

# Sheer Acoustic Equaliser Direct Blend EDB-1

Multi-function Pre-amplifier, with EQ, Blend & Direct Injection Functions, for Superior Acoustic Amplification.

Designed in the UK

## INSTRUCTION MANUAL

**EDB-1 provides a beautifully voiced and practical solution to the diverse and critical needs for high quality acoustic musical instrument amplification. Suitable for stage and studio signal processing.**

**EDB-1 offers huge amounts of gain, EQ and other highly versatile facilities, to get the best possible sound from amplified acoustic stringed instruments.**

**From a single compact box, the EDB-1 can take on a unique range of functions and qualities, and includes:**

- Refined Class "A" inputs with 2 FET stages.
- Voiced for clarity, warmth with low noise performance.
- Effective EQ for problem solving and creativity.
- Clear easily read pro audio style panel layout.
- Versatile inputs, switchable to optimise a comprehensive range of passive and active pickups, plus microphone.
- Tunable notch filter with switch, as acclaimed on Shire King amps, for extended range of control of acoustic feedback and problem frequencies.
- A range switch with settings for Guitar, Bass and Violin, remove unwanted boom, handling noise and low frequency feedback, to leave clearer, more musical tones from the instrument.
- Signal splitting is available, e.g. personal/stage monitoring, plus output to the front of house system, recorder or tuner.

- Dual system mixing of pickups and mic, via separate channels.
- Mic input offering phantom power for condenser mic.
- Feedback and hum control via phase reverse and earth lift switches.
- May be used stand-alone on rubber feet, or using the belt clip provided, or by use of optional mic stand adapter bracket.
- Extended headroom with the use of 18V power system.
- Powered by regulated mains power supply unit (PSU - included), or 2 x 9V PP3 (6F22) batteries.
- Sturdy steel housing, with quality pots and long life sockets.
- Choice of input and output connectors.

**Congratulations on your astute purchase. Please read this comprehensive manual carefully before switching on or plugging in the EDB-1.**

Please display (( HEADWAY )) promotional stickers proudly on your Instrument cases!

This manual is also available as a download file from the website below:

**[www.headwaymusicaudio.com](http://www.headwaymusicaudio.com)**

Headway Quality! Built to last & Guaranteed for 24 Months

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# 1 SAFETY PRECAUTIONS & OPERATION

## 1.1 IMPORTANT SAFEGUARDS TO YOUR LIFE & GEAR, TO NOTE BEFORE USE OF YOUR EDB-1

Read all warnings on Headway Sheer Acoustic EDB-1 Equaliser Direct Blend unit, very carefully:

**IMPORTANT:** Make sure that you power you EDB-1 using only Headway's Power Supply Unit included, or using 2 x PP3 (6F22) batteries, as may be supplied with unit.

Mains Plug Connector Types available for EDB-1:

EDB-1 PSU UK = United Kingdom

EDB-1 PSU EU = Europe (Continental)

EDB-1 PSU NA = North America

### 1.1.1 EARTH PROTECTION & GROUNDING

To prevent electric shock, ensure that any output cables from EDB-1 are connected to amplification or signal processing devices (e.g. mixers, amplifiers, effects units) where there is a continuous, unbroken chain of AC mains earth connection, including the mains supply at the venue. DO NOT disconnect the ground/earth wire on any associated mains powered devices.

Do NOT plug in a power cord, or use an extension lead, or power outlet, unless there is definitely a ground or earth contact at all stages.

### 1.1.2 MAINS PROTECTION

Always take care to protect your own life and those of others, along with your gear, by using **RCD Circuit Breakers** and **AC Mains Surge Protectors**, at each source of the mains power. Circuit breakers should be tested before prior to use. We also recommend that you also use **AC Mains Noise Filters**, which may be Multi-function Anti-Surge/Noise Filter devices.

Switch off the Power Supply Unit and other associated mains powered devices and unplug, when your EDB-1 unit is not in use.

### 1.1.3 ELECTRIC SHOCKS WARNING

Immediately stop using any AC Mains powered or Mains connected gear when even very minor shocks are detected, and seek consultation from a qualified professional electronics repair technician, or relevant approved Authorised Service Centre, before re-use.

### **1.1.4 RAIN & MOISTURE WARNING**

DO NOT expose the EDB-1, its Power Supply Unit, or attached cables to any liquids, such as rain, condensation & spill drinks. If your EDB-1 should come into contact with any water or other liquids, switch off mains power at the socket and disconnect. Make sure it is fully dry before re-use, and if water or other liquids are thought to have gone inside, have the unit fully checked by qualified personnel before re-use. If you get your hands wet, do not make contact with electrical devices until your hands are dry again.

### **1.1.5 VENUE WIRING**

Avoid venues with suspect electrical wiring, damp or wet wires & contacts, or wet A C Mains outlets.

### **1.1.6 MICROPHONE SAFETY WARNING**

Where wireless microphones are used in conjunction with your EDB-1, or associated PA system, try to use Government licensed/Approved Radio Microphones and Transmitters.

### **1.1.7 CABLE & EDB-1 PLACEMENT WARNING**

Always place your EDB-1 and associated cables where they are visible and cannot cause an accident. It may be useful to gaffer tape cables in place. It may be preferable to use the screw in Mic Stand Bracket mounting, or Belt Clip mounting also.

Do not place your EDB-1 and cables where they cause obstruction or the possibility for any person to trip over them.

- DO NOT BLOCK EXITS. THIS INCLUDES FIRE EXITS!

### **1.1.8 PRECAUTIONS DURING USE**

- Treat your EDB-1 with care and do not drop it, tread on it, or subject it to liquids, extreme heat or cold, or rough handling.
- Ensure that the power is switched off when not in use. Remove the Power Adapter and/or batteries, when not in use for extended periods.
- Do not subject your EDB-1 to prolonged and direct strong sunlight, prolonged high humidity or dramatic humidity variations, or extremes in temperature.
- Before switching your EDB-1 unit on or plugging in instruments and other devices, mute or reduce the volume to '0', or, in order to protect amp & speakers from transient noise damage, and prevent unwanted noises from being transmitted to audiences during performances.
- A quieter plug-in may be achieved by using quiet switching jack plugs, such as those offered by Switchcraft, Neutrik, Deltron & GH Industries. These plugs also prevent momentary hum & buzz when live 'leads' are plugged and unplugged.

## **1.2 SERVICING, REPAIR & RETURNS:**

All Headway servicing and repairs should be carried out by a qualified professional electronics technician, approved by Headway Music Audio Ltd. See website or contact details.

- All returns must be sent pre-paid, and should be insured against loss.

Headway Music Audio Ltd will NOT be held responsible for losses in transit, or for duty and taxes incurred, such as where customs documentation is completed incorrectly.

Customs Declaration forms on returned products sent internationally, should be completed and should read: "Electrical Musical Instrument Pre-Amplifier unit, returning to UK, country of origin, for Service/Repair. Not for Re-sale. Value for Customs = \$ 0.00.

See section: 1.8 STORAGE & TRANSPORT ADVICE

DO NOT DISASSEMBLE YOUR EDB-1 yourself, since there are no user serviceable /repairable parts. Any attempt to do so without prior permission will negate guarantee.

### **1.3 CLEANING THE EDB-1**

Ensure that your EDB-1 is SWITCHED OFF & UNPLUGGED before cleaning, with a moist cloth. Do NOT allow moisture to enter the unit and DO NOT use any chemically based or abrasive cleaning products.

### **1.4 PRODUCT LIABILITY**

Headway Music Audio Ltd cannot be held responsible for damage to its products, caused by the subsection to unreasonably high or low temperatures, or due to wet conditions, or abuse and mishandling. Headway Music Audio Ltd retains the right to make any 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 those due to the misuse of its products, accident, neglect, technical modifications, or unreasonable expectations. 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 from 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 user ignorance of the instruction manual, or due to ignorance of best practices in the use of AC Mains powered products. Headway Music Audio Ltd retains the right to make any determinations according to its own inspection and assessment.

### **1.7 GUARANTEE: TERM OF GUARANTEE**

EDB-1 guarantee is valid for up to, but no longer than 24 months from the date of purchase, but valid only after the guarantee registration has been made. All guarantee

issues will be subject to assessment by Headway and its appointed service agents. Also see further conditions below:

### **1.7.1 WHAT IS COVERED**

The cost of labour and parts required for the active functionality of all aspects of the EDB-1, except for moving parts, such as Knobs, Pots (Potentiometers), and other parts - Connectors and Switches, which are subject to a maximum of 12 months guarantee, from the date of purchase. This guarantee is subject to full completion and return of a guarantee card, submission of online guarantee form (subject to availability), or an email positively acknowledged by Headway Music Audio Ltd, as containing all required guarantee information, enabling full registration.

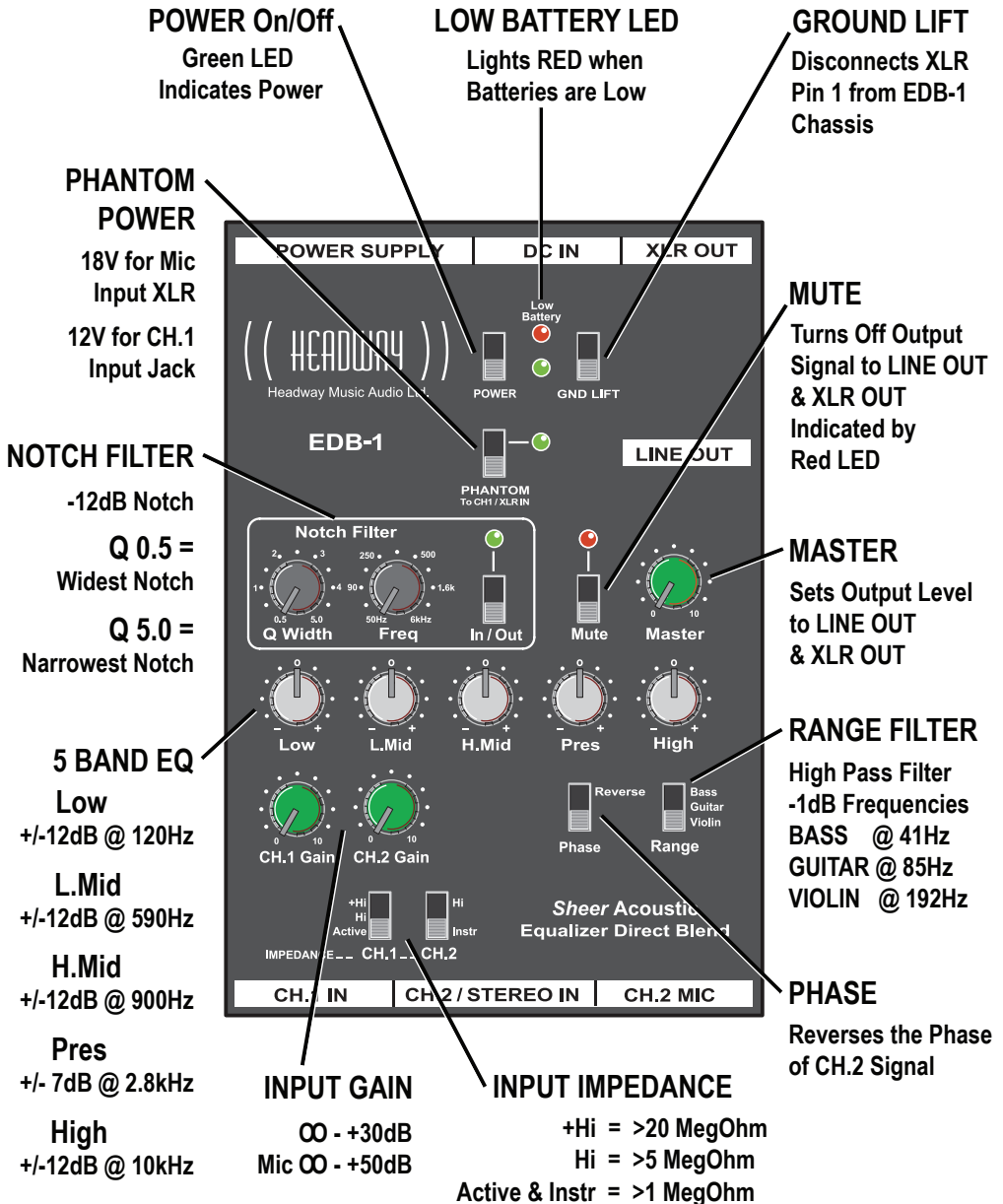
### **1.7.2 WHAT IS NOT COVERED**

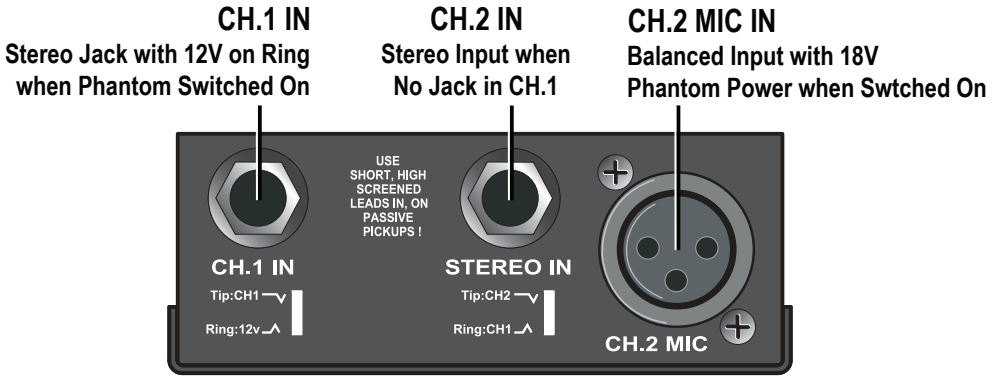
- Shipping related costs, handling or customs tax & duty charges will NOT be covered under this guarantee. See section 1.8.
- Physical damage and cosmetic blemishes, misuse or general vandalism
- Electrical, electronic or audio problems will NOT be covered under this guarantee, if caused by electrical misuse.
- Damage caused by insufficient care in handling and/or inadequate transportation.

## **1.8 STORAGE & TRANSPORT ADVICE**

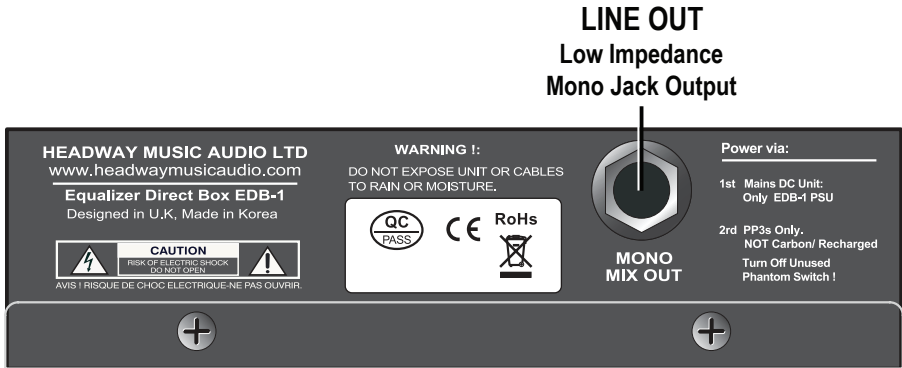
Headway Music Audio Ltd suggest storing & transporting the EDB-1 in a sturdy rigid box, flightcase, or inside a polythene bag, enclosed in a heavy duty, double thickness, cardboard box, which is in excellent condition, or complete original packaging. Any container should be padded out in order to prevent shifting around during transit. Due to our experience on breakages and service issues, we suggest that you do NOT use TNT, Parcelforce, or UPS.

# HEADWAY EDB-1 Top Panel

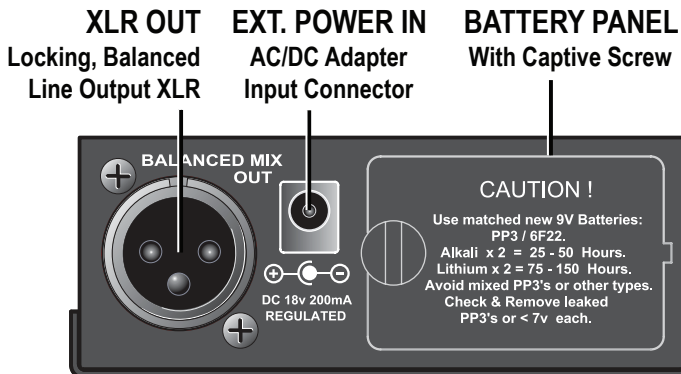




## EDB-1 Front Panel



## EDB-1 RH Side Panel



## EDB-1 Rear Panel

## 2 EDB-1 CONTROLS & FEATURES

### 2.1 POWER SWITCH

Switch unit ON and the Power LED will light green.

**IMPORTANT:** Before Switching EDB-1 On, Switch on Mute (Mute LED lights green), or fully back off Gain controls, or Master.

**NOTE:**

- ACW = Backing a knob off or turning it fully anti-clockwise.
- CW = Turning a knob up or turning it fully clockwise.

### 2.2 CHANNEL 1

#### 2.2.1 INPUTS & LEVEL CONTROL

CH 1 Jack In utilises a stereo jack where the ring offers phantom power and the tip inputs to CH 1. If a jack is plugged into CH 1, then Stereo Jack Input reverts to CH.2 Mono input.

CH1 has three input impedances, set using the 3 position slide switch. These are labeled +Hi, Hi & Active, described in detail in the following sections:

##### 2.2.1.1 +Hi Setting - Ultra High Impedance Input: > 20 Meg Ohms

This jack input is uniquely optimised for the feed of ultra high impedance passive, non-powered pickups, directly into the EDB-1. This type of pickup should always be used with a short, highly screened jack lead, preferably of low capacitance. The primary types of pickups include Piezo Cable or Co-axial Cable Pickups (Headway HE2 Passive), or Flexible Piezo Film Pickups, as offered by a number of manufacturers. Most are flexible structure types, but some film pickups are encased in rigid metal housings.

Jack leads used for this input should have at least 80% screening, preferably braided, or at least a conductive plastic shielding with extensive lapped screening. Metal jack covers should always be used, with the cable as short as is possible, no more than 2m (6') with standard, quality cables (e.g. Klotz or Van Damme), or 3m (9') with special low capacitance cable, such as Sommer (Germany). Remember that signal loss can amount to 30-50% per metre for this type of signal feeding CH 1 set to + Hi.

##### 2.2.1.2 Hi Setting - High Impedance Input: > 5 Meg Ohms

This input is optimised for the commonly available passive, under saddle Ceramic Pickups, or Limpet Contact Pickups, made from rigid piezo, also Headway's 'The Band' (for bowed Instruments). This input also gives a brighter sound for passive magnetic sound hole pickups.

The lead lengths for the Hi input setting are best kept as short as reasonably possible with good

screening, up to approximately 4m (12') in length, as this application is usually less critical than with ultra high impedance pickups.

### **2.2.1.3 Active Setting - Impedance > 1 Meg Ohm**

This input is optimised for normal active pickup systems, which require battery power. It can also be used for some high output, passive pickups, but there may be a treble roll-off. Input leads carrying active signals are not so sensitive to shielding quality or cable length, so leads up to 10m (33') in length are perfectly acceptable. This input will also accept industry standard 'Line Level' signals or battery powered Electret Condenser Mics.

### **2.2.1.4 Stereo Jack Input**

The general purpose stereo jack input feeds separate signals to both channels, controlled by their respective gain controls. The signal on the ring of the jack (usually a blue or black wire in cable) feeds CH 1. The signal on the tip of jack (red or white wire in stereo cable) feeds CH 2.

**If a mono jack is plugged in, it will feed Channel 1 only.**

**NOTE:** The Stereo Jack Input behaves as a dual input only when there is not a jack plugged into CH 1. In which case it is a single mono input, feeding CH 2 only.

### **2.2.1.5 CH1 Gain Knob: 0 –10**

Turn CW to increase the gain on CH 1 only. The gain should be set at 0 while plugging into the jack, in order to prevent damaging and or intrusive noises.

### **2.2.1.6 Gain & Master Knobs: Joint Operation**

To enable an output from the unit, it is necessary to have one of the CH Gain & the Master knobs turned up. Here are two ways of starting out:

- **Method A:**

After plugging in with both Gain & Master at '0', Turn Master up to around 70-80%, then gently turn CH Gain control up until you have reached the desired level for your instrument. This method minimises background noise.

- **Method B:**

After plugging in with both Gain & Master at '0', turn Master knob up to around 30-40%, then slowly increase the CH Gain until the desired level for your instrument is reached. If your instrument is then played harder or with higher volume level, drop the CH Gain back significantly, in order to retain headroom and clarity. Then re-adjust the Master for the overall volume required. This method may make it easier to set correct levels initially, especially if both channels are used.

## **2.3 5 BAND INTERACTIVE EQ SECTION**

Consists of 5 rotary controls with active boost & cut functions, including shelving responses at the low and high frequency ends of the audio spectrum. A flat response is achieved when the knobs are set in their central detented positions, which should be used as a starting point. You may use these controls creatively in conjunction with each other, remembering that there is a

degree of interaction, mostly between adjacent controls.

As an example of its use, if you wish to thin out mid range tones, try varying the relative amounts of cut between L. Mid (lower mid), H. Mid (higher mid) and possibly Pres (presence) controls, whilst listening for a suitable blend.

### **Typical Instrument EQ requirements:**

**Steel Strung Acoustic Guitars**, plus Celtic Bouzouki, Octave Mandolas and Acoustic Basses, often require a mid range cut, especially where full chords are often played.

Headway Fixed EQ pickups will require less EQ applied than most other pickups, because they incorporate an internal active contouring section, set for the instrument type specified.

**Nylon strung Guitars** played finger style, or **Resophonic Guitars** played slide, usually require roughly flat mid range EQ, or possibly with a slight boost, unless they are played with mainly full chords, in which case a slight mid cut may be preferable.

**Violins and Mandolins** often require treble cut, possibly presence cuts, but not usually mid attenuation. The Bass control may often be cut to a degree, without impinging greatly on fundamentals of these instruments.

### **BOOST EQ FACILITY:**

The EDB-1 offers active boost as well as cut on its EQ controls, while many competitors offer merely passive cut functions on theirs. However, boost functions can only work effectively, if there is a significant amount of energy at those frequencies, in order to be able to increase it.

### **Most important of all with EQ adjustments, use your ears!**

## **2.3.1 LOW knob: +/-12dB Centred Broadly @ 120Hz**

Allows control of the Bass at the lower frequencies of the audio spectrum, and will overlap a little tonally, with Lower Mid control.

**Cut LOW EQ (ACW):** to cut body handling noise, boominess, externally generated hum, percussive clunks and low end feedback, as well as any instrument or pickup bias towards the low strings.

**Increase LOW EQ (CW):** to beef up tone or bias lower strings more strongly.

## **2.3.2 L. Mid Knob: +/-12dB Centred Broadly @ 590Hz**

Allows control of Lower Middle range of the audio spectrum, which is centred above Bass, but below Upper Mid, Presence and High. Will overlap a little tonally, with Bass and Upper mid.

**Cut Low Mid (ACW):** 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.

**Cut Low Mid (ACW):** to reduce body handling noise, or over loudness on lower strings, or general muddiness, boominess and most feedback.

**Increase Low Mid (CW):** to thicken tone and increase bias towards lower strings. This is a little more likely to be necessary on nylon strung instruments, played fingerstyle.

### **2.3.3 H. Mid Knob: +/-12dB Centred Broadly @ 900Hz**

Allows control of Upper Middle range of frequency spectrum, which is centred above Bass and Lower Mid, but below Presence and High. Will overlap a little tonally, with Lower Mid and Presence. Upper Mid is useful in conjunction with similar, or opposite setting to those of neighbouring controls, in an experimental creative manner.

**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. This is more relevant to Nylon Strung Instruments, and guitars played fingerstyle.

### **2.3.4 Pres. Knob: +/-7dB Centred @ 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. Presence is useful in conjunction with similar, or opposite to settings to those of neighbouring controls, in an experimental creative manner.

**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.

**Increase Presence (CW):** to thicken treble, increase punch and increase bias of top 2-3 strings, which may be especially useful on old dull steel strings, or nylon strung guitars.

### **2.3.5 High Knob: +/-12dB Centred broadly @ 10kHz**

Allows control of treble, at the higher end of the audio spectrum, which offers increased brightness and sparkle on turning CW, or a jazzy more mellow sound when turned ACW. High overlaps into Presence area.

**Cut High (ACW):** to reduce high frequency feedback/whistling, harshness, externally generated hiss, squeaks from new strings/frets, or to compensate for over-bright pickups, or rooms with many hard reflective surfaces.

**Increase High (CW):** to compensate for older dull strings, weak top strings, overly mellow pickups, or dull 'boxy' sounding rooms.

**Overall EQ and Notch Filter ( see 2.6 ), are applied to both Channels,** since they would normally be applied to same instrument, in same acoustic environment, with combined output to same amplification gear. We recommend that you apply final EQ alterations to the overall sound from both input channels, after respective gain levels on each channel, have been set. If you must apply EQ separately to each input for the same instrument, then two units are required, or a Shire King Acoustic Amp, which has two comprehensive channels.

## 2.4 CHANNEL 2

Channel 2 is suitable for a second pickup on the same instrument, or an instrument mic. It is most suitable for active pickups, passive magnetic and passive ceramic piezo pickups.

Note that Passive Flexible Piezo Co-axial Pickups or Passive Flexible Piezo Film Pickups are NOT voiced optimally using this channel and should be connected to CH 1 input.

An XLR input allows the use of a high quality microphone, directed at the instrument, to be mixed in combination with a pickup source fed into CH 1. However, acoustic feedback and resonance problems are more likely when using microphones, compared to pickup sources. For live performances, use uni-directional, cardioid Mics, or better still, hyper-cardioid.

The EDB-1 has been designed for 1 or 2 signal sources from a single musical instrument. The EDB-1 is NOT intended to be used for two totally separate sources, such as guitar + vocal mic. This is because you will normally require different EQ settings on differing signals. If you require this facility, a Shire King Acoustic Combo Amp is much more suitable, or a P.A.

Phantom power is required to power true capacitor or condenser microphones, e.g. DPA types, or those such as AKG C414, Neumann U87 etc, where battery power is not contained within the mic itself. Exceptional quality reproduction may be obtained using such this type. Dynamic microphones, such as the Shure SM58, are more usual for live work, as they are tougher, often far easier to use than condenser types, and do not require phantom power.

**IMPORTANT:** Before switching on Phantom Power (Green LED On), Mute the output, (Red LED On). Alternatively, turn CH 2 Gain fully down.

**NOTE:** If any microphone or other devices do not require Phantom Power, please make sure the Phantom Power is turned off! (Green Phantom Power LED unlit)

### **Mic Use Notes:**

**Headway Music Audio does NOT recommend the use of internal microphones within instrument bodies,** for several reasons:

- Firstly, musical instruments are voiced to be heard from the outside, whereas internal body sounds usually offer unbalanced tones, with excessive mid and bass boom.
- Secondly, mics are meant to be used in free air, where sound waves are travelling mainly from the front, past the diaphragm to the rear, whereas inside instruments, sound reflections and partial cancellations from standing waves cause phase problems and prevent clarity. In addition, the sound quality and construction/reliability of mics often offered for internal use, need careful evaluation.
- The placement of a mic inside a resonant chamber, producing uneven peaks and a preponderance of lower frequencies, makes it exceptionally prone to feedback.

Musicians should bear in mind that they might judge the sound of an internal mic at very low volumes, but will normally find it completely un-useable at typical live performance volume levels, or in difficult acoustic conditions, and possibly even at very low volume levels.

If you try to blend in a little internal mic level, you are likely to have to set the level so low, that it is virtually imperceptible and therefore of little use. If you try to make the mic sound a little less boomy and unnatural by pointing it out of the soundhole, you will be making it more likely to pickup sound from loudspeaker cabinets and monitors, which may make it even more prone to acoustic feedback.

If the 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 move to a different room acoustic, the problems are likely to worsen again. Anti-feedback devices can help, but cannot work miracles. The more effective they are in removing troublesome frequency bands, the greater holes they create in the sound spectrum, virtually defeating the use a mic in the first place.

For the best results, mics should be used externally, with hyper-cardioid polar patterns, such as the DPA type with it's soft external body clip option. Alternatively use mic stands with full sized, quality condenser mics. Another option is Proel's Guitar Body Mounting Bracket, with mic holder. External mics will still be far more prone to feedback than most pickups, but at least they should sound natural.

Headway's Co-axial Piezo Cable Under Saddle Pickups offer a more natural sound, than flat pickup types, since they sense vibration around the full 360 degrees from their centre. However, as an alternative to a mic, to add the impression of air in the sound, try digital reverb, such as the Alesis unit included in Shire King Acoustic Amps.

Headway Music Audio could offer dual systems, by the addition of a \$2-\$20 internal mic, plus a simple mix circuit which often adds an additional \$300 to pickup system prices, but you can probably understand from our viewpoint, why we don't do it!

## **2.4.1 INPUTS & LEVEL CONTROL**

CH 2 utilises a stereo jack where the signal on the ring is fed to CH 1, provided there is no jack plugged into it. If there is a jacked plugged into CH 1, then CH 2 reverts to a mono input where the audio signal from its tip, will be passed to CH 2.

CH 2 has two input impedances, set using the 2 position slide switch. These are labeled Hi & Instr, described in detail in the following sections:

### **2.4.1.1 Hi Setting: Input Impedance > 5 Meg Ohm. See 2.2.1.2**

### **2.4.1.2 Instr. Input: Impedance > 1 Meg Ohm. See 2.2.1.3**

### **2.4.1.3 CH. 2 MIC Input: Impedance > 2k Ohm**

Balanced XLR input, to accept dynamic or phantom powered condenser microphones.

### **2.4.1.4 CH. 2 / Stereo Jack Input**

The general purpose stereo jack input feeds separate signals to both channels, controlled by their respective gain controls. The signal on the tip of jack (usually a red or white wire in a stereo

cable) feeds CH 2. The signal on ring of jack ( blue or black wire in cable) feeds CH 1.

**NOTE:** CH 2 stereo jack input behaves as a dual input only when there is not a jack plugged into CH 1. In which case it is a single mono input, feeding CH 2.

#### **2.4.1.5 Phantom Power Switch**

Sliding switch to On position, (Green LED light ), delivers 18V phantom power to the XLR microphone input (pins 2 & 3), plus 12v, limited to 10mA, phantom power to the ring connection (Blue or Black wire) on the jack input of CH 1.

**IMPORTANT:** *Phantom Power should always be OFF, when not in use.*

18V phantom power at the XLR will power the great majority of commonly available condenser mics at, or above their minimum voltage requirements.

The ability to power condenser mics from a battery device is not common. However, remember that as batteries gradually drain, their voltage will fall. As the voltage decreases, some condenser mics may suddenly cease to operate, whereas the EDB-1 continues to function for some time. To avoid this problem, change batteries regularly, or use PSU. See: 3.

#### **2.4.1.6 12v Phantom Power to Channel 1 Jack Input**

This enables external powering of active pickup systems onboard instruments, with no battery inside instrument itself. But they must be set up to accept phantom power.

Active pickup systems would require power to be accessed via the ring connection on stereo jacks with stereo cables, usually the blue wire inside the stereo cable. In this case, an active onboard system would not require a battery clip, or if it had one, a battery link connector is required in place of the battery. Headway pickup systems can be supplied custom wired to be powered externally, in this way.

**IMPORTANT:** *Phantom Power should always be OFF, when not in use.*

**Powering Constraints:** It is not possible to power the EDB-1 via phantom power from a mixing desk, or other devices, via its XLR balanced output, as is the case with some smaller less comprehensive units. This is because the number of features incorporated require a far greater amount of power, than the phantom power spec is designed to supply.

#### **2.4.1.7 CH. 2 Gain Knob: 0 –10**

Turn CW to increase the gain on Channel 2 only. Gain should be set at 0 while plugging into the jack or XLR, in order to prevent damaging and intrusive noises.

**IMPORTANT:** The Gain knob should always be at 0, or Mute set on, when turning the Phantom Power ON or OFF.

See 2.2.1.6 for A & B methods for combined use of Gain + Master.

## 2.5 NOTCH FILTER SWEEP

Utilising two knobs and a slide switch for In/Out, it applies overall to both CHs 1 & 2, including the Line Out jack and XLR DI output sockets. Please note that the control knob markers are as a guide, and not calibration points.

### 2.5.1 Q Width Knob: 0.5 – 5

Sets the bandwidth or spread of cut for the filter, at the frequency set using the Freq knob. **Turning ACW, to '0.5', increases width of cut to maximum**, while turning CW up to '5.0', reduces the width of notch cut to minimum, where it will have least effect on the majority of the signal.

### 2.5.2 Freq Knob: 50Hz – 8kHz

Sets the approximate centre frequency or effective band, in Hertz from 50 Hz (low bass) - 8kHz (treble), where the notched cut is applied.

### 2.5.3 In/Out - Slider Switch

Switches the Notch Filter in or out. When the Notch Filter is in operation, its green LED indicator is lit. The depth of the notch is designed to be approximately –12dBs.

The In/Out switch, is useful determining whether the notch setting is worthwhile or not, in that you can A/B test the sound changes by switching between Notch On and Off.

### 2.5.4 NOTCH FILTER USE

This is an extremely versatile, supplementary tone control, which can be used fairly subtly or severely. It is the most precise and effective method for cutting problematic sounds, such as acoustic feedback, excessive booming & body handling noise, background rumble, honky upper mid range, muddy lower mids, or excessively harsh high frequencies.

It can be used in several ways, but best addressed as a single EQ application, unless overlapping with the effect from the main 5 Band EQ controls. The EQ and Notch Filter function on the signal sent to the LINE OUT Jack and the balanced XLR D.I. output.

You could try the Notch Filter on what seems to be the most problematic frequency spectrum, leaving the other EQ controls at their centre click neutral settings, as a starting point. Here are a few potential strategies

**How to sweep out unwanted low end bass, below or at the low end of the of instrument range:**

- Set the notch Freq knob ACW, well below useful tonal range of the instrument, e.g. for guitar with standard tuning, set to cut at just under approximately 80 Hz.
- Set the Q Width knob fully CW.
- With the notch button set to In, slowly adjust the Q Width knob ACW from its minimum effect CW setting, while listening to the amplified low strings. Take it until the tone of the low strings starts to thin out. Then re-adjust the Q Width, for the best tone on the lower strings.

- If required, re-balance both controls slightly in order to fine-tune the maximum amount of cut, according to what sounds best.

**NOTE:** This technique is especially useful with amplifying problematic higher pitched instruments, such as the Violin, Mandolin & Uke, where the instrument fundamental frequencies are around 200 Hz, well above the bass region.

**A similar principle can be applied to high frequency problems:**

- Turn the Freq knob fully CW to the treble spectrum, and set the Q Width Knob fully CW. Then slowly turn the Q Width ACW, until the problem treble signal content is sufficiently attenuated, with the minimum amount of cut. Then, if necessary, re-adjust both controls in order to re-balance, with the minimum disturbance to the required signal.

**Excessive or problematic midrange can be found and dealt with too:**

- Set the Q Width ACW and then, whilst listening to the sound, adjusting the Freq knob to find where the cut is most effective. Then increase the Q Width CW until the problematic frequency is minimised, without excessive width of cut.
- Feedback peak or excessive spikes in the sound are best countered by setting the Q Width fully CW (as narrow as possible), and then whilst listening carefully, slowly adjust the Freq knob until the unwanted noise is located and attenuated.
- If other feedback peaks remain, the problem will have to be dealt with at source, or possibly with the use of a feedback destroyer, or other suitable device. (See Trouble Shooter Checklist)

**WARNING:** All EQ and Parametric EQ in particular, should be used carefully and not unless really needed. As well as improving a sound, they could instead detract from a sound, by removing important elements in the body of the sound.

An alternative view would be that carefully tuned active EQ boost and cut, such as that in an EDB-1, can be used creatively, beyond that of simple reproduction and problem solving. If at the start, the sound is reasonable and not problematic, you could switch Notch Filter to Out, and make good use of the 5 band EQ sections.

## **2.6 MASTER Knob & OUTPUTS**

The signals from CH.1 and CH.2 inputs are mixed together, and their combined signal feeds the Master level knob via the 5 Band EQ and Notch Filter, when switched in. The level set by the Master knob is sent to the LINE OUT jack and the balanced XLR OUT.

The LINE OUT jack is an ideal feed for stage equipment, such as an amplifier, stage monitoring, tuner or active DI box, whereas the XLR OUT is useful as a feed to a recorder or front of house PA system.

### **2.6.1 MASTER Knob**

Sets the output level of the EDB-1 preamp, which is fed to the LINE OUT and XLR OUT sockets on the end and side panels. See 2.2.1.6 - Gain & Master Knobs: Joint Operation.

## 2.6.2 MUTE Switch

Slide Mute switch on, and red LED illuminates to denote that the signal to the LINE OUT and XLR OUT is switched off. This is useful to allow silent tuning in front of an audience, or to instantly turn off if signal feedback or other sound problems are occurring. It can be disengaged instantly, during periods of inactivity, where noise free continuation of performance may be required, without re-setting Gain and Master controls.

## 2.6.3 LINE OUT Jack

Provides a low impedance mono jack output signal.

## 2.6.4 XLR OUT

Industry standard locking XLR output, which provides a low impedance electronically balanced output signal. Always feed this output into a balanced input. It is not designed to be fed into a 'single sided input' which unbalance the signal.

### 2.6.4.1 GND LIFT Switch

In case of hum when using the Balanced XLR Output, the GND LIFT switch allows the disconnection of the EDB-1 chassis from P1 of the XLR in, order to help prevent 'hum loops'.

## 2.7 PHASE REVERSE - Slider Switch

At the setting marked 'Phase', all signals are in alignment, or in phase. Switching to 'Reverse' reverses the polarity of the signal in CH 2. There are occasions, where signals from two different types of transducers, such as a piezo pickup and mic, for example, are out of phase. In this case, as you turn up the Gain knobs to mix the two signals together, you may experience a drop in level, or it 'thins out', as the signals mesh. If this happens, set the Phase switch to Reverse to check for the best signal.

Setting this switch to Reverse, may be useful in combating acoustic feedback in some instances too.

Remember to make a point of **leaving the Phase switch in its non Reverse setting when starting out** in setting up your sounds.

## 2.8 RANGE CONTROL - 3 Way Slider Switch

This sets a High Pass Filter, which rolls off low frequencies, according to the requirements of three key Instrument types: Violin / Guitar / Bass. The most common problem frequencies are cut to reduce low end feedback and boomy resonances from the instrument body, stage or room, but still passes the useful content, such as the fundamental frequencies and harmonics above that frequency roll off point. The effect of the Range switch may be countered by turning by increasing the Low or L. Mid of the EQ section.

### 2.8.1 Bass Setting: -1dB @ 41Hz

Progressively attenuates the signal below 41 Hz. This setting applies to all true bass instruments, such as double bass, electric bass guitar, upright stick bass, acoustic bass guitar, 6 string bass guitars, mando-bass, baja sexto, and the guitarron, plus baritone guitar and full size

harps. You may also prefer this setting on a cello and mandocello, with original low CGDA tuning. To counter the modest low Bass roll off below 41Hz for 5 string bass, boost Low EQ (bass) control.

## **2.8.2 Guitar Setting: -1dB @ 85Hz**

Significantly and progressively attenuates bass frequencies below 85Hz. Allows the fundamental frequencies and harmonics above 85Hz, but is designed to still reproduce signals from the lowest guitar string when tuning is 'dropped', from bottom 'E' to 'D' or 'C'. This setting also applies to 12 string, electric and nylon strung guitars, resophonic guitars, lap steel and pedal steel guitars, plus similar middle range instruments such as the bouzouki, octave mandola, mandocello, cello, tenor guitar, tenor mandola, Viola, cittern, hammer dulcimers, appalachian dulcimers, small to medium harps and banjos.

## **2.8.3 Violin Setting: -1dB @ 192Hz**

Significantly and progressively attenuates upper bass frequencies below 192Hz. This setting also applies to other smaller, high pitched instruments, such as the mandolin and ukele.

# **3 BATTERY POWERING**

Uses 2 x 9V PP3 (6F22) batteries, wired in series internally, which are housed accessed via the end panel cover. Undo the retained screw to access battery compartment. Connection is via two red/black twisted pair leads to non-reversible Battery Clips, which should all be pinched on tight.

**ENSURE THAT:** Batteries are connected to battery terminals the correct way around, i.e. male to female connector and female to male.

**Red = Positive ( + ) / Black = Negative ( - )**

Batteries should both be new and same type when fitted, and are checked for damaging leakage. If one battery is leaking, even slightly, dispose of both batteries and replace with two new ones.

### **BATTERY TYPES:**

Batteries can be of any brand, so you may buy the better types of the cheapest brands, as the type of battery is often more important than the particular brand.

Headway choices showing approximate battery life in hours:

**1st: Lithium: 200 hrs. continuous, or 100 hrs. if Phantom Power switch is set to ON.**

**2nd: Alkali: 50 hrs. continuous, or 25 hrs. if Phantom Power switch is set to ON.**

**3rd: Zinc Chloride (Minimum standard required):** Life depends on pattern of usage.

**We do not recommend re-chargeable batteries for this application, as life is limited and**

voltages start lower than 9v. But of these types, Ni-Mh (Nickel Metal Hydride) are preferable.

Zinc Carbon, or Heavy Duty PP3 (6F22) batteries are not recommended.

Ensure that **spare batteries** are always available in reserve.

Batteries should be checked using a battery checker or electronic test meter. We recommend they be changed once their voltage has dropped to 8V or just below, under load.

The **Low battery indicator** on your EDB-1, which lights red, offers immediate indication that battery life is close to being expended, and that the voltage remaining is approximately 7.5V.

**Powering Constraints:** It is not possible to power the EDB-1 via Phantom Power from a mixing desk, via its XLR Balanced Output, because the number of features incorporated, require a far greater amount of power, than phantom power systems are able to supply.

## 4 SPECIFICATIONS

### 4.1 PHYSICAL SPECIFICATION

- Dimensions (Approximate): Length 138mm (5.5"), Width 93mm (3.7"), Depth of Box 38mm (1.5"), Depth Inc. Knobs 43mm (1.7")
- Weight: 550g (1lb 4ozs)
- Mic Stand Bracket Connector: female threaded bush on rear at 1.5 cm Diam. ( 19/32" )

### 4.2 ELECTRICAL SPECIFICATION

#### 4.2.1 CH.1 INPUT

- Input Impedance: +Hi = >20 MegOhm, Hi = >5 MegOhm, Active = >1 MegOhm
- Gain Control: Continuously Variable 0 – +30dB

#### 4.2.2 CH.2 INPUT

- Input Impedance - Jack: Hi = >5 MegOhm, Instr = >1 MegOhm
- Input Impedance - XLR: >2 kOhm Balanced
- Gain Control - Jack: Continuously Variable 0 – +30dB
- Gain Control - XLR : Continuously Variable 0 – +50dB

#### 4.2.3 5 BAND EQ ( Baxandall Interactive )

- Low: +/-12dB Shelf @ 120Hz

- L. Mid:  $\pm 12$ dB Bell @ 590Hz
- H. Mid  $\pm 12$ dB Bell @ 900Hz
- Pres:  $\pm 7$ dB Bell @ 2.8kHz
- High:  $\pm 12$ dB Shelf @ 10kHz

#### 4.2.4 NOTCH FILTER

- Q Width: 0.5–5.0,
- Depth: 12dB
- Freq: 50Hz–6kHz

#### 4.2.5 RANGE SWITCH ( High Pass Filter )

- Bass:  $-1$ dB @ 41Hz
- Guitar:  $-1$ dB @ 85Hz
- Violin:  $-1$ dB @ 192Hz
- Slope: 12dB/Octave

#### 4.2.6 PHANTOM POWER

- XLR Mic Input: 18v with 2K7 Current Limit Resistors (pins 2 & 3).
- CH.1 Jack Input: 12v with 10mA Current Limit

#### 4.2.7 OUTPUTS

- Line Output: Nominal 0.5V RMS @ 100 Ohms  
Mix of Ch.1 & Ch.2, via Mono Jack Socket (For 1/4" Dia. Standard Mono Jack Plug)
- Balanced Output via XLR : Nominal 1.0V RMS @100 Ohms Electronically Balanced  
Mix of Ch.1 & Ch.2, via XLR Out (Mono)  
XLR Wiring: Pin 1 = Gnd, Pin 2 = + Signal, & Pin 3 = -Signal.

#### 4.2.8 POWER SUPPLY UNIT ( I.T.C. ) See 1.1

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

INPUT: 100-240VAC 50/60 Hz @ 100mA

OUTPUT: 18VDC @ 0.5A

EDB-1 Input Plug Connections (L.P.S.):

- Outer = +VE (Positive)
- Inner = - VE (Negative)

**Use only Headway Music Audio supplied EDB-1 PSU as in 1.1**

## **5 TROUBLE-SHOOTER CHECKLIST**

### **5.1 AVOIDING ACOUSTIC FEEDBACK & ROOM RESONANCES**

- Turn the EDB-1, instruments and microphones down and turn off when not in use.
- If possible, place instruments and microphones to the side, off axis, or behind any speaker cabinets.
- Try re-positioning the instruments to prevent acoustic feedback. Setting the loudspeakers at a different angle may help too.
- Check that you have the Range switch set to suit the instrument in use, to prevent the amplification of unwanted low frequencies.
- Use the tunable Notch Filter or other EQ controls, to cut acoustic feedback. When using the Notch Filter, set the Q Width to the sharpest useable setting, i.e. more CW.
- Try the Phase Reverse switch, it may help but be sure the sound is still acceptable.
- Covering or blocking the sound hole(s) of an instrument can often help give a few more decibels of level before the onset of feedback.
- Sound absorbent materials, such as drapes and heavy banners, can help to damp sound reflections, which cause feedback.
- When acoustic feedback is encountered, using either two pickups, or a pickup combined with a microphone:
  - Increase the proportion of saddle/bridge pickup or magnetic pickup, and reduce the level of contact pickup or mic.
  - Increase the proportion of contact pickup and reduce the level of the mic signal.
- Where using mics, avoid omni-directional and use uni-directional types, preferably hyper-cardioids, such as those produced by DPA.
- Instead of microphones, the use of Headway 'Limpet' contact pickups or The Band (for Bowed Instruments) will help, or preferably use Headway's active under saddle pickups in fretted instruments (HE2 & Snake3), and VL3 for violin, which should all provide greater level before the onset of acoustic feedback, in comparison with many other types.
- Electronic feedback destroyers, which are normally patched into the sound system, can be a great help for level increase. This type of unit automatically tunes into the troublesome feedback tones, and attenuates those particular frequencies. Allowing the rest of the spectrum level to be increased.

- A limiters, or compressor/limiter, usually rack mounted units patched into the sound system, can be useful in limiting the peaks, which set off acoustic feedback.
- The overall level may be increased, by playing harder, and getting the instrument closer to any microphones in use.
- Damp any strings, which will not be in use, either with good techniques while playing, or when left on a stand, unattended.

## **5.2 UNEVEN STRING AMPLIFICATION, HARSH or BOOMY SOUND**

- 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 corrected.
- If a contact pickup is in use, change its placement in order to get the best sound by locating the 'sweet spot'.
- If a mic is in use, change its position to obtain the best balance and overall sound. Guitars often work best with a mic pointed towards the treble strings area of the upper bout, close to the end of the fingerboard.
- If a magnetic pickup is fitted in the sound hole, where possible, adjustment of the magnetic pole pieces and overall pickup heights/angles will enable the string balance to be adjusted.

## **5.3 POOR SOUND: WEAK, DULL or DISTORTED**

- Make sure that any batteries, such as 9V PP3 types on pickup systems, Electret Condenser Mics and pedals are in good condition & that the Low Battery Indicator LED on the EDB-1 is not lit. See section 3: BATTERY POWERING.
- Turn down input gain controls, or excessively boosted EQ controls.
- AVOID Passive D.I. boxes, which often 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 any of the EDB-1 inputs, or outputs!
- Check leads for cross leakage, excessive capacitance or resistance, with an Electronic Multi-Meter, or Cable Tester.
- Try switching to the Phase Reverse setting to check whether the sound improves.

## **5.4 INTERFERENCE: HUM, BUZZ, HISS, RADIO NOISE**

- Keep your EDB-1 and signal cables away from any electronic and/or electrical units, which might have strong electrical or magnetic fields. These include units with large AC mains transformers, such as valve/tube amplifiers, generators, lighting control systems, fluorescent and unshielded neon lighting, also computers and their screens. If possible, switch off any lights which are causing interference.

- Keep signal cables away from AC mains and speaker leads.
- Make sure AC mains power leads and extensions are uncoiled!
- Use highly screened microphone and guitar cables, with the shortest lengths possible for the application. Cable runs should never be coiled. Use well maintained cables, with metal shell shielded connectors, in preference to those with plastic housings.
- When using the XLR D.I. output on the EDB-1, set the GND LIFT switch to minimise earth loop hums, if required. Otherwise leave the Ground Lift switch set to Off!
- AC Mains Filters are useful for filtering the mains power in order stop an impure waveform power source causing interference in your system.
- If lighting is causing hum and/or buzz, if possible, try to power your amplifier from a different AC mains ring circuit, or from a different mains power socket, which is not being used to power lights.
- Hum and buzz can be caused by a faulty signal cable, where the earth or signal connection is poor or disconnected.
- Hum and buzz can be generated in a guitar or stringed instrument, where there is no connection between the output jack ground and strings or tailpiece.
- Attenuate externally generated hum using the Notch Filter setting the Q Width to 5.0 (CW). Tune the Freq knob to cut hum. EU Hum @ 50Hz. North American Hum @ 60 Hz.
- Excessive Hiss may be produced by a faulty device, or a poorer quality electronic unit within the signal chain. Unmatched levels between different types of gear can also have an effect, such as using equipment with domestic levels in combination with pro audio devices. One method which may help reduce hiss, is to identify gear responsible and drive it harder with larger input signals, while reducing its own gain. Worst case, remove it from the signal chain. Alternatively, reduce treble, or use the Notch Filter with narrow Q Width (knob CW), with the Freq knob set to the higher frequencies (CW). Alternatively, try an electronic 'noise filter' pedal or rack unit.
- Radio pickup within a signal chain may be caused by the use of very poor quality input leads, such as the 'curly' types, especially where high impedances are used in combination with low output passive pickups. For the best results, use highly screened, low capacitance, jack leads into the EDB-1 inputs.
- Use only government licensed, type approved, multi channel radio mics and radio transmitters, of good quality. If noise or broadcast radio interference is experienced due to the use of such units, it may be better to change to conventional microphones and highly screen leads.

## **5.5 INTERMITTENT or LACK OF SIGNAL**

- Check that all power and signal connectors are pushed firmly into their sockets.
- There are 4 controls on the EDB-1 which should checked as any one of them, with the wrong setting, could cause lack of signal. Check that the POWER Switch is ON, indicated by its green LED being lit, CH1/CH2 Gain control(s) and Master are turned up enough for a

reasonable signal level, and that the Mute Switch is in its Off setting. (Its red LED will be lit if Mute is On)

- Make sure that the battery clips are pinched firmly and evenly onto their batteries, with correct orientation. Also make sure the EDB-1 Low Battery warning LED is not lit.
- Check that any jack leads and cables are in good shape physically, with good solder connections. Where possible, confirm with a Cable Tester or Electronic Multimeter. Make sure jack probes are straight and that the tip contacts are not misshapen in any way.
- Check that XLR leads are wired correctly: Pin 1 = Gnd, Pin 2 = + Signal & Pin 3 = - Signal.
- Make sure that connectors to your instruments fit firmly into their sockets. If a socket is incorrectly fitted, by being set too deeply into a guitar, for example, a jack plug may not be seated sufficiently deeply, and may spring out, unexpectedly.
- Check that the AC mains supply and distribution is operating such that there are earth connection to all pieces of equipment in use.
- If in doubt with regard to intermittent or total lack of sound, take a logical approach to changing the leads connected to the EDB-1. Disconnect all external devices and if necessary, try a different signal source too. Once you have a signal, re-connect everything until you can locate the troublesome item.

It is recommended that you use the best quality of connectors, since the fit of the lower cost types are known to be dimensionally inconsistent in some cases, and therefore likely to cause problems during practical use. We recommend the following makes:

- Neutrik, Deltron & Schurter/Rendar; Switchcraft/Horizon & GH Industries.

### PERSISTENT PROBLEMS

If you have worked through the trouble-shooting and problem prevention sections above and you still experience persistent problems related to your EDB-1, please contact your dealer, a professional electronics technician, Headway Music Audio, or an Authorised Service Centre.

### Future Headway Products

#### **Sheer Acoustic Magnetic SAM-1**

Active Magnetic Soundhole Pickup - Instant fitting and natural sound for Steel Strung Acoustic Guitar.

### Current Headway Products include:

#### **HE2 (e.g. HE2/G.FEQ)**

Superior Active Under Saddle pickup System for Acoustic Guitar - Steel Strings.

#### **Snake3 (e.g. Snake3 NY)**

Active Under Saddle Pickups for Nylon Strung Acoustic Guitar.

**Shire King - Superior Acoustic Guitar Combo Amplifiers: SK120 & SK60**

#### **The Band**

Bowed Instrument, Instant fit wrap around, passive body pickups. (e.g. Violin Band & Cello Band)

### **Sheer Acoustic SA2 & SA2-B**

Active Under Saddle Pickup System for Acoustic Guitar & Bass, featuring 4 Band EQ on sliders,  
plus Volume control.

### **VL3**

Active Bridge based Violin Pickup System with Rosewood Clamp Jack.

### **Limpet, Limpet Dual & Limpet Drum**

General Purpose, easy fit Piezo Ceramic Contact Pickups.

## **HEADWAY POLICY OF CONTINUOUS IMPROVEMENT**

Headway Music Audio Ltd operates a policy of continuous improvement and reserves  
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Validate your guarantee by sending in the card enclosed with your product or register  
online, subject to availability.

We recommend that to get the best possible sound, you use only Headway Pickups and good quality true  
Condenser Microphones, such as the excellent DPA ( Denmark) Miniature Instrument Mics.

Please *display* (( HEADWAY )) *promotional stickers proudly on your Instrument cases!*

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