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Glensound
Beatrice
IP Intercom
Keeps Working

BEATRICE
LUCIA

Party-Line Dante Interface

PRODUCT DETAILS

Dante™

Glensound Electronics Ltd

THE DESIGN BUILDINGS,BROOKS PLACE, MAIDSTONE, KENT, ME14 1HE. ENGLAND **TEL: +44 (0) 1622 753662**

Visit our Website at www.glensound.com

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:

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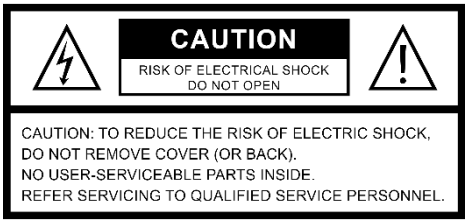
Technical enquires: techinfo@glensound.com
Sales enquires: sales@glensound.com

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.

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 fibre-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

GS-BEATRICE LUCIA

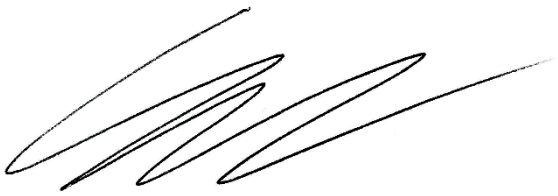
Party-Line Dante/ AES67 interface

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:

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: 19/02/2021

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 a business to business sale of WEEE in the UK our registration number is:

WEE/JJ0074UR

GLENSOUND BEATRICE LUCIA
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OVERVIEW

The BEATRICE LUCIA allows Dante and 2 Wire intercom units to communicate with one another and is available in 1 and 2 module versions. Each module can be set to interface with either the Clear-Com or RTS single channel party-line (two wire) intercom standard or the RTS two audio channel partyline standard.

It is part of the BEATRICE range of IP intercoms 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 LUCIA is fully compatible with other manufacturers' equipment using the Dante protocol. The Beatrice LUCIA is also AES67 compliant.

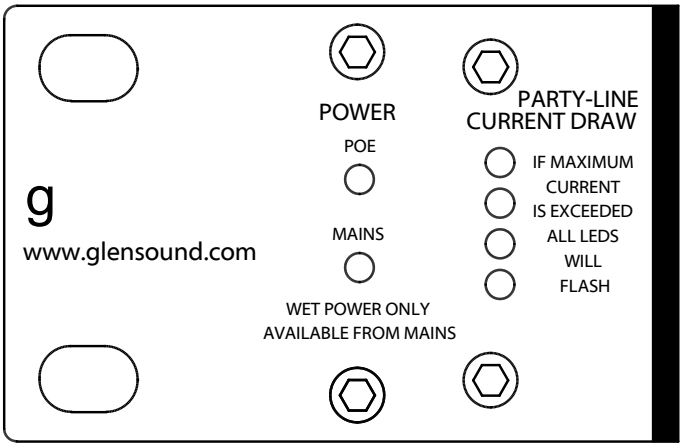
All units in the system are designed to be very easy to use for the operator and simple to setup for the technician. They include all the basic functionality required for small intercom systems and none of the overly complex installation requirements normally associated with large systems.

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.

LUCIA FRONT PANEL LAYOUT

LUCIA Front Panel Power



1. PoE Power LED

This indicates that the unit is being powered by Power Over Ethernet (POE). In this mode the unit cannot supply power (wet) to the party-line intercom.

2. MAINS Power LED

This indicates that the unit is being powered by mains power. In this mode the unit is able to supply power (wet) to the party-line intercom.

3. Power Redundancy

If the Lucia is being powered from both PoE and Mains then if either power source is lost the other will seamlessly take over. However as the PoE source cannot provide wet power to the party-line interfaces if the Lucia was supplying wet power from mains and the mains supply is lost then when switching over to PoE power the Lucia will automatically have to turn the wet supply to the party-lines off.

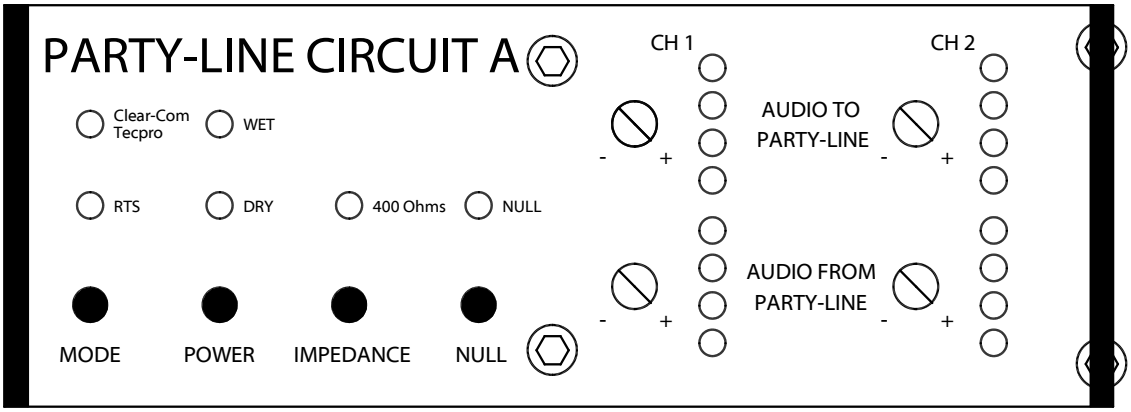
4. Party-Line Current Draw Indicator

This indicates how much of the total available power budget from the mains power supply (2 amps) is being used to power the party-line(s).

1 LED =	25%
2 LEDs =	50%
3 LEDs =	75%
4 LEDs =	100%

If all 4 LEDs are flashing then the total available current from the power supply is being exceeded and changes to the powering or number of devices on the party- line(s) need addressing.

LUCIA Party-Line Circuits



1. **Clear-Com Tecpro Mode Indicator**

   This indicates the party-line is set to interface with the Clear-Com two wire standard (which is also used by Tecpro (amongst others)). In this configuration power is supplied to the party-line through pin 2 and channel 1 audio through pin 3 (channel 2 audio is not used).

2. **RTS Mode Indicator**

   This indicates the party-line is set to interface with the RTS (Telex) two wire standard. In this configuration power and channel 1 audio are supplied to RTS units through pin 2 and a second audio channel (CH2) is supplied through pin 3.

3. **Mode Selector**

   This control is used to toggle between the RTS and Clear-Com modes.
   To operate the 'MODE' button must be pressed for at least three seconds before change will take place.

4. **Wet Mode**

   This indicates that the unit is providing power to the party-line and 200 ohm termination to the line.
   To change between 'wet' and 'dry' the 'POWER' button must be pressed for at least three seconds before the change will take place.

5. **Dry Mode**

   This indicates that the unit is not providing power to the line and is not terminating the line.
   The unit is locked in this mode when it is powered by POE.
   To change between 'wet' and 'dry' the 'POWER' button must be pressed for at least three seconds before the change will take place.

6. **Power Selector**

   This control is used to toggle between the Wet and Dry modes and must be pressed for at least three seconds before the change will take place.

7. 400 Ohm Impedance Indicator

When the unit is in RTS Wet mode and this LED is off, the audio on pin 2 has a line impedance of 200 ohms.

When the 400 Ohm LED is on the audio on pin 2 has a line impedance of 400 ohms. This allows two power supplies each with an output impedances of 400 ohm to be run in parallel on the party-line maintaining a 200 ohm line impedance for the audio signal.

NOTE: 400 Ohm termination impedance cannot be turned on if the party-line is set to Clear-Com.

8. Null Control

This control is used to activate the null process.
After the control has been depressed and held for 3 seconds the Null Indicator LED will flash. Upon release the null process will begin. If the control is depressed and held for less than 3 seconds the null process will not begin.

If the unit is in Clear-Com mode, channel 1 will be nulled taking approximately 30 seconds. If the unit is in RTS mode channels 1 and 2 will be nulled consecutively taking approximately 60 second. Whilst the null process is underway the front panel controls will be locked in their current states until the null process is complete.



WARNING
during the null process high level audio tone is sent to the party-line circuit. Make sure all party-line headphone/ headset users have removed their headphones/ headsets prior to nulling.

9. Null Indicator

When the LED flashes the null process has been activated. When the LED switches off the null process is complete.

CH1 (Clear-Com & RTS) and CH2 (RTS only) audio level LEDs are used to provide a visual indication of the progress of the nulling process.

10. Audio to Party-Line CH 1 Level Control

This controls the level of the audio being sent to the party-line intercom XLR on pin 3 from the Dante/ AES67 network.

11. Audio to Party-Line CH 1 Indicator

This indicates the level of the audio being sent to the party-line intercom XLR on pin 3 from the Dante/ AES67 network.

When the null process is underway, in conjunction with the return indicator (14) this acts as a progress bar indicating how much of the null process remains.

12. Audio from Party-Line CH 1 Level Control

This controls the level of the audio being sourced from the party-line intercom XLR pin 3 and sent to the Dante/ AES67 network.

13. Audio from Party-Line CH 1 Indicator

This indicates the level of the audio being sourced from the party-line intercom XLR pin 3 and sent to the Dante/ AES67 network.

When the null process is underway, in conjunction with the send indicator (12) this acts as a progress bar indicating how much of the null process remains.

14. Audio to Party-Line CH 2 Level Control

This controls the level of the audio being sent to the party-line intercom XLR on pin 2 from the Dante/ AES67 network.

15. Audio to Party-Line CH 2 Indicator

This indicates the level of the audio being sent to the party-line intercom XLR on pin 2 from the Dante/ AES67 network.

When the null process is underway, in conjunction with the return indicator (18) this acts as a progress bar indicating how much of the null process remains.

16. Audio from Party-Line CH 2 Level Control

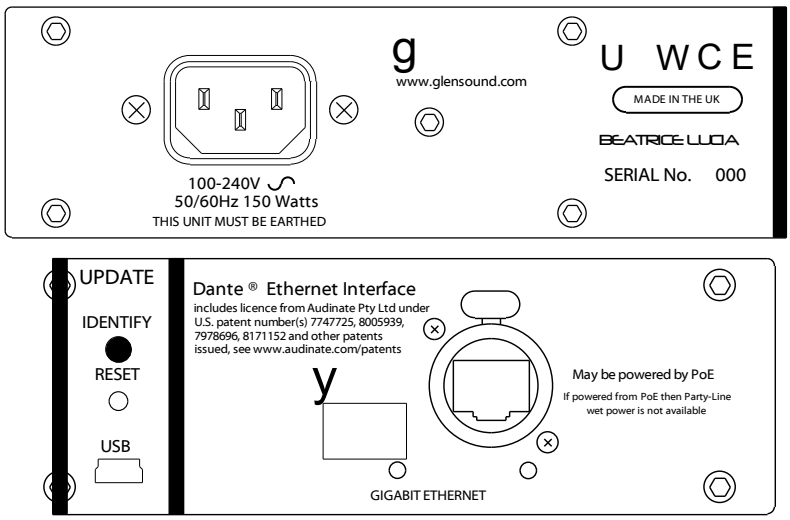
This controls the level of the audio being sourced from the party-line intercom XLR pin 2 and sent to the Dante/ AES67 network.

17. Audio from Party-Line CH 2 Indicator

This indicates the level of the audio being sourced from the party-line intercom XLR pin 2 and sent to the Dante/ AES67 network.

When the null process is underway, in conjunction with the send indicator (16) this acts as a progress bar indicating how much of the null process remains.

LUCIA REAR PANEL LAYOUT



Mains & Ethernet

18. IEC Mains

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

19. Network RJ45

The Neutrik Ethercon network socket can connect to both Neutrik Ethercons and standard RJ45 cables. It is a 1Gigabit standard IP network connection. The status LED flashes to show when data is being correctly communicated with the attached switch.

If connected to a Power Over Ethernet (PoE) source then the unit will be powered from it

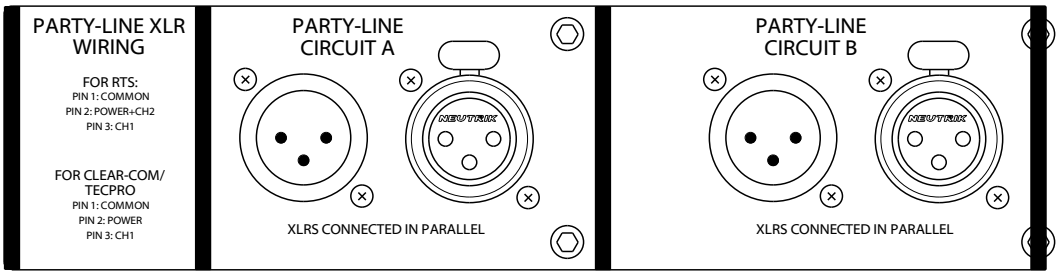
20. USB connector and update buttons

The MINI USB connection allows the firmware of the LUCIA to be updated. To prepare the LUCIA for a firmware update; power on the unit, press and hold down the reset button, press and hold down the identify button, release the reset button and then release the identify button a second after

21. SFP Fibre Network Port

A standard SFP Fibre network interface module can be fitted into this port. SFP modules are available in many different formats, if required Glensound can supply suitable SFP modules, contact sales@glensound.com for further information.

Party-Line Outputs



22. Party-Line connections

These ports are used to connect to the party-line (2 Wire) intercom. Both RTS and Clear-Com standards are supported (configuration set by **Mode Selector** control) but users MUST NOT use a mixture of RTS and Clear-Com units on the same line at the same time.

These connections carry volts and therefore MUST NOT be treated as standard audio XLR connections, use as such will likely result in permanent damage to any equipment connected at the time.

The pin configuration is outlined in the following table:

Pin Configuration	
RTS Mode	Pin 1: Common Pin 2: Power + Audio 2 Pin 3: Audio 1
Clear-Com Mode	Pin 1: Common Pin 2: Power Pin 3: Audio (+ DC when performing call signal)

Relationship between Dante/AES67 & Lucia party-line channels								
	Party-Line Circuit A				**Party-Line Circuit B (If fitted)**			
	Clear-Com single unit standard	**RTS single channel unit standard**	**RTS two channel unit standard**		**Clear-Com single unit standard**	**RTS single channel unit standard**	**RTS two channel unit standard**	
LUCIA	CH1	CH1	CH1	CH2	CH1	CH1	CH1	CH2
Dante channel name	Party-Line A CH1	Party-Line A CH1	Party-Line A CH1	Party-Line A CH2	Party-Line B CH1	Party-Line B CH1	Party-Line B CH1	Party-Line B CH2
XLR pin	Pin 3	Pin 3	Pin 2	Pin 3	Pin 3	Pin 3	Pin 2	Pin 3

LUCIA FUNCTIONS

Auto null

In order to null the unit, depress and hold the null control for a minimum of 3 seconds, upon release the unit will start the null process. If the unit is in Clear-Com mode, channel 1 will be nulled taking approximately 30 seconds. If the unit is in RTS mode channels 1 and 2 will be nulled consecutively taking approximately 60 second. Whilst the null process is underway the front panel controls will be locked in their current states until the null process is complete.

Nulling is the process where the Lucia automatically sets its party-line interface for you to achieve the very best possible audio performance. When the null process is started Lucia sets the internal amplitude and phase pots to zero, the noise source is switched on, then the amplitude pot is moved through each of its 256 positions. At each position the returned signal level is measured and stored. These values are then reordered from lowest to highest and the indexes of the 8 lowest values stored in a new array (see column 1).
The first of these indexes is then written to the amplitude pot, the phase pot is then moved through each of its 256 positions, and the returned signal level measured. The phase pot index that generated the lowest signal level value is then stored as is the signal level value itself (see columns 2 and 3). This process is then repeated for each of the 8 stored amplitude pot indexes.

The result is three 8 value arrays, an arbitrary example is shown below:

Table 1: Null array example

Amplitude pot index	Phase pot index	Phase pot index signal level
2	4	-60 dB
4	3	-61 dB
5	4	-60 dB
7	4	-63 dB
0	8	-59 dB
1	2	-60 dB
2	1	-56 dB

The combination of phase pot and amplitude pot indexes that give rise to the lowest signal level to are then written to their respective pots and stored in non-volatile memory.



WARNING
during the null process high level audio tone is sent to the party-line circuit. Make sure all party-line headphone/ headset users have removed their headphones/ headsets prior to nulling.

Mic kill

Mic kill signals are sent to the 2 Wire intercom units prior to the null process beginning. When the LUCIA unit set to interface between Dante and Clear-Com units this is achieved by toggling the power on pin 2. When set to interface between Dante and RTS units this is achieved by transmitting 24 kHz tones on pins 2 and 3.

Call signal

The unit translates call signals between the Dante/AES67 network and party-line intercom units. The table below provides further information on this.

Call Signal Translation			
Dante/ AES67 Network Call Signal		**Party-Line Intercom**	**Call Signal**
20 kHz @ -20dBFs for 2 seconds	>>>> <<<<	RTS standard	DC on pin 3
	>>>> <<<<	Clear-Com standard	20 kHz on pins 2 and 3

Network Audio Mixers

The Beatrice Lucia uses the Broadway chipset from Audinate as its network audio interface. The variant of the Broadway that we use in the Lucia is 8 audio channels in and out. As only 4 audio channels are required for the two party-line interfaces we have 4 'spare' channels available. We also have some spare DSP capacity within the Lucia's DSP. So rather than waste these valuable network resources we've included a simple preset audio mixer with 4 audio inputs and 4 audio outputs to the network.

PRESET MIXER FORMAT

DANTE TRANSMITTER	Sum of Mix in 1-2	Sum of Mix in 3-4	Sum of Mix in 1-3	Sum of Mix in 1-4
DANTE RECEIVER				
Mix in 1	X		X	X
Mix in 2	X		X	X
Mix in 3		X	X	X
Mix in 4		X		X

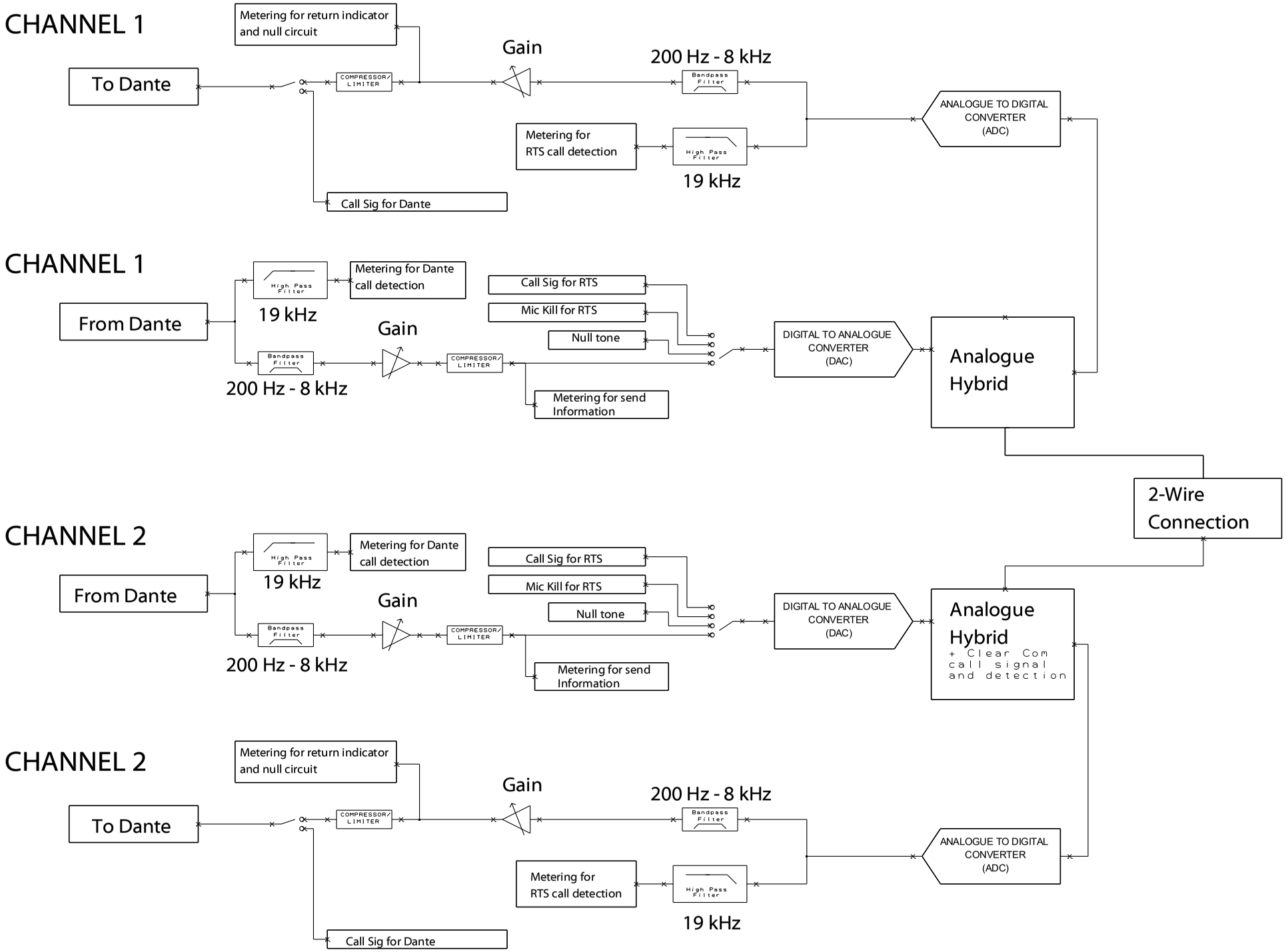
These preset network mixers can be used for anything you like. They do not have to be anything to do with your intercom system; they are just a set of mixers sitting on your Dante/ AES67 network.

To use them all you need to do is route the network audio circuits within your Dante/ AES67 setup that you wish to mix to the Dante receivers and then select the appropriate Dante transmitters for the mix output that you require.

For example say you want to add a program audio signal to the party-line A intercom talkback circuits to be sent to the attached party-line belt packs along with any network talkback signals. To do this in Dante controller you would:

1: Route the network talkback signal to Dante Receiver 'A'
2: Route the network program audio to Dante Receiver 'B'
3: Route Dante Transmitter 'Sum of A+B' to Dante Receiver 'Party-Line A CH1'

LUCIA AUDIO BLOCK DIAGRAM (analogue representation of digital circuits)



CONNECTING THE BEATRICE UNIT TO A DANTE NETWORK

The Beatrice units 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 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

Connecting Beatrice device to the network

The Beatrice unit 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.

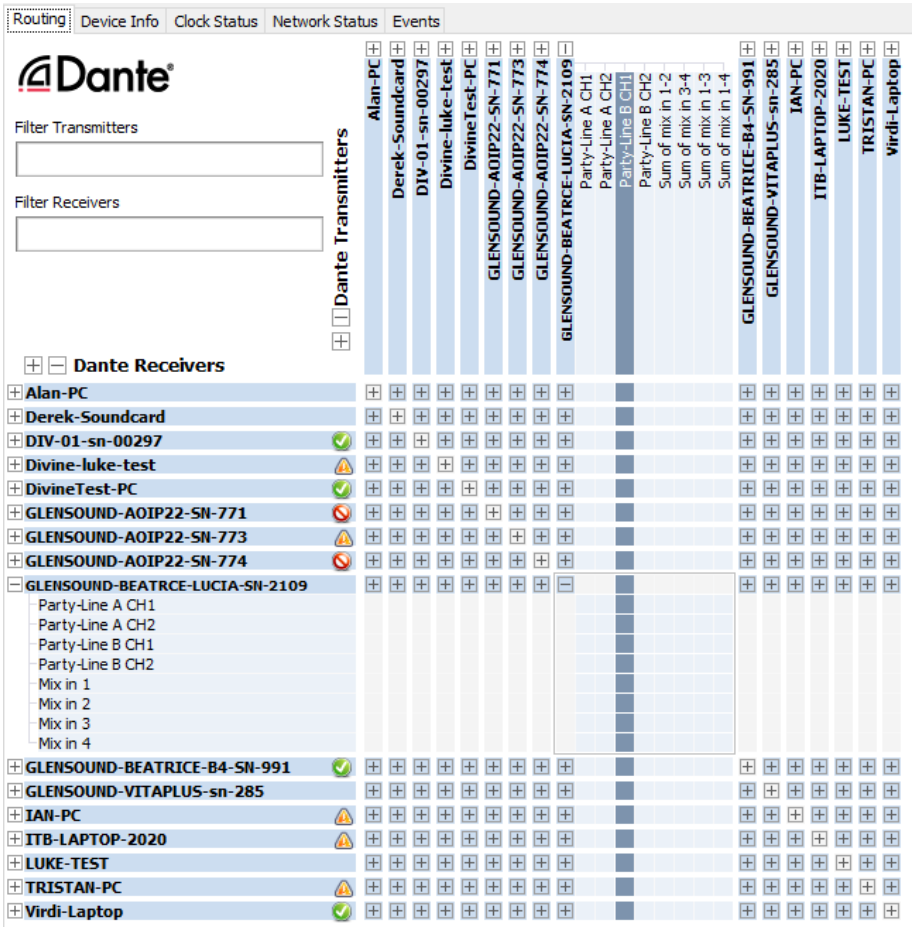
For more details of audio over IP network structure please visit www.audinate.com

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.

Running Dante Controller

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



The Beatrice LUCIA 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-BEATRICE-LUCIA-SN-XXXX’

Where ‘BEATRICE-LUCIA’ refers to the Glensound product i.e. Beatrice LUCIA.

The ‘SN-XXXX’ refers to the serial number of the Beatrice LUCIA 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 Beatrice LUCIA 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 ‘BEA-B4pl-xxXxXx’ whereby the ‘X’s refer to the devices MAC address.

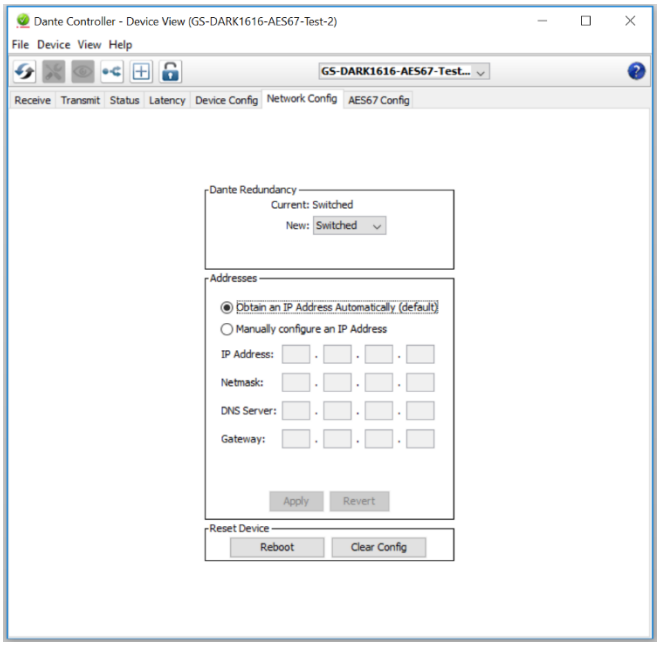
Device not showing up in Dante Controller

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.



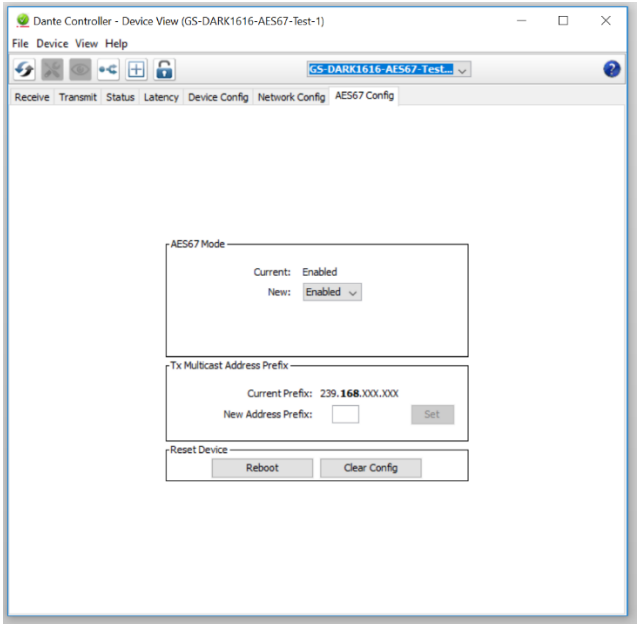
AES67 MODE

The Beatrice uses a chipset from Audinate called the Broadway 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.

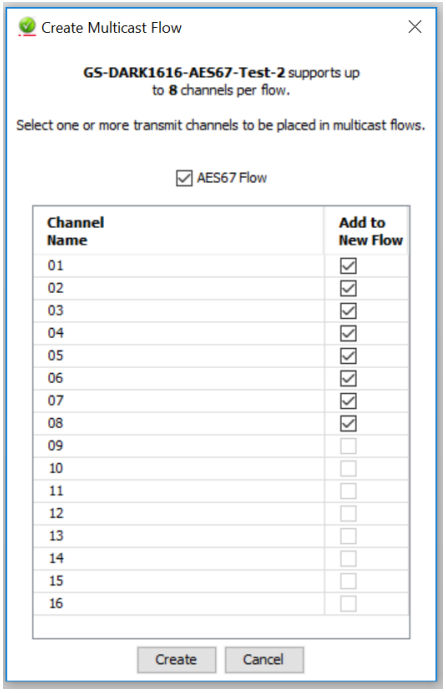


Once the AES67 drop down box has been enabled you'll have to reboot the Beatrice for the change to take effect. After the reboot go back to the AES67 tab and set the multicast prefix address to one that is suitable for your network.

Sending AES67 Audio

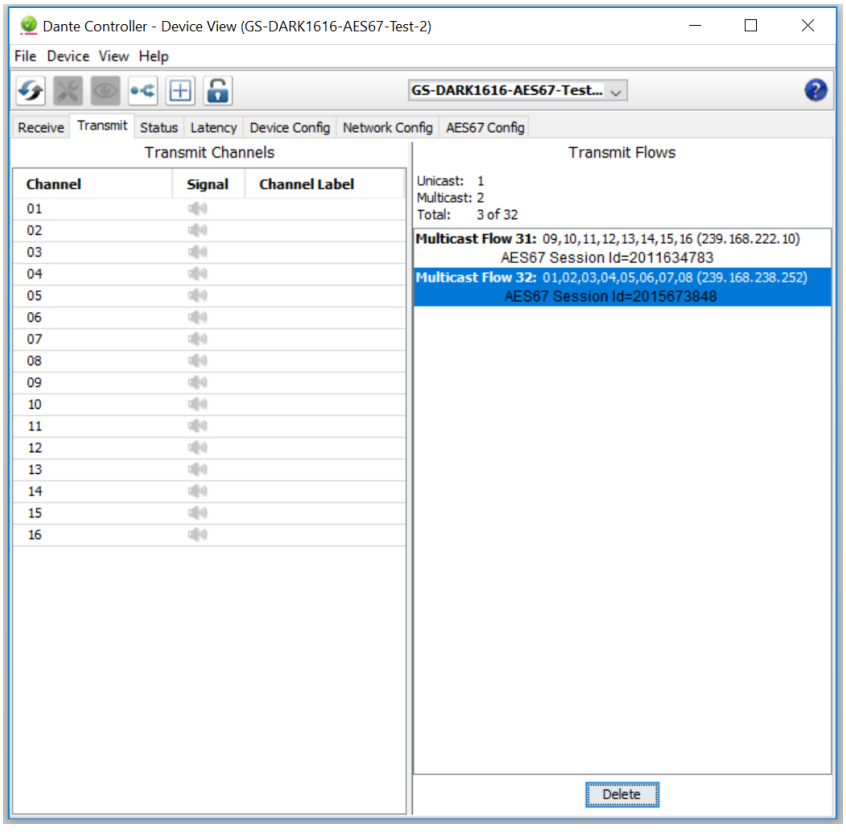
To transmit AES67 audio to the network a multicast flow must first be setup.

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



Tick the AES67 Flow check box, and then select 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

SMPTE 2110-30 MODE

The Broadway chipset from Audinate that is used for the network interface of the Beatrice Lucia has been made SMPTE 2110-30 compliant by Audinate.

However the only way of turning on SPTE 2110-30 and correctly setting it is by using Audinate's '*Dante Domain Manager*' for which a licence fee is payable.

For further details please see www.audinate.com

UPDATING THE BROADWAY CHIPSET

The Broadway Chipset is a device supplied by Audinate that does most of the processing for the actual Dante/ AES67 network audio streams. There is one Broadway Chipset in each Beatrice LUCIA. We supply special code (a .dnt file) that sets up/ initiates the Broadway 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.
Ion the Device View box open the Status Tab.

The ‘Product Version:’ shows the currently installed version of Broadway Chipset dnt code.

Updating the device

The firmware that runs in the Broadway 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 accidentality updating the wrong Dante device.

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 Lucia 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. Install DFuSE driver

   Once DFuSE is installed, navigate to the following location on your machine:

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

   You now need to run the following driver.
   - If your machine is 64 bit run ‘dpinst_amd64.exe’
   - If your machine is 32 bit run ‘dpinst_x86.exe’

   This will install the driver you need.

3. Download firmware



Figure 1 Example filename

Connect To A PC

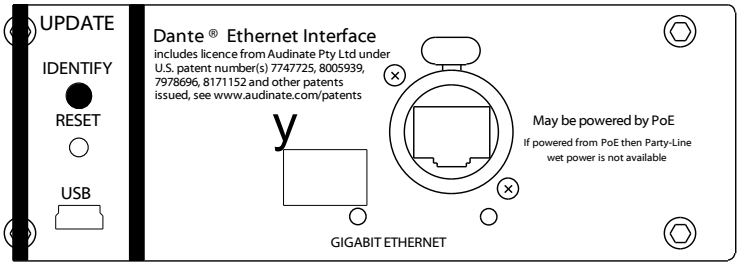


Figure 2 USB connector

Connect the Beatrice Lucia to the PC via the USB cable. The micro USB connector is located on the rear panel of the Beatrice Lucia.

4. Firmware update preperation

   To prepare the Beatrice Lucia 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 UDPATE 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 Lucia successfully entered DFU mode then it will appear as ‘STM Device in DFU Mode’ under the ‘Available DFU Devices tab’.

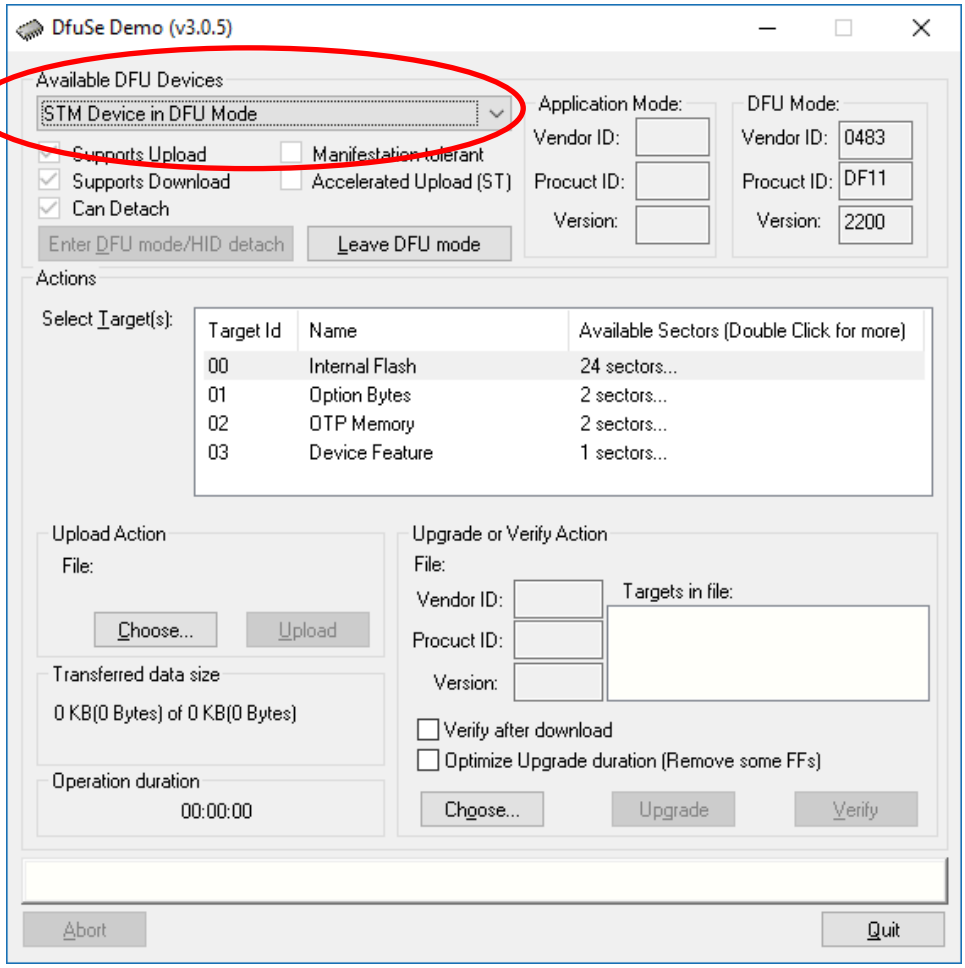


Figure 3 Device successfully recognised

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

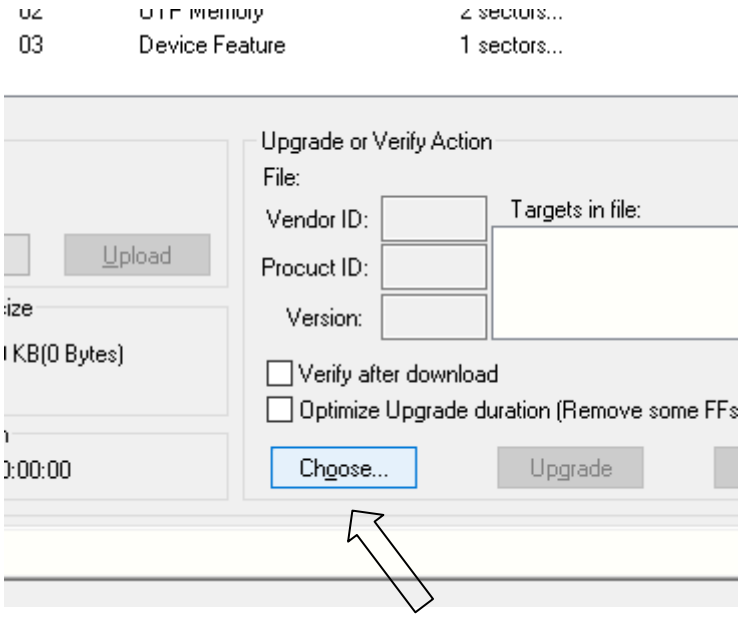


Figure 4 Choose .dfu file

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’.

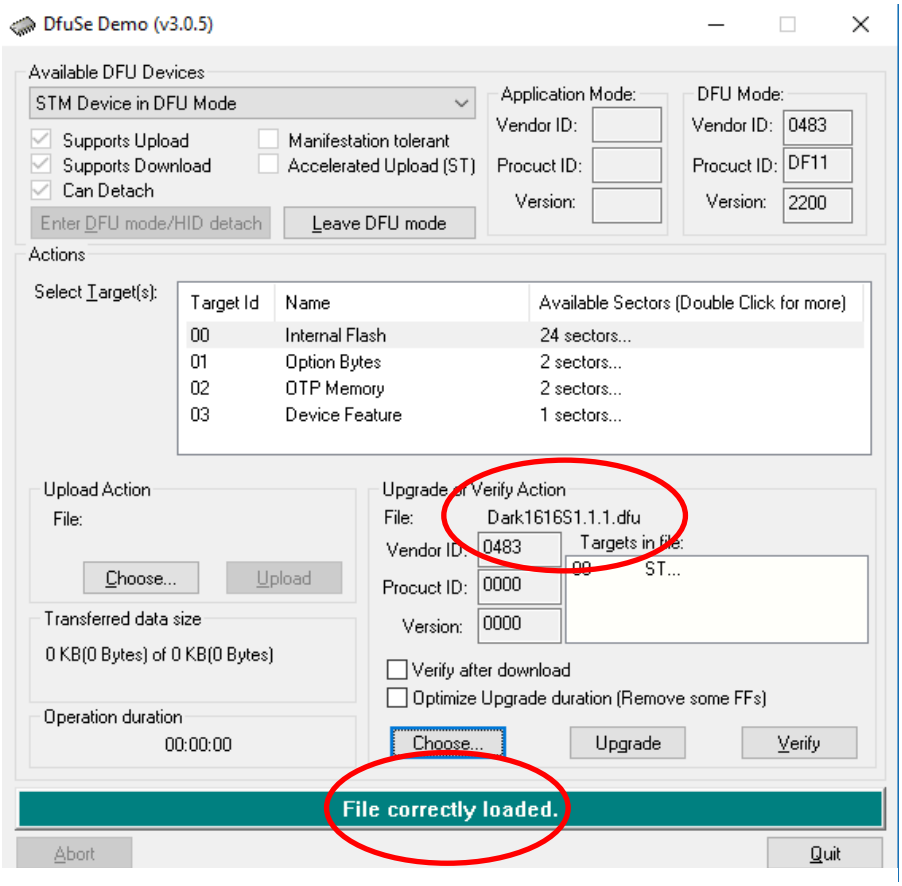


Figure 5 .dfu successfully loaded

6. Upgrading the Beatrice Lucia firmware

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

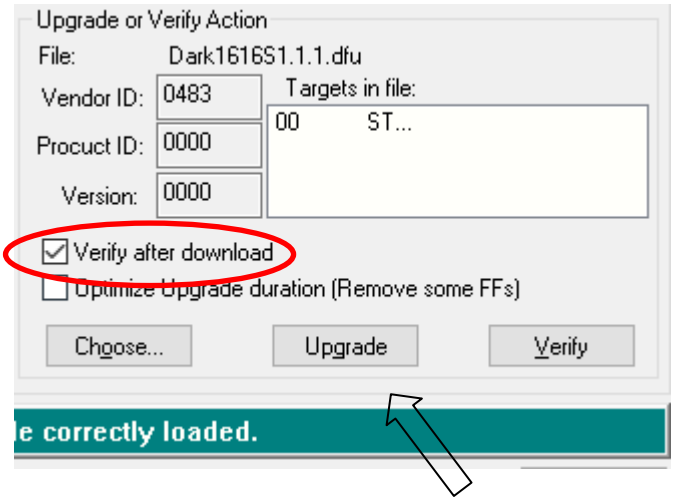


Figure 6 Upgrade

Click yes to proceed.

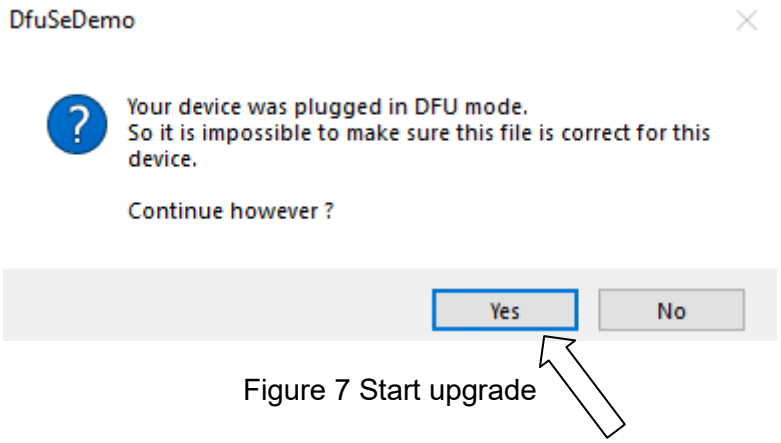


Figure 7 Start upgrade

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

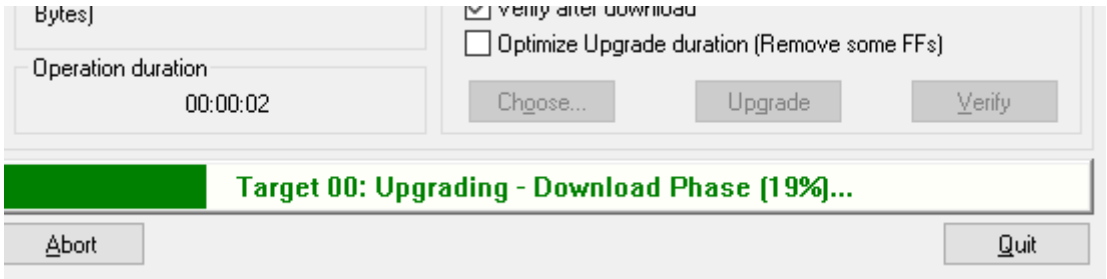


Figure 8 Upgrade status

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

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

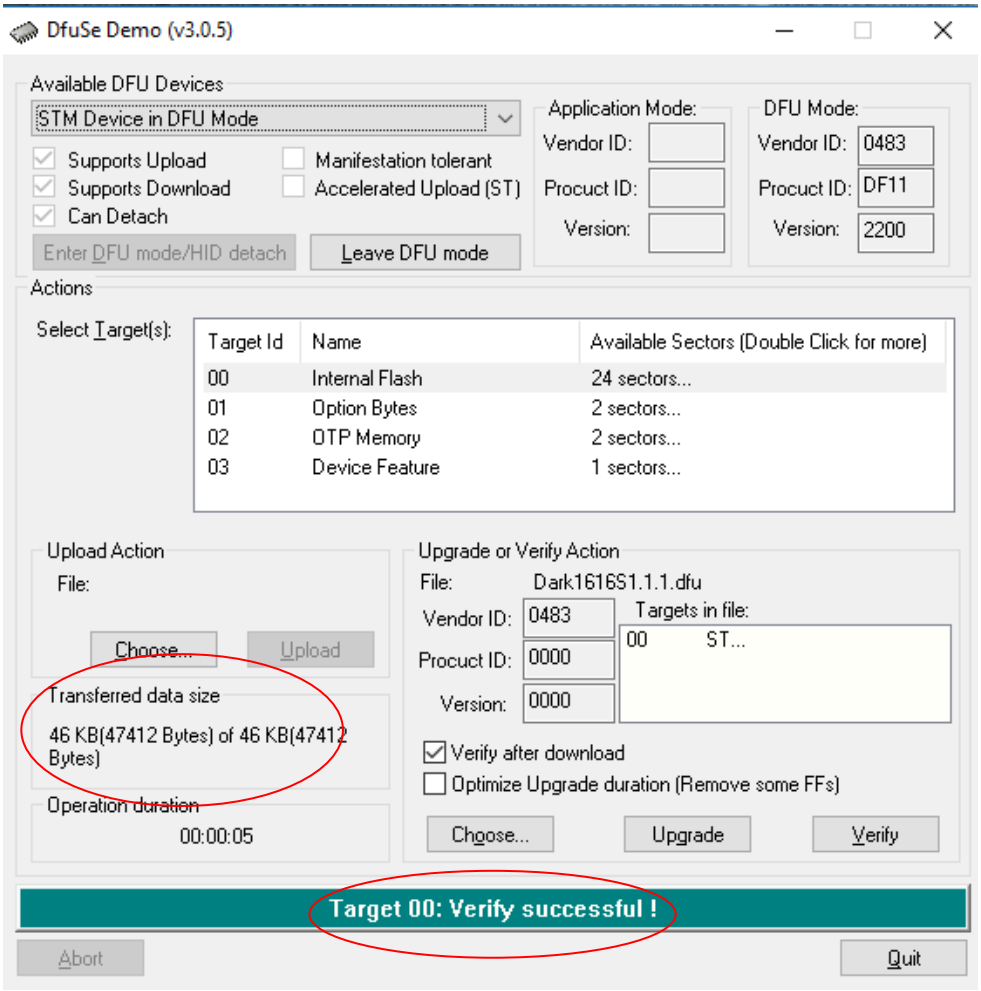


Figure 9 Successful upgrade!

7. Final steps

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

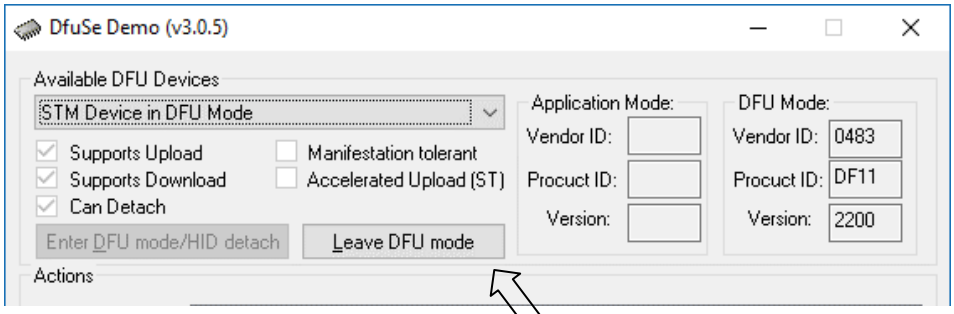


Figure 10 Final step

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

SPECIFICATIONS

NETWORK/ Dante®

Physical Interface
1 off RJ45 & 1 off SFP slot
(Can be set to work in redundant mode)

Audio
48kHz 24 Bit 8 channels to/from network

Transfer Rate
1000 Mbps

Dante® Chipset
Broadway

AES67 Compliant
AES67 compliant

SMPTE 2110-30 Compliant
2110-30 compliance via use of Dante Domain Manager (licence fees apply see audinate.com)

PHYSICAL

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

Size
19" wide, 1RU high, 225mm deep

Weight
2.1Kg 4.85lb (fitted with 2 x party-lines)

Shipping Weight
3.5Kg 7.7lb

Shipping Size
62 x 42 x 12 cms

Shipping Carton
Rugged export quality cardboard

ENVIRONMENTAL

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

Storage Temperature
-20 to +70 °C (-4° to 158°F)

Relative Humidity
0 to 95% non-condensing

POWER

Mains Voltage
100 - 240 VAC +/-10%

Mains Frequency
50 to 60 Hz

Power over Ethernet (PoE)
May be powered by PoE on Copper Port
Complies to: IEEE 802.3af-2003
Classification Class 0

Consumption
Mains <150 Watts PoE <15 Watts

Redundancy
PoE to Mains = Seemless
Mains to PoE = Partial (wet power not supported by PoE)

Power On LEDs
Bright Blues

PARTY-LINE AUDIO

Frequency Response
Network to Party Line <-2dB 230Hz to 8.1kHz (-3dB @ 200Hz & 9.1kHz
Party Line to Network <-2dB 230Hz to 8.5kHz (-3dB @ 200Hz & 8.7kHz

Gain Control
+/- 15dB to & from Party-Line/ Network

Line Up Levels (@ unity gain)
-18dBFs from Network = -10dBu on Party-Line
-10dBu from Party-Line = -18dBFs on Network

Distortion (THD+N)
Network to Party-Line >= 0.015% (Pin2)
Party-Line to Network >= 0.016% (Pin 2)

Signal To Noise @ Line Up
Network to Party-Line >= -80dBu (Pin 2)
Party-Line to Network >= -93dBFs (Pin 2)

PPM LED Levels

From Network To Party-Line	From Party-Line to Network
-5 dBu	-12 dBFs
-11 dBu	-18 dBFs
-17 dBu	-24 dBFs
-25 dBu	-30 dBFs

Maximum Signal Level
Pin 2 & Pin 3: = +7dBu

Trans-Hybrid Loss (amount of null in 200R termination)
Pin 2 Dry Mode:
-53dB@300Hz, -53dB@1kHz, -56dB@8kHz
Pin 3 Dry Mode:
-56dB@300Hz, -60dB@1kHz, -63dB@8kHz
Pin 2 Wet Mode:
-47dB@300Hz, -48dB@1kHz, -67dB@2.7kHz -32dB@8kHz
Pin 3 Wet Mode:
-39dB@300Hz, -47dB@1kHz, -52dB@2kHz -46dB@8kHz

PARTY-LINE GENERAL

Compatibility
Clear-Comm/ TecPro standard single channel
RTS standard single & unbalanced two channel

Party-Line Impedance
Dry mode: > 10 kOhms
Clear-Comm Wet mode: = 200 Ohms
RTS wet mode: 200/ 400 Ohms (selectable)

Power (Wet Mode)
Voltage: = 29 Volts DC
Max current: = 0.75 ampere (each party-line)

Nulling Cable Length
Max cable length: 1 km

Nulling Impedance Range
100 - 200 Ohms

Call Signals
RTS mode: 20 kHz, +/-1%
Clear-Com mode: 7 Volts DC on Pin 3, +/-5%

INCLUDED ITEMS

Handbook
By download

RJ45 Network Cable
2 metre Cat5 RJ45plug /RJ45plug cable

Mains Cable
2 metre IEC (UK & Europe Only)

E & OE