Signature Series

Maximum Resilience Broadcast Audio

DDA1:6

Digital Distribution Amplifier

1 in 6 out AES3 (Stereo) with headphone monitor

up to 192kS/s

User Guide

Glensound
6 Brooks Place, Maidstone
Kent, UK, ME14 1HE
Tel: +44 (0)1622 753662
www.glensound.com

Glensound
Keeps Working

Glensound Electronics Ltd

Thank you for choosing a new Glensound product.

All rights reserved.

Information contained in this manual is subject to change without notice, if in doubt please contact us for the latest product information.

If you need any help with the product then we can be contacted at:

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

Telephone: +44 (0) 1622 753662

EMAIL ADDRESSES

General enquires: office@glensound.co.uk

Technical enquires: techinfo@glensound.co.uk

Sales enquires: sales@glensound.co.uk

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.

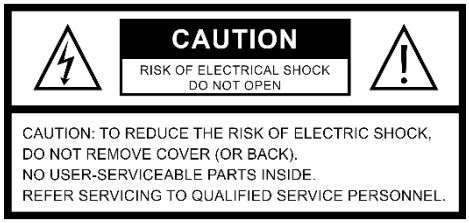
1. Read & Keep Instructions: Read these instructions, keep these instructions, heed all warnings, and follow all instructions.

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 fiber-optic cable ends while the equipment is energized.



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

CE

This equipment manufactured by Glensound Electronics Ltd of Brooks Place Maidstone Kent ME14 1HE is CE marked and conforms to:

Low Voltage Directive: EN60065

Emissions: EN55103.1

Immunity: EN55103.2

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

RoHS2 DIRECTIVE

EC directive 2011/65/EU restricts the use of the hazardous substances listed below in electrical and electronic equipment.

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

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

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.

DDA1:6 Digital AES3 Distribution Amplifier

Handbook Contents

Issue 1,

Description Page No.

Contents

IMPORTANT SAFETY INSTRUCTIONS ..... **Error! Bookmark not defined.**
PRODUCT WARRANTY: 6
OVERVIEW 8
PHYSICAL INSTALLATION 9
AUDIO BLOCK DIAGRAM 11
EXAMPLES OF USE 12
1. Radio Station CTA 12
USER CONTROLS 13
1. Power On LED 13
2. Error LED 13
3. AES Lock LED 13
4. Selector Switch 13
5. Headphone Jack Socket 13
6. Headphone Volume Control 13
CONNECTIONS 14
7. AES3 Outputs 14
8. AES3 Input 14
9. External DC Input 14
10. Mains In 14
WIRING INFORMATION 15
1. Standard Pin Outs 15
TECHNICAL SPECIFICATION 16

OVERVIEW

The Glensound Signature Series DDA1:6 is a professional audio distribution amplifier. It is manufactured using high quality components and low noise audio circuits to provide many years of trouble free use.

Although traditionally a broadcast manufacturer, Glensound's products are equally at home in professional and high end home studios, industrial installations and live pro sound environments. The DDA1:6 can therefore be used in a number of applications.

The DDA1:6 features one transformer balanced audio inputs on a Neutrik XLR. This input is then routed via the front panel 'Loop Through' or 'Renormalising' switch to 6 transformer balanced outputs also on Neutrik XLRs.

When in 'Loop Through' mode the AES3 input is sent straight to the 6 off AES3 outputs and the signal present at the output will be identical to that received by the input. Loop through is done with no delay to the signal and therefore is most useful if the AES3 signal is synced with another source through the users' production chain.

When in 'Renormalising' mode (the most common way to use the unit), the incoming signal is cleaned up and the output signals will have clean clock edges and be as close to their initial source as possible. The only disadvantage of renormalisong is that the incoming signal is fed via a high quality AES3 receiver chip and it takes 1 sample to produce the cleaned up output.

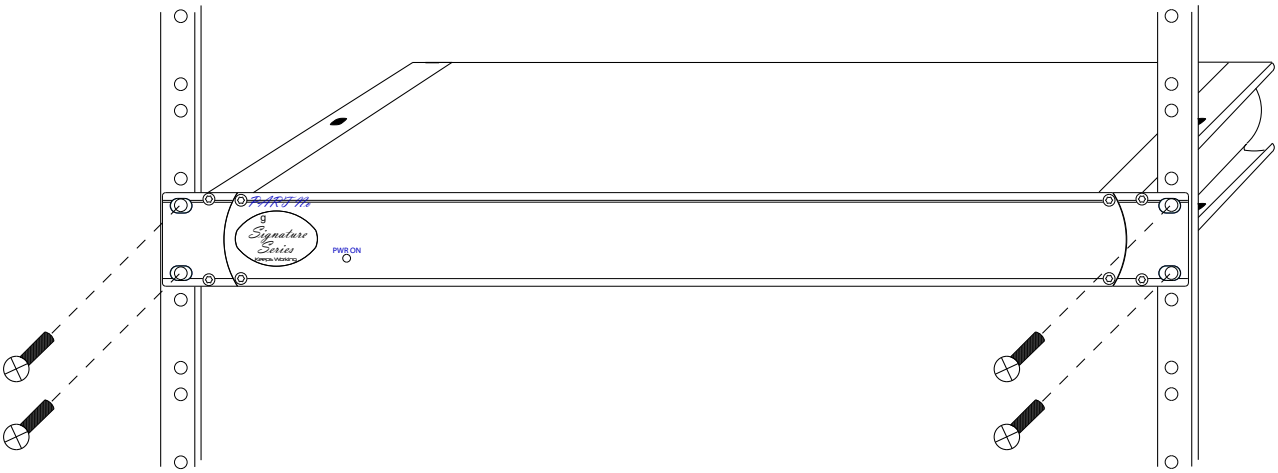
The DDA1:6 works with all digital signals from 16 – 192 kS/s and up to 32 bit.

The DDA1:6 is powered from an internal switch mode mains power supply fed from a filtered IEC mains plug suitable for use Worldwide. It has an internal fuse for safety. The unit can also alternatively be powered from an external +/-12V DC power source (such as the Signature Series PS1). If both mains and external DC power sources are present then, if one power source were to fail the unit would continue to work seemlessly from the other source.

PHYSICAL INSTALLATION

The Glensound Signature Series have been designed to be highly versatile for installation and can be installed in 19" racks with either their front or rear panels facing the front of the rack. They can also be mounted underneath desks or work tops and can be either permananetly mounted or stood (using the supplied feet) on top of desks or worktops.

INSTALLING SIGNATURE SERIES IN A 19" RACK



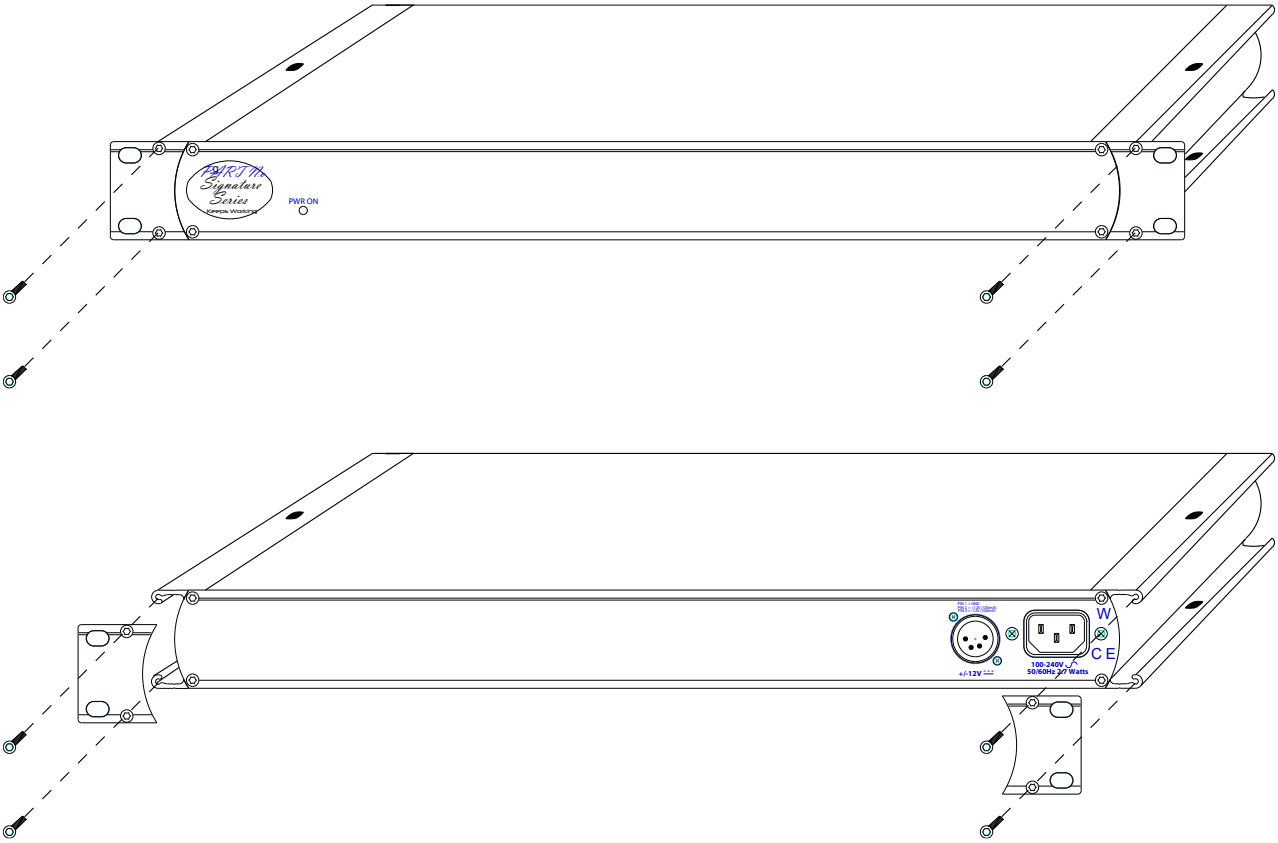
Firmly hold the signature subrack within the 19" rack and locate in 1RU of space. Use the supplied 6mm rack screws to securly attach the unit to the rack.

INSTALLING ADHSIVE FEET FOR NON PERMANENT TABLE TOP MOUNTING



Remove the front rack ears (if they are not required), turn the unit upside down and attach the supplied 4 sticky feet as per the above drawing.

SWAPPING RACK EARS TO ALLOW THE REAR TO BE INSTALLED AT THE FRONT OF A RACK

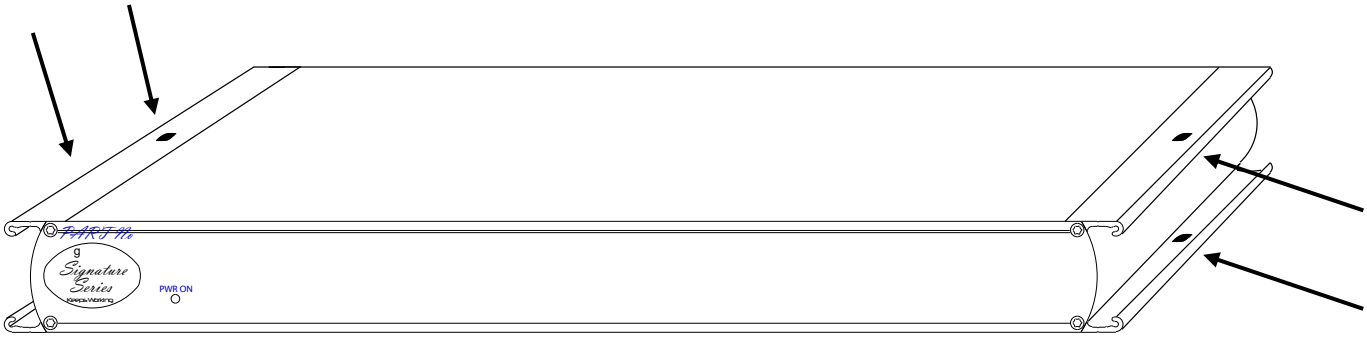


First remove the 4 silver button head screws that fix the rack ears onto the front of the unit as shown in the top picture above.

Remove the rack ears and turn the unit around for access to its back panel.

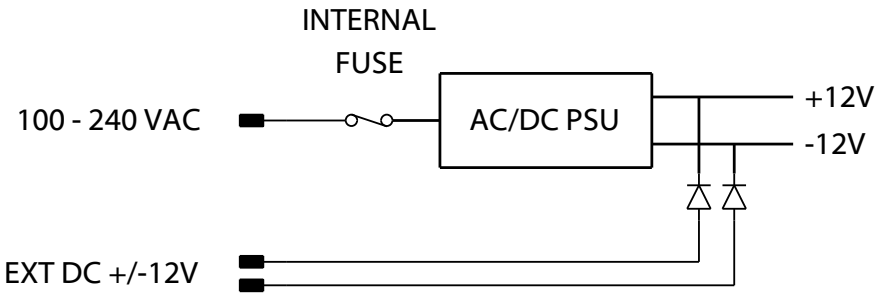
Re-fit the 2 rack ears using the same 4 silver button head screws that were removed from the front as per the bottom picture above.

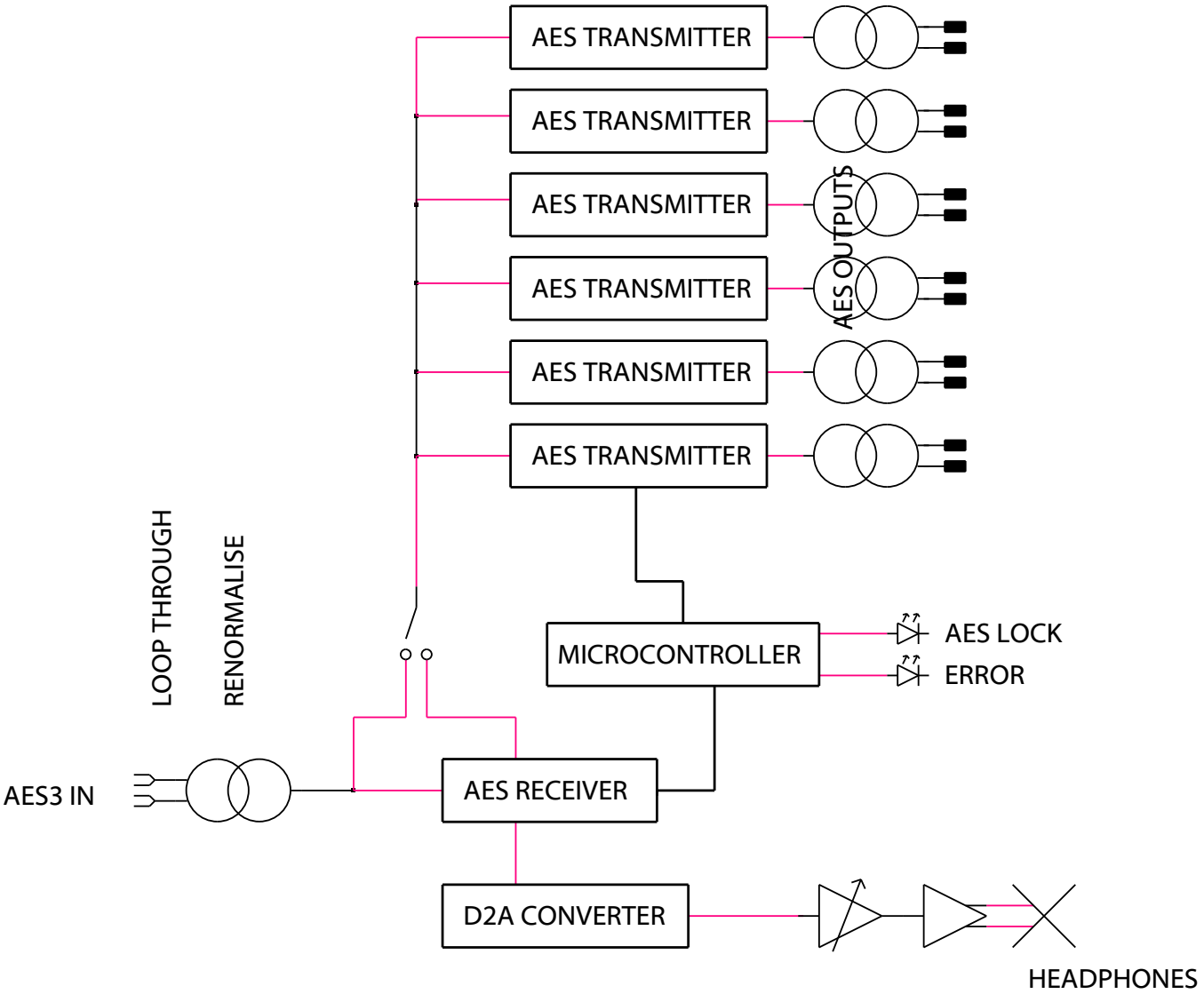
USING THE MOUNTING HOLES FOR PERMANENTLY ATTACHING THE UNIT ABOVE OR BELOW A WORKTOP/ DESK



Use either the top or bottom mounting holes as indicated above to use suitable screws to attach the signature unit to a worktop or bench. **PLEASE ENSURE THAT YOU USE SUITABLE FIXINGS**

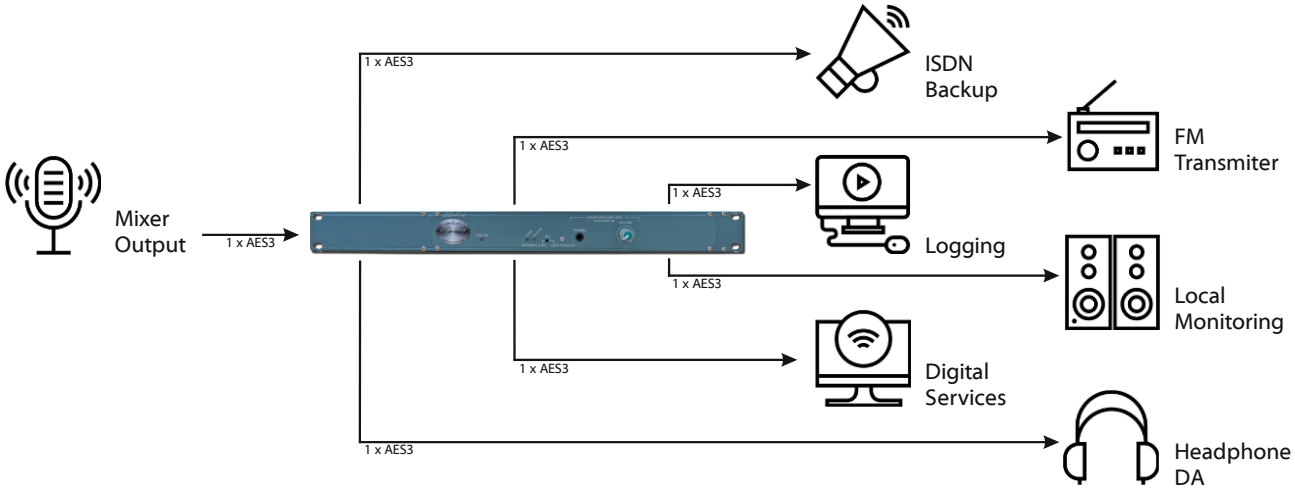
AUDIO BLOCK DIAGRAM





EXAMPLES OF USE

1. Radio Station CTA

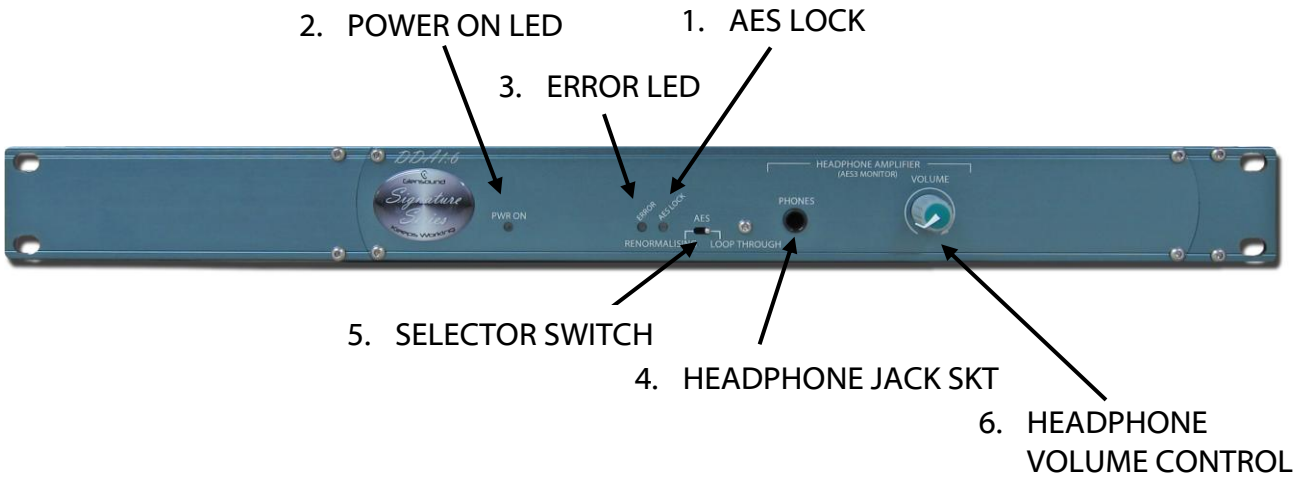


In this example, the main stereo programme feed from a radio station needs to be distributed across multiple platforms. The output from the desk or automation system no longer just heads off to the transmitter. The audio must be distributed across all of the relevant services that require a connection of the original programme audio.

The Signature DDA 1:6 provides 6 stereo AES outputs of the main AES programme audio. One output connects to the transmitter as the main FM broadcast feed. As multiple guest headphones are required in the studio, another output connects to a separate AES headphone distribution amplifier. This station also broadcasts online, so another output connects to a PC to become the internet broadcast stream. Local monitoring is required, so one feed goes to the local AES monitoring system. The transmitter B chain is on ISDN, so one AES output goes to an ISDN codec. And the final output connects to another PC that manages all of the stations logging requirements.

It's very easy to see why multiple outputs of the main AES programme audio are required in a typical radio station environment.

USER CONTROLS



1. Power On LED

The front panel bright blue LED shows that the unit is powered on and functioning correctly.

2. Error LED

The error LED is fed from the output of the AES3 receiver and will be illuminated whenever the receiver is not receiving a valid AES3 signal.

3. AES Lock LED

This LED is connected to the output of the AES3 receiver. If illuminated it indicates that the receiver has detected a valid AES3 signal and is correctly locked onto it.

4. Selector Switch

When in the 'Renormalising' position the AES3 outputs of the unit will be cleaned up and 'renormalised' so as they have clear sharp clock edges and mirror the original AES3 signal. It takes 1 sample to do this so the output will be sample behind the input.

When in 'Loop Through' mode the AES3 outputs will be identical to the input, so if the input signal has been degraded by a long cable run or noise, then the output signal will reflect this identically.

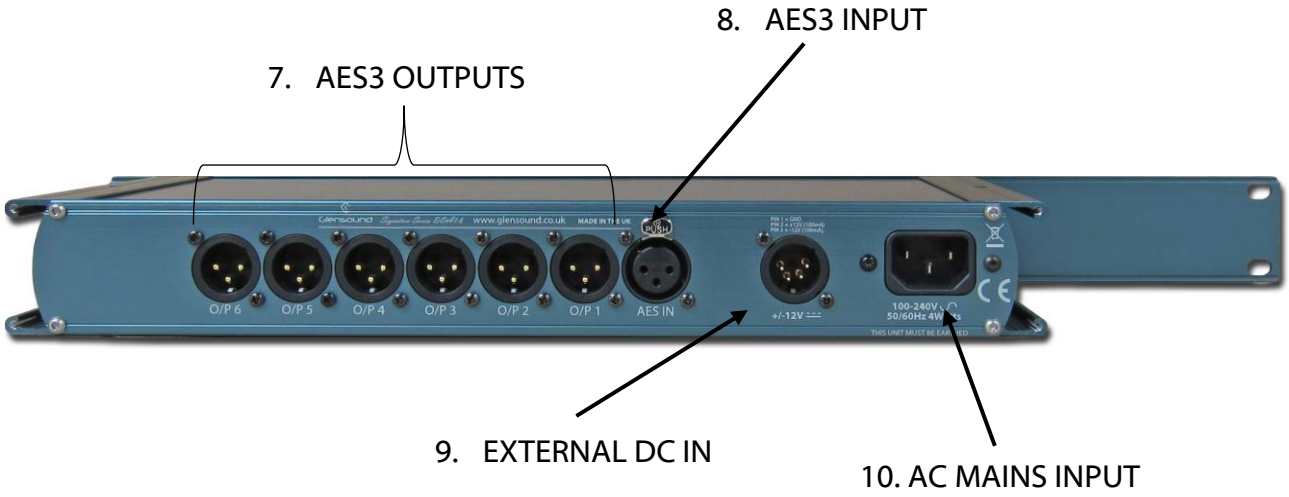
5. Headphone Jack Socket

This is a standard 6.35mm (1/4") stereo headphone jack socket. The audio output is taken from the AES3 input and it can be used as a monitor point to ascertain audibly the quality of the incoming circuit.

6. Headphone Volume Control

Turning this control clockwise will increase the audio output level of the headphone amplifier.

CONNECTIONS



7. AES3 Outputs

6 off identical transformer balanced AES3 outputs, derived from the AES input and matching its frequency rate.

8. AES3 Input

This transformer balanced AES3 input will accept standard AES3 signals between 16 and 192kS/s and up to 32 bit.

9. External DC Input

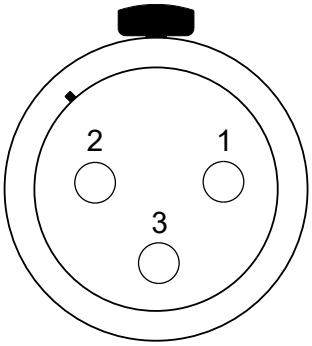
This DC input can be used instead or as well as the mains input. It requires a +/- 12V power source (such as our PS1). If used in conjunction with the mains input it will seamlessly provide a redundant power source.

10. Mains In

This AC input accepts a wide range power supply, suitable for use Worldwide. If used in conjunction with the external DC supply then a seamless redundant power supply will be provided.

WIRING INFORMATION

1. Standard Pin Outs



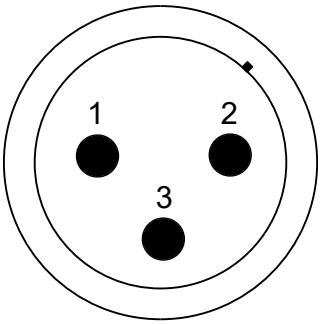
XLR SOCKET (FEMALE)

STANDARD XLR AUDIO PINOUTS:

1: Ground/ Earth

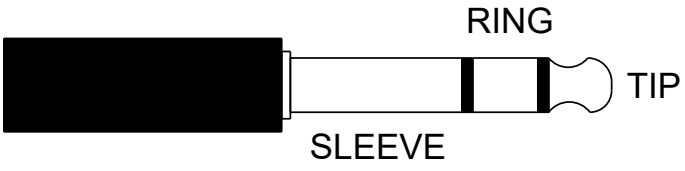
2: INPHASE/ POSITIVE/ MIC +

3: MATE/ NEGATIVE/ MIC -



XLR PLUG (MALE)

STANDARD HEADPHONE WIRING:



TIP: A/ LEFT Ear

RING: B/ RIGHT Ear

SLEEVE: Common/ Earth

HEADPHONE WIRING NOTE:

The *Signature Series* range of products feature sophisticated headphone amplifiers whose stereo outputs can be connected directly to mono headphone jacks without damaging the headphones internal amplifiers.

TECHNICAL SPECIFICATION

AUDIO AES3 IN to OUT

Input Impedance
110 ohms

Output Impedance
110 ohms

Maximum & Minimum Levels
200mV to 10V peak to peak

Sample Frequency Range
32-192 kS/s *(***32***,* **44.1***,* **48***, 88.2,* **96***, 176.4,* **192** k*S/s)*

Digital Resolution
8, 16, 24 or 32 bit

Input Type
1 x 3 pin Neutrik XLR Transformer balanced

Output Types
6 x 3 pin Neutrik XLRs Transformer balanced

Noise (unweighted 22Hz-22kHz)
-145.7dBfs

Distortion (+8 from line up)
0.00005%

Loop Through
Output signal integrity matches input signal

Re-normalised
Output signal is reconstituted and signal integrity returned to normal

HEADPHONE MONITORING

Headphone Level
0dB (600 Ohms) @ -18dBfs input

Headphone Gain Range
+6dBu to off

Headphone Clip Level
+18dBu

Frequency Response (@96kS/s)
25Hz: -0.25dBu
32kHz: 0.25dBu

Noise Level (Unweighted 22Hz-22kHz)
-77dBu @ Maximum gain

Distortion (+8 from line up)
100Hz: 0.006%
1kHz: 0.005%
10kHz: 0.011%

PHYSICAL

Size
336 x 123 x 44mm (LxDxH) no rack ears
482mm 19" (1RU) with rack ears

Weight
0.75kg

Mechanics
All aluminium construction, anodized and laser etched

Shipping Carton
Rugged export quality cardboard carton
610 x 420 x 130mm LxDxH

Shipping Weight
2.25kg

POWER

Mains Input
Filtered IEC, 100 to 240VAC
47 - 63Hz

AC Consumption
1.4 Watts @ 230VAC

DC Input
4 Pin Neutrik XLR plug +/- 12V

DC Consumption
<60mA per rail

Internal Mains Fuse
20mm 1A Anti Surge