAL

Mechanics
All aluminium with laser etched panels and light textured black powder coated lid/ base

Size
19" 1RU 164mm deep

Weight
1.35Kg (4.2lbs)

Shipping Weight
3.1Kg (6.8lbs)

Shipping Size
62 x 41 x12 cms

Shipping Carton
Rugged export quality cardboard

ENVIROMENTAL

Operating Temperature
0 to +50 °C (32 to 122 °F)

Storage Temperature
-20 to +70 °C (32 to 122 °F)

Relative Humidty
0 to 95% non-condensing

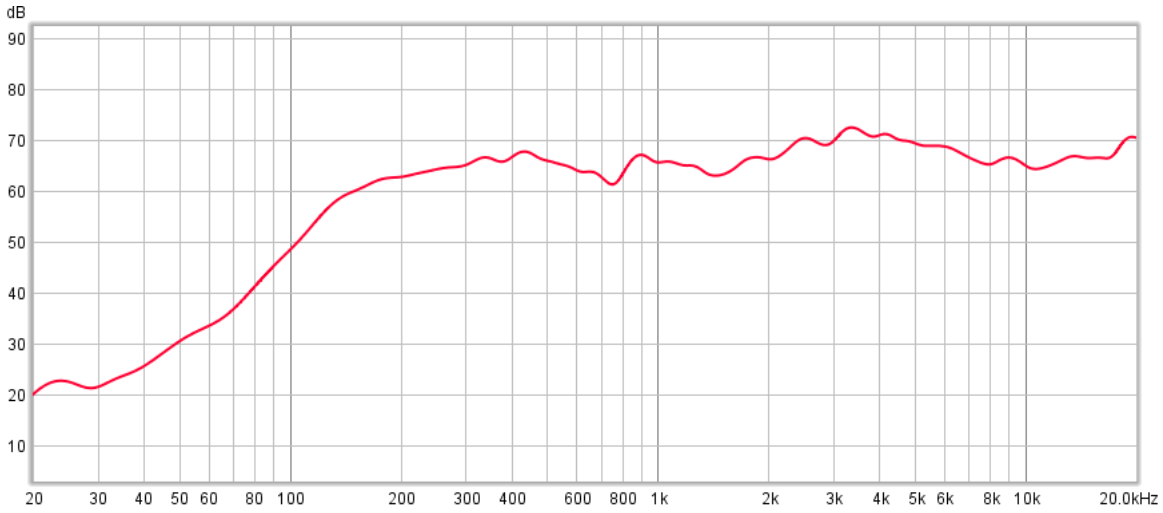
INCLUDED ITEMS

Handbook
Physical A4 (download also available)

Mains Cable
2 metre IEC (UK & Europe only)

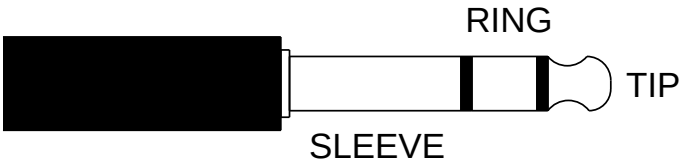
Network Cable
2 metre RJ45 to RJ45

Loudspeaker Frequency Response



WIRING INFORMATION

Standard Headphone Wiring



STANDARD HEADPHONE WIRING:

TIP: A/ LEFT Ear

RING: B/ RIGHT Ear

SLEEVE: Common/ Earth