

EDB-2 H.E
Equaliser Direct Blender – 2 Channel Pre-amplifier &
Harmonic Enhancer
INSTRUCTION MANUAL
New for 2020



- Acoustic Pre-Amplifier, EQ's, D.I, Anti-Feedback, Blender, Phantom & Harmonic Enhancer – For Pickups & Microphones via Battery or D.C Powering
- SUPERIOR ACOUSTIC AMPLIFICATION & CONTROL

INSTRUCTION MANUAL

EDB-2 H.E provides a beautifully voiced and practical solution to the diverse and critical needs for high quality acoustic musical instrument amplification. Suitable for stage and other signal processing e.g. recording

Offering a huge range of gain to Interface signals weak or strong.

With mixers and other sound processors, EDB-2 H.E provides a unique range of features, including highly effective but simple Interactive EQ & Tunable Notch Filter plus other versatile facilities to get the best possible, trouble free sound from amplified acoustic stringed instruments with ease all from an exceptionally compact unit

EDB-2 H.E incorporates customer-led Expanded Features, now Dual Instrument/Player friendly

Featuring: H.E.A.T. ~ Harmonic Enhanced Analogue Technology offering enhanced tuneable natural High Harmonics

Improved Class "A" Inputs & Classy Pro Audio Circuit voiced for clarity and warmth, producing a huge 32dB of Low Noise Gain

Twin Channels with 2 sets of 5 Band Interactive EQ & 2 Silent Mute Switches

48v & 11v Phantom Power To Jack & XLR - Mono, Stereo & Balanced Inputs

Send & Return FX Loop ~ providing optimal connection of Effects & Tuner

Mono, Stereo or Blended Outputs via Jack & Balanced D.I. XLR

Tunable Notch Filter ~ defeating feedback & resonances on either channel

2 Way Phase Reverse & Earth Lift Switches ~ for phase imbalances, feedback & ground hum

2 Range Switches for Guitar, Bass, Violin/Mandolin ~ handling noise, boom & feedback

Easy to read, BBC Pro Audio design panel layout & contrast

Batteries & Power Supply included (as standard) ~ suits Europe, North America, Japan etc. 100v-240v

3 Pre-amplifier mounting methods

New sturdier, lightweight, extra-compact construction in Aluminium alloy

Long Life Heavy Feel Controls that hold their position.

Comprehensive printed manual

Designed in UK - Made in EU

Congratulations on your astute purchase!

**Please read this comprehensive manual carefully
before first use of your EDB-2 H.E. Text is also
available on our website:**

www.headwaymusicaudio.com

EDB-2 H.E PRINCIPLES

EDB-2 H.E is a Pre-amplifier or Analogue Audio Signal Processor with many additional features, offering huge reserves of gain and headroom designed to bring instrument output levels up to optimum levels to interface with a wide range of other such devices and at low noise

EDB -2 H.E shapes and equalises uneven tones, defeats feedback, and allows two sound sources to sit together and sound better by reversing the phase or cancelling hum loops

Devices with which to interface include Mixers, Effects Pedals and Rack Units, Powered Monitor Speakers, Headphone Amps, Combo Amplifiers and Power Amplifiers

EDB-2 H.E also offers a uniquely developed Analogue Harmonic Enhancer feature, perceived as an "audio sparkle", which replaces naturally inherent harmonics 1-1.5 Octaves above what is often lost from your instrument due to shortcomings or inadequacies in a pickup or microphone

All can be achieved easily at hand. EDB-2 H.E can be On but muted on either channel, ready to re-start instantly and quietly. EDB-2 H.E is small enough for convenient transportation

DON'TS: Without additional suitable equipment, EDB-2 H.E WILL NOT drive speakers, headphones or produce it's own audible sound and WILL NOT accept a power

amplifier into the "IN" or "Return" sockets as this may cause damage .

EDB-2 H.E WILL NOT operate or may become intermittent or damaged with use of any but the included Power Supply. Will likely to be damaged if rain or liquids are in contact

CONTENTS OF EDB-2 H.E RETAIL PACKAGING BOX:

I) EDB-2 H.E Pre-amplifier x 1 EAN: 7107718579859



II) 1 x Belt clip & screws x 2



III) Power Supply (as standard) with mains plug for territory initially supplied

IV) PP3 Batteries x 2 fitted

V) Instruction Manual, Guarantee Card & "Headway"
Logo Stickers to apply to Cases etc

MANUAL CONTENTS / INDEX

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HEADWAY PRODUCTS/ POLICY OF CONTINUAL
IMPROVEMENT

HEADWAY EDB-2 H.E

FEATURES DIAGRAM TOP PANEL

LOW BATTERY LED

Lights PURPLE when Batteries are within hours of expiring

POWER ON/ STANDBY/ OFF

Green LED Indicates Power ON
Slow Power on Time to Reduce Power on "Thump"

HIGH HARMONICS

Harmonics Enhancer Switch: CH.1, CH.2 or BOTH

ENHANCER >1kHz

Level of Harmonic frequencies added above 1kHz

NOTCH FILTER

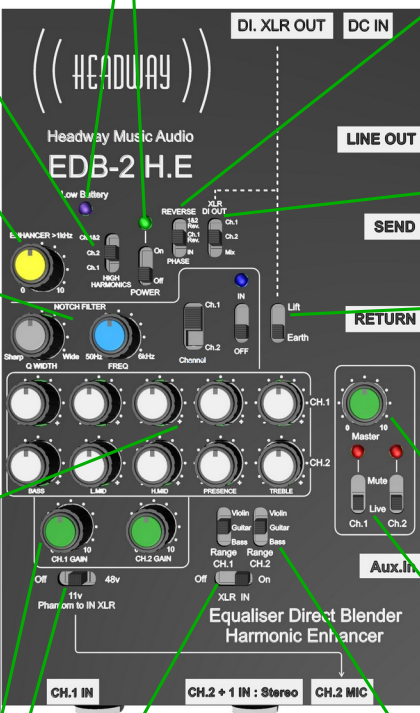
-12dB Notch
Q=Band width
FREQ = Centre Frequency of cut.
Switches: CH.1 CH.2 or OFF

5 BAND EQ CH.1

TREBLE @ 10kHz +/- 13dB
PRESENCE @ 2.8kHz +/- 7dB
H.MID @ 880Hz +/- 12dB
L.MID @ 590Hz +/- 13dB
BASS @ 120Hz +/- 12dB
(BASS...if measured @45Hz +/-16dB)
CH.2 : As above

INPUT GAIN

0dB to 32dB
CH.1 & CH.2



PHASE

Reverse Phase of CH.1 to CH.2, or EDB-2 to Outside signals.
Anti-Feedback Option

XLR DI OUT

Switches Signals: CH.1/ CH.2/ Mix on D.I. OUT

EARTH/GROUND LIFT

Anti Hum Loop - Disconnects Pin 1 re. XLR OUT

MASTER

Sets Output Level to LINE OUT, XLR D.I. OUT & AUX IN levels

MUTE CH.1 & CH.2

Turns OFF Output Signals Re. Red LED.
Live Denotes Pre-Amp Output ON

RANGE FILTER

(High Pass Filter/ Low Roll OFF)
Switches: CH.1 & CH.2
Violin @ 192Hz
Guitar @ 85Hz
Bass @ 41Hz

XLR SWITCH/ MIC IN

Switches: XLR OFF / ON

XLR PHANTOM SWITCH

Switches: OFF / 11V / 48V

EDB-2 H.E Side Panel

AUX IN / IPOD INPUT

3.5mm Mini Jack
Post EQ to Master Vol.

RETURN

Mono: Ch.1 to Tip

FX LOOP

SEND

Mono: Ch.1 to Tip

LINE OUT

Low Impedance
Mono Mix Jack Out



EDB-2 H.E Front Panel

PHANTOM POWER 11V

TO CH.1 JACK IN
SWITCH OFF/ RING/ TIP

CH.1 JACK IN

Switchable Phantom to
Tip/Ring Powers
Electret Mics & suitable
Active Pickups



CH.2 MIC/XLR IN

Balanced with Phantom
Power Option
(See XLR SWITCH)

CH.2 Stereo/Mono JACK IN

Routes Stereo to Both
Channels if no Jack in CH.1

EDB-2 H.E Rear Panel



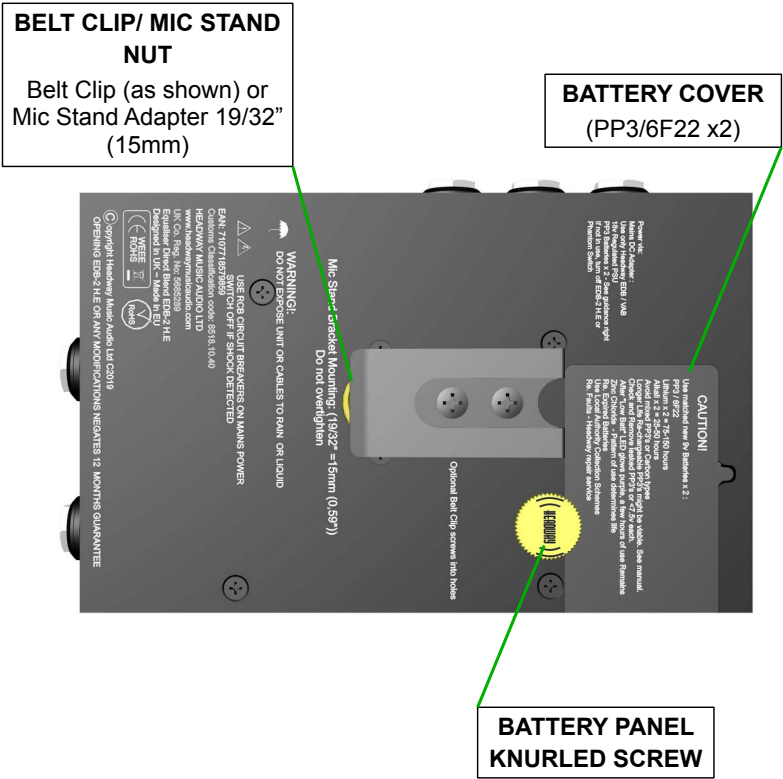
EXT. POWER IN

18v DC Adapter Input Connector
Use ONLY Headway EDB – PSU

D. I. / XLR LINE OUT

Balanced Line Output XLR (CH1/CH2 or MIX)
Does not accept Phantom Power From Mixer
but EDB-2 H.E not damaged

EDB-2 H.E Bottom Panel



Please read all warnings on Headway Sheer Acoustic EDB-2 H.E very carefully

1 SAFETY PRECAUTIONS & OPERATION

1.1 IMPORTANT SAFEGUARDS to your life and gear to note before use of your EDB- 2 H.E

IMPORTANT: Make sure that you power only by: PP3 (9v) battery as included with this unit or: Phantom Power via XLR-Stereo Jack plug Adapter (supplied as standard with unit) installed in Output Socket and with 48v Phantom from Mixer

Headway EDB/M PSU (Optional) Mains AC-DC 18v Adapter Connector Types available for EDB-2 H.E See Electronic Specifications

EDB/M PSU UK = United Kingdom/Eire/Singapore

EDB/M PSU EU = Europe (Continental Mainland)

EDB/M PSU NA = North America/S. America/Japan

EDB/M PSU AUS = Australasia/S. Africa

1.1.2 EARTH PROTECTION & GROUNDING To prevent electric shock, ensure that any Input/Output cables from EDB-2 H.E are connected to amplification or signal processing devices (e.g. mixers, amplifiers & effects units) so that where Mains powered devices with an Earth Connection are used, there is a continuous, unbroken chain of Mains earth connection and where the mains supply at the venue offers a viable Earth or Ground connection. DO NOT disconnect any ground/earth wire on any earth connected mains powered devices

1.1.3 MAINS PROTECTION Always take care to protect your own life and those of others along with your equipment by using RCD Circuit Breakers and AC Mains

Surge Protectors at each source of the mains power. Circuit breakers should be tested prior to use. We recommend that you also use Mains Noise Filters. Also Switch Off Power Supply Unit and other connected mains powered devices and unplug when EDB-2 H.E unit is not in use

1.1.4 PREVENTION OF SHOCKS & DAMAGE DO NOT expose the EDB-2 H.E, its optional Power Supply Unit or attached cables to any liquids, such as rain/spilt drinks.space. If your EDB-2 H.E should come in contact with any liquids, switch off at mains power socket, disconnect and dry EDB-2 H.E and hands before re-use
SHOCKS WARNING Stop immediately the use of any sound equipment when even minor electric shocks are detected and seek a practical consultation from a qualified professional electronics repair technician

1.1.5 VENUE WARING Avoid venues with suspect electrical wiring, damp or wet wires and/or contacts or where sparks are visible

1.1.6 MICROPHONE SAFETY Where microphones are used into EDB-2 H.E or associated PA system, Government Authority Type Approved & Licensed Radio Microphones and Transmitters could be used. Do not use Non-Type Approved for the Territory, likely to cause or pick up radio interference

1.1.7 CABLE & AMP PLACEMENT WARNING Always place your EDB-2 H.E and associated cables where they

are visible and cannot cause an accident such as on a Mic Stand or Belt Clip. Try not to block exits

1.1.8 MINIMISING PLUG IN NOISES. Plugging In and Out of EDB-2 H.E quietly is possible without a big clunk heard through the P.A Sound System is as follows:

First engage Mute switch, plug Guitar Lead /Output cable into Guitar/Instrument Output Socket, then plug Guitar Lead Cable into combo amp, mixer or FX device etc.

Next, plug Guitar Lead Cable into EDB-2 H.E IN Socket.

Next Switch Mute to LIVE

Switchcraft, Neutrik, Deltron & GH offer quieter switching Jack Plugs

1.2 SERVICING, REPAIR & RETURNS: All Headway servicing and repairs should be carried out by Headway Music Audio Ltd. or any approved agents where applicable

All returns must be sent pre-paid and insurance against loss is sender responsibility. Headway Music Audio Ltd. will NOT be held responsible for losses in transit or for duty and taxes incurred, e.g. where customs documentation is completed incorrectly. Customs Declaration forms on returned products sent internationally, should be completed and could read, for example:

"Electrical Musical Instrument Amplifier Unit returned to Country of landed origin (UK) for Service/Repair. Not for Re-sale. Value for Customs = \$ 35 ? **Customs**

Classification & Code: Graphic equalisers & mixing units: **8543 70 90 99**. Unit will be returned to sender"

See: Transport 1.8 If returning product for repair/service you must include: Your full contact details including name, phone number, full mailing address and email address. A full description of any problems. If claiming under Guarantee/Warranty you must also include: Proof of purchase clearly indicating date, business name and address of dealers who sold the product, when as new
DO NOT DISASSEMBLE ANY PARTS OF YOUR EDB-2 H.E yourself as there are no user serviceable or repairable components. Any attempt to do so without prior permission would negate the 12 Month guarantee

1.3 CLEANING the EDB-2 H.E: Ensure EDB-2 H.E is unplugged before cleaning with a moist cloth. Do not allow moisture to enter unit and do not use chemical or abrasive cleaning products

1.4 PRODUCT LIABILITY: Headway Music Audio Ltd. cannot be held responsible for damage to its products caused by the subjection to unreasonably high or low temperatures or due to wet conditions or for abuse or mishandling. Headway Music Audio Ltd. retains the right to make such determination according to its own inspection

1.5 CONSEQUENTIAL LOSS: Headway Music Audio Ltd. will not be responsible for consequential loss or damages such as due to the use or misuse of its products, accident, neglect, technical modifications or unreasonable expectations. Headway Music Audio Ltd. will not be held responsible for the application of Phantom Power where some other electronic device may

have been damaged. Headway Music Audio Ltd. retains the right to make all such determinations from its own inspection

1.6 PERSONAL INJURIES: Headway Music Audio Ltd. cannot be held responsible for personal injuries or damages related to its products such as those caused by heat, fire, obstruction, modifications or electrical shock where obtained due to a lack of care on the part of the injured party or due to that persons ignorance of the instruction manual or due to that persons ignorance of best practices in the use of mains powered facilities. Headway Music Audio Ltd. retains the right to make any such determinations according to its own assessment

1.7 WARRANTY/GUARANTEE TERMS: EDB-2 H.E guarantee is valid for up to but no longer than 12 months from the date of purchase but valid only after the guarantee registration has been made online at: www.headwaymusicaudio.com

All guarantee issues will be subject to assessment by Headway and appointed service agents. Headway Music Audio Ltd. does not recognise or participate within guarantees/warranties offered by third party companies such as retailers and dealers. We have observed that such dealer guarantees are not always maintained

WHAT IS COVERED: Headway Music Audio Ltd. Cover labour and parts required for the actively functioning of all aspects of the amplifier. This guarantee is subject to: Full completion and receipt by Headway Music Audio Ltd. of online guarantee form within 30 days of purchase, customers retention of proof of purchase indicating date,

business name and address of dealers who sold the product

WHAT IS NOT COVERED: Shipping related, handling or customs, tax & duty charges will not be covered under this guarantee. (Physical damage and cosmetic blemishes.) Electrical, electronic or audio problems will not be covered under this guarantee if caused by electronic or electrical misuse or general vandalism! Damage caused by insufficient care in handling and/or inadequate transportation. Non - registered guarantees, partly completed registrations, expired guarantee periods or 3rd party company issue guarantees will NOT qualify for free repair work or free transportation

WHAT IF I HAVE NOT REGISTERED GUARANTEE? If you have not registered the Guarantee/Warranty within 30 days of purchase you are not covered by the 12 Month Guarantee unless you are the end retail customer and have purchased direct from Headway Music Audio Ltd. If you have not registered it you retain your statutory rights under consumer law of the country in which you made the purchase and your contract is with the dealer/retailer

1.8 STORAGE & TRANSPORT ADVICE: Headway Music Audio Ltd. suggest storing & transporting the EDB-2 H.E in the original box or inside a polythene bag inside a heavy, double thickness cardboard box in excellent condition or the original packaging. Any container should be padded out in order to prevent the unit from shifting around during transit. We recommend using Postal Services, DHL or Fedex

International Shipping with Batteries: Lithium batteries, Re-Chargeables and spent batteries are now banned from all International Shipping and could result in a return to sender or disposal. The battery shipping rules and regulations keep changing so please check. If in doubt, remove them first

2.0 EDB-2 H.E POWER ON / QUIETER SWITCH TO LIVE SOUND

EDB-2 H.E is powered ON/OFF via Power Switch on top

First ensure that any Instrument(s) are plugged in to their cables, the cable are plugged into the EDB-2 H.E and Mute Switches are ON.

Next, move Power Switch slowly with a delay through middle "Standby" position for less noisy switching to 'ON' when connected to a live sound system

Lastly, when ready for live sound, Switch Mute(s) to "Live" on Channel(s) in use & Red LED's cease illuminating. This should be a virtually silent operation

3. PICKUP & MICROPHONE TYPES TO INTERFACE

The primary types of pickups optimised for EDB-2 H.E can be active (powered by battery or phantom), or Passive (non powered) in addition to all main types of microphones:



i) **Active (Powered) Piezo Under Saddle Pickup Systems** (e.g. HE4/G.FEQ, or Snake3 pictured above, or forthcoming Headway "Superbug" - Low Impedance Output with Fixed EQ according to model). These pickups are one of the last prone to feedback and body noises



Ebony Floating Bridge for Archtop Guitar – here routed for Piezo cable Pickup & bone saddle.

ii) Passive Piezo Cable or Co-axial Cable Under Saddle Pickups (e.g. Headway HE4 Passive - Ultra High Impedance Output that requires a short, high quality lead into a High Impedance Input such as EDB-2 H.E



iii) **"The Band & Band2"** pictured on Violin above. Headway's "The Band" is a popular, easy fit, strap around Violin Contact Pickup with High Impedance Output. "The Band2" is latest tonal upgrade version for 2020

iv) **Active Magnetic Sound-hole Pickups** - Low Impedance Output (e.g. Headway SAM-1 pictured

above.) These types of pickups are generally the least prone to feedback.



SAM-1 carries pre-EQ and Harmonic Enhancer. Other active magnetic sound-hole pickup typically require a lot of EQ and may still sound mellow or boxy



SA2 Active Under Saddle Pickup System with On Board 4 Band EQ & Vol.

v) **Active Piezo Contact Pickups** (e.g. forthcoming Headway “SuperBug” - Low Impedance Output) These should be less prone to feedback than Passive Contact Pickups and a lot less prone than Microphones



vi) **Transducers or contact pickups** : High Impedance (e.g. Headway “Limpet” Passive Contact Pickup) ,

Headway “Limpet Duo” pictured above. These should be less prone to feedback than Microphones

vii) **Passive Piezo Ceramic** - Under Saddle Fitting

viii) **Passive flexible “Piezo Film”** contact pickups or Under Saddle Transducer pickups (may be encased in metal) - Ultra High Impedance

ix) **Passive Magnetic Sound-hole Pickups** - Low to Mid Impedance Normally fairly proof against feedback

x) **MEMS Microphones** include analogue output versions of miniature mic's mainly utilised in the manufacture of digital devices. Not unrelated to Electrets they exhibit a generally flatter frequency response and note: take out "which" run on very low voltages (typically 3v-5v) from their own power supplies.

MEMS are new to the analogue audio industry but carry/hold a lot of potential to rival miniature Condenser Microphones (i.e. a smaller footprint, lower power consumption, higher sensitivity, flatter response and less expense)

xi) True **Condenser or Ribbon Microphones**: Run optimally at 48v from EDB-2 H.E or most mixers via XLR connections, they deliver high quality amplification only at very low stage volume levels without problems

xii) **Electret Condenser Microphones**

Run on low voltages via battery compartments or on low Phantom Power Voltages usually between about 5v-11v, their sound quality is normally considerably lower than with True Condenser Mic's or MEMS, but may be powered by EDM-1 H.E or EDB-2 H.E 11v Phantom to stereo Jack Plugs. Check if Tip or Ring wiring is required

and check voltage requirements. BEWARE that 48v is likely to burn them out.

xiii) **Dynamic Microphones:** Included the popular SM57 and may connect via XLR or Jack but do not require powering and are not damaged by Phantom Power. They are often tough and reliable but not terribly sensitive and have an uneven frequency response. They usually benefit from treble boosts and mid cuts. Most are for external use on stands but miniature versions do exist, often used primarily for drums or woodwind

3.1 CABLE / LEADS NOTES:

Suitable Jack leads as used to the Input of the EDB-2 H.E should have at least 80% screening, preferably braided or, at least, conductive plastic shielding with extra extensive lapped screening to minimise hum and radio interference

Denmark can have a particular problem with hum when using Mains electricity to run a sound system, because there is no mains earth. So everything has to be exceptionally well shielded, particularly at high impedance

High quality leads as short as practicable with metal covers are generally recommended

3.1.1 LEADS FOR PASSIVE PICKUPS: For the highest Impedance Passive Pickups such as Piezo Cable or Film

pickups, we recommend using cables 2m (6') max. if standard quality (e.g. Klotz or Van Damme), and 3m (9') max. with note: remove special low capacitance cable, (e.g. Sommer Cable into Pre-amp Input)

Headway offers Sommer Cable Jack Leads and quality Standard braided cable Jack leads with quality lightweight Jack plugs

For High Impedance Passive Piezo Pickups, such as Piezo Ceramic or Headway's popular "The Band", use quality cables of 3-5m (9'-15') max. to EDB-H.E are recommended

For Lower Impedence Magnetic Passive Pickups and Dynamic Mic's, a max. of 6m is recommended

3.1.2 LEADS FOR ACTIVE PICKUPS: quality Active (powered) Pickup Systems of all types are least affected, but are not unaffected by lead length and quality. A maximum of 10m (33') is recommended. For lengths above that, go to balanced cables, such as XLR outputs from Active D.I Boxes, e.g EDB-2 H.E

3.1.3 D.I. BALANCED LEADS: XLR Output leads running a Balanced signal greatly extend effective lead lengths possible without noise build up, making cable quality less critical for noise

4.0 CH.1. JACK INPUT (Standard 1/4" - 6.35mm diam.)
- LOCATED ON FRONT END. Accepts Active and

Passive Pickups and some Dynamic and Electret Condenser Microphones. Offers Stereo (TRS) Socket configured for standard Mono Jack Plug Inputs. Alternatively Stereo Jack Plugs may be used with Phantom Power options. See: Sections 3.x,xi,xii, 8 and 9

Warning! - Plugging a live Power Amp would likely damage the unit and negate the Guarantee / Warranty

5.0 MUTE/ LIVE SWITCHES ON CH.1 & CH.2 -
LOCATED ON TOP. Mute position with Red LED illuminated indicates that Output is OFF on that Channel. They are useful to allow silent tuning in front of audience or to switch off during periods of inactivity without re-setting controls, preventing howl sound/feedback

Two Mute Switches enable easy instrument swapping and quieter plugging/unplugging when Live. Mutes can also be used to switch off a feedback loop instantly

ROTARY POT CONTROLS -LOCATED ON TOP

6.0 GAIN CONTROLS (- CHANNEL 1 & 2) (0dB-32dB Gain) Graduated 0-10

Turn Rotary Pot CW to increase the gain. Each dot marker equals 2.5dB (approx.) or +/- 40%

Control on maximum "10" provides gain of 32dB (x 5 approx.) which is far more than should normally be required

Start at around "2-3" or 1/4- 1/3 of the way to the right and adjust to taste, listening to the level/desired volume.

Control on maximum "10" provides gain of 32dB (x 5 approx.) which is far more than should normally be required.

NOISE NOTES: Background noise, usually residual hiss and hum, may or may not be audible. Noise levels usually increase as gain levels are boosted but may or may not be more noticeable. But a higher output from EDB-2 H.E may mean running subsequent devices in the chain with less gain and producing less noise at those stages. Every electronic device produces some noise in operation. You may wish to provide the highest gain levels from the devices in the chain with the lowest noise levels?

EDB-2 H.E is a multi-function device which may be run on batteries, which has made the achievement of a low noise performance challenging, but this has been attained. This is not mains powered, nor is it a limited single function device, or a digital software, so some small amount of noise is necessary. See Electrical Specifications 19.2.7

6.2 GAIN & MASTER - JOINT OPERATION

Method A. After plugging in at a Gain of "0" with Mute ON, turn Master up to about 2/3 CW or 2pm., then switch Mute OFF and gradually turn CH.1 (or CH.2) Gain Control CW note: loose "slightly"until you have reached the desired level at maybe 1/4-1/3 CW.

Method B. After plugging in at a Gain of "0" and with Mute ON, switch Mute OFF and turn MASTER up a little

maybe 1/4-1/3 CW, then gradually increase the Gain CW to maybe 1/2-2/3 CW or about 2pm., until the desired level (for your instrument) is reached. Further adjust Gain and Master in order to retain headroom and clarity. Use the MASTER control for the overall volume required.

Method "B" should offer a slightly lower noise level, while Method "A" may offer a slightly clearer or more pleasing tone ~ Recommended

6.3 INTERACTIVE 5 BAND EQ ~ CH.1 & CH.2 - LOCATED ON TOP

**-Baxendall Interactive & Musical Sounding EQ
CW = Clockwise (right) to Increase effect of Rotary
Pot Controls from Centre position marked by Centre
Detent**

**ACW = Anti Clockwise (left) to reduce effect of
Rotary Pot Controls from Centre Position, where you
may be able to feel Centre Detents. Detents may not
be felt due to long life "Heavy Feel" Pots used
(potentiometers), that hold their position**

Each dot marker equals 2.5dB (approx.) or +/- 40%

EDB-2 H.E now offers two sets of 5 Band EQ by popular demand to offer maximum flexibility in shaping the sound of two sources via two channels for input from both Pickups and/or Microphones

6.3.1 TYPICAL EQ REQUIREMENTS

Steel Strung Acoustic Guitars plus Celtic Bouzouki, Octave Mandolas and Acoustic Bass often require a mid range cut, especially when playing full chords. Headway HE4 & Snake3 Fixed EQ pickups will require less EQ applied than most other pickups because they incorporate an active tone section, such as with fixed mid range cuts and low end roll offs, which is set for the instrument type specified on the Pickup model (e.g Headway HE4/G.FEQ for High End Acoustic Guitar - Fixed EQ)

Nylon Strung Guitars played finger style, Macaferri or Resophonic Guitars usually require flat mid range EQ or maybe with a slight boost unless they are played with mainly full chords in which case some mid cut may be preferable.

Violins and Mandolins often require treble cuts and low end cut below 200Hz, as offered on EDB-2 H.E Range Switch

Violins also often benefit from Upper Mid cuts

Many Electret and Condenser Microphones carry a Presence or Treble boost, which you may wish to cut via EQ controls?

Dynamic Mic's usually benefit from a treble boost and often some mid cut

6.3.2 BOOSTING EQ: The EDB-2 H.E offers active boost as well as cut on its EQ controls while some alternatives offer merely passive or cut functions on controls.

However, boost functions can only work effectively if there is a significant amount of the frequency already there in order to be able to increase it.

The Harmonic Enhancer can apply high end content above 1 kHz that would otherwise not be present which can then be fine tuned, cut or further boosted via the Treble and Presence Control

For critical applications, EQ is generally thought to sound better where cut rather than boosted

6.3.3 WHAT DETERMINES TONE? There are a lot of overlapping influences. At the top (treble) end alone, they include reflectiveness and brightness of the room, what fixtures, fittings and people are in it, the size of the space, the instrument type and what it is constructed of, strings type and condition, tuning, player style, type of pic or fingers used, pre-amplifier, effects, power amplifier, speaker drivers and speaker cabinets as well as the direction the speakers are set at. EQ can compensate for a lot of these influences

But most important of all with EQ is to **USE YOUR EARS!**

6.3.4 EQ CONTROLS - ROTARY POTS

i) **BASS CONTROL:** +/- 12dB centred broadly, approximately @ 120Hz, or +/- 16dB if measured @ 45Hz....and before you ask, YES, this figures are both correct!

Allows control of the bass at the lowest frequency of the audio spectrum and will over-lap a little tonally with Low Mid control

Controls the lowest frequency of the audio spectrum
Cut Bass ACW to cut body handling noise, boomy sounds, externally generated hum, percussive clunks and low end feedback, as well as any instrument bias towards the low strings.

Increase Bass CW to beef-up tone or bias lower strings more strongly. However, high strings will produce some lower tones or sub-harmonics which will be enhanced or reduced by the Bass Control

If you prefer a more sharply focussed Bass cut, use the Notch Filter

Guitar or Violin 'Range' setting offers a fairly gentle additional bass roll off

ii) **LOW MID CONTROL:** +/- 12dB centred broadly, approximately @ 590Hz

With a broad sweep it allows control of lower Middle range of frequency spectrum which is centred above bass but below High Mid or Treble/High. These will overlap on both sides a little

Cut Low Mid ACW bringing down to thin out tone or linearise or naturalise the tone of many lower mid biased guitar pickups, especially when mounted on steel strung Acoustic guitars

Also, used in cut mode, to linearise speakers and speaker cabinets which are often Mid biased

Cut Low Mid to reduce body handling noise or over loudness on lower strings, muddiness and boomy sound
Increase Low Mid CW to thicken tone. This is more popular on Nylon Strung Instruments or when playing finger-style or slide

The Notch Filter and Violin "Range" Switch settings can all impinge on this area

iii) **HI MID CONTROL**: +/- 12dB centred broadly, approximately @ 880Hz
Allows control of Upper Mid range of frequency spectrum. Will overlap a little tonally mainly with Low Mid and Presence.

Cut Upper Mid ACW to thin out or hollow out tone, reduce bias of middle guitar strings, remove honkiness, clunk, or peakiness.

Increase Upper Mid CW to thicken tone, add punch and increase bias towards middle strings

iv) **PRESENCE CONTROL**: +/- 7dB centred in narrow band, approximately @ 2.8kHz

Allows control of Presence which noticeably overlaps into lower treble and upper mid range areas but offers a useful, narrow but distinctive area of control.

Cut Presence ACW to reduce clunk, peakiness or harshness,

to hollow out sound subtly and reduce low end brightness, reduce bias of top 2-3 guitar strings, thin the treble, tame low treble feedback and mellow the sound. A Presence cut is also thought to reduce the Piezo

response effect which is sometimes partly characterised as "quacking"

Increase Presence CW to thicken treble, increase punch and increase bias to top 2-3 strings

N.B. Pro Audio or dictionary defined "Presence" as used by Headway should NOT be confused with the controls sometimes listed on Electric Guitar combo amps which use the term to denote high treble

v) **TREBLE CONTROL:** +/- 13dB Centred broadly @ 10.5 kHz with shelving

HIGH allows control of treble at higher end of the audio spectrum which offers you increased brightness on turning CW or a jazzy mellow sound on turning ACW. Treble overlaps mainly into Presence area. However, low strings will also produce high tones or harmonics

Cut Treble ACW to reduce high end feedback, harshness, externally generated hiss, squeaks from new strings or to compensate for over-bright pickups or hard reflective rooms.

Increase Treble CW to compensate for old, dull strings, weak top strings, mellow pickups or dull, boxy rooms and P.A's

Use Treble control to fine tune the effect of the Harmonic Enhancer Control. For Piezos, try applying a treble cut, while the H.E Pot control is placed about halfway CW or full ON to the right

Humbucker Magnetic Pickups and Flexible Piezo Film Contact Pickups will probably benefit from treble control increases in addition to turning H.E. Pot CW

7.0 HARMONIC ENHANCER H.E.A.T ~ HARMONIC ENHANCED ANALOGUE TECHNOLOGY: VIA ROTARY CONTROL POT & CHANNEL SELECTOR SWITCH - LOCATED ON TOP

Generates an exceptional, high end, even, "harmonic sparkle", restoring "string zing", replacing natural tones lost from your instrument due to amplification or use of magnetic or piezo pickups and many microphones and defining string separation, enabling greater clarity to be heard in ensembles

The 3 Way Channel Switch allows it to be applied to CH.1, CH.2, or Channels 1 & 2. **The treble tone can be completely re-shaped in this way without it needing to be overly bright, by turning down treble control (ACW). Or an overly mellow pickup can have a huge boost in brightness by applying the HARMONIC ENHANCER, while turning up treble control**

7.1 PIEZO PICKUPS (CERAMIC, CRYSTAL & PIEZO CABLE) and Condenser Mic's: If sound is perceived as being bright, try putting Enhancer Control in 1/3 CW up position for modest effect then try turning treble control pot down to fine tune overall sound. This will boost high harmonic content while reducing lower frequency "clunky" treble content and the "piezo quacking" response

7.2. MAGNETIC PICKUPS, DYNAMIC MIC'S AND

PIEZO FLEXIBLE FILM PICKUPS: These tend to be on the over mellow or boxy side, with magnetic pickups usually not producing tones above 4kHz -5kHz, while Piezo Flexible Contact Film Pickups can often produce no higher than 2 kHz. Put Treble control in the centre and Enhancer Control Pot 2/3 CW to the Right, then try increasing treble control CW as there would then be something there for it to be able boost. Re-adjust Enhancer control to your taste

Headway's SAM-1 Magnetic Pickup already incorporates Harmonic Enhancement Analogue Technology

8.0 CHANNEL 2 & MICROPHONE USE

8.1 INPUTS - LOCATED ON FRONT END

Channel 2 is suitable for a second pickup or Microphone on the same instrument or to facilitate and balance two instruments such as Guitar and Bass or Guitar and Vocals and provides a full independent set of EQ for each. As with Channel 1, it suits Active and Passive Magnetic/Piezo Pickups as well as a wide range of Microphones

The two channels are now configured to accommodate the option of two players or two instruments left plugged in under effective individual control

8.1.1 STEREO JACK INPUT

Stereo Jack Input feeds separate signals to both 1 & 2 Channels controlled by their gain controls. The signal on

the tip of jack (red or white wire in stereo cable) feeds Channel 2. The signal on the ring of the jack (blue or black wire in cable) feeds Channel 1. Plugging a Mono Plug into the Stereo In feeds Ch.2 only, freeing Ch.1 for additional Independent use

Warning - Plugging a live Power Amp would likely damage the unit and negate the Guarantee / Warranty

Headway Music Audio will NOT accept requests for information on other manufacturers wiring or specifications

Headway Music Audio Ltd. will not be held liable for damage to other manufacturers pickup systems from Phantom Power

The Ring Position suits more typical active pickup systems where wired for Phantom Power. Tip position powering is required for many Electret Condenser Mic based systems

8.1.2 MIC INPUT XLR: Impedance < 2k Ohm.
XLR input accepts Dynamic, Ribbon, Condenser and Electret Condenser Microphones

The XLR input allows the use of a high quality true Condenser Mic or Ribbon Mic, directed at the instrument, often to be mixed in combination with a pickup source fed into Channel 1

Use Uni-directional Microphones such as Cardioid and note: loose "especially" Hyper-Cardioid Polar Patterns to optimise signal in a live setting before feedback

A 3 Way Switch on the front end offers 11v or 48v Phantom to XLR . 11v is optimal for most Electret Condenser Microphones or Active Pickup Systems while 48v is optimal for true Condenser microphones

Headway XLR 3 pin wiring is standard configuration. See Phantom Power / Electrical Specifications / Microphone Notes

8.1.3 ON/OFF MICROPHONE SWITCHING - LOCATED ON TOP PANEL

2 Way Switch offers XLR ON/OFF (to minimise circuit noise to Jack In Channels and reduce battery power consumption, when XLR is not in use)

8.2 MICROPHONE USE NOTES: Headway Music Audio suggests caution on the use of internal Mics within instrument bodies. Miniature Mic's supplied with pickups, or purchased separately at low cost are often poor quality. These are usually Electret Condensers running on around 9v

MICROPHONE MOUNTING - INSIDE OR OUT?

Firstly, musical instruments are voiced to be heard from the outside whereas internally, body sounds usually offer excessive mid/bass boom

Secondly, Mics are meant to be used in free air where sound waves travel mainly from the front of a diaphragm to the rear whereas inside instruments, sound reflections and partial cancellations from standing waves may cause phasing problems, causing a swirling effect and preventing clarity

Finally, the placement of a Mic inside a resonant chamber may produce uneven peaks and a tendency to low frequencies making them highly prone to feedback



TESTING OR PERFORMANCE? Musicians should bear in mind that they might judge the sound of an internal Mic at very low volumes but will often find it completely unusable at typical live performance volumes or in difficult acoustic conditions, even at low volumes

BLENDING: If you try to blend in some Mic you may be severely constrained by stage sound pressure levels

from PA speakers, monitors, or backline combo amps and you may have to turn down the Mic volume to prevent feedback to such a low signal that it is effectively perceived as turned off

POSITIONING: If you try to make the Mic sound a little less boomy and unnatural by pointing it out of the sound-hole you will be making it even more likely to pickup speaker cabinets and monitors which may make it more likely to feedback

If a Uni-Directional Microphone is mounted outside of an instrument, it may be offset to cut it's potential to feedback, by angling it to keep front and rear of the Mic pointed away from the main sound source

GOOSENECKS: If an internal Mic is on a flexible gooseneck you may lessen the problems by spending time finding the best sounding spot for placement but as soon as it inevitably moves or changes angle slightly, or you take it to a different acoustic environment, the problems are likely to worsen as it interacts differently with the room

ANTI-FEEDBACK ELECTRONIC DEVICES: If used correctly, these can help a lot at the professional sound engineer level but the sound quality that a good microphone can deliver is incrementally compromised by use of anti-feedback electronic devices. The harder they work, the more holes in the sound they need to remove, which defeats much of the aim of using a Mic. One of the cheaper rack units commonly available is supplied incorrectly setup and they are not at all easy to use

POLAR PATTERNS: For optimal sound quality, Headway recommends that, if used, microphones should be used externally and with Uni-Directional, Cardioid and Hyper Cardioid polar patterns, such as the DPA 4099 with its soft external body clip option

Omni-Directional mic's may produce a natural sound at low cost but their feedback headroom is the lowest of any such device

FREE STANDING FULL SIZED/LARGE DIAPHRAM MIC'S: Headway recommends full sized/large diaphragm, Uni-directional Condenser or Ribbon Mics mounted on standard microphone stands or with Proel's Guitar body mounting bracket. External Mics will still be prone to feedback compared to pickups however, they should sound better than internal Mics

DPA: Headway recommends Miniature Instrument Microphones by DPA which are true Condensers(HyperCardioid)

HE4: Headway's "HE4" range of Co-axial Piezo Cable Under Saddle pickups for acoustic instruments offer a more natural sound than flat pickups, sensing in 360 degrees (see website for full range)

REVERB: A quality digital reverb (e.g. Lexicon) with a slow natural decay, on a Room/Hall reverb setting a little larger than the ambience of the space you are performing in, can add the impression of "air" in the sound

9. PHANTOM POWER - FEATURES LOCATED ON FRONT END

**9.1 3 WAY PHANTOM SWITCH to CH.1 IN JACK SOCKET:
OFF / 11V to JACK RING / 11v to JACK TIP**

This is not to be confused with the XLR On/Off Switch on the top, which switches off the XLR circuitry

EDB-2 H.E Phantom provision enables external powering of certain Active Pickup Systems and Blender systems on board instruments with no battery inside where wired to accept Phantom Power via RING (Stereo Jack Lead) or wired to accept Phantom Power to TIP.

Active Pickup or Active Pickup/Mic Blender Systems wired for Phantom should NOT require an Internal Battery. This may be an advantage where maximum active system performance is required but where battery access may be restricted, e.g. "f" Hole Instruments and Resophonic Guitars

When using Phantom Power, we recommend removing any battery in place in a pickup system, whether new or expired, which might be heated up or be damaged and leak. You may then need to bridge the two battery snap terminals with a wire from positive to negative to complete the circuit

Headway's "HE4" and "Snake3" Active Pickups may be powered by 9v-18v Phantom Power to RING from EDB-2 H.E, using a Stereo Jack Lead to End Pin Jack Socket. **ENABLE PHANTOM POWER BY REMOVING BATTERY AND CONNECTING THE TWO BATTERY TERMINALS TOGETHER.** Alternatively use **Headway's "PPE Clip" (Phantom Power Enabler)** which is fast and reversible and available to HE4 & Snake3 Purchasers

Some Blender systems which include Electret Condenser Microphones may be powered via 11v Phantom to TIP. Check Pickup manufacturer's Instruction Manual first

11v Phantom Power has been identified as the maximum voltage for optimum signal to noise ratio, headroom, tone quality and output levels in many pickup systems and Mic's

CAUTION: BE SURE TO CHECK IF PHANTOM POWER IS REQUIRED BY CHECKING THE WIRING SPEC. OF YOUR PICKUP/MIC OR BLENDER SYSTEM WITH THE MANUFACTURER OR THEIR TECHNICAL SPECIFICATIONS BEFORE TRYING THIS FACILITY

9.2 3 WAY PHANTOM SWITCH : OFF / 11v to XLR IN / 48v to XLR IN:

48v powers true Condenser Microphones optimally. Exceptional quality reproduction may be obtained in this way. Many of them will also operate on a lower voltage

9.3 PHANTOM POWER CONSTRAINTS: It is NOT possible to power the EDB-2 H.E via Phantom Power from a Mixer, due to insufficient milli-amps provided from Mixer. This is a multi function device and not a simple, minimal D.I Box and the quality of components used in EDB-2 H.E have NOT been compromised to run LoFi & with low headroom at a low power consumption



The smaller alternative Pre-amplifier EDM-1 H.E will run on Phantom Power from most mixers, depending upon the voltage and milli-amps offered, as current draw is much lower, due to reduced functions

Applying Phantom from a Mixer to EDB-2 H.E will NOT damage the unit

10. NOTCH FILTER CONTROLS / ANTI-FEEDBACK - LOCATED ON TOP

Sometimes known as a "Sweep" the Notch Filter utilises two Rotary Pot Controls, a Sliding On/Off Switch and a sliding channel selector Switch. It applies either to Channels 1 or 2 and applies to Line out and DI out

sockets. Control markers are only a rough guide to frequency and band width

10.1 NOTCH-Q CONTROL: Sharp to Broad Band Width Application

Sets the bandwidth or spread of notch cut for the filter around the frequency setting of the NOTCH Control Rotary Pot. Turning ACW to "Sharp" reduces width of cut towards minimum width while turning CW up to "Broad" increases width of notch cut towards maximum

A sharp width enables you to seek and remove typical narrow but problematic feedback peaks

10.2 NOTCH FREQUENCY SELECTOR: 50Hz - 6kHz

Sets the approximate centre frequency from 50 Hz (low bass) - 6kHz (treble) via a Rotary Pot to which the "Q" Pot sets a broad or narrow notch cut either side of the position

10.3 NOTCH FILTER SWITCHES

i) 2 Way Slider Switch determines whether the Notch Filter is In or Out. This enables you to instantly determine whether you like the application set "ON" or "OFF" without altering settings. The LED indicator illuminates BLUE when filter is applied

ii) 2 Way Slider Switch applies Notch Filter to Ch. 1 or Ch. 2 alternately

10.4 NOTCH FILTER IN USE

This is a versatile, supplementary tone control which can be used quite subtly at the "Sharp" end or severely at the "Broad"/Wide end. It is the most precise and effective

method for cutting highly intrusive or severely problematic sounds such as feedback, excessive booming & body handling noise, background rumble, honky upper mid range or muddy lower mids
First try the Notch Filter on what seems to be the most problematic frequency spectrum leaving the other EQ controls at their centre position. Here are a few potential strategies

10.4.1 How to sweep out unwanted low end Bass

- i) Set the NOTCH Frequency Rotary Pot ACW well below useful tonal range of instrument or fully ACW
- ii) Set the NOTCH-Q knob close to or fully ACW
- iii) With the NOTCH Switch selected for channel, adjust the NOTCH-Q Width control from its minimum ACW setting slowly turning CW while listening to the amplified low strings until the tone of the low strings starts to thin out and clarify as required. Re-balance both controls slightly in order to fine tune the maximum amount of cut and the roll off point according to what sounds best

10.4.2 Excessive or problematic heavy Midrange:

Set NOTCH-Q and NOTCH Frequency controls around middle of dial and then, whilst listening to the amplified sound, adjust the NOTCH frequency control to find where the cut is most effective. Increase or reduce the NOTCH-Q control until the problematic frequency is minimised without taking more useful tone than is necessary

10.4.3. Feedback Peak / Spikes & Feedback :

These are best countered by setting the NOTCH-Q width control fully ACW (as narrow as possible) Then, whilst listening carefully, slowly turn the NOTCH Frequency Control CW. Stop turning immediately when the unwanted noise has been located and removed

All EQ and Parametric EQ in particular, should be used carefully and sparingly. The use of EQ can improve or worsen sound quality. Even frequencies that may sound unpleasant when heard in isolation may need to be retained as part of the overall mix of a body of sound, to enable it to be perceived as full, natural or balanced. An alternative view would be that carefully tuned active EQ boost and cut can be used creatively beyond just problem solving

11. RANGE CONTROLS / ANTI-FEEDBACK - CH.1 & CH.2 - LOCATED ON TOP

- 3 Way Slider Switches

These set a High Pass Filter which rolls off low frequencies according to the requirements of three target instrument types: Violin/Mandolin, Guitar and Bass

This rolls off low end, feedback and "muddy" resonances from the instrument body, stage or room but allows through and amplifies the fundamental frequencies and harmonics above that. Hence "High Pass Filter". This may be partly countered by turning up Bass or Lo Mid

controls, which overlap in effect, or further re-enforced by turning those controls down

11.1 RANGE SETTINGS

i) **Bass:** Effectively "Full Range". Cuts below 40 Hz. This setting applies to all instruments producing bass such as Double Bass. You may also prefer this setting on Baritone Guitar, Cello and Mandocello

ii) **Guitar:** Cuts bass frequencies gently below 80 Hz, which will still allows sufficient amplification through when the lowest string is dropped from bottom "E" to "D" (70Hz) or down to "C" (65Hz)

Ensure that Combo Amplifiers and P.A speakers are capable to reproducing these Guitar and Bass frequencies as very small cabinets will typically not produce any fundamental frequencies below about 130 Hz

Setting also applies to 12 String, Electric and Nylon Strung Guitars, Resophonic Guitars and Pedal Steel Guitars plus other mid range instruments, e.g. Bouzouki & most Banjos

If applied to Baritone Guitar & Cello, this will trim low end

iii) **Violin:** Cuts bass and Low Mid frequencies significantly below 200 Hz. This setting also applies to similar smaller, high pitched instruments such as Mandolin and Ukulele

If applied to Viola or Tenor Mandola, the low end would be significantly trimmed

The "Range" Switch effect may be partly countered or modified by the use of the Bass & Low Mid controls

If the "Range" Switch is set high at "Violin" it will thin out the sound instruments with lower ranges. See "Rock Acoustic" below

11.2 STRINGED INSTRUMENTS - THEIR LOWEST FREQUENCIES PRODUCED

These are an approximate guide to help set Notch Filter and Range switches

Bass Guitar/ Double Bass (E) = 40Hz

5 String Basses theoretically produce 30Hz on Low "B" string but there is no fundamental produced that low on the instrument and even if there was, almost no bass amplifier could reproduce such low frequencies.

We perceive the 30Hz via the harmonics, at an octave or more above, i.e at 60Hz. Set on "Bass"

Baritone Guitar ("B" to "B") = 60 Hz

Cello (Low "C") = 65 Hz

D Guitar (Dropped "D" Guitar Tuning) = 70 Hz

Acoustic Guitar / Nylon Strung Guitars ("E") = 80 Hz

Bouzouki (Celtic "G") Octave Mandolin/ Oct. Mandola /
Tenor Banjo = 100 Hz

Tenor Guitar ("A") = 110 Hz

Viola / Tenor Mandola (Middle "C") = 130 Hz

5 String Banjo (Typical lowest note "D") = 147 Hz

Violin/ Mandolin ("G ") = 200Hz

Uke ("A" Soprano) = 210 Hz

11.3 "ROCK ACOUSTIC" SETTING: If you need to amplify an acoustic guitar or other acoustic instrument over a loud electric band especially where using high powered stage monitor speakers, there may be little or no point trying to amplify the bass end of that acoustic instrument since it would be drowned out by Electric Bass Guitar, Bass Drum or Keyboards etc. It may be trying to feedback at lower volume levels than where an acoustic guitar's low tones are likely to be audible

To achieve this effect, set Range Switch on "Violin", further reduce Bass and Low Mid EQ controls and set Notch Filter to cut broadly below approx. 300-500 Hz. This will still allow the "shimmer" of Acoustic Guitar chords to be heard. Although less in lower frequency content, the result may be a useful sound in a Band

ensemble spectrum, similar to Cymbals and with the minimum possibility of feedback

11.4 TWO GUITAR MIX: This thinning EQ technique also enables the mixing together of two quite similar range Instruments so they separate audibly in a mix. To mix two guitars or an Acoustic Guitar and a Bouzouki for example, thinning out the sound of one of them will prevent them audibly clashing, blurring and cancelling out notes

12. PHASE REVERSE / ANTI-FEEDBACK - 3 WAY SWITCH - LOCATED ON TOP

Allows you to better match diverse separate signals via 2 Channels in a mix, similar to tiny time delays between them. The function is also used to beat feedback. It will change tone slightly which is inevitable

"In Phase" - Low position is normal

"Out of Phase" via Channel 1 with Channel2 / Or could be for Anti-feedback - Middle Position

"Out of Phase" via Channels 1 & 2 with other non EDB-2 H.E signals / Alternative Anti-feedback option

13. SEND & RETURN - FX LOOP - JACK OUT & JACK IN - LOCATED ON LEFT SIDE

Effects (FX) pedals or rack units can be connected in line using short Mono Jack Leads, Patch Leads or Jack to Jack Adapters if those line up effectively. Note that the order in which they are connected will affect tone and

noise levels building up, so pedals with the highest output and lowest noise (s/n) should be first in the chain. You may wish to experiment with the order FX Pedals are connected as this will also affect tones and the way they interact with each other

Devices chained into the Loop may include Chorus, Delay, Reverb, Acoustic Multi FX, Band Creator Pedal, Phaser, Vibrato, Volume Pedals, Electronic Tuners with Jack In and Out, or Pro Audio type Compressor/Limiter

We do not recommend Electric Guitar type Compressor Pedals or Overdrive/Distortion Pedals for Acoustic Instruments if you wish to retain an acoustic sound

Headway Music Audio Ltd. recommends that Jacks Socket contacts be kept clean to retain full working operation. Lubricating with e.g. Switch Cleaner with Lubricant, or WD40 will prevent problems. Send & Return Sockets should be treated with particular care

14. AUX IN / IPod - LOCATED ON RIGHT SIDE - 3.5mm Diam. Mini-Jack Socket routes directly to Master Volume Pot (Post EQ)

Intended to connect analogue audio signal of pre-recorded music for practice or backing, which does not require EQ

15. MASTER VOLUME CONTROL - LOCATED ON TOP Rotary Pot Control sets the output level of the EDB-2 H.E pre amp which is fed to the LINE OUT and DI Out sockets

Also applies as sole control to Aux. IN via Mini-Jack Socket. Turn CW to increase Output
See: Section 6.2

16. LINE OUT - JACK SOCKET - LOCATED RIGHT SIDE

Line Out Jack is a standard Mono Output at Low Impedance, able to run long shielded cables of decent quality without significant loss to. It can interface with rack units, pedals, Combo Amps, Headphone Amps, many Digital Recording Interfaces and some Power Amps

17. D.I BALANCED OUTPUT VIA XLR - LOCATED REAR END

Less sensitive to cable quality, specification or cable lengths. May be interfaced with rack units, pedals, combo amplifiers, headphone amps, many digital recording interfaces and many power amps

An XLR Output lead that terminates in a stereo (balanced) or Mono Jack Plug may be used if convenient

Passive Transformer type D.I's are designed for microphones only and can be problematic with pickups. They are better avoided. EDB-2 H.E ELIMINATES THE NEED TO RESORT TO INFERIOR D.I. BOXES. USE THE D.I. OUT FACILITY

Uses Standard 3 pin XLR wiring. See 19.2.7

18. POWERING OPTIONS

18.1 BATTERY POWERING Via 9v PP3 (6F22) x 2, supplied as standard, and housed under angled aluminium panel cover. Undo the engraved, knurled brass nut to slide off cover and access batteries



Connection is via two fixed, non-reversible clips which should be pinched on tight

Batteries should be new and identical and their condition checked before use to avoid damage or injury. Dispose of leaking batteries responsibly!

Battery removal is unnecessary whilst using a Headway DC Adapter (external Power Supply Unit) or if EDB-2

H.E Phantom Power is switched ON however when using EDB-2 H.E to power pickup systems, any "in-instrument" batteries should be removed to avoid injury or damage

EDB-2 H.E is designed to be powered with Alkali, Lithium, Lithium Polymer Rechargeable or Ion Rechargeable. Type of battery, i.e Alkali, is more important than brand or manufacturer, so you might buy the least expensive Alkali or Lithium, Lithium Polymer Rechargeable or Ion Rechargeable.

18.2 LIFESPAN OF BATTERIES IN EDB-2 H.E WHEN POWERED ON

1st: **Lithium: 250 Hours** of Power ON, or maybe 150-200 Hrs if Phantom Switch also ON, which depends on *current draw of device EDB-2 H.E is Phantom Powering Lithium have the longest life, but are relatively expensive and banned from normal international transit, fitted, not fitted or expired

2nd: **Alkali: 70 Hrs** of Power ON, or less hours if **EDM-1 H.E** Phantom Switch also ON*. Probably the best value non-rechargeable battery to purchase in terms of cost per hour and long, reliable life

3rd: **Zinc Chloride or Manganese**: Reasonable lifespan but pattern of use is major determination of battery life

We do not recommend Zinc Carbon Batteries or NiCd, the older re-chargeable batteries for this application as life is limited, NiCd Voltages start at 8.4v or lower and they are banned from International Shipping

Note that lifespans are approximate and will vary according to pattern of use and current draw from any devices requiring Phantom Power from EDB2-H.E

Do not dispose of batteries in Landfill rubbish collections. Use battery collection schemes

18.3 LIFESPAN OF RE-CHARGEABLE BATTERIES IN EDB-2 H.E WHEN POWERED ON - based on recently improved battery manufacturer claims of specification when new:

1st Lithium Polymer Rechargeable PP3: at approx. 100 Hours

2nd Lithium Ion Rechargeable PP3: at approx. 60 Hours (roughly comparable to Alkali when new)

3rd Ni-Mh (Nickel Metal Hydride) PP3 9v 280 mAh: at approx. 50 Hours

4th Ni-Mh, at 9.6V 220 mAh PP3 NiMH Rechargeable Battery : at approx. 40 Hours

Headway advises keeping two spare PP3 batteries for EDB-2 H.E

18.4 LOW BATTERY INDICATOR LED - Located on Top

Indicates that battery life is close to being expended. EDB2-H.E will continue to function for several hours after

which the voltage remaining falls below the minimum required 7.3v (per battery)

(International Shipping with Batteries: See: Section 1.8)

18.5 PSU Power Supply 18v D.C. Adapter

Insert 2.1mm diam. plug into D.C. Socket. This overrides the battery. Only Headway Regulated PSU-EDB/M should be used, which may operate on between 100v-240v Mains Electricity Supply

The PSU Output cable should not be knotted or stressed as it will subsequently fail. A loose loop held by a re-useable nylon or double sided Velcro cable tie holding it together will allow it to last years. See Specifications 19. for PSU details.

19. SPECIFICATIONS OF EDB-2 H.E

EAN: 7107718579859

19.1 PHYSICAL SPECIFICATIONS (Approx.)

Dimensions: Aluminium Metal Box Length 160mm. (6,3")

- Overall Length = 167mm (6,57")
- Box Width 100mm (3,9"), Overall Width = 103 mm (4,0")
- Depth of Metal Box 30mm (1,18")
- Depth including knobs and feet = 41mm (1,61")
- Weight: 450g (oz)
- Dimensions of Retail Packaging complete with EDB-2 H.E = 195mm x 185 mm x 51mm (7,7" x 7,3" x 2")

- Weight of Retail Packaging complete with EDB-2 H.E = g (. ")
- Mic Stand Bracket Connector: Female threaded bush on rear at 19/32" = 15mm approx.). DO NOT OVER TIGHTEN!

19.2 ELECTRICAL SPECIFICATIONS (Approx.)

19.2.1 CH.1 & CH.2 Jack Input Impedance = 6.8Meg Ohms / High Impedance

Voicing is not negatively affected by Impedance setting when using Active Inputs & Condenser Mic's etc. and will optimise Piezos and slightly brighten dull sounding Passive Magnetic Pickups & Dynamic Mic's

- Gain Control to Ch.1 Jack: Continuously variable 0 - +32dB Jack IN: Offers Mono Signal path IN via Tip plus Phantom Power 11v option, sent when switched on via Ring or Tip Switching Options
- Gain Control to Ch.2 Jack: Continuously variable 0 - +32dB Jack IN: Offers Mono to Ring (Ch.2) or Stereo Signal path IN via Tip to Ch.2 & Ring to Ch.1
- Ch.2 XLR Mic In with Continuously variable 0 - +50dB and Switchable Phantom Power 11v -48v option. Ch.2 XLR Mic Input Impedance = 3.4kOhm

19.2.2 BAXENDALL INTERACTIVE 3 BAND EQ SECTION

- Treble: @ 10.5 kHz +/- 12dB Shelf
- Presence: @ 2.8 kHz +/- 7dB
- Upper Mid: @ 880 Hz +/- 12dB
- Low Mid: @ 590Hz +/- 13dB
- Bass: measured @ 120 Hz +/- 12dB Shelf.
- Bass if measured @ 45Hz +/- 16dB Shelf

19.2.3 "RANGE" 3 WAY SWITCH (High Pass Filter)
 Slope Profile of Low frequency roll off: 12 dB per Octave.
 Rolls off below: 40Hz (Bass) / 80Hz. (Guitar) / 200Hz
 (Violin/Mando)

19.2.4 PHANTOM POWERING OF ALL PRESENT & PAST MODELS OF EDB PRE-AMPLIFIERS - Output XLR does NOT accept 48v Phantom from a mixer, as milli-amps power provided is not sufficient to power EDB preamplifier's high performance, multi-function features

19.2.5 PHANTOM POWER TO IN JACK – SWITCHABLE

IN Jack Socket: 11v with 10 mA Current Limit on Ring option or 5K6 Resistor in Series, for Tip setting. 3 Way Switch: Off / Ring / Tip

19.2.6 CURRENT DRAW

Minimum = 16.3 mA

+ additional draw if Notch Filter On = 0,14mA

+ additional draw if Phantom Power On = 0,1mA

Maximum total draw =19,9mA with red led diodes mute on

19.2.7 OUTPUT - Line Output via Jack: Nominal 0.5v RMS @ 150 Ohms Mix of Ch.1 & Ch.2 + Aux IN via Mono Jack Socket. (Standard 1/4" / 6.35mm Diam.)

D.I Balanced Output via XLR Adapter: Nominal 0.5v RMS @ 150 Ohms Electronically Balanced (Mono)

XLR IN/Out Wiring: Pin 1 = Earth/Ground, Pin 2 = +Signal (Plus), Pin 3 = - Signal (Minus)

Noise Level (True RMS 20 Hz-20 kHz) At/@ 20 dB gain, EDB-2 H.E produces (-)90 dB. At /@10 dB gain, EDB—2 H.E produces -94 dB Distortion: THD
See 6.1 Noise Notes

19.2.8 POWER SUPPLY UNIT - D.C Adapter

Supplied as standard - Mains Plug type & PSU inclusion with EDB-2 H.E determined by Trade Purchaser

AC ADAPTER: CE in EU, UL Listed in USA. PSE in Japan

INPUT: 100-240VAC 50/60 Hz @ 100mA+ OUTPUT: 18VDC @ 0.5A+ **N.B. Output power can be higher than 100mA without problems** as power is drawn from PSU

Input Plug Connections (L.P.S.): 2.1mm Diam. Outer = +VE (Positive)• Inner = - VE (Negative)

**PSU MUST BE "REGULATED" OF CORRECT
OUTPUT VOLTAGE, POLARITY & OFFERING
SUFFICIENT MILLI-AMPS**

**MAINS PLUG CONNECTORS SUPPLIED ARE
CHOSEN ACCORDING TO THE PRIMARY
PURCHASERS OF EDB-2 H.E AS REFLECTS THE
REQUIREMENTS OF THEIR TERRITORY.**

**BEWARE - IF YOU PURCHASE EDB-2 H.E FROM A
RETAIL SUPPLIER IN A DIFFERENT TERRITORY,
YOU ARE LIKELY TO RECEIVE THE WRONG MAINS
PLUG.**

YOUR OPTIONS WOULD THEN BE TO:

- i) PURCHASE THE CORRECT PSU ADAPTER FROM
HEADWAY;**
- ii) TO USE BATTERIES;**
- iii) TO USE A MAINS PLUG TYPE CONVERTER; OR**
- iv) TO RETURN THE PRODUCT FOR A REFUND AND
PURCHASE FROM YOUR OWN TERRITORY WITH
THE CORRECT MAINS PLUG ON PSU ADAPTER**

**Headway Music Audio will always supply the correct
plug type to each territory where ordered with EDB-2
H.E**

**On occasions, purchasers may opt to purchase
EDB-2 H.E without PSU Adapter**

**IN JAPAN, THE 100v MAINS REQUIRES "PSE" MARK
FOR POWER SUPPLY COMPATIBILITY. A PSU
Adapter without that mark may not operate optimally
on 100v**

Use only Headway Music Audio supplied 18v PSU:
As per EDB-1, EDB-2, EDB-2 H.E, EDM-1, EDM-1 H.E,
or forthcoming EDB-2 V.A.P, Headway Music Audio Ltd
will not honour guarantees where an incorrect Power
Supply has damaged a pre-amp

19.2.9 WEEE Regulations & Environmental Disposal:
Power Supplies, Batteries and Pre-amplifiers should
NEVER be randomly disposed of in a bin or sent for
landfill disposal. Repair and service Pre-amplifiers for
long term use and use local re-cycling and electronics
collection schemes

RoHS Regulations: EDB-2 H.E and other Headway
products are made in accordance with RoHS Regulations
and are made free of lead and other environmentally
damaging substances

20 TROUBLE-SHOOTER CHECKLIST

20.1 AVOIDING ACOUSTIC FEEDBACK & ROOM RESONANCES

- Turn the amplifiers, instruments and microphones down and turn off when not in use
- Re-angle instruments and Mics to the side of, off axis or behind the speaker cabinets
- Try re-positioning speakers
- Use "Notch Filter" to hone in on and cut troublesome frequencies

- Check that "Range" control switch is set correctly to remove unwanted low frequency amplification
- Use EQ controls to cut frequency of feedback
- Covering or blocking the sound hole(s) of an instrument may often help give a few more dBs of level before the onset of feedback
- Sound absorbent materials such as drapes and heavy banners in room may help to damp sound reflections which cause feedback
- Where using two pickups or pickup + Mic and feedback is encountered, increase proportion of saddle/bridge pickup or magnetic pickup and decrease proportion of Contact Pickup or Mic; or Increase proportion of Contact Pickup and reduce Mic level
- Where using Mics, avoid Omni-directional and use Uni-Directional / hypercardioid
- Move source closer to any Microphone in use
- Electronic feedback destroyers are rack units which, when set up correctly, automatically tune into and attenuate the troublesome feedback peaks allowing the remaining frequencies' volume to be increased. However, they may be complex to use correctly and will remove frequencies from the sound which may defeat the point of using Mics
- The overall level may be increased by playing harder and getting the instrument closer to any microphones

- Damp any strings, which will not be in use either with techniques while playing or when left on stand such as by wedging in plectrums (pics)
- Getting people, such as your audience into an enclosed performance space will soak up a lot of sound reflections and discourage feedback as if MABS, or Mobile Acoustic Baffles!
- Check that a power amp output or headphone output is not plugged into EDB-2 H.E inputs

20.2 UNEVEN STRING AMPLIFICATION, HARSH or BOOMY SOUND?

- Use "Notch Filter" or EQ controls to hone in on and cut troublesome frequencies
- Under saddle pickups may not be fitted or seated correctly and evenly on the instrument. Contact a professional luthier in order to have the installation checked and put right
- If a contact pickup is in use, change its placement in order to get the best sound by locating the sweet spot and avoiding honks, resonances and hollowness
- If a microphone is in use, change its position to obtain the best balance and overall sound. Guitars often Mic up best with Mic pointed towards treble strings area of upper bout a little away from sound-hole

- If a magnetic pickup is fitted in the sound hole, where possible, adjustment of the magnetic pole pieces and overall pickup heights and angles will enable the string balance to be adjusted

20.3 POOR SOUND: WEAK, DULL or DISTORTED?

- Ensure that any batteries on pickup systems and pedals are in good condition & Low Battery Indicator LED is not red. (See 9. Battery Powering.) Alternatively use Phantom Power (48v) from mixer or optional Headway EDB/ EDM/ VAB PSU (External power supply)
- Turn down gain control or excessively boosted EQ controls or engage attenuation switch on some devices (e.g. PAD control -15dB)
- Avoid Passive D.I. boxes (transformers) which can change or degrade the sound of a pickup due to the way they load it and can add rhythmical load and discharge noises
- Check that a Power amp Output or Headphone Output is not plugged into EDB-2 H.E Inputs (or Outputs)
- Check leads for cross leakage, excessive capacitance or resistance with an Electrical Meter or Cable Tester

20.4 INTERFERENCE: HUM, BUZZ, HISS, RADIO?

- Keep your EDB-2 H.E and signal cables away from devices with strong magnetic fields, or mobile/cellular phones. These include large AC mains transformers, generators, lighting control systems and non earthed fluorescent lighting
- Switch off equipment which is causing interference. Keep signal cables away from mains and speaker leads
- Check mains power leads are not coiled
- Use highly screened microphone or instrument leads, with metal shielded connectors and good connections
- Shorten or uncoil cable runs
- When using the XLR to Jack adaptor for a D.I. output, set the Earth/GND LIFT switch to cut earth loop hums if required. Otherwise leave Earth Lift switch Off
- Use "Notch Filter" with narrow "Q" to hone in on troublesome hum and cut it (at around 50-60Hz) or cut fluorescent light buzz (at around 100-130 Hz)
- Mains Filters prevent noise transmitting through mains power which can affect amplifiers
- If lighting is causing hum and/or buzz, power your amplifier from a different AC mains ring that is not being used for stage facilities or lighting
- Hum and buzz can be generated in a stringed instrument where there is no earth connection between output jack, strings or any tail piece

- Excessive hiss will normally be produced by a faulty, poor quality, noisy device in the chain or by imbalances between different gear. To reduce hiss, identify gear responsible and drive it harder while reducing its own gain.
- Turn off unused mixer channels
- Radio interference within the signal may be caused by the use of poor quality leads such as curly leads, especially where High Impedance and Low Output Passive pickups are used
- To avoid, use highly screened jack leads into Inputs and use active pickups
- Use only current government licensed, type approved, multi-channel radio Mics and radio transmitters of good quality. If noise or broadcast radio interference is experienced, change for conventional Microphones and high screen leads

20.5 INTERMITTENT or LACK OF SIGNAL

- Check that all connectors are pushed firmly into their sockets
- Jacks Sockets need to be kept clean or can short out functions. Switch Cleaner with Lubricant, WD40 or the like, on the probe can get them working. Send & Return Sockets may be the first connectors to deserve attention

- Check that Power Switch is ON, Mute is OFF, Gain control(s) and Master are turned up and Jacks are fully home
- Ensure batteries are in good condition and connectors are pinched firmly on(,)the correct way around. Ensure PSU is properly plugged in at both ends. Warning light indicates less than a 7.3v charge per battery
- Use a meter/cable tester to check jack leads and solder connections for resistance and good connection
- Make sure jack probes are straight and that the tip contacts are not misshapen in any way
- Check that XLR leads are wired correctly as standard. See Specifications
- If a socket is set too deeply recessed into an instrument a jack plug may not make full contact
- Check that mains supply is operating in chain of power supply with earth connected at all points
- It is recommended the best quality of connectors be used. We recommend quality products: Neutrik, Deltron & Schurter, Switchcraft, ST Professional & GH. Headway offers quality jack leads with appropriate lengths and specifications
- If EDB-2 H.E has become overheated, turn off, cool it down and try turning on a little later to re-start, checking leads and connected devices. Try changing or removing batteries

20.6 PERSISTENT PROBLEMS If you have worked through the Trouble Shooting and Problem Prevention areas above and you still experience persistent problems and require help, please contact your dealer, a professional electronics technician or Headway Music Audio Ltd. where applicable and we will attempt to help where it applies to our products

HEADWAY LATEST NEW PRODUCTS

Sheer Acoustic Magnetic SAM-1 : Active Magnetic Sound Hole Pickup - superior fixed EQ, Filtered and Enhanced pre-amplifier. Easy fit for superior natural Steel Strung Acoustic Guitar amplification

EDM-1 H.E Equaliser Direct Mini – Ultra Compact 1 Channel EQ Pre-amp with comprehensive new features including Tuneable Range Filter, Phase Reverse, Earth Lift and D.I. Output with 3 Band EQ, Send and Return via Insert Point and Harmonic Enhancer Switch with improved Pro Audio sound quality, plus lightweight Aluminium enclosure, supplied with 2 Adapters. Plus version has 18v PSU and offers a Condenser Mic Friendly DC Adapter Powering and additional XLR - Jack Adapter

! PIC of Bands !

The Band2 - New Improved Bowed Instrument popular instant fit wrap around, passive body pickup. (Available for Violin, Viola, Cello & Double Bass). Band2 offers a larger, fuller sound with greater clarity

Due for release: SuperBug: Range of Active Contact Pickup Systems with Multiple Maple encased Pickups, superior fixed EQ, Filtered & Harmonically Enhanced pre-amplifier and Other Pickup "additional channel blend" facility

Headway Existing Products include:



HE4 (e.g HE4/G.FEQ - Active Under Saddle Pickup for Steel Strung Acoustic Guitar). Also versions for Mandolin, Bouzouki, Nylon Strung Guitar, Ac Bass etc. Improved version introduced in 2019

Snake3 (e.g. Snake3 AG - Active Under Saddle Pickup for Steel Strung Acoustic Guitar). Versions for other stringed Instruments

! PIC of Violin Bridge Pickup. !

VL3 - Bridge based Violin Pickup System. Rosewood "Clamp Jack" supplied

HEADWAY POLICY OF CONTINUOUS IMPROVEMENT

Headway Music Audio Ltd. operates a policy of continuous improvement and reserves the right to alter specifications, components and prices without prior notice. Validate your Guarantee only by registering it online within 30 days of purchase. We recommend that to get the best possible sound, you use only Headway Pickups and good quality Microphones such as the excellent DPA Miniature Instrument Mics

Headway Music Audio Returns/Repairs - 2020
Glympton Post Office
Glympton,
Woodstock,
Oxfordshire,
OX20 1AL
UK

*N.B. PLEASE CHECK WEBSITE FOR
AMENDMENTS ON RETURNS ADDRESS*

www.headwaymusicaudio.com

EDB-2 H.E: EAN: 7107718579859

Headway Music Audio Ltd

VAT Tax number: GB 924 7711 16.

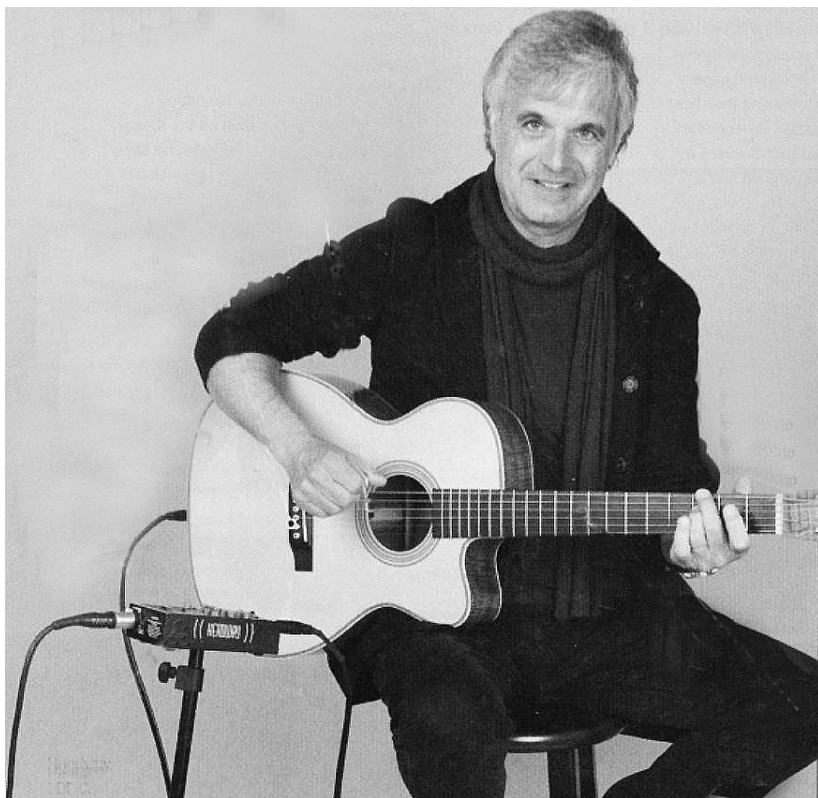
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**MAKING INSTRUMENTS LOUDER
SINCE 1995**

**The British Acoustic Specialists
HEARING WAY AHEAD!**

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Lawrence Juber pictured with Headway EDB-2 Pre-amp mounted via integral Microphone Stand Bracket.

INSERT NOTES

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Design in UK - Made in EU

"The Swiss Army Knife for the gigging acoustic musician (or two)"

- Standby Lightweight, Super Compact Construction & Long Life Controls
- Power Supply & Cables Included as standard • 3 mounting methods
- 3 Way Phase Reverse & Earth Lift Switches
- Range switches for Guitar, Bass or Violin/Mandolin via each channel

Featuring: **H.E.A.T**
 Harmonic Enhanced Analogue Technology
 with Tuneable added High Harmonics



• Twin channels: two sets of 5 Band • Interactive EQ & Silent Mutes

• Improved Class "A" Inputs & top Pro Audio IC Producing a huge 32dB of low noise Gain • 48v & 11v Phantom Power To XLR & Jack Inputs

• Stereo Input Jack Option • Send & Return FX Loop Jacks

• Mono, Stereo or Blended outputs • Line Jack output • Aux 3.5mm Input

• Tuneable Notch Filter to beat feedback & resonances on either channel