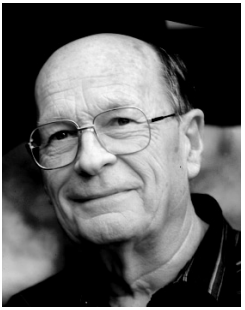
A Few Words from Rupert



"The 'digital age' imposes completely new considerations for high performance analogue audio design and brings both advantages and disadvantages with it. These considerations cause us to completely re-think how to get the very best out of each new design, such as the specifically designed transformers I have incorporated into *Pure Path*™ technology.

"The *Pure Path*™ "Channel in a Box" - or CIB - is the result of these careful considerations and designed to meet the changing needs of engineers and producers for a powerful yet compact outboard unit combining the features they might wish for in their console of choice.

"It has become common practice to surround the control room console with a collection of microphone pre-amps, equalizers and compressors - often using the original console purely as a monitor.

"The CIB is essentially the input channel of a very high quality console contained, complete with it's own power supply, in a 1U rack mounted assembly. It combines Microphone Pre-amplifier, Line Amplifier, Hi and Lo Pass Filters, Four Band Equalization and a fully featured Compressor.

"The Mic Pre-Amp, Filters and EQ stages are virtually identical to those used in the 9098i in-line console including familiar features such as "GLOW" and "SHEEN".

"The Compressor is an all analogue design which musically emulates the best of my past designs and includes a control of the "knee" shape ranging from "HARD" to a very gentle transition which I have called "&MM" (and Much More!) the description a friend gave it!"

CE

Parts of the design of this product may be protected by worldwide patents.

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It is recommended that all maintenance and service on the product should be carried out by AMEK or it's authorised agents. AMEK cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

PART No: MANCIB Issue 2

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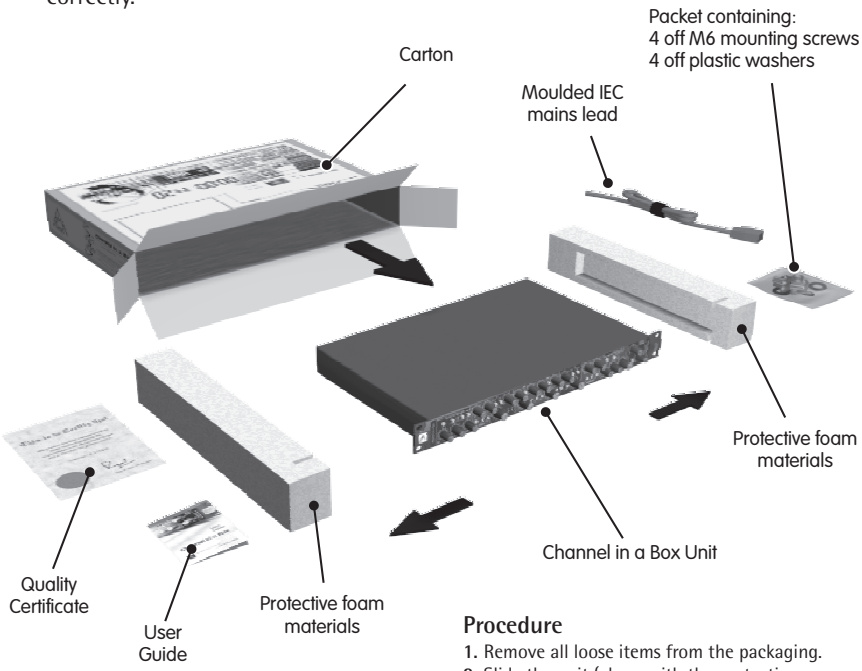
Contents

Unpacking

Check List

The following items are included with the product. Please retain all packaging materials until all expected items are accounted for and found to be operating correctly.



Procedure

1. Remove all loose items from the packaging.
2. Slide the unit (along with the protective foam parts) out of the box.
3. Slide the protective foam parts away from the unit.
4. Refer to the User Guide before installing or using.

Important Safety Instructions / Instructions de Sécurité Importances

Cautions Warnings and Notes

Please read this manual carefully before connecting this apparatus to the mains for the first time! For your own safety and to avoid invalidation of warranty, all text marked with these Safety Symbols should be read carefully! Please keep this information!

Cautions
Hazards or unsafe practices which could result in severe personal injury or death.

Avis
Dangers ou pratiques dangereuses pouvant résulter en des blessures graves ou causant la mort.

Warnings
Hazards or unsafe practices which could result in minor personal injury or product or property damage.

Avertissements
Dangers ou pratiques dangereuses pouvant résulter en blessures personnelles mineures légères ou en dommages à la propriété.

Notes
Contain inportant information and useful tips on the operation of your equipment.

Notes
Contiennent l'information de inportant et les pointes utiles sur l'opération de votre équipement.

Earthing / Terre

This apparatus MUST be earthed. Under no circumstances should the mains earth be disconnected from the mains lead.

Cet appareil DOIT être mis à la terre. La mise à terre ne doit pas être débranchée du terminal principal sous acune circonstance.

Important Safety Instructions / Instructions de Sécurité Importances

Mains Cable / Cable de Secteur

The supplied IEC mains cable must be terminated correctly to the AC mains supply before use. Use only an approved AC plug or power distribution device. The Green/Yellow core in the mains cable is a safety ground and must be connected at all times!

The three cores are colour coded as follows:

Safety Earth	=	Green/Yellow (Green/Yellow USA)
Live	=	Brown (White USA)
Neutral	=	Blue (Black USA)

Le cable de secteur IEC fourni doit être correctement au cable d'alimentation avant l'utilisation. Utiliser seulement une prise de courant conforme. Le cable vert/jaune à l'intérieur du cable d'alimentation est la sécurité terre et doit être toujours connecté!

Les 3 cables à l'intérieur du cable d'alimentation sont de couleurs suivantes:

Prise de Terre	=	Vert/Jaune (Vert/Jaune USA)
Phase	=	Marron (Blanc USA)
Neutre	=	Bleu (Noire USA)

Changing the Fuse / Changer le Fusible

To avoid the risk of fire replace only with same value and type of fuse as marked on the unit.

Before changing the fuse, always switch off the unit and remove the AC power cable! Using a flat blade screwdriver, press the fuse cap inwards gently and twist anti-clockwise to release the cap. Fit the new fuse to the cap and replace it in the fuseholder by reversing the procedure.

Afin d'éviter un risque de feu, remplacer seulement avec fusible de la même valeur et type tel qu'indiqué sur l'appareil, 1A (100-230V T). Les fusibles sont de type IEC 20mm protection-surtension (pour fusibles).

Avant de changer le fusible, éteindre l'appareil et enlever la prise d'alimentation! Utiliser un tourne vis à tête plate, appuyer sur le capuchon du fusible doucement vers l'interieur et tourner dans le sens contaire des aiguilles d'une montre pour dégager le capuchon. Mettre le nouveau fusible dans le capuchon et remetre en place en faisant la procédure inverse.

100V/230V Operation / Fonctionnement

This apparatus does not require any operating voltage adjustment.

Cet appareil n'exige pas l'ajustement de tension qui opérant.

Servicing / Services

The servicing instructions in this manual are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Les instructions de services contenues dans ce manuel sont pour utilisation seulement par des professionels. Pour réduire le risque de choc électrique, ne tenez aucune opération de service sauf celles contenues dans le manuel d'opération a moins d'être qualifié pour le faire. Référez toute réparation à un agent de service professionel.

AVIS: RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

WARNING - For your own safety and to avoid invalidation of the warranty, please read this section carefully.

- Do not place the apparatus on an unstable surface.
- Do not insert objects through any apertures.
- Do not use this apparatus near water.
- Unplug the unit before cleaning. Clean only with a damp cloth.
- Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus including amplifiers or power supplies that produce heat.
- Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised 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 or the third prong are provided for your safety. When the plug provided does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Avoid using mains outlets on the same circuits as air control systems or other equipment that regularly switches on and off.
- Only use attachments /accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the 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, the apparatus does not operate normally or the apparatus has been dropped. Unplug the unit under these circumstances.
- Adjust only those controls that are covered by the operating instructions.
- Use only the mains lead provided with the equipment . Other leads may not have sufficient current rating.
- Do not operate this unit with the cover removed.

Installation

Location

This product is designed and screened to minimise internal electromagnetic emissions and provide immunity to external electromagnetic fields.

To reduce the risk of performance degradation due to external interference, do not site this unit close to sources of strong magnetic fields such as power supplies, power amplifiers, loudspeakers etc.

Rack Mounting

This product is designed to be rack mounted using the screws and washers supplied to help preserve the finish of the facia panel.

The facia graphic layer is under-surface printed to provide a robust hard wearing surface designed to last the life of the product in virtually any operating environment.

It is recommended that additional rear or side supports are used in conjunction with the facia panel fixings, particularly when the unit is mounted in a flite case or vehicle where vibration and transit shocks can be expected.

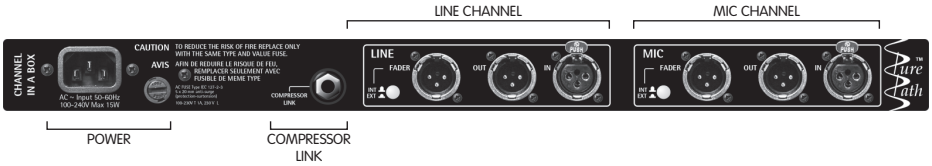
Powering up and Clicks

Clicks may be heard from in/out switches when the product is powered up, these will dissipate after approximately 10 minutes. This is perfectly normal.

Cleaning

Unplug the unit before cleaning. The product should be cleaned with a soft brush around the controls. If the facia becomes dirty, use a damp cloth with a little household soap to remove the dirt. DO NOT use solvent cleaners under any circumstances or the facia may be permanently damaged and warranty invalidated!

Connections



Audio Connections

Inputs

The Mic input is electronically balanced via a standard 3 pin female XLR connector and employs Rupert Neve's TLA (transformer like amplifier. The Line input uses a transformer balanced arrangement via a female XLR.

Outputs

The Mic and Line outputs are both transformer balanced via standard 3 pin XLR male connectors.

All audio connectors follow the European wiring convention:
Pin 1 = Screen; Pin 2 = Hot (+); Pin 3 = Cold (-)

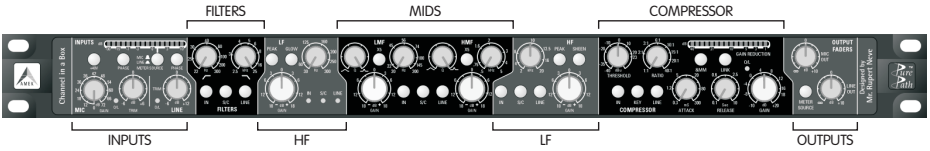
Faders

The Mic and Line faders can be switched out of circuit via the associated rear panel switches allowing external faders to be used. Connections are via standard 3 pin male XLR with the following pinout:
Pin 1 = Screen; Pin 2 = Fader Top; Pin 3 = Fader Wiper.

Compressor Link

When enabled, identical gain reduction can take place when two or more CIBs are linked together. The applied gain reduction is derived from whichever path has the greatest signal.

CIBs are linked together using a mono or stereo ¼ inch jack lead via the connector on the rear panel. For more than two units, create a daisy-chain lead with all the tip contacts wired together (the ring contact is not used).



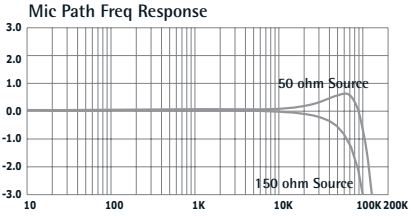
Signal Paths

There are three audio signal paths within Channel in a Box, Mic path, Line path and Compressor side-chain path. By default the side-chain is sourced from the Mic input. Filters, HF/LF and HMF/LMF can be switched independently into the Mic, Line or Side-Chain paths.

Selecting "Side-Chain" allows equaliser settings to be inserted into the Compressor side-chain allowing gain reduction to be frequency dependent. LF cut can be applied to the side-chain to prevent a bass line "pumping" the overall signal level. Alternatively, HF boost can be applied which makes the compressor act more severely on high frequency signals. This can be used to "de-ess" over sibilant signals.

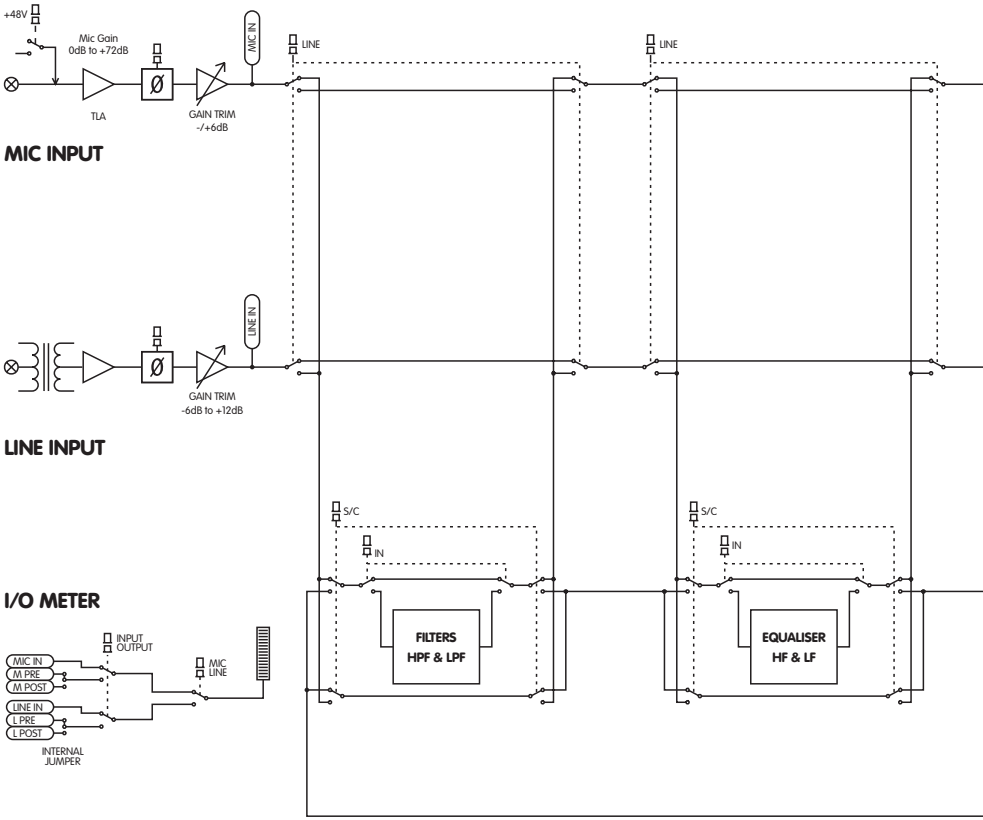
Mic Input

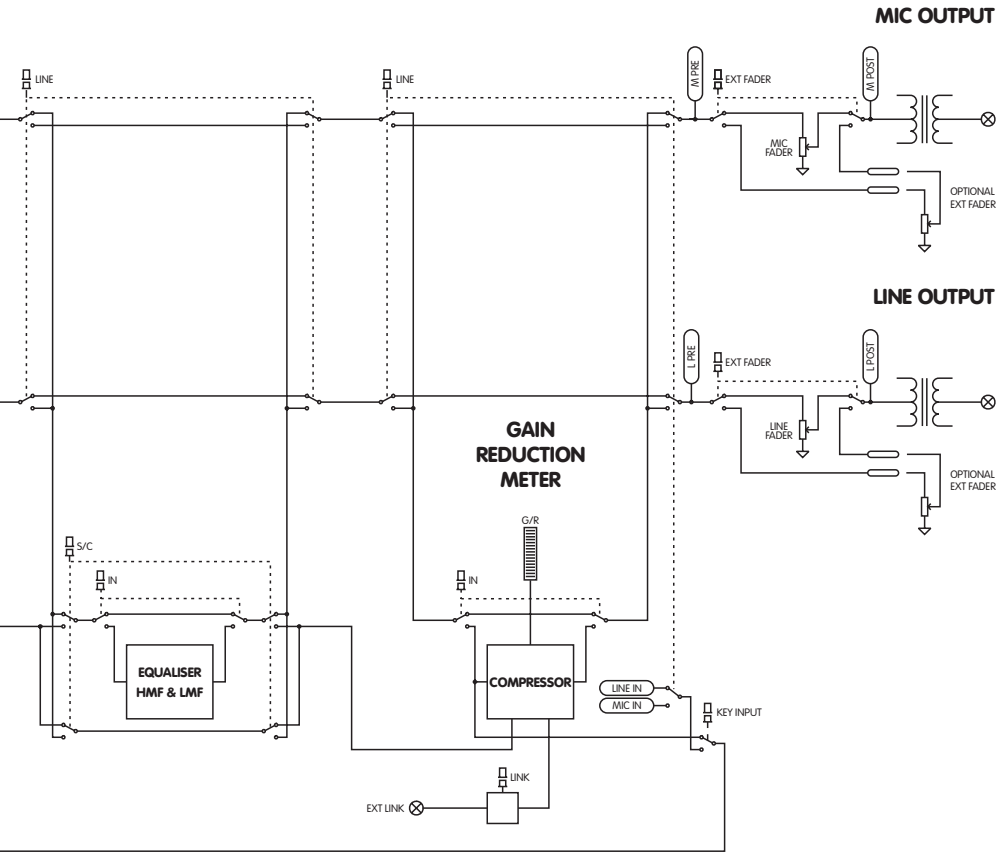
The microphone input circuit is a T.L.A. (Transformer-Like- Amplifier). It behaves like a transformer in that if a signal is applied to one input leg only, no (or very little) output is the result. A common mode input coil rejects common mode signals and acts as a Low Pass Filter for differential inputs.

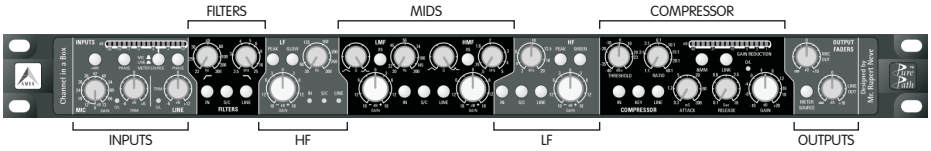


A high quality rotary switch provides a gain range from 0dB (unity) to +72dB in 6dB steps. Mic gain trim is continuously variable +/-6dB. The mic input impedance is 5k0 ohms thus producing extremely low loss from a 150 or 200 ohm microphone.

Block Diagram




MIC OUTPUT
LINE
LINE
M PRE
EXT FADER
M POST
MIC FADER
OPTIONAL EXT FADER
LINE OUTPUT
L PRE
EXT FADER
L POST
LINE FADER
OPTIONAL EXT FADER
GAIN REDUCTION METER
G/R
S/C
IN
IN
EQUALISER HMF & LMF
COMPRESSOR
LINE IN
MIC IN
KEY INPUT
LINK
EXT LINK



At unity gain, the "microphone" amplifier can handle a balanced input signal of more than + 20dBu without an attenuator pad (this is a unique feature amongst "microphone" amplifiers), it could therefore double as an additional high performance Line Input.

Phantom Power

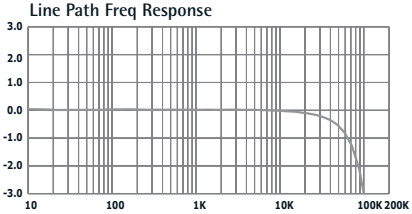
The 48V switch applies 48V phantom power to the Mic input XLR. Note: Under no circumstances press the 48V switch if an unbalanced source is connected to the XLR.

Phase Switch

The Ø (phase) switch allows phase inversion of the incoming signal. The switch should normally be released.

Line Input

The Line input is a 10k0 ohm (bridging) balanced and floating transformer design which provides uncompromising isolation and protection against ground currents and any unwanted signals.



Unlike traditional transformers the frequency response and distortion are independent of the source impedance of the preceding equipment. Full low frequency performance is maintained even with input levels higher than +20dBu. Gain is provided on a variable control covering an 18dB range.

The Line Input features a new high performance transformer with exceptional low frequency performance... as with any genuine transformer input, this Line Input may be used with either balanced or unbalanced sources without having to allow for change of gain due to grounding one leg of a so-called 'electronically balanced' circuit.

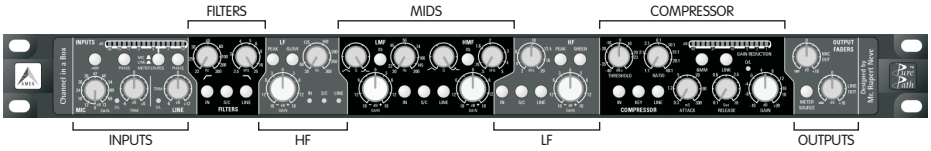
An internal jumper allows the Line Input to be re-configured for use as a low noise balanced mixing buss when used in conjunction with other Pure Path™ products. Refer to the applications ideas leaflet.

Phase Switch

The Ø (phase) switch allows phase inversion of the incoming signal. The switch should normally be released.

Level Meter

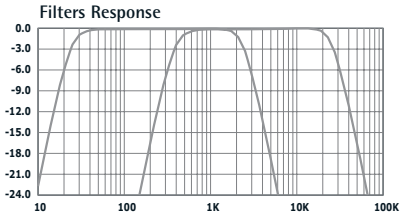
The level meter can display the input or output levels of either path. The local Meter Source switch selects between Mic and Line paths. The output section Meter Source switch selects between Outputs and Inputs. The meter is calibrated to read 0 for output levels of +4dB and normally monitors the post-fade signal (factory preset) but can be selected to read pre-fade by internal jumpers.



Filters

Filters In

Both filters are switched in together and are only active with this switch operated, irrespective of the audio path they are resident in: Mic, Line or Side-Chain.



Side-chain Switch

Switches the High Pass and Low Pass filters into the side-chain path.
Note: this switch overrides the Line switch setting.

Line

Switches the High Pass and Low Pass filters from the Mic path into the Line path.

High Pass

The High Pass filter operates over a frequency range of 22Hz to 300Hz with a slope of 18dB/Octave allowing the removal of unwanted low frequency noise components such as rumble and hum.

Low Pass

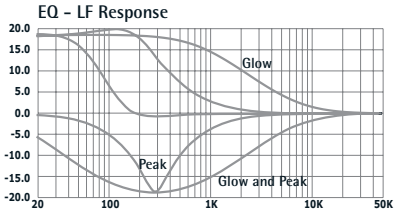
The Low Pass filter operates over a frequency range of 2.5kHz to 25kHz with a slope of 18dB/Octave. The extended range allows the filter to remove unwanted harmonic distortion in the conventional audio band caused by audio components in the inaudible upper frequency bands.

Equaliser

The EQ section comprises four parametric bands which are independently selectable in pairs (HF/LF and HMF/LMF) between the Mic path, Line path or Compressor side-chain.

Low Frequency

The LF band operates over a frequency range of 30Hz to 300Hz with a variable cut/boost range of ±18dB.



Peak

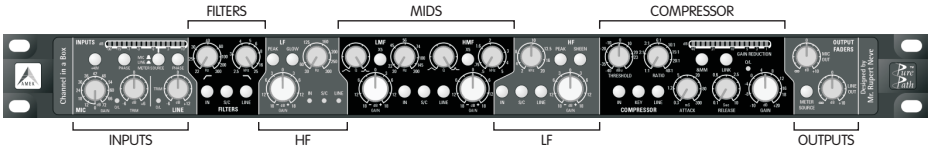
When the Peak switch is pressed a Bell response is selected. When deselected the response is Shelf.

In Bell mode the LF response curve is symmetrical around the current frequency setting with a Q factor of approximately 0.7 providing the ability to subtley boost or cut the signal around the chosen frequency.

In Shelf mode the response curve remains flat up to the chosen frequency where it rolls off at 12dB/Octave.

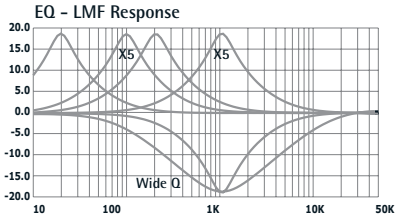
Glow

Normally the EQ provides steep sided curves allowing powerful tonal changes. The Glow switch provides a subtle alteration to the response curve giving greater or less "warmth", altering the overall sound without changing its character.



Low Mid Frequency

The LMF band operates over a frequency range of 20Hz to 200Hz with a variable cut/boost range of ±18dB. Using the X5 button changes this to 100Hz and 1kHz respectively.

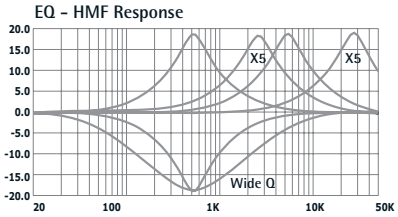


Q Control

The Q control defines the bandwidth over which the LMF control is active. The Q range is 0.7 to 2.

High Mid Frequency

The HMF band operates over a frequency range of 500Hz to 5kHz with a variable cut/boost range of ±18dB. Using the X5 button changes this to 2.5kHz and 25kHz respectively.



Q Control

The Q control defines the bandwidth over which the LMF control is active. The Q range is 0.7 to 2.

Mids In

Both LMF and HMF sections are switched in together and are only active with this switch operated, irrespective of the audio path they are resident in: Mic, Line or Side-Chain.

Side-Chain Switch

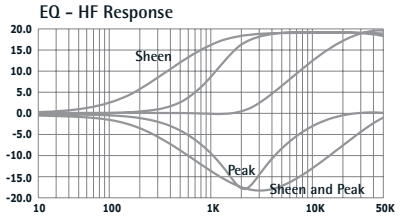
Switches the HMF and LMF bands of the EQ into the side-chain path.
Note: this switch overrides the Line switch setting.

Line

Switches the HMF and LMF bands of the EQ from the Mic path into the Line path.

High Frequency

The HF band operates over a frequency range of 2kHz and 20kHz with a variable cut/boost of ±18dB.



Peak

When the Peak switch is pressed a Bell response is selected. When deselected the response is Shelf.

In Bell mode the LF response curve is symmetrical around the current frequency setting with a Q factor of approximately 0.7 providing the ability to subtley boost or cut the signal around the chosen frequency.

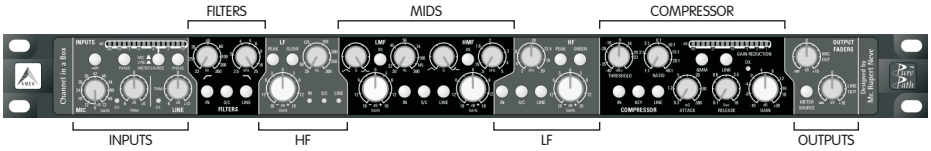
In Shelf mode the response curve remains flat up to the chosen frequency where it rolls off at 12dB/Octave.

Sheen

Normally the EQ provides steep sided curves allowing powerful tonal changes. The Sheen switch provides a subtle alteration to the response curve giving greater or less "warmth", altering the overall sound without changing its character.

HF & LF In

Both HF and LF sections are switched in together and are only active with this switch operated, irrespective of the audio path they are resident in: Mic, Line or Side-Chain.



Side-chain Switch

Switches the HF and LF EQ bands into the side-chain path.
Note: this switch overrides the Line switch setting.

Line

Switches the HF and LF EQ bands from the Mic path into the Line path.

Compressor

Threshold

Adjusts the level setting at which gain reduction begins to occur. The range is –40dB to +23dB.

Attack

Changes the time over which compression begins to occur. The range is 0.3 to 300mS.

Release

Determines the time taken for the gain reduction to stop being applied. The range is 0.1 to 10 Seconds.

Ratio

Changes the severity of the gain reduction once the signal exceeds the threshold setting. The range is 1:1 (no compression) to 40:1 (limiting).

&MM (and Much More!)

Selects a different shape to the compression curve which musically emulates the best of my past designs.

Output Gain

Using compression causes the output signal level to be reduced. This drop in the output level is therefore compensated for using the output gain control. The gain range is -6dB to +18dB.

In

Switches the Compressor into the signal path. The default is Compressor in the Mic path with the Mic signal presented to the Side-Chain.

Line

Switches the Compressor into the Line path with the Line signal presented to the Side-Chain.

Key

Switches the Side-Chain input to the "other" signal path, e.g. if the Compressor is in the Mic path, the Line path feeds the Side-Chain and vice versa.

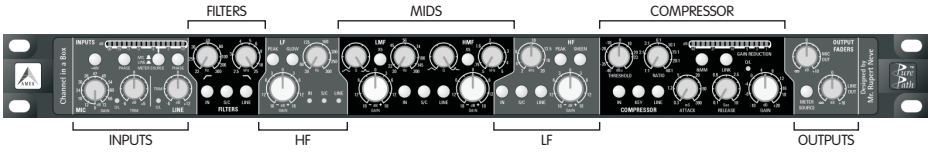
In many circumstances the CIB will be used with either the Mic or Line path for the primary signal flow but not both. This allows the secondary path to be used as an external Key input to the Side-Chain.

Link

When enabled, identical gain reduction can take place when two or more CIBs are linked together. The gain reduction applied is derived from whichever path has the greatest signal.

Gain Reduction Meter

If the signal exceeds the compression threshold, the amount of gain reduction is displayed.



Output Faders

Both Mic and Line paths are fitted with rotary output faders ranging from infinity (off) to +10dB with a detented 0dB point. Connections for external faders (5k or 10k ohm, linear law) are provided via rear panel XLR connectors and switches.

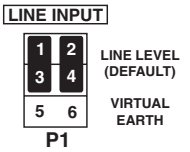
O/L LEDs

There are three overload LEDs monitoring signal levels on the CIB. All LEDs are set to illuminate 4dB before clipping. The Mic O/L LED is sourced from the Mic input trim and the pre fade signal. The Line O/L LED is sourced from Line input trim and the pre fade signal. The side-chain O/L LED follows the side-chain input signal and is additionally sourced from two points within each EQ section when they are switched to side-chain.

Jumper Options

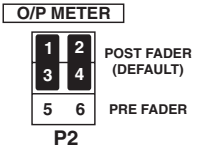
Line Input to Virtual Earth Conversion Option

To configure the Line input to become a virtual earth input, link pins 3 – 5 and 4 – 6. The factory default setting is pins 1 – 3 and 2 – 4.



Output Meter Source Option

To set the output meter source to pre-fader, link pins 3 – 5 and 4 – 6. The factory default setting (post-fader) links pins 1 – 3 and 2 – 4.



Specifications

Mic Input

Gain +72dB

Input Impedance

T.L.A. Input Impedance >5,000 Ohms

Input Balance

@1kHz Better than 60dBr

Equivalent Input Noise

(Bandwidth 22Hz-22kHz)
(Measured with gain settings above 54dB)
Input terminated with 150 ohms Better than -128dBr
Input terminated with zero ohms Better than -133dBr

(Measured with gain at 36dB)
Input terminated with 150 ohms Better than -127dBr
Input terminated with zero ohms Better than -129dBr

(Measured at unity gain)
Input terminated with 150 ohms Better than -98dBr
Input terminated with zero ohms Better than -98dBr

Harmonic Distortion

Unity gain setting
Input/Output level +20dBu
THD measured @ 1kHz Better than 0.0015%

Gain setting 42dBu
Output level +20dBu
THD measured @ 1kHz Better than 0.002%

Maximum Input Level

T.L.A. @ Unity gain +22dBu

Equaliser

Noise

At the output, unity gain with all EQ in
22Hz-22kHz Better than 92dBu

Distortion

Unity gain with all EQ in,
1kHz @+20dBu. Better than 0.0025%

Line Input

Gain -6dB to +12dB

Input Impedance

Bridging Input Impedance >10,000 Ohms

Input Balance

@1kHz Better than 60dBr

Overall Noise

Measured at output
(Bandwidth 22Hz-22kHz) Better than 98dBu

Harmonic Distortion

Unity gain setting, input/output level +20dBu
THD measured @ 1kHz Better than 0.002%

Maximum Input Level

Balanced and floating transformer
Input @ unity gain +22dBu

Filters

Noise

At the output, unity gain with Filters in
1kHz @+20dBu. -95dBu

Distortion

Unity gain with Filters in,
1kHz @+20dBu. Better than 0.0025%

Compressor

Noise

Measured at output, gain unity, ratio @ max,
Threshold @ 0dBu,
attack and release @ mid setting Better than -94dBu

Distortion

Settings as for Noise above,
Input signal @ +10dBu, 1kHz Better than 0.02%
(mostly 2nd harmonic)

Outputs

Maximum Output Level

Balanced and floating transformer
Measured at the Mic Path output +22dBu
Measured at the Line Path output +22dBu

Notes