EAW

UX48 Series
OWNERS MANUAL

Table of Contents

IMPORTANT SAFETY INSTRUCTIONS

The lightning bolt triangle is used to alert the user to the risk of electric shock.

The exclamation point triangle is used to alert the user to important operating
or maintenance instructions.

1.   Read these instructions.
2.   Keep these instructions.
3.   Heed all warnings.
4.   Follow all instructions.
5.   Do not use this apparatus near water.
6.   Clean only with dry cloth.
7.   Do not block any ventilatio n openings. Install in accordance with the manufacturer's instructions.
8.   Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus
     (including amplifiers) that produce heat.
9.   Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades
     with one wider than the other. A grounding type plug had two blades and a third grounding prong. The wide
     blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult
     an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and
     the point where they exit from the apparatus.
11. Only use attachments / accessories specified by the manufacturer.
12. Use only with the cart, 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.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Service is required when the apparatus has been damaged in
     any way, such as power-supply cord or plug damaged, liquid has been spilled or objects have fallen into the
     apparatus, this apparatus has been exposed to rain or moisture, does not operate normally,
     or has been dropped.
15. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases,
     shall be placed on the apparatus.
16. Permanent disconnection from the mains supply is to be achieved by removing the supplied cord connector
     from the back of the unit. This connector must remain readily operable.

WARNING
Do not remove any covers, loosen any fixings or allow items to enter any aperture.

WARNING
This product must be grounded. Use only a flexible cable or cord with a green and yellow core which must be connected
to the protective earthing terminal of a suitable mains plug or the earthing terminal of the installation

WARNING
The rear of the product may get hot. Avoid direct skin contact during operation and for at least 5 minutes after power has
been isolated.

WARNING
This product is designed for permanent installation. It must be fitted in to a 19" rack enclosure and not operated unless so
installed. The rack enclosure must allow free air movement through the product.

CONSIGNES DE SÉCURITÉ IMPORTANTES

Le triangle de l'éclair est utilisé pour alerter l'utilisateur À risque d'électrocution.

Le triangle du point d'exclamation est utilisé pour alerter l'utilisateur sur des importants Instructions d'utilisation ou d'entretien.

1. Lisez ces instructions.
2. Conservez ces instructions.
3. Respectez tous les avertissements.
4. Suivez toutes les instructions.
5. Ne pas utiliser cet appareil près de l'eau.
6. Nettoyer uniquement avec un chiffon sec.
7. Ne pas bloquer les ouvertures de ventilation. Installer conformément aux instructions du fabricant.
8. Ne pas installer près de sources de chaleur telles que radiateurs, registres de chaleur, poêles ou autres appareils (y compris les amplificateurs) qui produisent de la chaleur.
9. Ne supprimez pas le dispositif de sécurité de la fiche polarisée ou mise à la terre. Une fiche polarisée possède deux lames dont l'une est plus large que l'autre. Une prise de terre a eu deux lames et une troisième broche de terre. La lame large ou la troisième broche sont fournies pour votre sécurité. Si la fiche fournie ne rentre pas dans votre prise, consultez un électricien pour remplacer la prise obsolète.
10. Protéger le cordon d'alimentation soit écrasé ou pincé, particulièrement au niveau des fiches, des prises et le point où ils sortent de l'appareil.
11. Utilisez uniquement les accessoires spécifiés par le fabricant.
12. Utilisez uniquement le chariot, le trépied, le support ou la table spécifiés par le fabricant, ou vendu avec l'appareil. Quand un chariot est utilisé, soyez prudent lorsque vous déplacez l'ensemble chariot / appareil afin d'éviter toute blessure en cas de chute.
13. Débranchez cet appareil pendant les orages ou lorsqu'il n'est pas utilisé pendant de longues périodes de temps.
14. Adressez-vous à un personnel qualifié. Une réparation est requise lorsque l'appareil a été endommagé de quelque façon que ce soit le cordon d'alimentation ou la fiche endommagé, du liquide a été renversé ou des objets sont tombés dans l'appareil, cet appareil a été exposé à la pluie ou à l'humidité, ne fonctionne pas normalement, ou s'il est tombé.
15. Le dispositif ne doit pas être exposé à des gouttes ou des éclaboussures et aucun objet rempli de liquides, tels que des vases, doit être placé sur l'appareil.
16. Déconnexion permanente de l'alimentation secteur doit être atteint en supprimant le connecteur du cordon fourni à l'arrière de l'unité. Ce connecteur doit être facilement utilisable.

ATTENTION

Ne retirez pas les couvercles, ne desserrez pas les fixations et ne laissez aucune pièce s'introduire dans les ouvertures.

ATTENTION

Ce produit doit être mis à la terre. Utilisez uniquement un câble souple avec un noyau vert ou vert / jaune qui doit être relié à la borne de terre de connecteur d'alimentation ou la borne de terre de l'installation.

ATTENTION

Le radiateur arrière de cet appareil devient chaud. Evitez tout contact direct avec la peau pendant le fonctionnement et au moins 5 minutes après la mise hors tension de l'appareil.

ATTENTION

Ce produit est conçu pour une installation permanente. Il doit être installé dans un boîtier rack 19 ". L'enceinte du rack doit permettre un mouvement de l'air libre à travers le produit.

COMPLIANCE

FOR CUSTOMERS IN EUROPE

This product complies with both the LVD (electrical safety) 73/23/EEC and EMC (electromagnetic compatibility) 89/336/EEC directives issued by the commission of the European community.

Compliance with these directives implies conformity with the following European standards:
EN60065 8th Edition   Product safety

EN55032-2012   EMC emissions

EN55103-2-2009   EMC immunity

This product is intended for the following electromagnetic environments: E1, E2; E3 & E4.

THIS PRODUCT MUST BE GROUNDED. Use only a flexible cable or cord with a green and yellow core which must be connected to the protective earthing terminal of a suitable mains plug or the earthing terminal of the installation. The cord must be a maximum of 2m long, have a 0.75mm2 CSA, a 300/500V rating and comply with EN50525-2-11 / H05W-F (105oC).

FOR CUSTOMERS IN THE USA

This product complies with UL60065 8th edition.

DECLARATION OF CONFORMITY WITH FCC RULES
We, EAW Ltd., One Main Street, Whitinsville, Massachusetts, 01588, USA, declare under our sole responsibility that this family of devices, complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FEDERAL COMMUNICATIONS COMMISSION NOTICE
An example of this equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential and commercial installation.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

THIS PRODUCT MUST BE GROUNDED. Use only a flexible cable or cord with a green or green / yellow core which must be connected to the protective earthing terminal of a suitable mains plug or the earthing terminal of the installation. The cord must be a maximum of 6' long, be 18AWG, 105oC have a rating SJ, SJT, SJE or 300/500V H05W-F and be marked VW-1.

FOR CUSTOMERS IN CANADA

This product complies with CA /CSA C22.2 No.60065-03
Ce produit est conforme avec CA /CSA C22.2 No.60065-03

DECLARATION OF CONFORMITY WITH CANADIAN ICES-003
This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

THIS PRODUCT MUST BE GROUNDED. Use only a flexible cable or cord with a green or green / yellow core which must be connected to the protective earthing terminal of a suitable mains plug or the earthing terminal of the installation. The cord must be a maximum of 6' (2m) long, be 18AWG, (0.75mm2 CSA), 105oC have a rating SJ, SJT, SJE or 300/500V H05W-F and be marked VW-1.

CE PRODUIT DOIT ÊTRE MIS À LA TERRE. Utilisez uniquement un câble souple avec un noyau vert ou vert / jaune qui doit être relié à la borne de terre de connecteur d'alimentation ou la borne de terre de l'installation. Le cordon doit être un maximum de 6' (2m) de long, 18 AWG (0.75mm2 CSA), 105oC être classé SJ, SJT, SJE ou 300/500V H05W-F et être marquée VW-1

Thanks and Unpacking

Thank you for choosing a EAW UX48 advanced system processor for your application. Please spare a little time to study the contents of this manual, so that you obtain the best possible performance from this unit.

All EAW products are carefully engineered for world-class performance and reliability.

If you would like further information about this or any other EAW product, please contact us. We look forward to helping you in the near future.

Unpacking the EAW UX48 Processor

After unpacking the unit please check carefully for damage. If damage is found, please notify the carrier concerned at once. You, the consignee, must instigate any claim. Please retain all packaging in case of future re-shipment.

INSTALLATION INSTRUCTIONS

Mechanical Installation
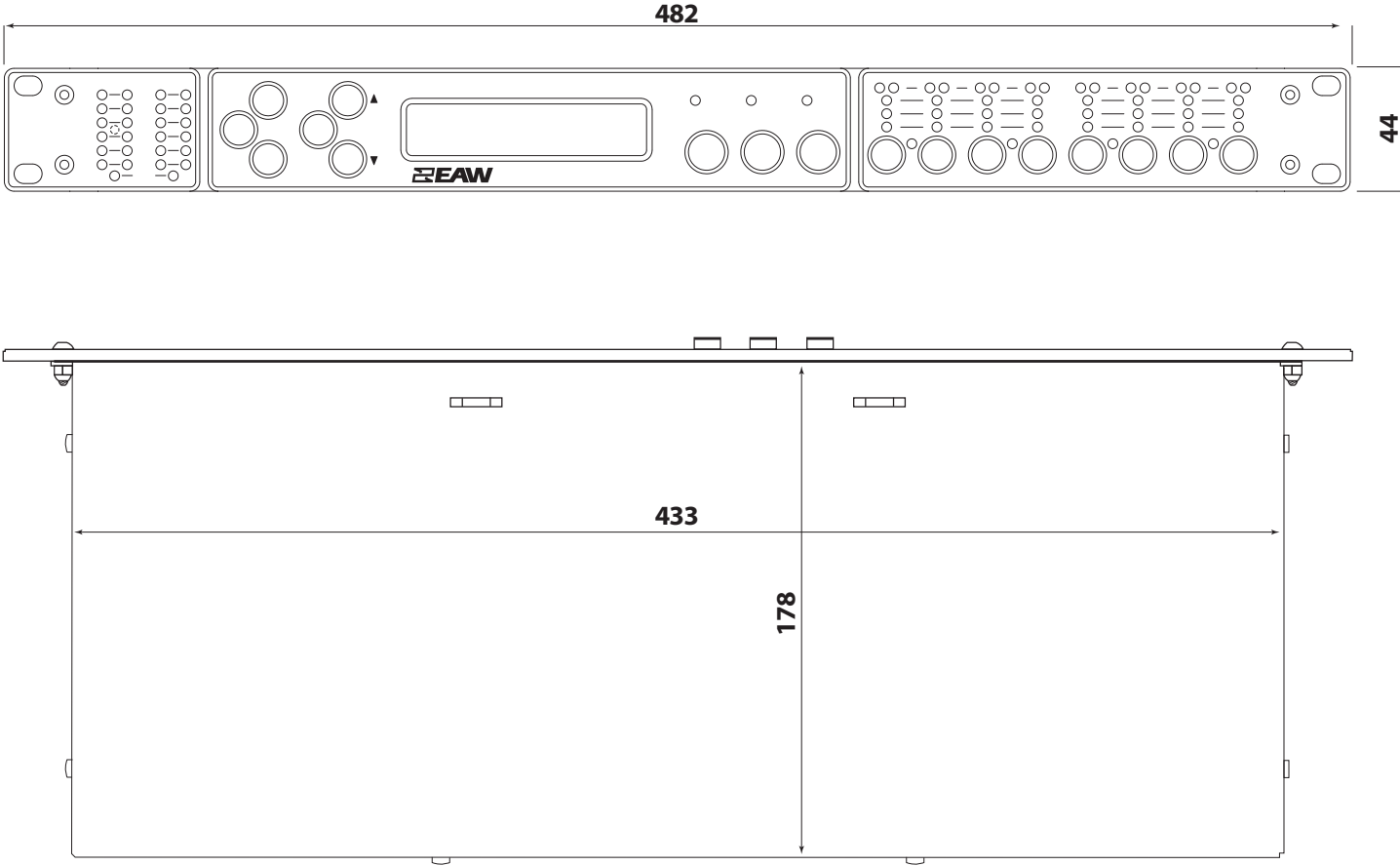
The UX48 Series Processor must only be operated when mounted in a standard 19" rack enclosure.

Where the processor is used in a fixed installation, as long as the bottom unit is supported and there are no gaps between units, it is acceptable to use only the front panel 19" rack mounting points when fitting it in a standard rack enclosure. If the processor is mounted in a mobile rack it is important that either the rear is supported or that it is positioned directly between other supported units. Damage caused by insufficient support is not covered by the manufacturer's warranty.

To prevent damage to the front panel it is recommended that plastic cups or washers are fitted underneath the rack mounting bolt heads.

⚠️ **IMPORTANT**

General

The UX48 should never be exposed to rain or moisture during operation or storage. If the unit does come into contact with moisture, remove the AC power cord immediately and leave it in a dry and warm location.

Note that when any equipment is taken from a cold location into a warm humid one, condensation may occur inside the device. Always allow time for the equipment to attain the same temperature as its surrounding environment before connecting the AC power cord.

It is the responsibility of the user to ensure that dirt, liquids and vapour from theatrical smoke and fog machines is not ingested by the unit. Damage so caused is not covered by the manufacturer's warranty.

Cooling

It is important that the air intake on the left side of the chassis and the exhaust vents on the right side are not obstructed. Steps must also be taken to ensure that hot air does not continually circulate through the rack.

It is possible to mount multiple UX48 processors without ventilation gaps between them but it is essential that an unobstructed flow of clean air is available from the left side of the chassis to the right-front of the unit to the rear.

AC Power Connection

The UX48 Series Processors are designed to operate from an 85V to 254V 50/60Hz mains supply and utilise a standard C14 IEC mains power connector. Use only a C14 IEC power cord correctly terminated with a plug suitable for the territory where the product will be used. It is the responsibility of the user to ensure that all wiring is performed by a qualified person in accordance with all local regulations.

EAW UX48 Introduction and Key Features

Introduction

The EAW UX48 Advanced System Processor represents current state-of-the-art technology. Taking advantage of the latest advances in Analog to digital conversion and digital signal processing technologies the unit achieves performance levels among the very best that engineering permits. Below is a list of key features, followed by some information on the major advancements of the UX48 feature set.

Key Features

- EAW minimal signal path design
- 48kHz sampling frequency
- Three rotary encoders, illuminated buttons and graphical display provide a rapid, intuitive and user-friendly control interface
- High speed capable and flexible Ethernet communications that supports DHCP, static-IP and auto-IP and direct connection to a computer
- Class leading sonic performance achieved by the use of state of the art converters, a 4th Generation Analog Devices Sharc DSP and highly advanced DSP algorithms
- Linear phase HF system EQ profiling which provides perfect integration between enclosures
- Dante audio networking with automatic fall over to Analog or AES3
- AES3 inputs and outputs, switchable in pairs
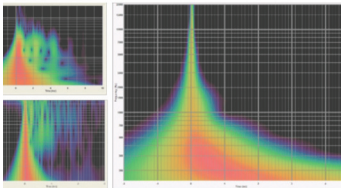- High performance 'universal mains' switch mode power supply

What is a Greybox?

A Greybox is a file that includes everything you need to get optimal performance from an EAW loudspeaker. 'White' component that is user accessible. 'Black' component that is EAW-provided and locked down. Mix together = Grey.
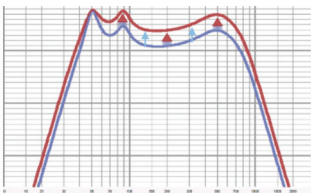
## Greyboxes include:

Crossover Settings

EAW Focusing

By deploying advanced signal processing EAW Focusing corrects for mechanically induced anomalies in the loudspeakers acoustic system and provides a pure impulse response. This means the sound you hear is true to the original version free from time smear created by intra-cabinet reflections.


DynO (where applicable) & limiters

Dynamic Optimization, which maximizes the output of every passband. This tangibly increases output over what would otherwise be possible.
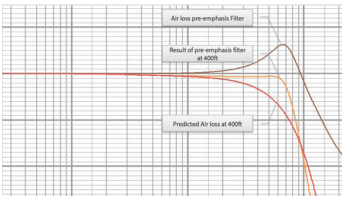
Air Loss Pre-emphasis Filter

A distance, temperature and humidity-dependent air loss pre-emphasis filter improves high frequency projection by correcting for expected air losses for longer distances.
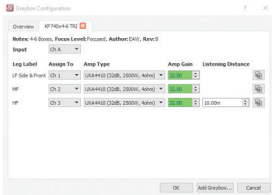
Easy Configuration

Just enter the loudspeaker model and amplifier you are using in the Greybox setup window. Resolution automatically applies the Greybox settings and optimizes the entire system in seconds.
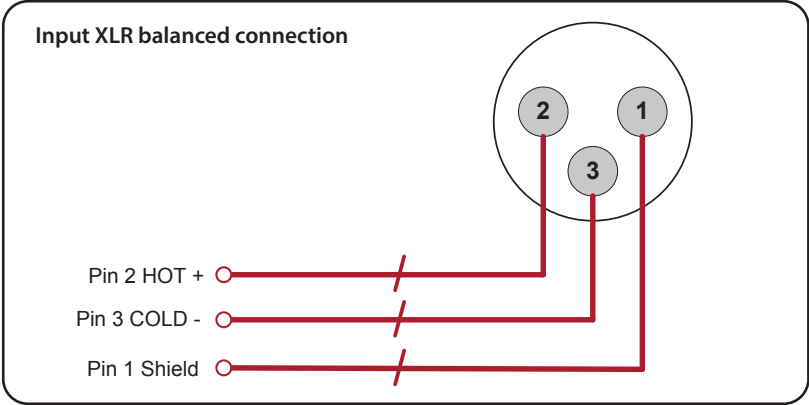
Audio Connections

Input Connections

For each input channel there is a female XLR input connector. Even channel numbers are for Analog inputs only. Odd channel numbers are either for Analog inputs (when in Analog input mode) or for AES3 input pairs (when in AES3 input mode).

The HOT, or + connection should be made to pin 2 of the XLR connector.
The COLD, or - or connection should be made to pin 3 of the XLR connector.

Pin 1 of the XLR connectors is internally connected to the chassis. The shield of the input cable should always be connected Pin 1 of the XLR to ensure that EMC performance and regulations are met.

Output Connections

For each output channel there is a male XLR input connector. Even channel numbers are for Analog outputs only. Odd channel numbers are either for Analog outputs (when in Analog output mode) or for AES3 output pairs (when in AES3 output mode).

The HOT, + or connection should be made to pin 2 of the XLR connector.
The COLD, - or connection should be made to pin 3 of the XLR connector.

Pin 1 of the XLR connectors is internally connected to the chassis. The shield of the output cable should always be connected Pin 1 of the XLR to ensure that EMC performance and regulations are met.
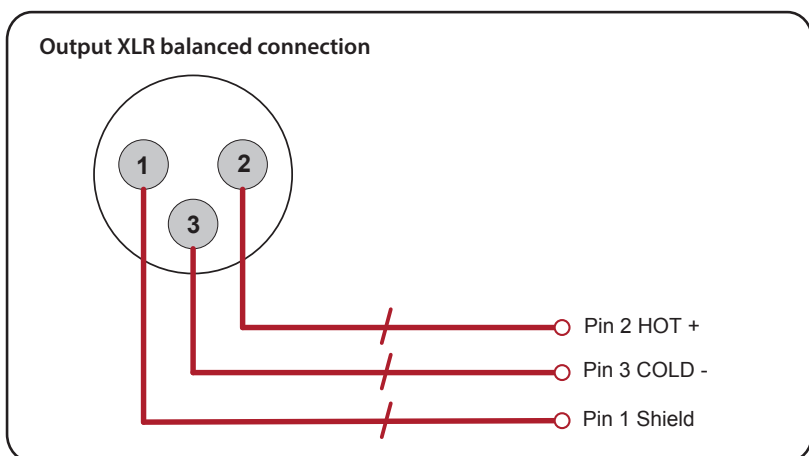
Output XLR balanced connection

1   2
3

○ Pin 2 HOT +
○ Pin 3 COLD -
○ Pin 1 Shield

Using unbalanced connections

Please note that the use of unbalanced connections is not recommended, however, when connecting the device to an unbalanced audio source, the signal conductor should be connected to XLR pin2. The 'Cold' conductor or cable screen should be connected to XLR pin 3 with a short connection made between pin 1 and pin 3.

Input XLR unbalanced connection

2   1
3

HOT + ○
Shield ○
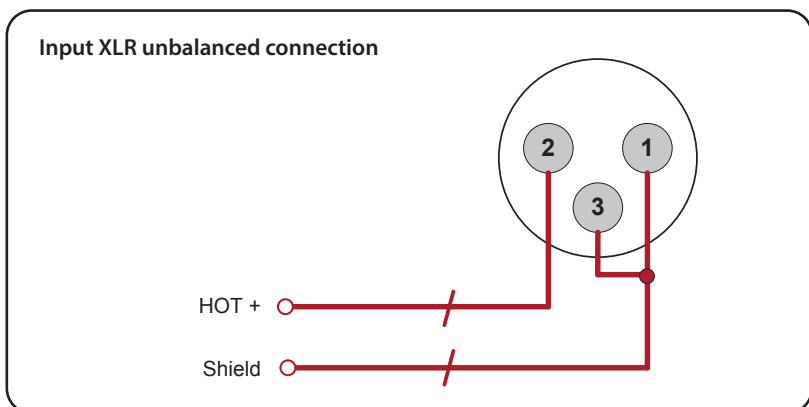
An unbalanced input may be driven by connecting pin-3 'cold' signal to the ground connection of the unbalanced destination input. The cable shield is connected to pin 1 at the source (this device), and to ground at the destination device (along with the pin 3 'cold' connection). Alternatively, if the cable is a single core plus shield, the cable shield should be terminated to both pins 1 and 3.

Output XLR unbalanced connection

1   2
3

○ HOT +
○ Shield
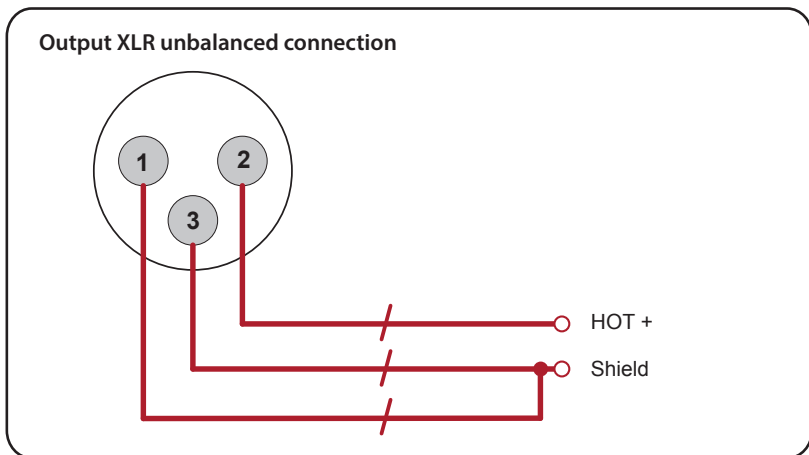
Panel Layouts
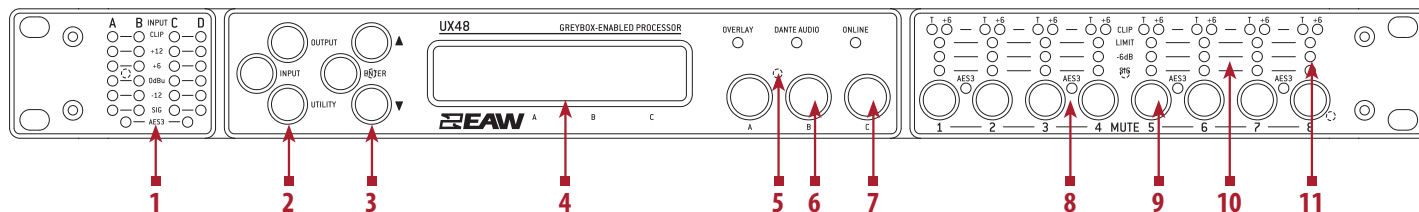
1. **Input Signal Indicators–** A set of five indicators show **"Sig"**, **"-12"**, **"0dBu"**, **"+6"** and **"+12"** for each of the DSP inputs **"A" "B" "C" "D"**. The signal present Indicators operate at approximately –40 dBu, giving a useful indication of even relatively low input signal levels. The **"0dBu"** indicators are intended to show nominal operating level and can also be useful for setting system gain structure.

2. **Menu Buttons–** There are three buttons to determine which section of the device to view or edit. The **<OUTPUT>** button displays pages of parameters associated with a particular output channel. The **<INPUT>** button displays pages of parameters associated with a particular input socket or input DSP channel. Pressing **<INPUT>** or **<OUTPUT>** buttons repeatedly will scroll through the inputs/outputs of the processor. After the last channel, navigation returns to the Home screen. The **<UTILITY>** button displays pages of miscellaneous parameters not associated with any particular channel. Whilst in Edit mode, one of these three buttons will be illuminated. They are mutually exclusive – pressing one of the buttons will deselect any others that are active. Pressing Utils will escape back to the Home screen.

3. **Page Selection Buttons–** When one of the buttons **<INPUT>**, **<OUTPUT>** or **<UTILITY>** is illuminated, the up <▲> and down <▼> arrows will also illuminate, informing the user that these buttons may be used to scroll through the various pages of parameters that may be viewed and edited. The **<ENTER>** button is used to confirm an operation. It will illuminate when the user is being invited to press it. It will flash when warning the user that pressing this button will activate an important function.

4. **Graphical Display–** When the device is switched on, it will show the Home screen. This provides a useful overview of channel allocation and Drive Module presets. The screen contrast can be changed by pressing the <UTILITY> button to navigate to "Screen" and using encoder "A" will change the percentage; this can also optimise the viewing angle. In most pages the currently selected channel and parameter information is displayed on the upper part of the screen and the parameter value on the lower part of the screen.

5. **Status Indicators–** The **"OVERLAY"** indicator is not currently used. The **<DANTE AUDIO>** indicator illuminates when one or more of the inputs is using a dante source. The **"ONLINE"** indicator has three states: **Off** – the unit is offline and not connected to a computer or network. **Flashing** – the unit is searching for an IP address; if the unit does not find an IP address the unit will assign itself an IP address automatically and the indicator will stop flashing. **On** – the unit is online and connected with software. IP settings can be viewed or changed within the **<UTILITY>** pages.

6. **Selection Indicators–** Each page that is visited when navigating will usually show either one, two or three parameters labelled **"A"**, **"B"** and **"C"**, each of which can be edited by turning the Encoder associated with that parameter also labelled **"A"**, **"B"** and **"C"**.

7. **Parameter Encoders–** Three velocity sensitive parameter encoders are used to adjust parameters shown on the display. Up to three parameters at a time are displayed on the screen. The parameter name is shown above the parameter value in each of the three screen sections.

8. **AES3 Active Indicators–** The **"AES3"** active indicators show when the AES3 input/output is active for that pair of channels. AES3 transmits two channels on one XLR cable. Channels 1 and 2 will be carried on connector 1; channels 3 and 4 will be carried on connector 3 and so on.

9. **Mute Buttons–** DSP output mute status is indicated and controlled by and illuminated button for each channel. These flash when the entire unit is muted from the AUX port or from Mute-All.

10. **Limiter Indicators–** The output indicators shows the status of the limiter and output level relative to the limiter threshold. The **<SIG>** indicator shows signal presence and will illuminate when a signal is present in the output. The second indicator **<-6dB>** shows that the signal has reached 6dB below the limiter threshold. The third **<LIMIT>** indicator indicates that the threshold of that output channel has been reached. The fourth **<+6>** indicates a signal 6dB higher than the limiter threshold.

11. **Input Clip/Mute Indicators–** Warn the user of input overload and operate at 1dB before clip. The **"CLIP"** Indicator will only come on when all other signal lights are illuminated. This indicator also shows a muted input state, and will remain illuminated at all times whilst mute is active. Input mute is turned on/off in the **<INPUT>** gain page.
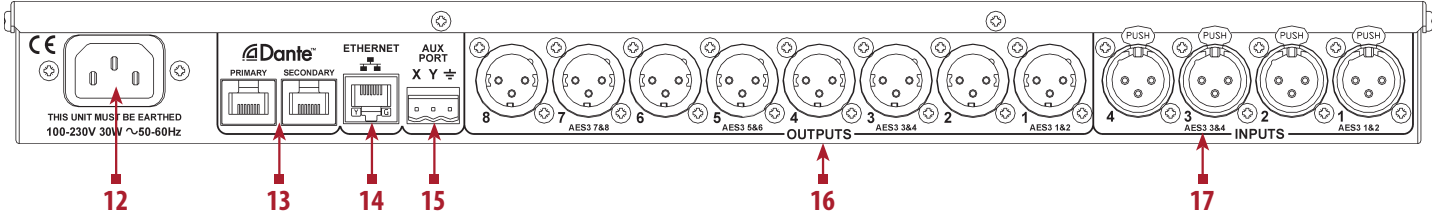
12. **Power Inlet–** The EAW UX48 unit should be connected to a suitable mains electricity supply using a grounded IEC C14 connection power lead. The processor has a switch mode power supply that is capable of operating with a nominal mains voltage of 100V to 230V, 50/60Hz without re-configuration.

     NOTE: The UX48 must be grounded to a suitable power earth; failure to do so may affect performance and/or operation and will invalidate warranty and could be potentially hazardous.

13. **Dante Audio Ports–** Used to connect to Dante network. Can be configured for switched or redundent operation.

14. **Ethernet Communications Port–** Used for remote control and monitoring via Resolutio Software.

15. **Auxiliary Port–** The auxiliary port may be configured for a variety of purposes. See the *AUXA Port* section.

16. **AES Digital Audio Output Connectors–** The processed outputs are impedance balanced, and wired: pin-1 directly bonded to ground (as required by the AES48 standard), pin-2 hot and pin-3 cold. When AES3 operation is selected on an output pair, the Odd channel connector is used for both channels (e.g. Input 1 is used for channels 1 and 2).

17. **AES Digital Audio Input Connectors–** All audio connections are fully balanced and wired: pin-1 to ground (as required by the AES48 standard), pin-2 hot & pin-3 cold. When AES3 operation is selected on an input pair, the Odd channel connector is used for both channels (e.g. Input 1 is used for channels 1 and 2).

Operation

Starting up the unit

The unit will power up as soon as power is applied to the IEC power inlet; there is no power switch. When power is present the unit will go through its start-up cycle - first all the indicators will illuminate then go off, while the screen displays the boot loader information. Next the screen will display the application firmware information, and all the mute buttons will illuminate. The display will then show the Home screen indicating input/output configuration; the mutes will then return to the state they were in when the unit was powered off.

Navigation and Designing Crossovers

To design a new crossover, press the desired **<INPUT>** or **<OUTPUT>** button to enter the pages where the parameters for each of the channels are shown. Once in these pages the up <▲> and down <▼> buttons will scroll through the processing parameters for the selected input/output. Pressing the **<INPUT>** or **<OUTPUT>** button repeatedly will scroll through the channels. This allows the user to enter all the parameters for each of the channels in the signal chain or enter each parameter for each channel one after another. A parameter may be adjusted when it is displayed by turning one of the three parameter encoders **"A", "B"** or **"C"**.

Each of the three parameter encoders is associated with a zone on the display. Adjusting the leftmost parameter encoder **"A"** will change the value of the parameter showing in the leftmost zone of the display above the **"A"** and so on. Turning an encoder clockwise will increase the value of a parameter, or anticlockwise will decrease it. The encoders are velocity-sensitive so turning an encoder rapidly will cause the action to 'accelerate', so the value changes more rapidly.
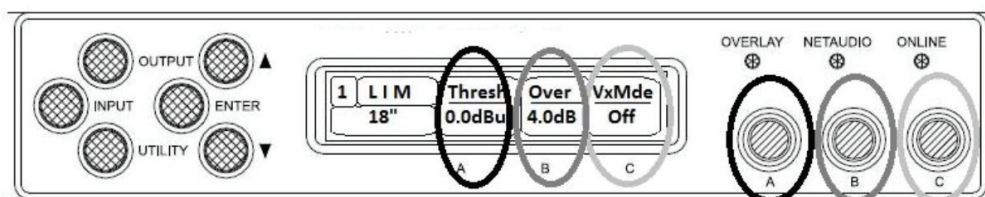
Input

AES3 / Network Inputs

In addition to the usual Analog inputs, the UX48 can also accept AES3 digital inputs. The same physical XLR sockets are used for both Analog and AES3 inputs; the function of these being determined by the Type parameters in the Input Type menu. The Input sockets 1 and 3 are used to input pairs of AES3 channels, so setting the input to 'AES3' on either Input 1 or Input 2 will cause the other channel to change also. Similarly, adjusting the setting of Input 3 will affect Input 4 and vice-versa. When an input socket is selected for AES3 operation, the "AES3" indicator under the input meters will illuminate.

There is no 'standard' for the relative gains between Analog, Dante and AES3 so it may be necessary to adjust the digital input gains to normalise them. So that the relative gain between an Analog input and an AES3 input can be normalised, it is possible to adjust the gain of the AES3 channel using the Input Route AES3 Gain parameter. For example, to achieve 0dBFS = +18dBu, set the digital trim to -2dB. To achieve 0dBFS = +24dBu, set the digital trim to +4dB.

This device will automatically select the correct sample rate from the incoming stream between 28kHz and 108kHz.

Dante Inputs

It is possible to select any channel(s) as being sourced from the Dante network. To do this, connect the Dante network connection to the connection on the rear of the Device, and set the relevant Input Type menu Type parameter to "Dante".

When a Dante channel is routed to an input, the "Dante Audio" indicator above the encoders will illuminate. This indicator will come on even if there are no cables plugged into the networked audio port on the Device.

As for the AES3 inputs, it is possible to set the relative gain between an Analog input and the signals sourced from the Digital Audio Network using the Input Trim Dante gain parameter.

The amplifier will automatically select the correct sample rate from the incoming stream.

For other details on the operation of the Digital Audio Network, please refer to the relevant manufacturer's documentation.

Automatic Input Selection (Fallover)

When a Digital Audio Network input is installed, it is possible to configure the input selection to be automated. The Input TYPE screen has a Fallover parameter, which defaults to Manual, allowing you to select what Type of input you wish to use. When Fallover Dante>AES3 is selected, then the Dante source will be automatically selected if it has a valid audio stream on it. If the Dante stream should fail, then AES3 is automatically selected instead. Note that automatic selection will take precedence over manual selection, so if you try to manually select Dante when there is no valid Dante stream, then it will revert to AES3. Similarly, if Dante>Analog is selected, then Dante will be selected unless the stream fails, in which case AES3 will be used.

Gain and Polarity
The gain page of the input channel selected allows users to increase or decrease the amount of signal going into the selected input. Using encoder **"A"** will change the value in 0.2dB steps from -40dB to +20dB. This page will also allow users to change the polarity of the selected input from normal to reverse, using encoder **"B".** Using encoder **"C"** will mute the selected channel.

Delay
The delay page which controls the amount of delay associated with the input channel selected and is adjustable from 0 to 998ms. The delay parameter is adjustable in fine steps at low values; the adjustment becomes progressively coarser as the value increases.

High Pass Filter
System high pass filtering is provided for the input signal. Filter type is selectable from 1st order, Butterworth, Bessel, Linkwitz-Riley and Hardman. Filter slopes of up to 4th order or 24dB / octave are provided. Not all filter types are available in all slopes. For example 18dB / octave Linkwitz-Riley filters do not exist.

The Hardman type filter is always described by its order as the filter becomes progressively steeper rather than following a linear slope so a dB/octave description is not accurate.

Parametric Equalization
There are nine stages of equalization available for each input channel, three shelving filters and six parametric filters.

FIR Linear Phase Equalization
The Input High-Shelf Equalizers use Finite Impulse Response (FIR) filtering to produce Linear Phase equalization; that is all frequencies are delayed by the same amount, perfectly preserving the transient response. This can also be important in applications where different amounts of EQ are applied to different parts of a speaker cluster,

such as to add 'Throw' EQ boost so that parts of cluster which are throwing further can have HF absorption correction added. If this EQ is not linear phase, then the zones where the speakers combine may suffer frequency response anomalies.

Being a linear phase FIR equalizer, this necessarily introduces some latency delay, which is constant regardless of the settings. However, when the 'Enable' parameter is set to "Off", it is removed from the signal path entirely, so it does not add any latency. In this page you can change the frequency parameter from 2kHz to 20kHz, enable/disable the filter, and change the cut or boost in 0.2dB increments. The filter (and its associated latency) can be completely removed by setting the enable parameter to the "Off" position.

Also see Bandwidth Units in Utilities.

Parametric Filters
Parametric filters are defined by frequency, bandwidth and gain. The frequency is controlled by encoder **"A"** and ranges from 10Hz to 25.6kHz. The bandwidth, shown as Width on the screen, is controlled by encoder **"B"** and ranges from 0.10 octaves to 5.2 octaves. Bandwidth can be shown and adjusted as Q or Octaves (Oct). Gain is controlled by encoder **"C"** and is adjusted in 0.2dB increments. .

Also see Bandwidth Units in Utilities.

Routing
Routing allows users to route any physical Analog or digital signal channel to any DSP input. This is effectively a matrix mixing system where all DSPs can be driven from any one input, or from pairs of inputs **"1+2", "3+4", "1+3", "1+4", "2+3", "2+4", "1+2+3"** or **"1+2+3+4".** Summed inputs have 6dB of attenuation so that a sum of largely similar programme material remains at the correct calibrated level.

Output

AES3 outputs
In addition to the usual Analog outputs, the UX48 also allows outputs to be sent digitally using AES3. The same physical XLR sockets are used for both Analog and AES3 outputs; the function of these being determined by the XLR parameters in the Output Route menu. The Odd numbered output sockets are used to output pairs of AES3 channels. When an output socket is selected for AES3 operation, the "AES3" indicator under the output bar graphs will illuminate.

The output sample rate for AES3 will always be 48kHz. The calibration between Analog and AES3 levels is 0dBFS (AES3) = +20dBu (Analog).

Gain and Polarity
The gain page of the output channel allows users to increase or decrease the relative signal gain for the selected output. Using encoder **"A"** will change the value in 0.2dB steps from -40dB to +20dB. This page will also allow users to change the polarity of the selected output from normal to reverse, using encoder **"B"**.

Delay
The delay page controls the amount of delay associated with the output channel selected and is adjustable from 0 to 998ms. The delay parameter is adjustable in fine steps at low values; the adjustment becomes progressively coarser as the value increases.

High and Low pass Filters

High pass and Low pass crossover filtering is provided for the output signal. Filter type is selectable from 1st order, Butterworth, Bessel, Linkwitz-Riley, Hardman and LIR Linear Phase using encoder **"B"**. Filter slopes of up to 8th order or 48dB / octave are provided. Not all filter types are available in all slopes. For example 18dB / octave Linkwitz-Riley filters cannot be selected because they do not exist.

The Hardman type filter is always described by its order as the filter becomes progressively steeper rather than following a linear slope so a dB/octave description is not accurate.

Parametric Equalization

There are ten different EQ filters; two shelving filters and eight parametric filters. Parametric filters are defined by frequency, bandwidth and gain. The frequency is controlled by encoder **"A"** and ranges from 10Hz to 25.6kHz. The bandwidth, shown as Width on the screen, is controlled by encoder **"B"** and ranges from 0.10 octaves to 5.2 octaves. Bandwidth can be shown and adjusted as Q or Octaves (Oct). Gain is controlled by encoder **"C"** and is available in 0.2dB increments.

Also see Bandwidth Units in Utilities.

Amplifier Gain

Expressed in dB, this is the gain of the amplifier which the output of the UX48 is feeding. This value must be entered to allow the UX48 to correctly calibrate the limiter for the amplifier in use.

Limiter

Three parameters are available for adjustment:

Threshold – the continuous RMS voltage which the driver should be able to withstand. This is calibrated at the output of the amplifier. The Limiter can be defeated by setting the Threshold to the maximum "Off" value.

Attack – The time-constant of the speed at which the driver heats up (in seconds).

Release – The time-constant of the speed at which the driver cools down expressed as a multiple of the Attack time.

Please note that whilst the limiters in this product offer protection for amplifier and drivers, they can never protect from all possible scenarios, therefore, EAW is not responsible for any damage which might occur.

Routing

Outputs can be driven from any DSP input.

Utility Pages

Screen Contrast

The Screen page in the **"UTILITY"** section adjusts the contrast (and optimal viewing angle) of the screen from 0-100% in 1% increments using encoder **"A".**

Current Ethernet IP Address

This may be viewed in the "**IP Curr**" page of the **"UTILITY"** menu. This value cannot be edited.

IP Mode

The Ethernet IP address may be automatic "Auto" or may be a fixed static value "Static" as determined by the "IP Mode" page of the "UTILITY" menu.

WARNING – Do NOT use Static mode unless your IT system specifically requires it. Auto mode should always be used where possible since in this mode, the UX48 can always be 'discovered' by the EAW Resolution Software application. When in Static mode, the IP Address will flash on the Home screen.

Also see Ethernet Configurations.

IP Static
This allows the Static Ethernet IP address to be adjusted by the three rotary encoders on the IP Static page of the **"UTILITY"** menu. This page will only be visible when in Static mode.

Bandwidth Units
This page of the **"UTILITY"** menu allows the Bandwidth of Parametric Equalizers to be viewed and adjusted in either Octaves or 'Q'.

Ethernet

Ethernet configurations
IP addressing in the Device can be completely automatic; No setup is required.

DHCP
There are two primary IP address ranges – one used when there is a DHCP server, and another ('Link Local') where there is no DHCP server (so the Device and the Computer will instead use 'Auto IP' to allocate themselves an IP address). Both the device and the computer must be in the same IP address range. In a local network environment such as an office where there is a DHCP server, both the computer and the Device will be in the DHCP IP address range, and so will connect immediately.

AUTO-IP
The device will initially search for a DHCP server when first switched on (during which time its Online Indicator will be flashing). As it can take up to one minute to establish that there is no DHCP server available, this is the time it may take before Auto IP is entered.

Please be aware that it can also take some time from a computer being switched on in an isolated network (without a DHCP server), or unplugged from a network with DHCP to time out of DHCP searching, so it will not connect immediately to amplifiers that are already using Auto IP. The time it takes before it decides to revert to Auto IP depends on the operating system but it can take several minutes to acquire an Auto IP address.

Static-IP
If the device or the computer has a static IP address set, EAW Resolution software may not be able to 'see' the device if it is in a different IP Address range (i.e. in a different subnet).

AUX Port
The AUX has two inputs, X & Y. These allow simple contact closure devices (relays or switches) or external logic signals to change the state of the amplifier as described below. Connecting an AUX input to ground (the earth symbol) will trigger it; there is no requirement for an external voltage. However, the ports can also be triggered directly by a logic signal as long as the logic 'low' goes below +0.5V. Do not connect systems if their logic 'high' voltage exceeds +24V.

The AUX port is configured with the following functionality.

- Mute+Sleep (State) – The device may be muted by grounding AUX X or placed in Sleep by grounding AUX Y

This table shows the action taken for various AUX connection patterns in the various AUX port modes:

AUX X	AUX Y	Mute+Sleep (State)
Open	Open	No Change
Gnd	Open	Mute
Open	Gnd	Sleep
Gnd	Gnd	Sleep

Secure Mode

When activated, this will disable all the front panel controls so they cannot affect the signal path, making the unit secure against tampering. When in secure mode, the indicators still operate normally. To activate secure mode, press and hold the utility button for 5 seconds. To deactivate, press and hold the utility button for 5 seconds. When in secure mode, this will be shown on the display. Note that the Ethernet communications port is still active in secure mode.

Revert to Factory Settings

If you wish to erase all of your settings in the device and revert everything to factory settings, then simultaneously press and hold for 5 seconds the Up button and the Mute 1 button, then follow the prompts on the display. Only continue by pressing the Enter button if you are sure this is what you want to do. Otherwise, press the Down button to escape.