ATHENS 2

Twin RIAA Turntable Preamplifier with Network Audio Outputs

PRODUCT DETAILS

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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

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PRODUCT WARRANTY:

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

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

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

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

CE

EU DECLARATION OF CONFORMITY FOR:

ATHENS 2

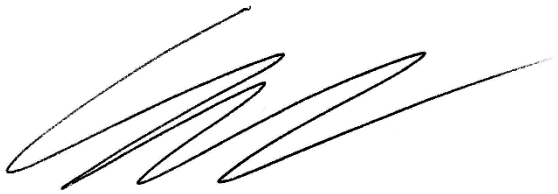
Twin RIAA Preamp with Dante/ AES67 outputs

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: 15/01/2019

RoHS DIRECTIVE

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

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

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

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT REGULATIONS 2006 (WEEE)

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

WEE/JJ0074UR

GLENSOUND ATHENS 2

Handbook Contents

Issue 1

Description Page No.

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OVERVIEW

Athens 2 is twin RIAA phono preamplifier with Dante® and AES67 network audio outputs.

It is a mains powered device with two high quality stereo turntable preamplifiers inputs. Each preamplifier has its own set of preset controls to allow accurate matching of the Athens 2 input circuitary to the turntable's cartridge. Input gain, input impedance and input capacitance can all be set for each of the two stereo inputs.

The Athens 2 is suitable for use with both moving coil and moving magnet cartridges.

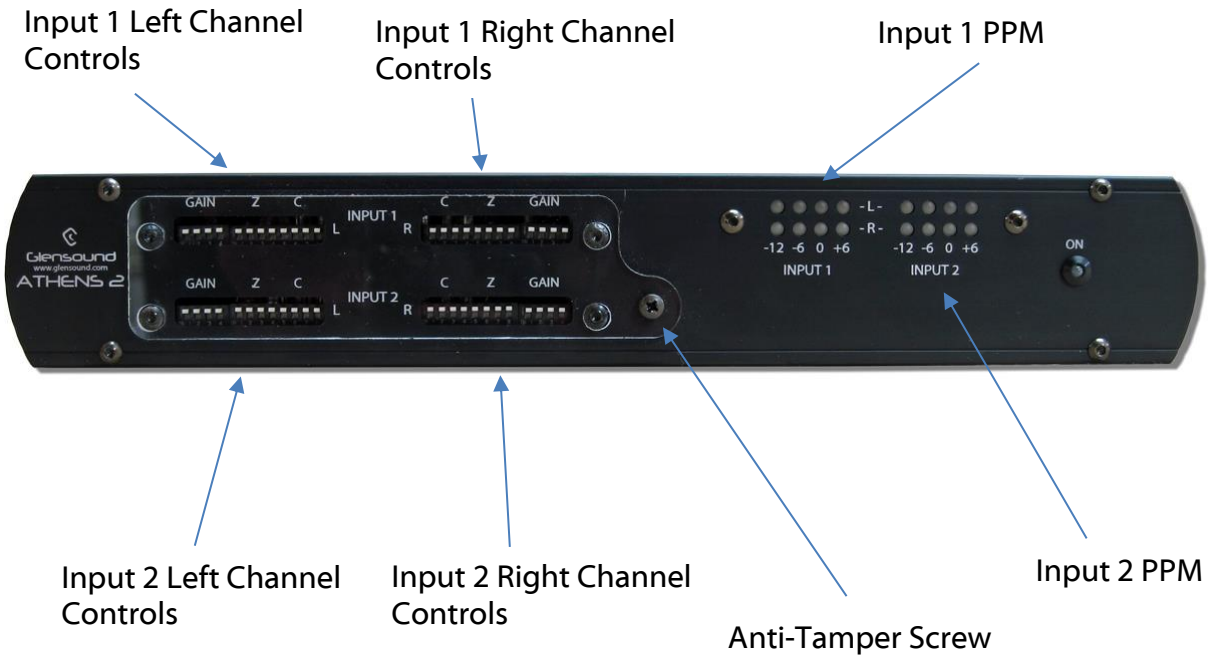
To provide the best possible equalisation of the RIAA curve the preamps feature high quality high tolerance analogue circuitary followed by a high quality analogue to digital converter and DSP. The combination of the analogue circuitary and DSP provides a very good quality RIAA equalisation resulting in a very flat output.

For reliability, redundant network audio outputs are provided on two copper Neutrik Ethercon Ethernet ports and also on two SFP slots for fibre Ethernet connectivity.

The name Athens 2 was chosen for our RIAA preamp as Dante Alighieri cites the city of Athens as a place of good governance and mentions its contrtibution and commitment to civil law. It is of course very important that a good RIAA preamplifier provides perfect governance of the audio and follows the RIAA equalisation law perfectly.

ATHENS 2 PANEL LAYOUT

Front Panel



Front Panel Features

1. **Input 1 Left Channel Controls**

   These 12 preset dip switches provide controls to adjust the input gain, the input impedance and the input capacitance for the left channel input of input 1.

   Please see the cartridge setup section of this handbook for detailed information.

2. **Input 1 Right Channel Controls**

   These 12 preset dip switches provide controls to adjust the input gain, the input impedance and the input capacitance for the right channel input of input 1.

   Please see the cartridge setup section of this handbook for detailed information.

3. **Input 1 PPM**

   This 4 LED per channel PPM provides indication of the output level of input 1 of the Athens 2 preamplifier. The marked scale is in dBu and digital network output levels are set such that 0dBu = -18dBFs.
   If the gain is set correctly during normal use you would expect the +6 LED to illuminate occasionally

4. **Input 2 Left Channel Controls**

   These 12 preset dip switches provide controls to adjust the input gain, the input impedance and the input capacitance for the left channel input of input 2.

   Please see the cartridge setup section of this handbook for detailed information.

5. **Input 2 Right Channel Controls**

   These 12 preset dip switches provide controls to adjust the input gain, the input impedance and the input capacitance for the right channel input of input 2.

   Please see the cartridge setup section of this handbook for detailed information.

6. **Anti-Tamper Screw**

   The clear plastic anti-tamper shield is fitted to prevent un-authorised changes of the Athens 2 input parameters. To gain access to the dip switches then the Anti-Tamper screw must first be removed to allow removal of the anti-tamper shield.

7. **Input 2 PPM**

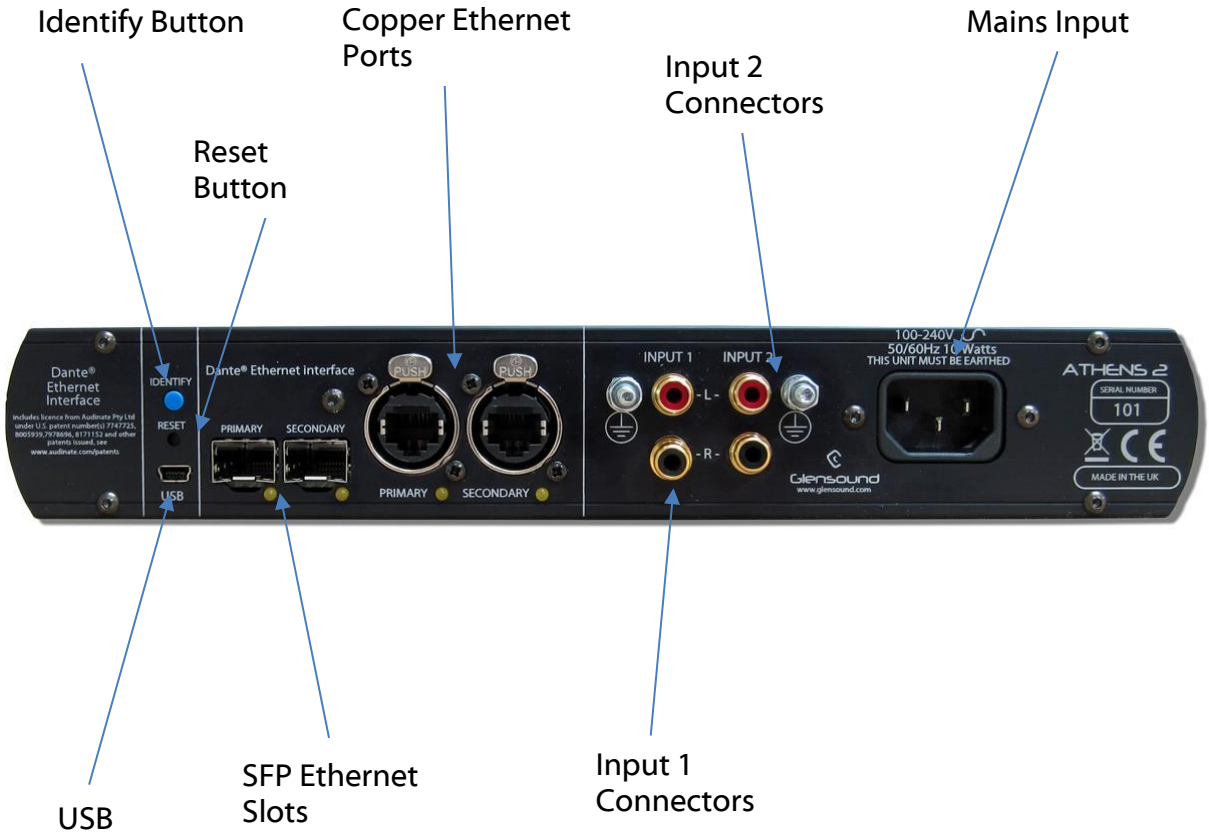
   This 4 LED per channel PPM provides indication of the output level of input 1 of the Athens 2 preamplifier.

   The marked scale is in dBu and is digitally referenced such that on the network outputs 0dBu = -18dBFs.

   If the gain is set correctly during normal use you would expect the +6 LED to illuminate occasionally.

   If however you are using the -24dBFs output circuits then the front panel PPM will read 6dB too high and the -6dB LED should become your lineup position.

Rear Panel



Rear Panel Features

8. **Identify Button**

   This is used in combination with the reset button during software updates…..see updating firmware for further details.

9. **Reset Button**

   This is used in combination with the Identify button during software updates…..see updating firmware for further details.

10. **Copper Ethernet Ports**

    These 2 copper RJ45 Ethernet ports can accept standard RJ45 cables or Neutrik Ethercons. Only one port is required to be connected to your network to correctly pass Dante®/ AES67 network audio, however both the primary and secondary ports can be used if a redundant network topology is in use.

    Both ports are gigabit Ethernet and the LEDs flash to indicate data is being correctly communicated with a switch.

11. **Input 2 Connectors**

    These 3 connectors are the audio input circuits from the turntable. Two of the connectors are the left/ right audio circuits and these are standard RCA (sometimes called phono) connectors.

    The third connector is a 4mm screw terminal used for an audio ground circuit. If the attached turntable has an equivalent ground/ earth connector then the two should be connected.

12. **IEC Mains**

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

    There is an internal fuse and maximum current consumption is 10 Watts.

13. **USB Connector**

    This Mini USB connector is used for attaching the Athens 2 to a PC for updating its firmware. …..see updating firmware for further details.

14. **SFP Ethernet Slots**

    These 2 SFP Ethernet slots can accept most standard SFP (GBIC) modules. Only one port is required to be connected to your network to correctly pass Dante®/ AES67 network audio, however both the primary and secondary ports can be used if a redundant network topology is in use.

    Both ports are gigabit Ethernet and the LEDs flash to indicate data is being correctly communicated with a switch.

15. **Input 1 Connectors**

    These 3 connectors are the audio input circuits from the turntable. Two of the connectors are the left/ right audio circuits and these are standard RCA (sometimes called phono) connectors.

    The third connector is a 4mm screw terminal used for an audio ground circuit. If the attached turntable has an equivalent ground/ earth connector then the two should be connected.

CARTRIDGE SETUP

For best results it is important to carefully setup the front panel dip switch (input channel controls) for both channels of both inputs.

Most cartridge manufacturers supply information such as the recommended load impedance and the recommended load capacitance. The Athens 2's input should be set to match these recommended figures.

IMPORTANT NOTE: Input 1's left and right channels should be setup identically and input 2's left and right channels should also be setup identically.

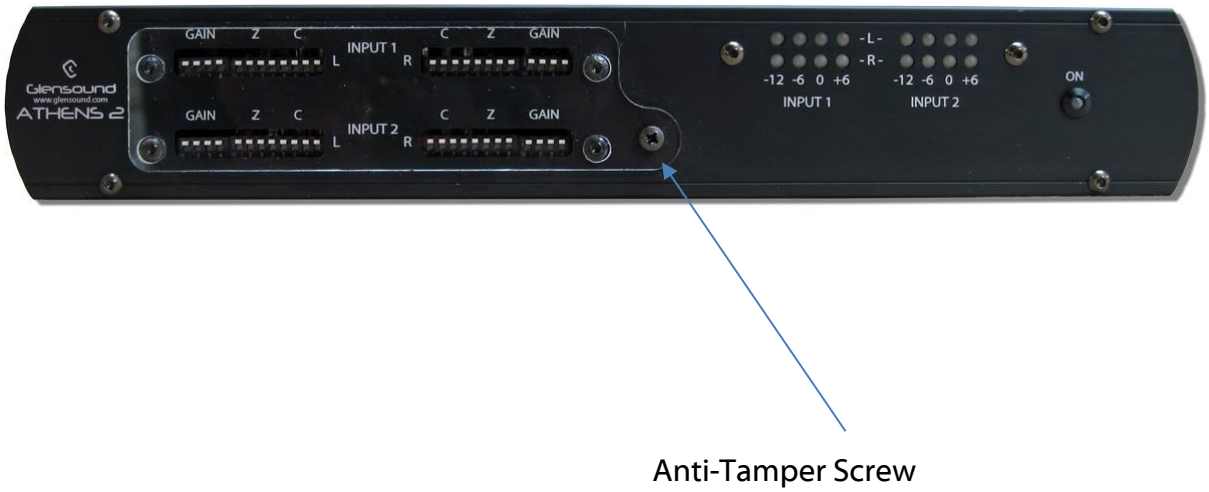
Available Controls

Each input has 3 sets of controls.

1) G…Gain….this adjust the gain of the preamplifier
2) Z…Impedance….this sets the input impedance
3) C…Capacitance….this sets the input capacitance

First Remove The Anti-Tamper Screen

Before adjusting the setup dip switches the Anti-Tamper screen must be removed by unscrewing the Anti-Tamper screw (this has a standard pozi drive head).



Anti-Tamper Screw

Gain Settings

NOTE: Please set input impedance and input capacitance prior to setting the gain.

NOTE: Only 1 gain dip switch should be on at any time for gain settings.

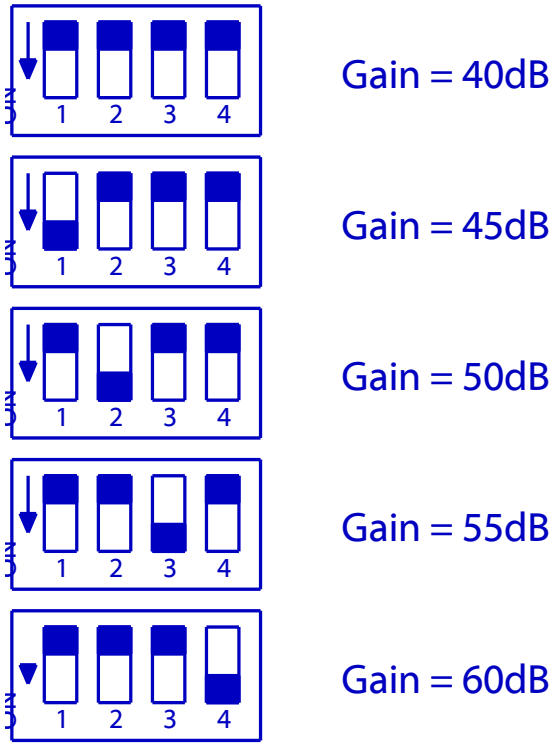
The quick and simple way of setting the gain is to connect your turntable and play a record then adjust the gain dip switches such that the PPM only ever occasionally peaks at +6.

Cartridge manufacturers usually provide output level information by describing the output voltage (i.e. 3.5mV (@1 kHz, 5 cm/sec)).

The table below shows average gain settings in dB required on the Athens 2 for cartridge output level in mV. This table should be used as guidance only.

Cartridge Output level @ 5 cm/sec	Gain Setting Of Athens 2
< 1 mV	60 dB
1 to 2 mV	55 dB
2 to 3 mV	50 dB
3 to 4.5 mV	45 dB
> 3.5mV	40 dB

The picture below shows the position of the gain dip switches (marked as ‘G’ on the panels) required to achieve specific gain levels.



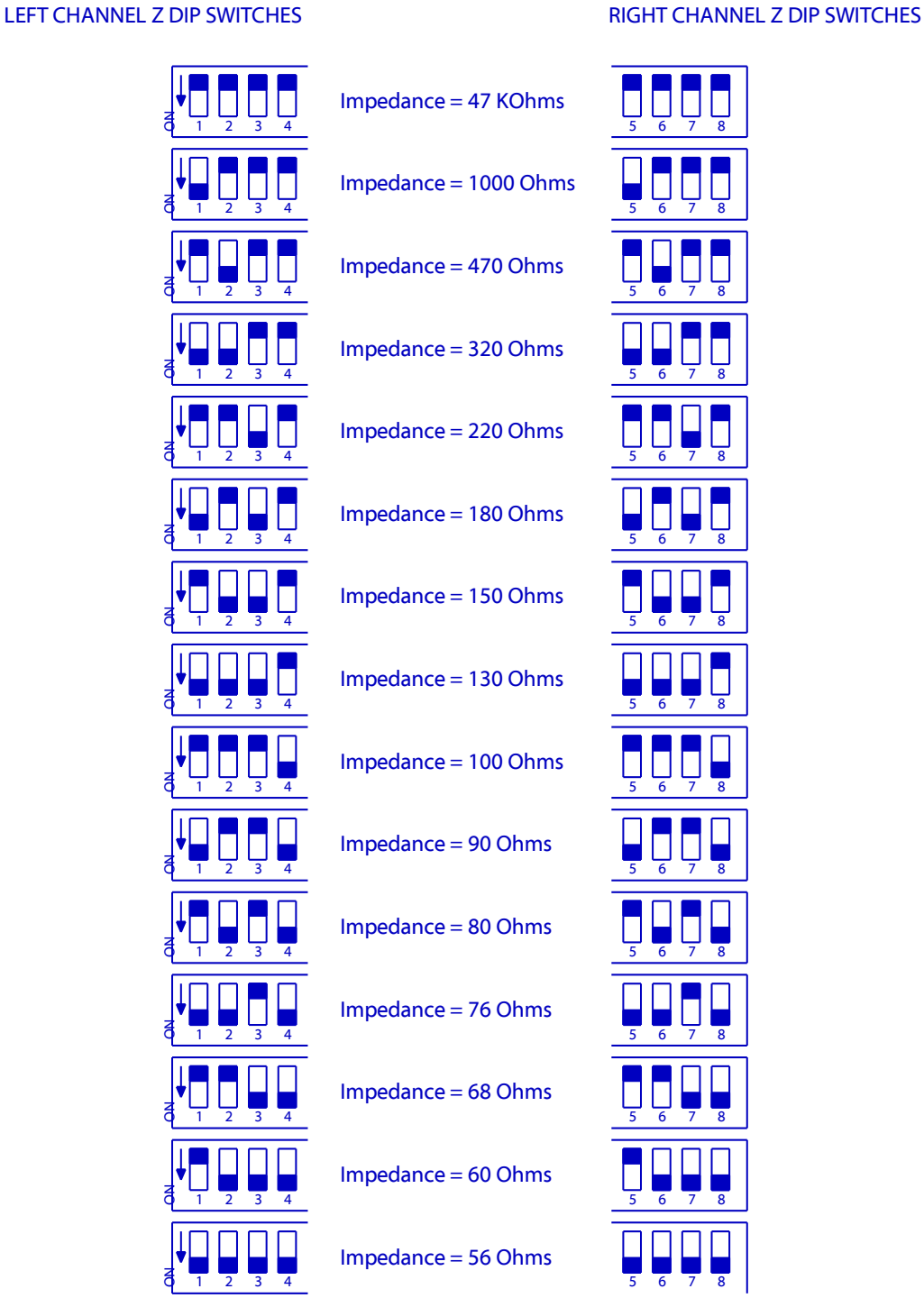
Input Impedance Settings

Most cartridge manufacturers provide the recommended load impedance for their cartridges. The Athens 2's inputs should be set to match this recommended figure as closely as possible.

4 dip switches adjust the input impedance and more than one dip switch can be turned on at the same time.

The 4 dip switches that adjust the input impedance are marked on the panel as 'Z'.

The picture below shows the required position of the Z dip switches for specific input impedances.



Input Capacitance Settings

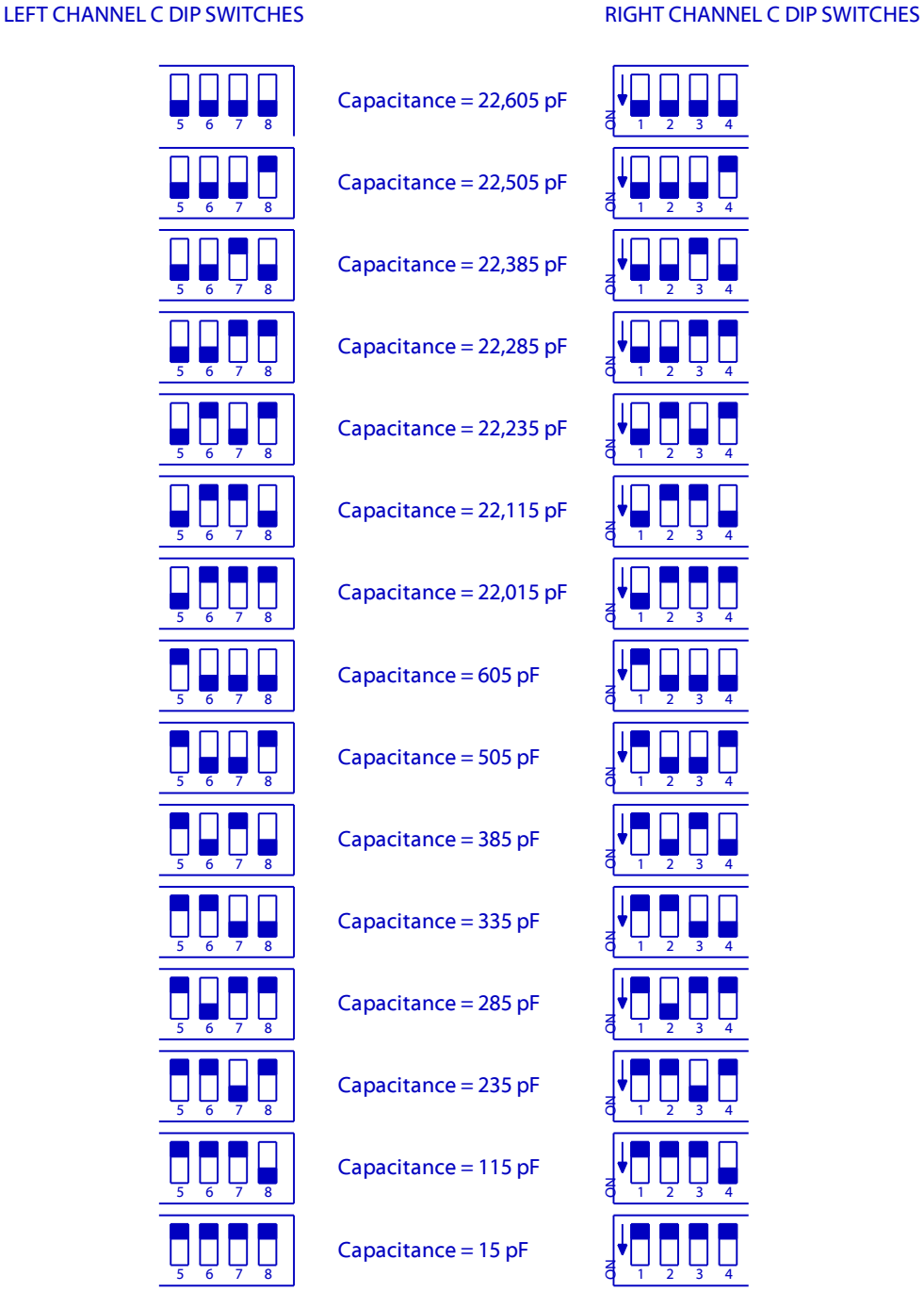
If you're using a Moving Magnet cartridge then the manufacturer will provide the recommended load capacitance. The Athens 2's inputs should be set to match this recommended figure as closely as possible.

If you're using a Moving Coil cartridge then the input capacitance should be set to minimum (15 pF (all capacitance dipswitches off))

4 dip switches adjust the input capacitance and more than one dip switch can be turned on at the same time.

The 4 dip switches that adjust the input capacitance are marked on the panel as 'C'.

The picture below shows the required position of the C dip switches for specific input capacitances.



NETWORK dBFs LEVELS

The Athens 2 provides 2 separate stereo network audio outputs for each of the 2 input preamplifiers.

One of these stereo outputs references 0dBu = - 18dBFs

The other of these stereo outputs references 0dBu = -24dBFs

Please note the front panel PPM is set for 0dBu = -18dBFs and if you are working in an environment utilising 0dBu = -24dBFs then the PPM will read too high and the -6dB LED will actually represent 0dB.

CONNECTING THE ATHENS 2 TO A DANTE® NETWORK

The Athens 2 is a 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 Athens 2 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 Athens 2 To The Network

Athens 2s 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 Athens 2 from within the Dante controller and route its' audio circuits.

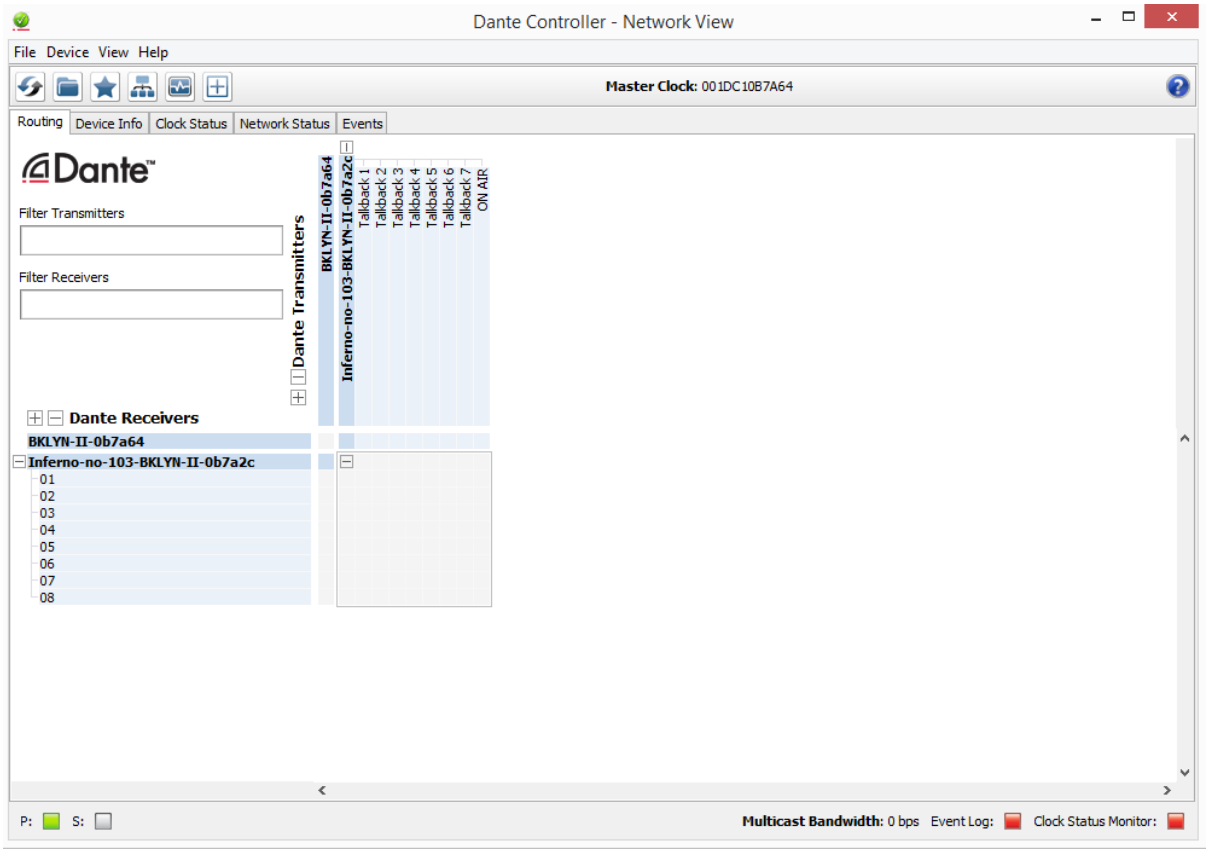
Audio Over IP Network

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 Athens 2 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:

‘Athens2-snXXX’

The ‘–snXXX’ refers to the serial number of the Athens 2 unit which can be found printed on the rear of the unit.

Note if you upload a new DNT file or clear the devices config then the name will change to Athens 2XX-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.

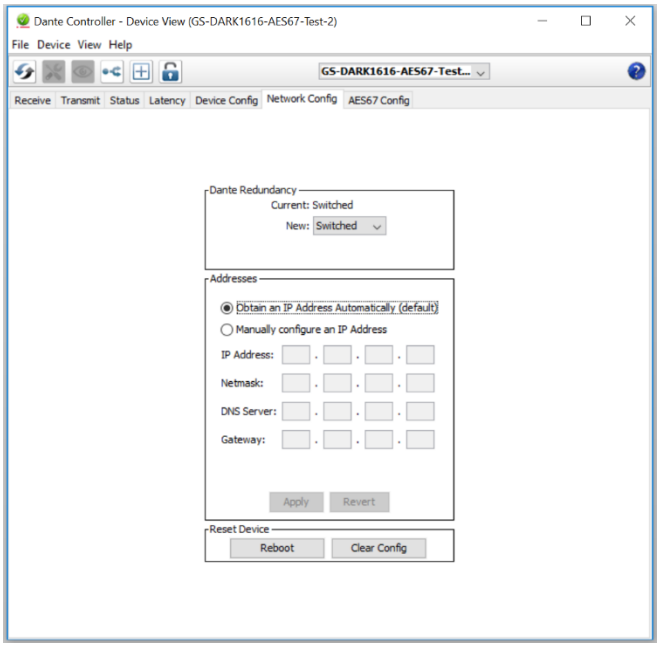
Device Not Showing Up In Dante Controller

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.



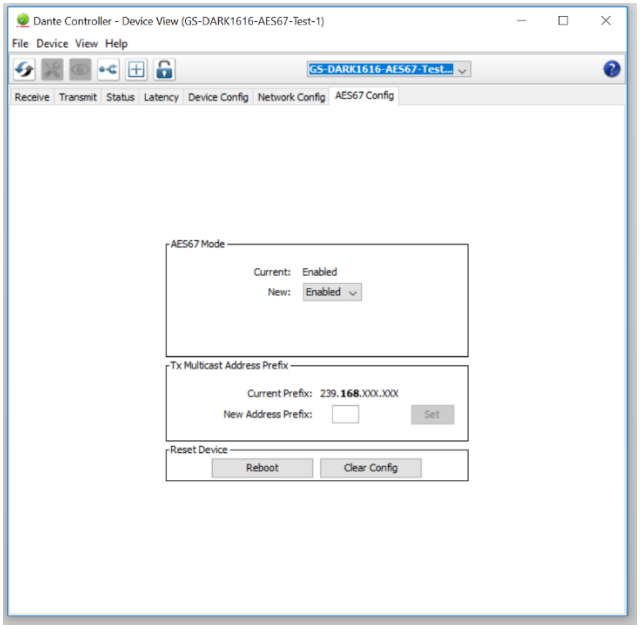
AES67 MODE

The Athens 2 uses a Brooklyn 2 module from Audinate 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 Athens 2 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 Athens 2 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 Athens 2 to open the Device View window where you will find an AES67 tab to enable AES67 support.

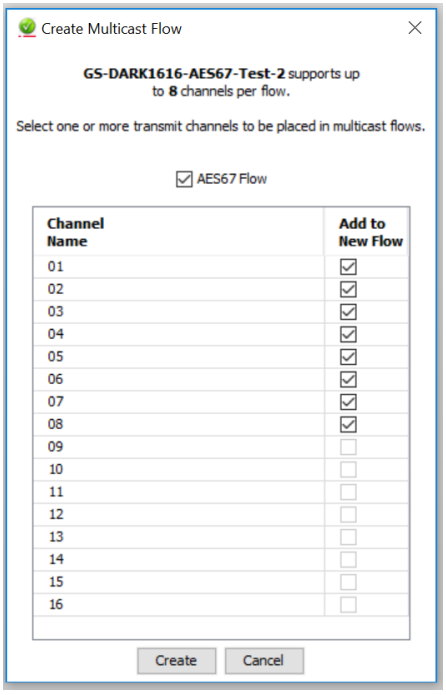


Once the AES67 drop down box has been enabled you'll have to reboot the Athens 2 for the change to take effect. After the reboot go back to the AES67 tab and set the multicast prefix address to one that is suitable for your newtork.

2. Sending AES67 Audio

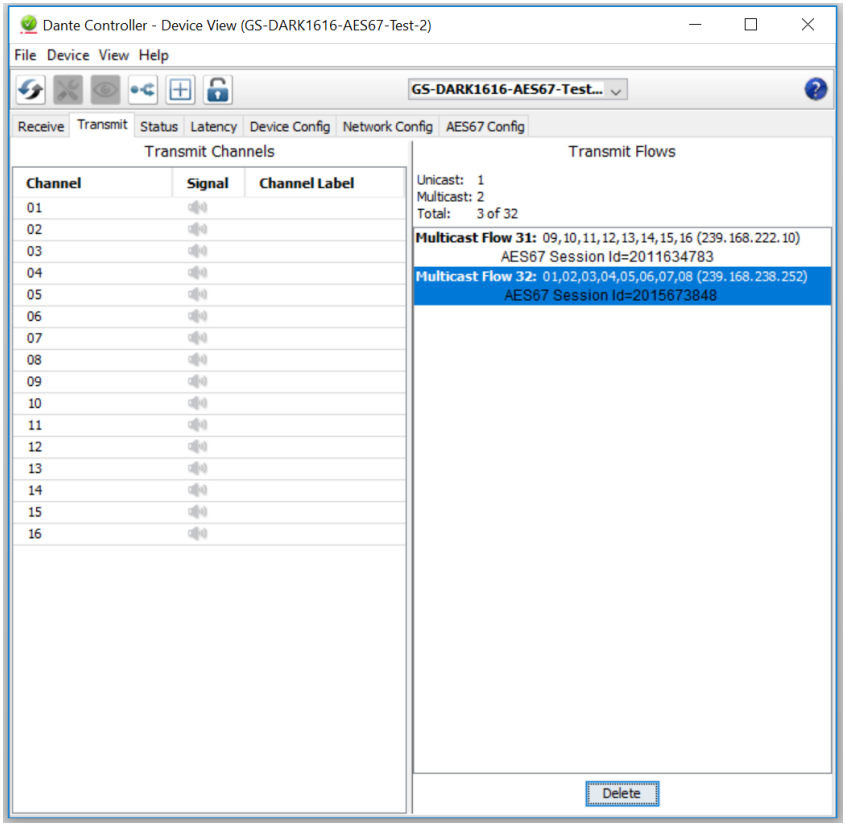
To transmit AES67 audio to the network a multicast flow must first be setup.

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 4 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.



UPDATING FIRMWARE

The Athens 2 units are a digital audio system comprising of a Micro Controller and ADC and DSP. These items run software and may need to be occasionally updated.

Equipment needed

- A windows based PC
- USB Type A to Micro B cable
- A copy of 'DfuSe Demo' software
- The latest firmware from Glensound
- The Athens 2 unit to update

Instructions

1. Download and install DfuSE Demo

   'DfuSE Demo' is a firmware updating tool that is required for loading new firmware on to the Athens 2.

   It can be downloaded from the S®icroelectronics website found here: https://goo.gl/AbzhsA. It is the file named "STSW-S®32080".

   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 Athens 2 can be found on the Glensound website, under the product page for Athens 2 device. Once you have downloaded the file, place it in a folder or location of your choice.

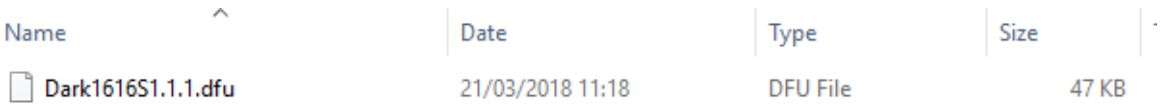


Figure 1 Example filename

3. Connect To A PC

   Connect the Athens 2 to the PC via the USB cable. The Micro USB connector is located on the rear panel of the unit.

4. Firmware update preperation

   To prepare the Athens 2 for a firmware update;

   1. Press and hold down the Enter Setup button
   2. Power on the unit
   3. Release the Enter Setup button

   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 Athens 2 successfully entered DFU mode then it will appear as 'S® Device in DFU Mode' under the 'Available DFU Devices tab'.

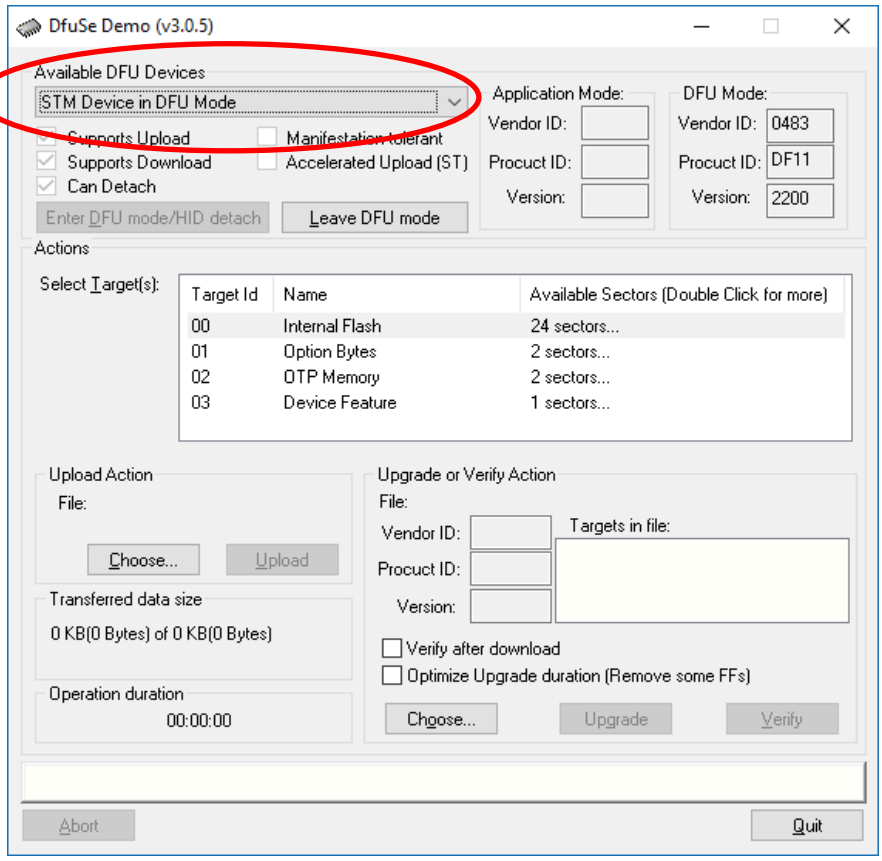


Figure 2 Device successfully recognised

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

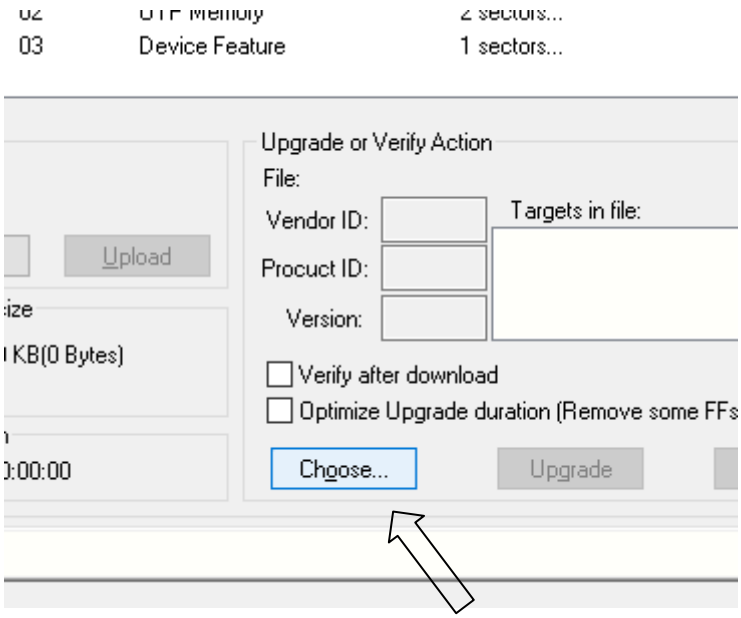


Figure 3 Choose .dfu file

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. Upgrading the Athens 2 firmware

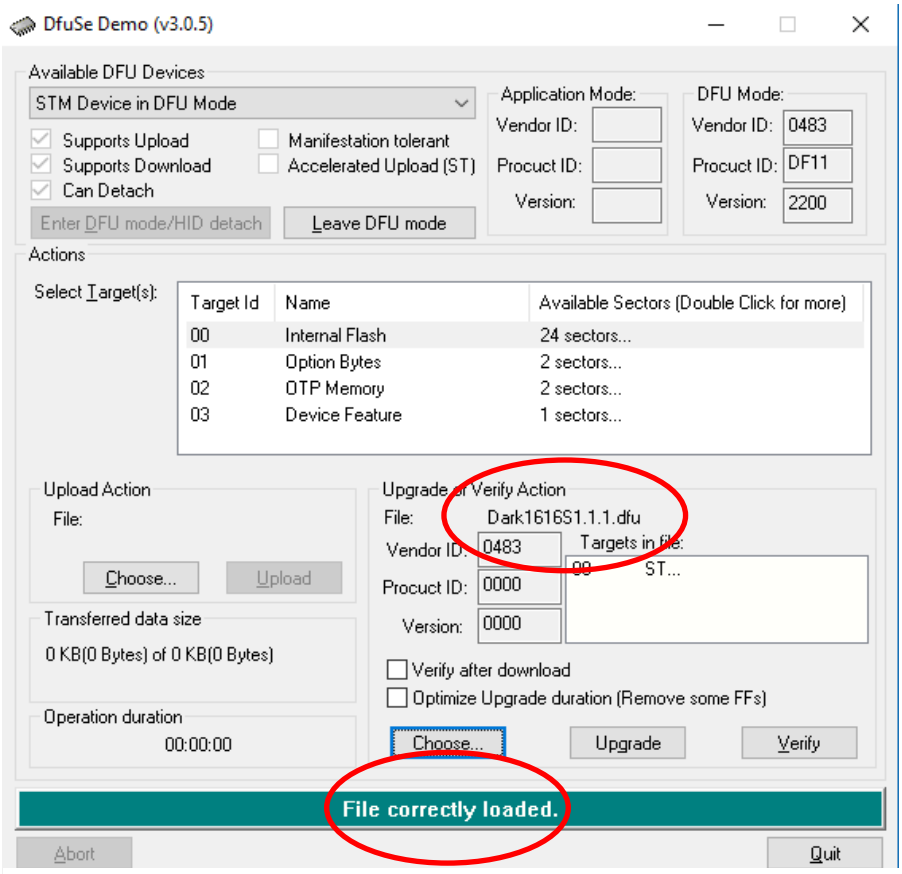


Figure 4 .dfu successfully loaded

The firmware is now ready to be put on to the Athens 2. Tick the ‘Verify after download’ box first and then click ‘Upgrade’.

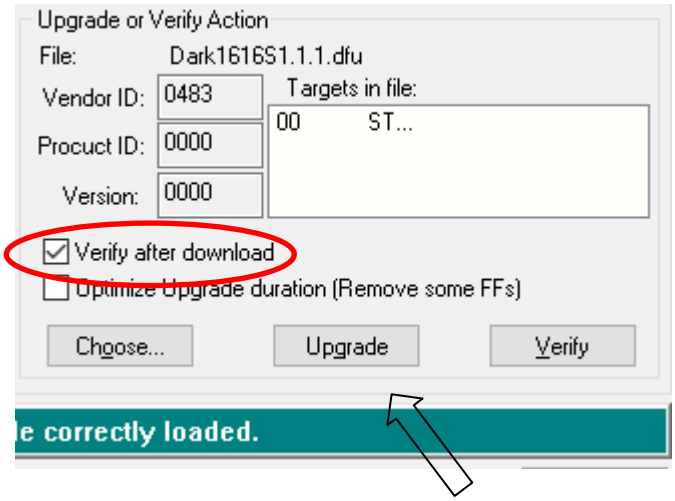


Figure 5 Upgrade

Click yes to proceed.

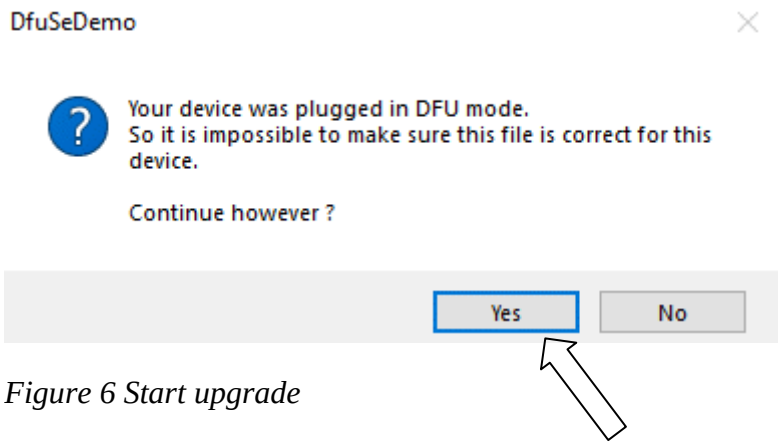


Figure 6 Start upgrade

The progress bar along the bottom will show the status of the operation.If the operation was successful, DfuSe Demo will report that “Target 00: Verify Successful!”.

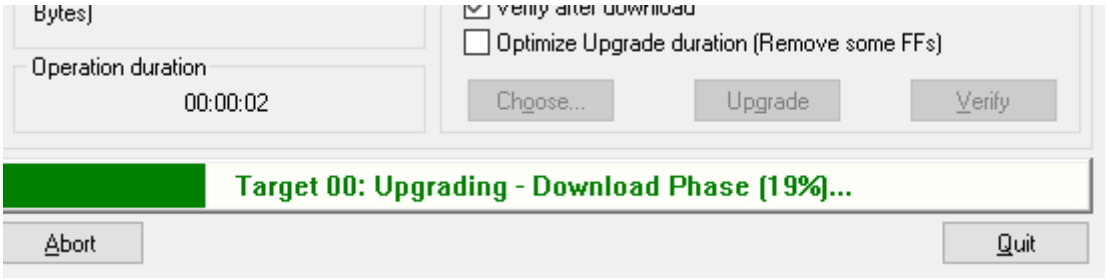


Figure 7 Upgrade status

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

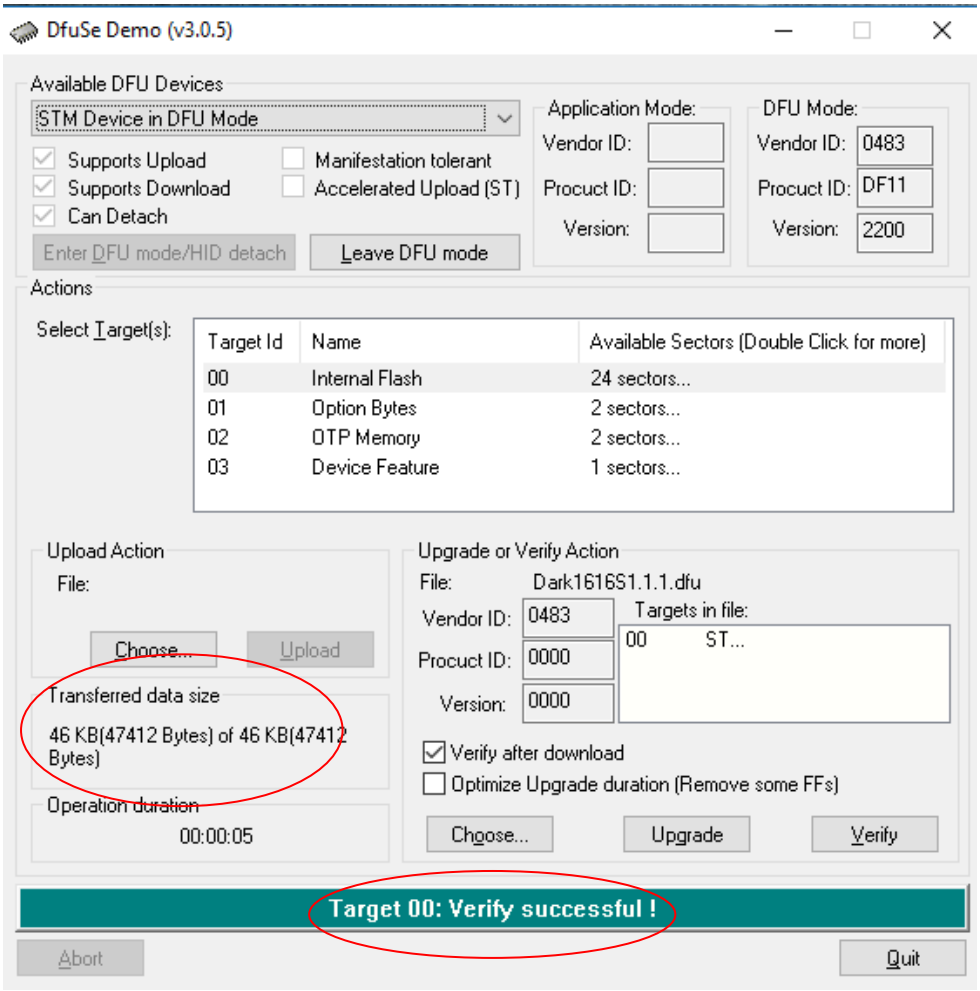


Figure 8 Successful upgrade!

7. Final steps

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

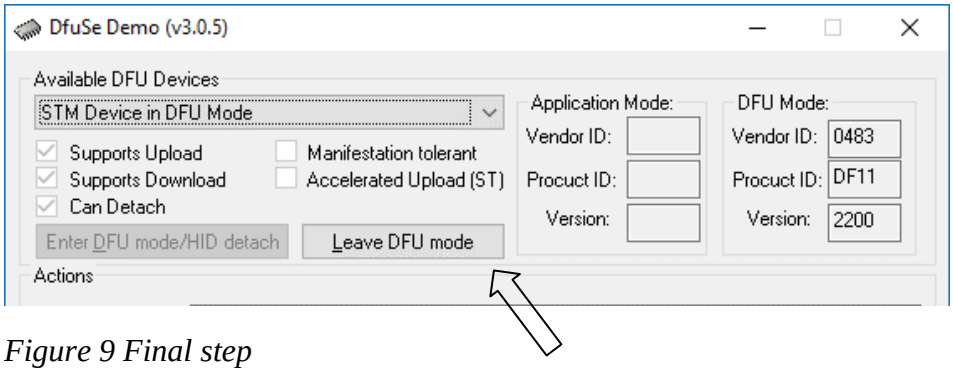


Figure 9 Final step

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

UPDATING THE BROOKLYN CHIPSET

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 Athens 2. We supply special code (a .dnt file) that sets up/ initiates the Brooklyn module and makes it work in particular way that is compatible to the Athens 2.

1. Finding Out Current Installed Version

Using Dante® controller double click on the Athens 2 device name in the routing tab to open the Device View box.
In the Device View box open the Status Tab.

The 'Product Version:' shows the currently installed version of Brooklyn module dnt code.

2. Finding Out What The Latest Available Version Is

Go the Athens 2's web 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.

3. Updating the Brooklyn module

The firmware that runs in 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

NOTE:

Please note we strongly advise that when you do the update that only your PC and the Athens 2 that you want to update are on the network to save accidently updating the wrong Dante device.

SPECIFICATIONS

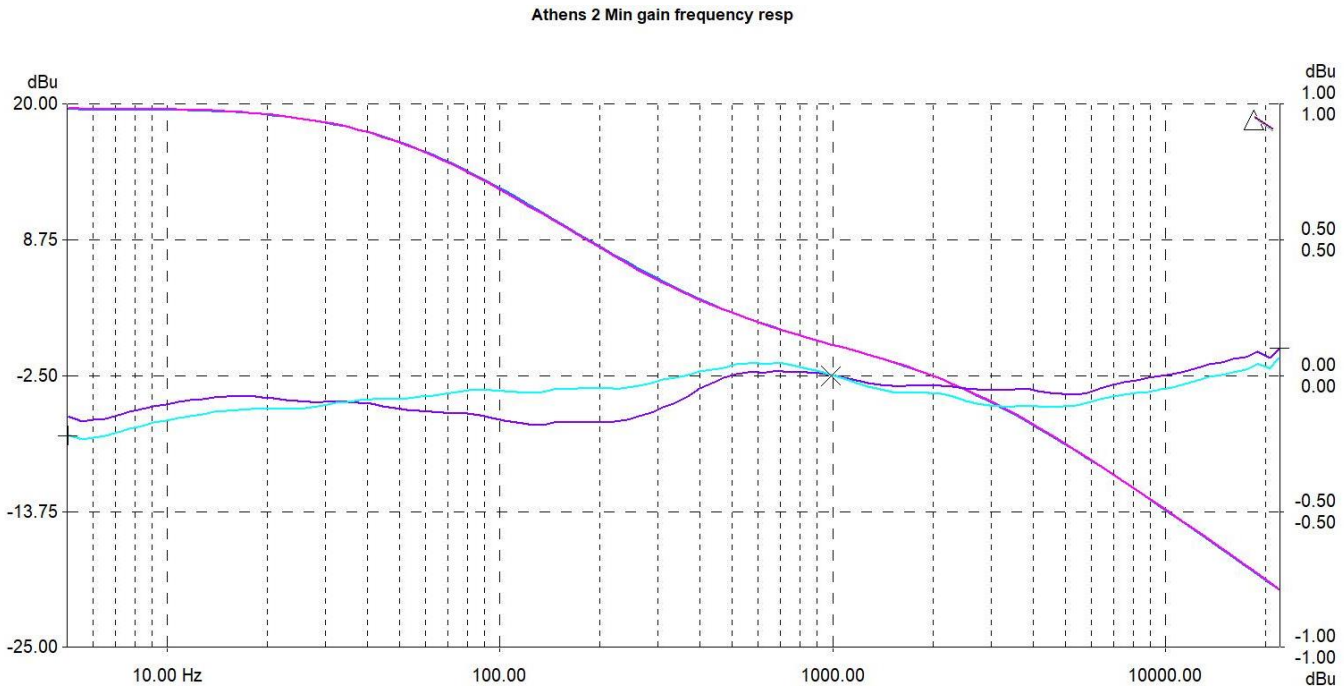
RIAA EQUALISATION

The Athens 2 uses a hybrid of Analogue & DSP circuits to perform its RIAA equalisation.

In the below graph two horizontal light blue/ purple lines show the frequency output of the two channels of the amplifier after the RIAA equalisation. The level reference is the right Y axis (right hand scale) and the frequency range is the X (bottom) axis.

As can be seen RIAA equalisation is within – 0.2dB and + 0.1dB between 5Hz and 20kHz

The interwined pink/ purple lines from top left to bottom right show the frequency response output of the apmplifier prior to RIAA equalisation with level reference to the left hand Y axis.



SPECIFICATIONS

NETWORK/ Dante®

Physical Interface
2 off Rj45
2 off SFP slots

Audio Sample Frequency
48kS/s

Transfer Rate
1000 Mbps

Dante™ Chipset
Brooklyn II
Note: suitable for acting as master clock for a network incorporating many Ultimo chipsets

AES67 Compliant
AES67 compliant

PHYSICAL

Mechanics
All aluminium, extruded sides & panels
black anodised with laser etching

Size
275 x 225 x 45mm (w x d x h)

Weight
1.25Kg 2.75lb

Shipping Weight
2.75Kg

Shipping Size
62 x 42 x 12 cms

Shipping Carton
Rugged export quality cardboard

POWER

Mains Voltage
100 - 240 VAC +/-10%

Mains Frequency
50 to 60 Hz

Consumption
10 Watts

AUDIO

Input Gain Range
60 to 40dB

Input Impedance (Ohms)
47000, 1000, 470, 320, 220, 180, 150, 130, 100, 90, 80, 76, 68, 60, 56

Input Capacitance (pF)
22605, 22505, 22385, 22285, 22235, 22115, 22015, 605, 505, 385, 335, 285, 235, 115, 15

RIAA Equalisation
Output <-0.2/+0.1dB 5Hz to 20kHz

Distortion THD
<0.005% @1k ref +8dBu

Noise @ 40dB gain
-87.5dBu (residual) 100r termination min gain

Equivalent input noise
-127.5dBu 100r (22Hz - 22kHz)

Crosstalk between inputs
>-91dBu @ lineup @ 1kHz

Maximum input before distortion
-22dBu @ 1kHz (min gain)

Headroom
+24dB for -24dBFs

Fs
Network outputs for both:
0dBu = -18dBFs
0dBu = -24dBFs

PPM
4 LEDs -12, -6, 0, +6 dB
0dB = -18dBFs

INCLUDED ITEMS

Handbook
Physical A5 (download also available)

Rj45 Network Cable
2 metre Cat5 Rj45plug /Rj45plug cable

Mains Cable
2 metre IEC (UK & EUROPE only)