E2 Stereo Parametric Equaliser

Operators Manual

E2
Stereo Parametric Equaliser
Digital

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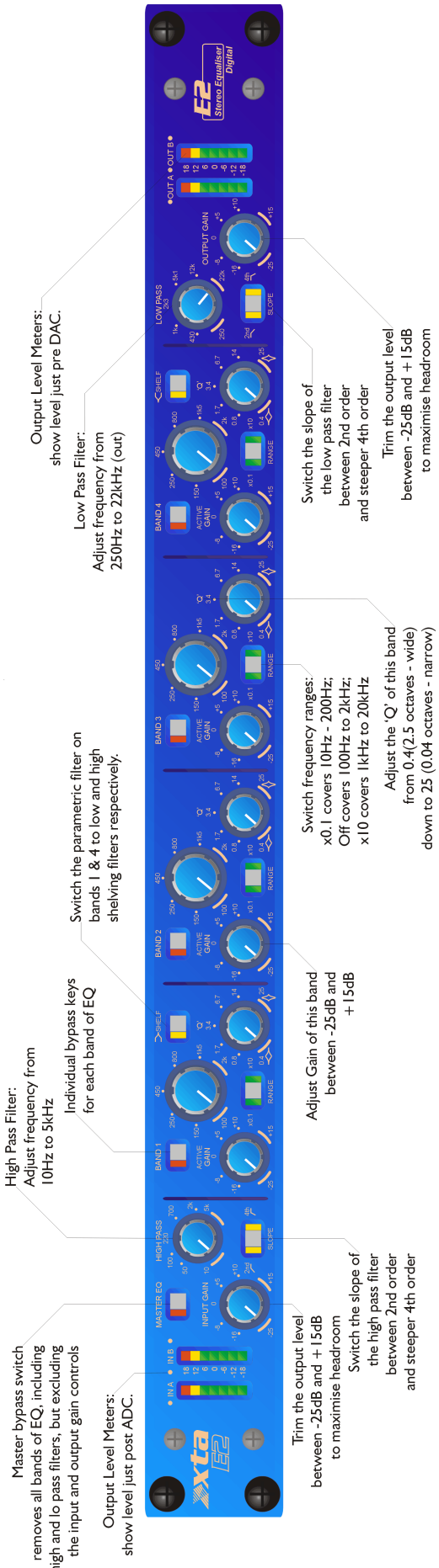
E2 Quick Reference

THINGS YOU NEED TO KNOW…

- ✓ The input meters show level, in dB, from the clipping point of the DSPs (digital signal processors) – the reading *will* be affected by the input gain control – it is post converter.
- ✓ The output meters show level just before the DAC and *will* be affected by the output gain control.
- ✓ Input and output gain is *not* bypassed when the Master switch is off.
- ✓ High and low pass filters *are* bypassed my the Master switch.
- ✓ The Listen LED always flashes when any Listen switch is enabled. Listen is not automatically turned off if the unit is switched off and on
- ✓ When the unit is bypassed, all its metering and status LEDs will dim. All metering will continue to function.



Contents

CE An example of this equipment has been tested and found to comply with the following European and international Standards for Electromagnetic Compatibility and Electrical Safety:

Radiated Emissions (EU):	EN55013-1 (1996)
RF Immunity (EU):	EN55103-2 (1996) RF Immunity, ESD, Burst Transient, Surge, Dips &Dwells
Electrical Safety (EU):	EN60065 (1993)

Important Safety Information

Do not remove Covers.
No user serviceable parts inside, refer servicing to qualified service personnel.
This equipment must be earthed.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
DO NOT EXPOSE TO RAIN OR MOISTURE

ATTENTION
RISQUE DE CHOC ELECTRIQUE
NE PAS ENLEVER
NE PAS EXPOSER A LA PLUIE NI A L'HUMITE

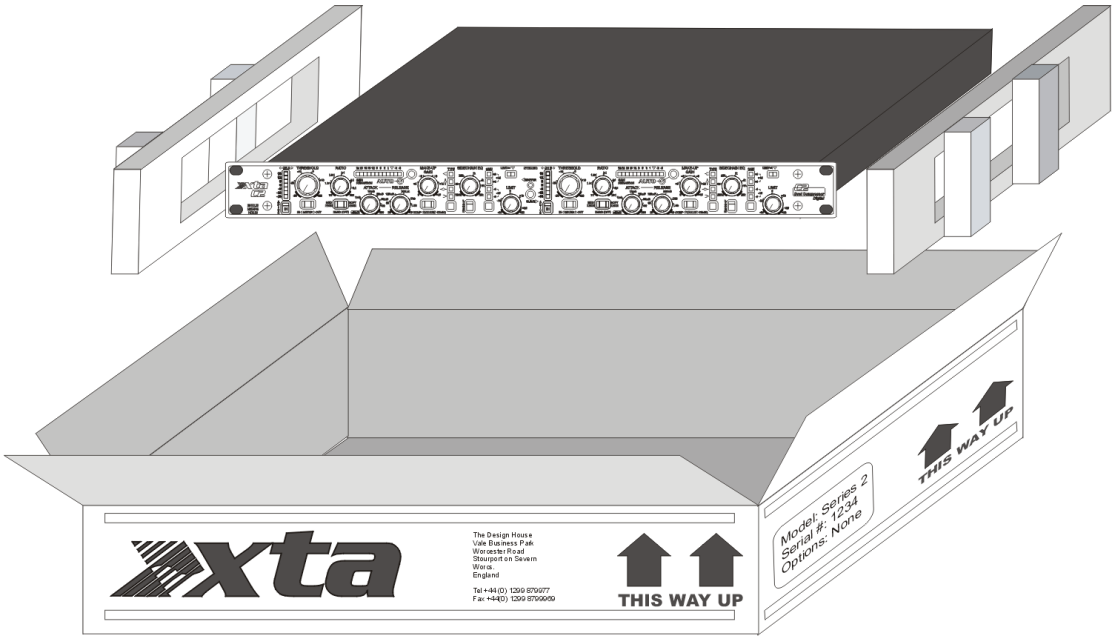
It should not be necessary to remove any protective earth or signal cable shield connections.
Do not defeat the purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade and the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
Only use this equipment with an appropriate mains cord.
In the USA the cord should comply with the requirements contained in the Standard for Cord Sets and Power Supply Cords, UL 817, be marked VW-1, and have an ampacity rating not less than the marked rating of the apparatus.

Thanks

Thank you for choosing the XTA *E2* Stereo Equaliser for your application. Please spend a little time reading through this manual, so that you obtain the best possible performance from the unit.
All XTA products are carefully designed and engineered for cutting-edge performance and world-class reliability. If you would like further information about this or any other XTA product, please contact us.
We look forward to hearing from you in the near future.

Unpacking the *E2*

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



Introduction

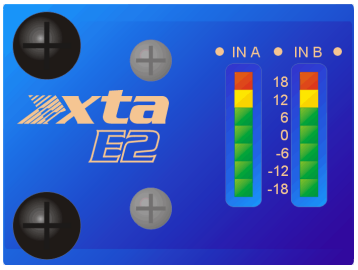
The *E2* is a powerful DSP based audio equaliser, ideally suited for live sound applications, where it combines the accessibility and immediacy of a pure analogue design with the quality and accuracy of a digital design in a compact 1U unit. To achieve this, the *E2* has an analogue control surface, following the 'one control – one function' philosophy and a pure digital signal path, with 24-bit conversion, 40-bit internal processing and a professional 48kHz sampling rate.

The *E2* is also available with optional AES/EBU digital inputs and outputs.

Features

- Four bands of full range equalisation on each channel.
- Independent high and low pass filters with selectable slope.
- 'Outer' bands can be set to high and low shelving responses respectively..
- Each band is individually bypassable for complete control, with an overall channel master.
- Separate input and output gain controls with permanent input and output metering.
- AES/EBU Digital input and output interfaces are available as an option.
- Input and output balancing transformers are also available as an option.

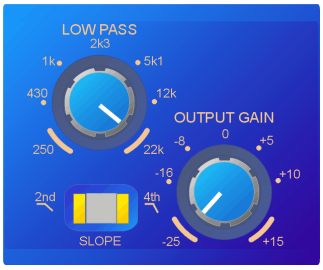
Front Panel Familiarisation



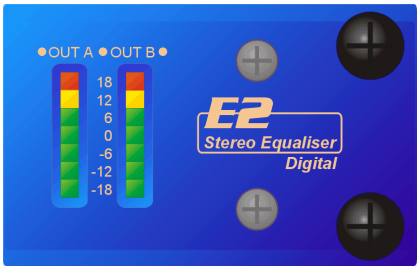
Input Level Meter: These meters permanently show the level just after the analogue to digital converter, and are not affected by any subsequent controls.

Master Key: Bypasses the entire channel – LED illuminated when processing is active. All metering and status LEDs for dim when the unit is bypassed.
Input Gain Control: If you are applying large amounts of cut or boost it is best to turn down the input gain to prevent the EQ stages clipping, rather than adjusting the level entering the unit. This will ensure that the converter is still being used over the widest resolution (and greatest number of bits), keeping noise at a minimum.
High Pass Filter Control: Adjust the cut-off frequency of the high pass filter from <10Hz (effectively off) to 5kHz.
High Pass Filter Slope Key: Choose either a second order response (12dB per Octave roll-off) or a steeper 4th order response (24dB per Octave).

EQ Bands:
Active Key: Switch out just this band of Eq to quickly gauge its effect.
Gain control: Adjust the amout of cut or obbst of the selected band of frequencies. Note the asymmetric nature of the control – 25dB of cut is available, and 15dB of boost.
Frequency Control: In conjunction with the range key, select the centre frequency of the band. In shelf mode, this sets the corner frequency of the shelf.
Range Key: Scale the frequency range available on the frequency control with this key. The left hand LED illuminated means multiply the values by 0.1, so the control covers 10Hz to 200Hz. No LEDs illuminated means the range is "x 1" so the control covers 100Hz to 2kHz. The right hand LED means multiply the values by 10, covering the range 1kHz to 20kHz.
Shelf Key: Bands 1 & 4 can have their response switched from a parametric (bell) filter to a shelving response. Band 1 will become a low shelf, boosting all frequencies below the selected frequency, and band 4 will become a high shelf, boosting all above the selected frequency. Note that the 'Q' control will not have any effect when the shelf mode is on.
'Q' control: In parametric mode, this will effect the width of the filter's response. Turned fully anti-clockwise the bandwidth is 0.4, or 2.5 octaves (a wide gently response). Fully clockwise, the 'Q' is narrowed to 25, or 0.04 octaves.

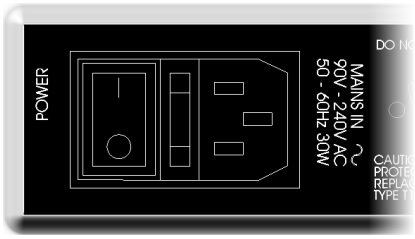


Low Pass Filter Control: Adjust the cut-off frequency of the low pass filter from 250Hz to 22kHz(effectively off).
Low Pass Filter Slope Key: Choose either a second order response (12dB per Octave roll-off) or a steeper 4th order response (24dB per Octave).
Output Gain Control: To compensate for large amounts of cut or boost and bring the output level back to that at the input, use the output gain control, in conjunction with the meters.

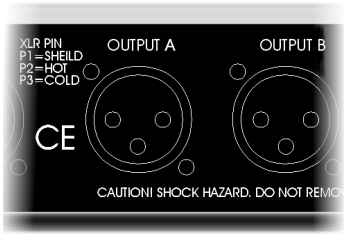


Output Meters: These meters permanently show the level after all processing, just before the digital to analogue converters.

Rear Panel Connections



Power Switch: turns the units mains supply off and on.
Mains Fuse: located in a finger-proof holder adjacent to the mains inlet. A spare fuse is also located in this holder.
Mains Inlet: connected via a standard IEC socket.



Audio In-Out: 3 pin XLR sockets are provided for each channel. All are fully balanced, pin 2 hot, 3 cold, 1 screen.

Always replace the fuse with the correct type and rating as shown on the rear panel legend.

Operating the *E2*

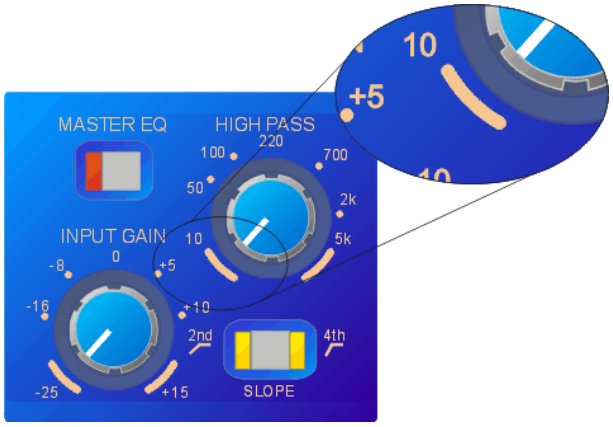
Operation of the *D2* is very straightforward, but there are a few points worth noting which, once understood, will make using the unit even easier.

Switching the unit on and start-up procedure

After plugging in the power and switching the power on suing the rear panel switch, confirmation is quickly given that all is well by all LEDs illuminating almost immediately after power-up.

The LEDs of all 'engaged' keys (when the unit was last powered up) will illuminated, and after the bypass relays disengage, a pattern will undulate across the LEDs as the level fades up. The entire process is complete when the input/output meters begin to operate normally. This whole start-up procedure only takes a few seconds.

Minimum and maximum control positions



To ensure that the *E2* is 100% accurate all of the time, and that what it says on the front panel is exactly what the unit is doing, it has been necessary to introduce 'end-stops' on the controls.

The extreme regions on each control marked with the curved line designate this entire region as relating to the parameter value shown. This is to compensate for the mechanical tolerances of the potentiometers.

Operating Notes

Operating Level

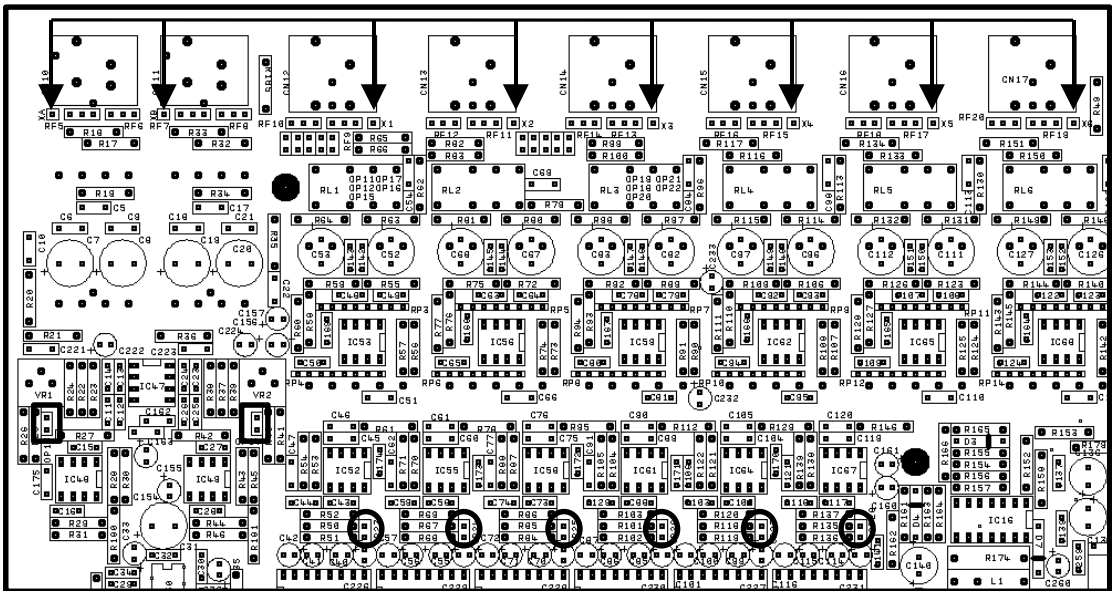
With any audio signal processing equipment it is necessary to ensure adequate signal level is used through the device, to avoid sacrificing noise performance. It is suggested that the operating level chosen should give adequate level to just light the -12dB LED on the headroom meter with maximum program level being used. Since the meter is deliberately set to show clipping 3dB early, this still provides 9dB of headroom before clipping occurs. With equalisation in use it may be necessary to further reduce the input level, as gain within the unit may cause digital clipping, indicated by the top red LED's lighting independently of the rest of the meter.

It should be noted that the figure quoted for the maximum input level options is the clipping point for that option (not a safe operating level). Always ensure that this clipping point is no lower than that for the following equipment in the signal chain, and allow extra margin if equalisation sections are boosted.

Grounding

The Screen (shield) pins on all audio connectors are normally connected directly to the ground pin of the IEC mains inlet. The chassis is also directly connected to this pin. Never operate this unit without the mains safety ground connected. Signal ground (0V) is in turn connected to the chassis ground.

To avoid ground loops, cable shields should be connected to ground at one end only. The normal convention is that the shield is only connected at the output XLR. Provision is also made for separately isolating each input and output shield pin permanently within the *E2* by breaking the appropriate PCB track, where marked with a box and an arrow next to each XLR connector using a small drill bit or cutter. See the following diagram for details.



XLR pin 1 Isolation points (arrowed) and 10dB pads (circled)

Specifications

Inputs: 2 electronically balanced◆
Impedance: > 10k ohms.
CMRR : >65dB 50Hz - 10kHz.

Outputs: 2 electronically balanced◆
Source Imp: < 60ohms
Min. Load: 600ohm
Max. Level: +20dBm into 600 ohm

Frequency Resp.: ±½dB 20Hz-20kHz
Dyn Range: >110dB 20Hz-20k unwtd
Distortion: < .02%@1kHz, +18dBm

High and Low Pass Filters:
Slope: Switchable 12dB/Oct Butterworth or 24dB/Oct Butterworth.

Parametric EQ Sections:
Type: Selectable low/high shelf (bands 1 & 4 resp.) or parametric response.
Centre/corner Freq: 20Hz to 20k in three ranges
'Q': 0.4 to 25 (2.5 – 0.04 Octaves)
Gain: +15dB to –25dB

Input/Output Gain
Both ±15 dB range.

Input meter: 7 point, -18dBu to +18dBu.
Output meter: 7 point, -18dBu to +18dBu.

Connectors
Inputs: 3 pin female XLR
Outputs: 3 pin male XLR.
Power: 3 pin IEC

Power: 60 to 250V ±15% @ 50/60Hz.
Consumption: < 20 watts.
Weight : 3.5kg. Net (4.8kg. Shipping)
Size: 1.75"(1U) x 19" x 11.8" (44 x 482 x 300mm) excluding connectors.

Options ◆ = Transformers available.
Optional Interfaces AES/EBU Digital Input/Output

Due to continuing product improvement the above specifications are subject to change.

Warranty

This product is warranted against defects in components and workmanship only, for a period of one year from the date of shipment to the end user. During the warranty period, XTA will, at it's discretion, either repair or replace products which prove to be defective, provided that the product is returned, shipping prepaid, to an authorised XTA service facility.
Defects caused by unauthorised modifications, misuse, negligence, act of God or accident, or any use of this product that is not in accordance with the instructions provided by XTA, are not covered by this warranty.
This warranty is exclusive and no other warranty is expressed or implied. XTA is not liable for consequential damages.

Options and Accessories

Part Number	Part Description
ITX-100	*E2* Transformer balanced inputs (factory fitted only)
OTX-100	*E2* Transformer balanced outputs (factory fitted only)
AES-E2	AES/EBU Digital inputs/outputs (factory fitted only)