

# Headway EDM-1 and EDB-2 acoustic instrument preamplifiers



by **Chris Fitzgerald**

I can remember a time when trying to amplify an acoustic instrument was far more difficult than it is today, due to the predominance of amplification gear best suited to amplifying the magnetic pickups most electric instruments utilize. While most of this “electric instrument gear” fulfilled its function well enough for electric instruments, it often left those attempting to use the same gear to amplify acoustic instruments with a number of difficult hurdles to overcome that the controls on

the “electric gear” were ill-suited to deal with: problems with input impedance for piezo pickups, lack of built-in phantom power for condenser microphones, and limited EQ options to reduce feedback and excess low end are three of the most common of these hurdles. Without specific controls to address these issues, amplifying an acoustic instrument in a live situation can easily become a sonic nightmare.

Fortunately, these days, there are a lot more options for the instrumentalist who wants to amplify an acoustic instrument cleanly in an increasingly noisy (and therefore complicated) soundstage. Headway offers two such products with the EDM-1 and

EDB-2 instrument preamps, which are designed to handle the exact sorts of problems regularly presented by acoustic instruments, from busses and guitars, to violins and mandolins. Need to supply phantom power to a condenser mic? Need enough control over input impedance to allow you to get the most out of either an active input from your instrument or to allow you to use a piezo pickup? Want to bypass the colored preamp section of rented or borrowed backline amps while on the road? Need to be able to send your output either to an amp or direct to the front of house system? No problem – both units have you covered. And as we’ll see, there are still more tools in the toolbox that these two units offer.

## Introduction and Caveat

Both the EDM-1 (“EDM” is short for “[Sheer Acoustic] Equaliser Direct Mini”) and the EDB-2 (“EDB” being short for “[Sheer Acoustic] Equaliser Direct Blend”) are high quality class-A devices that are designed to pack a number of useful tools for the acoustic instrumentalist into a small portable package that can be easily transported in a gig bag, used onstage in a variety of convenient ways (worn on a belt clip, mounted on a mic stand, or placed on top of an amp), and allow the player to easily control many aspects of their signal that might otherwise be left up to chance or to the preferences of an unknown soundman. Both offer variable input impedance, a number of phantom power options, a low noise floor, flexible EQ options (including hi pass filtering) and a high quality DI, all built into a small, solid package. As someone who travels and often has to rely on borrowed backline amps, these units can often be a true godsend, in terms of salvaging what might otherwise have been an amplification nightmare without the tools they place readily at my fingertips.

As an example, on a recent trip abroad, where I was forced to rely on both borrowed acoustic basses and backline, the amplifiers provided did not have an input impedance that was friendly to a piezo bridge pickup, and also had highly colored preamp sections that were designed to bring out a lot of lows and low mids. Without some control over these aspects of the signal, it would have been nearly impossible to get what I would consider to be a usable sound. With the use of these two handy little units, I was able to start the signal chain with a proper input impedance, and in most cases also bypass the built-in colored preamps of the backline, by plugging directly into the

effects return, which produced a much more neutral and “acoustic friendly” environment from which to begin sculpting a sound. I’m not sure that it’s possible to put a price tag on the peace of mind that having these options brings to the traveling musician, but I think it’s fair to say that the cost of either of these units falls well below the price of that piece of mind.

As a caveat, I will pass along one mantra that has been shared with me over the years by a number of people who know far more than I do about electronics in general and preamps in particular: every preamp imparts some sonic coloration to the output signal. The question of, “does this preamp provide me with a truly uncolored signal?” is better stated as, “does this preamp add a coloration that I find sonically pleasing?” With that distinction in mind, I will add that I find the sound of the preamp circuit on both units very pleasing. While I slightly prefer the color of the preamp circuit on my personal gear that I carry with me when I am able to take my own gear to the gig, I can safely say that I prefer the sound of the Headway preamps over the built-in preamp section of any borrowed backline gear I’ve ever run across, and that’s saying a lot.

## EDM-1

Right off the bat, the “mini” portion of the name of this unit turns out to be entirely accurate. Only slightly larger than a box of cigarettes (remember

those?), this little black box packs a small set of useful features into a clearly laid out and solid package. For whatever reason, I’m not the kind of player who likes to clip preamps to my belt, but if I were that kind of player, I could easily see the EDB-1 being very comfortable in this capacity. All of the controls and inputs (save the DC power input, which belt clip types tend not to use) are on the front and bottom front of the unit, which makes finding everything a very simple matter, even on a dark stage.

The bottom of the unit (imagining it’s mounted on a belt clip) contains the ¼” input and output jacks and the phantom power controls. Since both jacks are TRS (tip-ring-send) jacks, phantom power can be used on either. The input jack can supply





9v of phantom power to an external mic, or the entire unit can be powered (thus saving battery life) by 48v phantom power from a mixer through the XLR adapter to the output jack. For the phantom power supplied by the input jack, a three-way switch allows the choice of phantom power off, through the ring, or through the tip of the TRS connection – a nice touch, which increases flexibility for different pickup/mic options out there on the market. In all cases, Headway recommends using the external power supply for increased headroom and clarity.

The front panel (still in imaginary “belt clip status”) contains the bulk of the controls. At the very bottom of the panel, there are switches for input impedance and earth lift. The Input Impedance specs are as follows: +Hi = >20 Meg Ohms, Hi = 5 Meg Ohms, Active/Low = 1 Meg Ohms. This is an incredibly useful feature for an acoustic preamp, since piezo pickups

are often extremely sensitive to input impedance. In my case, using the Fishman Full Circle pickup, the 5 Meg Ohm option always sounds best, but when borrowing instruments abroad, I used this switch as three options to try whenever plugging in an unfamiliar pickup, and as might be expected, different positions of the switch seemed to suit different pickups best. As I have mentioned before, this is a wonderful option to have access to close to the beginning of the signal chain, and an almost indispensable one when relying on borrowed gear. The earth lift switch is self-explanatory and very useful. Headway reminds the user repeatedly in the manual that phantom power is automatically disconnected when earth lift is applied.

Next tier up on the front panel are Mute/Live switch, master Volume, the Low Battery indicator, and the Range control. The Volume spec is listed as continuously variable 0 - +20dB (note that this assumes that the tone section above is set flat; boosting or cutting frequencies in the tone section naturally affects the output). The Mute/Live switch is a great feature that allows the player to make discrete changes without creating a lot of noise in the amp or front of house signal, and is (to my ears) dead silent in operation. By far, my favorite feature of the unit is the Range control, which is a continuously variable

high-pass filter that rolls off the lows at 12dB per octave over a frequency range from 40Hz to 300Hz. As I’ve said many times previously, I consider a continuously variable high-pass filter to be the most useful tone control any bass amp could possibly have, and this one works beautifully.

The final tier of controls at the top of the front panel contains a 3-band EQ that is simple enough for even the most gear-shy bassist to comprehend: the three controls are marked “Bass,” “Mid” and “Treble,” and the corresponding frequency center points for each are 120Hz, 590Hz, and 10kHz. While at first glance, the frequency center of the Treble control seems a bit far removed from the center points of the other two bands, in actual practice, I did not notice anything unusual about the center points while using the controls as their names suggested.

An external 18v power supply input (power supply is included) is on the left-hand side, and the battery compartment for the single 9v battery



to power the unit is on the top. All controls are clearly marked and easy to access, and the unit, though small (dimensions are 4.3"L x 2.625"W x 1.37" D), has a pleasing heft to it that makes it feel extremely well made and solid. Users who choose not to clip the unit to their belt will find that the mic stand mounting option works perfectly and feels solid as a rock, and those who choose (as I did) to set the unit on top of their amp will find that the rubber feet on the back of the unit hold the unit in place nicely.

## EDB-2

As the name of the unit suggests, the EDB-2 is version 2.0 of the previous model of the same device, the EDB-1, which I previously reviewed as a smaller article in issue 6. The important difference between the EDB-2 and the EDM-1 is that the EDB-2 is designed to handle the blending or mixing of two different signals into an aggregate signal (it could also easily be used for doubling, by plugging a different instrument into each of the two channels, although Headway does not recommend this because the two sources would share the same EQ). While it's the same basic design as the EDB-1, the EDB-2 features a number of changes and improvements, including a lower noise floor, better gain matching between the two channels, and a number of instances where the functions of the various controls can be assigned to one channel or the other (or, in the case of the EQ section, both). Having spent some time with both units, and as a satisfied owner of an EDB-1, I can safely say that each of the improvements implemented in the EDB-2 iteration are both well thought out and welcome.

Although the EDB-2 seems a bit large and complicated to be worn in the belt clip configuration, a belt clip

is included in the box, and like its smaller sibling, the EDB-2 can also be mounted on a mic stand or set on top of the surface of the amp on ergonomic rubber feet. As this black box is nearly twice the size and weight of the EDM-1 (with dimensions of 5.5"L x 3.7"W x 1.7"D), it has a lot more room for added functionality, and it packs an amazing amount of features in the package. Fit and finish are similar to the EDM-1, with a clear layout and a satisfying heft and solidity to the unit. While the unit is probably best used on a flat surface or mounted to a stand, for the sake of consistency, I'll describe the features as I did those of the EDM-1, as though it were mounted on a belt clip.

The bottom of the unit contains the input section. The Channel 1 input section is exactly the same as the EDM-1: a 1/4" TRS connection that allows the same phantom power options – but this is where the similarities with the EDM-1 end. To the right of the Channel 1 input is a TRS input marked, "Channel 2/Stereo in," a 1/4" input that accepts a mono cable wired to the tip, or a stereo cable that carries the Channel 2 signal wired to the tip and the Channel 1 signal wired to the ring. To the right of this input is an XLR input marked "Channel 2 Mic," which can also supply 18v of phantom power to a



condenser microphone. No matter which configuration of inputs is used, the Channel 1 and Channel 2 inputs always get routed to individual gain controls for optimal mixing.

The front (face) of the unit contains a number of tiers of controls. At the bottom are two 3-way input impedance switches (one for each channel), with the same specs as the switch on the EDM-1. Again, this is an extremely useful feature, as it is never safe to assume that the optimal input impedance for two separate input devices would be the same, and it's crucial to be able to control both independently (the EDB-1 also had two switches, but the Channel 2 switch had only two positions, instead of three). On the next tier up, there are gain controls for both channels (now

matched, where previously the channel 1 gain was much hotter than the channel 2 gain), a 3-way Phase reverse switch (switchable for either channel), phantom power switch for the XLR input, and a 3-way Range control. This Range control is basically a high-pass filter with only three stopping points, marked “Bass,” “Guitar” and “Violin.” While these are useful for managing excess low end thickness, they are not as useful as the Range control on the EDM-1, since the “sweet spot” for high-pass filtering is usually discovered aurally and varies from room to room.

The next tier of controls is the 5-band EQ, marked “Bass” (120Hz), “L. Mid” (590Hz), “H. Mid” (880Hz), “Presence” (2.8kHz), and “Treble” (10kHz). In actual usage, the Presence control was especially useful for quickly dialing in definition, and I found myself wishing that this band had been included on the EDM-1 in place of the Treble control. Next to the EQ section is a 3-way switch which allows the user to choose between applying the EQ settings to Channel 1, Channel 2, or both. This feature was not a part of the original EDB-1 design, and is an extremely welcome and useful addition. The next tier up includes a sweepable Notch Filter featuring variable Q width and frequency sweep controls, plus switches to assign the filter to either channel, or to turn it off entirely. Not being a fan of notch filters for bass, I generally had the filter turned off, after determining that it did exactly what it was supposed to do.

Rounding off the features on the front of the unit are the Master volume control, Mute switch, Power/standby switch, Earth Lift, and Low Battery indicator. The top of the unit includes the battery compartment cover, which houses two 9 volt batteries, the DC

in jack, and the DI XLR out. The right side of the unit has jacks for Line Out and a thoughtful and handy 1/8” iPod In jack, which seems like an afterthought, until you really need it (in which case it’s a blessing). All in all, there are a truly astounding number of routing and tonal options available with this unit, and though the term “Swiss Army Knife” is often bandied about in gear reviews with annoying regularity, this is one product to which it truly and rightly applies.

### **The EDM-1 and EDB-2 in practice, and “which one is right for me?”**

Not surprisingly, the two units sound practically identical when set flat, which makes sense since they share the same preamp circuit. I mentioned earlier that every preamp imparts some coloration to the sound, and though it’s basically “dancing about architecture,” I’ll try to describe the “Headway Sound” a bit, here. The first thing I notice about the signal is that it sounds extremely clean, very focused in the high mids and highs, and what I would usually describe as very “Hi-Fi.” It’s the kind of sound that sits extremely well in the mix whenever there is sonic mud to be overcome, whether that mud be from other instruments, the acoustics of the room, or some combination of both. I normally don’t bother taking a preamp to gigs where I can take my own gear, as I like the sound of my amp’s preamp section quite a bit. But there are several rooms where the added clarity of the “Headway Sound” really helps me cut through, and when possible, I’ll add it to the signal chain in those spaces so that I don’t get lost in the mix. “Transparent” is an overused term, but one that I would generally apply to the sound of the Headway preamp; to me, for the double bass, it’s almost like a microphone sitting close to the top – there is an added layer of detail that many preamps don’t put out there

front and center, and in a mix, this is very often a good thing.

These units are the kind of gear that I am happy to review, because I can give them a hearty two thumbs up without any real reservations. For the traveling bassist, I am hard-pressed to think of any gear I would recommend ahead of these units, as they give the player so many options to shape the sound, and allow the option of bypassing the EQ section of borrowed or rented backline, which is a godsend. As for which unit is right for you, that will of course depend on what you’re trying to do. If you need to blend two signals before sending them to the house, or if you want to send one signal to the house and another line to your stage amplifier, the EDB-2 does both of these things, while the EDM-1 doesn’t. If you like to have a lot of EQ band options or a notch filter for more surgical EQ possibilities, again, the EDB-2 does this while the EDM-1 does not.

If, on the other hand, you are more of a simple person who doesn’t need to blend multiple signals, who dislikes futzing with too many controls, and who wants a more meat-and-potatoes approach to tone shaping, then the EDM-1 may be more up your alley. I am one of these people, and frankly, I quickly fell in love with the EDM-1 because of the variable HPF feature, then later came to appreciate the tiny footprint and simplicity of the unit. While I had to use the EDB-2 on one occasion on the tour, due to the need to send a signal both to the FOH and the amp at the same time, when I had a choice (i.e. – when the borrowed back line had a decent D.I. built in), I chose the EDM-1 for the sake of simplicity and for the variable high-pass feature.

**BGM**



# Headway EDM-1 and EDB-2

## Headway EDM-1

### EDM-1 ENCLOSURE

**Material:** Steel  
**Dimensions:** 2.625" wide, 4.3" long, 1.18" high  
**Weight:** 10.5 oz.  
**Rackable:** No

### EDM-1 PREAMP

**Inputs:** 1/4" (TRS)  
**Mode:** Solid State  
**Tubes:** N/A  
**Input Impedance:** +Hi = >20 Meg Ohms, Hi = 5 Meg Ohms, Active/Low = 1 Meg Ohms  
**EQ Type/Features:** 3-band Baxendall  
**Compressor/Limiter:** None  
**DI Output:** 1/4" (XLR adapter provided) with ground lift  
**Effects Loop:** N/A  
**Dedicated Tuner Out:** N/A  
**Construction:** PCB  
**Additional Features:** Variable input impedance, high-pass filter (Range control), Mute switch, phantom power option

## Headway EDB-2

### EDB-2 ENCLOSURE

**Material:** Steel  
**Dimensions:** 2.625" wide, 4.3" long, 1.18" high  
**Weight:** 10.5 oz.  
**Rackable:** No

### EDB-2 PREAMP

**Inputs:** 1/4" (Ch. 1), 1/4" TRS (Ch. 2), XLR (Ch. 2), 1/8" iPod In  
**Mode:** Solid State  
**Tubes:** N/A  
**Input Impedance:** +Hi = >20 Meg Ohms, Hi = 5 Meg Ohms, Active/Low = 1 Meg Ohms  
**EQ Type/Features:** 5-band Baxendall  
**Compressor/Limiter:** None  
**DI Output:** Balanced XLR with ground lift  
**Effects Loop:** N/A  
**Dedicated Tuner Out:** N/A  
**Construction:** PCB  
**Additional Features:** Variable input impedance, variable notch filter, phase reverse, 3-position Range control, Mute switch, phantom power option

### GENERAL

**Company:** Headway Music Audio Ltd.  
 Headway House  
 Walnut Tree Works  
 St. Thomas Street  
 Deddington, Oxfordshire OX15 0SY  
 www.headwaymusicaudio.com

**Country of origin:** United Kingdom  
**Year of origin:** 2013  
**Warranty:** 1 year  
**List price:** EDM-1 \$249.00, EDB-2 \$399.00  
**Street price:** EDM-1 \$219.59, EDB-2 \$364.99  
**Accessories:** EDM-1 XLR output adapter, included, EDB-2 None  
**Available colors:** Black

**Acquired from:** Headway Music Audio  
**Dates:** February-April 2014  
**Locales:** Kentucky  
**Test gear:** Home Rig: New Standard LaScala Hybrid bass, Thomastik Dominant strings, Fishman Full Circle pickup, Phil Jones Super Flightcase BG-300 combo amp, Phil Jones BG-100 Bass Cub. Traveling/Tour Rig: Nameless carved German bass, Thomastik Spirocore Weich strings, Full Circle pickup, Kolstein Czech-Ease bass, Realist pickup, Peavey TKO 15" combo amp, Roland Cube 60 bass combo amp, Line 6 12" combo amp.

## TEST RESULTS

### 1-5 (unacceptable to impeccable)

#### EDM-1 In-Hand

**Features:** 5  
**Tonal Flexibility:** 4.5  
**Ease of Use:** 5  
**Aesthetics:** 4  
**Tone:** 4.5  
**Value:** 4.5

#### EDB-2 In-Hand

**Features:** 4.5  
**Tonal Flexibility:** 4.5  
**Ease of Use:** 4  
**Aesthetics:** 4  
**Tone:** 4.5  
**Value:** 4.5

**EDM-1 In-Hand Score**  
**4.58**average

#### EDM-1 SONIC PROFILE:

**Lows:** Full, but otherwise neutral  
**Mids:** Wide range of midrange tones available  
**Highs:** Very present and easy to add definition to attack

### TONE-O-METER

Relatively transparent and clear, but not thick or rubbery on the bottom end. Excellent for acoustic amplification, largely because the variable HPF allows the most important tonal sculpting to be done with the EQ section set flat.

**EDB-2 In-Hand Score**  
**4.33**average

#### EDB-2 SONIC PROFILE:

**Lows:** Full, but otherwise neutral  
**Mids:** Wide range of midrange tones available  
**Highs:** Very present and easy to add definition to attack

### TONE-O-METER

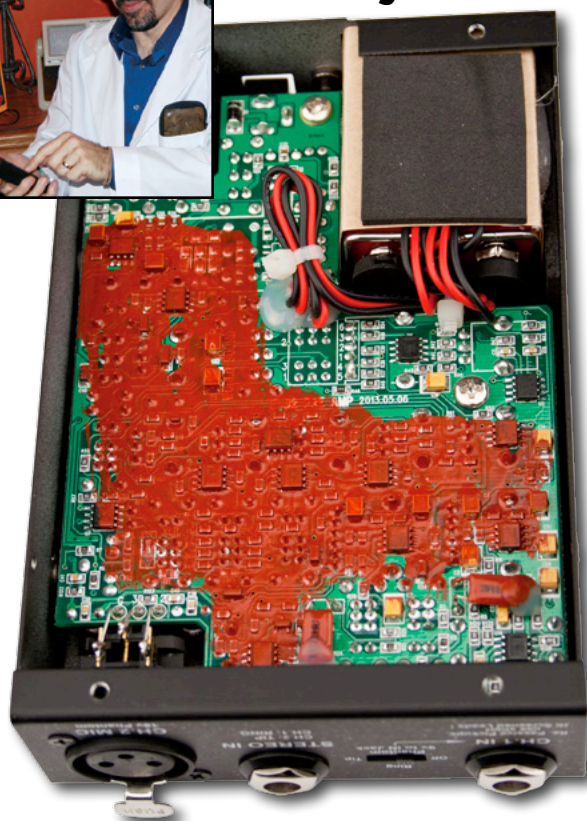
Relatively transparent and clear, but not thick or rubbery on the bottom end. Very good for acoustic amplification. Would consider the tone great with a variable HPF.



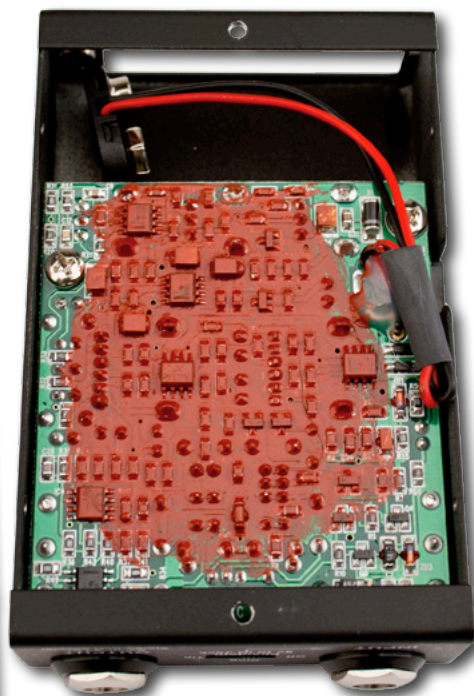
Tom Lee's  
**AMP  
LAB**



## Headway EDB-2



## Headway EDM-1



# Headway EDM-1 and EDB-2

When it comes to a focus on acoustic products, we are seeing more and more attention to delivering feature-packed, yet useful devices. Headway Music Audio Ltd. brings us two such products: the Sheer Acoustic Equaliser Direct Mini (EDM-1) and the Sheer Acoustic Equaliser Direct Blend (EDB-2).

### Construction

The EDM-1 and the EDB-2 are each packaged in a heavy duty metal enclosure. Headway has done a nice job of making these devices small enough to be portable and easy to carry in a gig bag. However, these devices are heavy enough to have a quality feel to them. One neat touch in the design is the inclusion of a microphone stand adapter threaded into the back of the housing, so that you can mount the device to a microphone stand for easy access.

### Tone Shaping

#### The EDM-1:

The EDM-1 is a single-channel device featuring a ¼" TRS input jack with a trick up its sleeve. A switch adjacent to the input jack allows the user to selectively apply phantom power to the input. Moreover, the switch allows assigning phantom power to the ring or tip. The EDM-1 also features a balanced DI output on a stereo ¼" jack. The output jack has a trick, as well. Plugging in a stereo jack switches on the internal battery (where the provided external power adapter is not being used). As yet a further trick, the ¼" output jack accepts phantom power from a desk mixer, providing even more headroom than using a battery.

Turning to the front panel, the EDM-1 has an equalizer section featuring Bass, Mid and Treble controls, which are illustrated in *Figs. 1-3*,

respectively. In these figures, the red trace is the control turned fully clockwise (full on position). The black trace is the control at "noon" (center position) and the blue trace is the control turned fully counterclockwise (full off position).

Referring to *Fig. 1*, the low frequency sweep shows a low shelving control with just under 15dB boost and cut. Note that the Bass EQ looks like a bell curve, especially on the boosted signal. This appears to be due to the interaction of the high-pass filtering, discussed below. Referring to *Fig. 2*, the Mid control is a traditional bell curve with about 13dB of boost and cut around 600Hz. Referring to *Fig. 3*, the Treble control is a shelving control providing about 12dB of boost and cut.

Referring to *Fig. 4*, the EDM-1 also features control that Headway calls the

anti-feedback Range control. For some users, this label may be a bit confusing. Rather than providing anti-feedback in the form of a tight, adjustable notch filter, the “anti-feedback” Range control is actually a variable high-pass filter. As a variable high-pass filter, this control is worth the entire price of admission on the EDM-1. Did I mention that the Range control is, hands-down, my favorite feature of the EDM-1?

As *Fig. 4* illustrates, the Range control provides a wide variety of low-end cut, without appreciable band interaction in the higher frequencies. The Range control is thus great for taming the low end of your instrument. In this regard, the labeling on the front panel provides suggested settings based upon instrument type.

One thing I like to do is dial the Range fully counterclockwise, then turn up the bass until I get the thump I want. Then, slowly dial up the Range to remove any ugly rumble, leaving full, tight low end.

Take a look at *Fig. 5*. I first set the Range fully counterclockwise, and set the Bass, Mid and Treble flat. This is the black trace. Then, I cranked the Bass fully clockwise (full on) for the remaining traces. The blue trace is the Bass setting (fully counterclockwise). The red trace is the Cello setting (9:00). The green trace is the Bouz setting (noon). The brown trace is the Violin setting (3:00). Finally, the orange trace is the Rock Acoustic setting (fully clockwise). As *Fig. 5* illustrates, an impressive amount of low end control is available when the Bass and Range controls are used together.

Also, don't overlook the power of the Range control as a “room equalizer.” By dialing the Range control, you can effectively remove the “boominess” of the room. As such, I appreciate the suggestions provided on the labeling, but do not hesitate to dial the Range control to taste.

## EDB-2:

The EDB-2 is a three-channel device. Channel 1 features a ¼” TRS input jack with the same phantom power switching arrangement as that of the EDM-1.

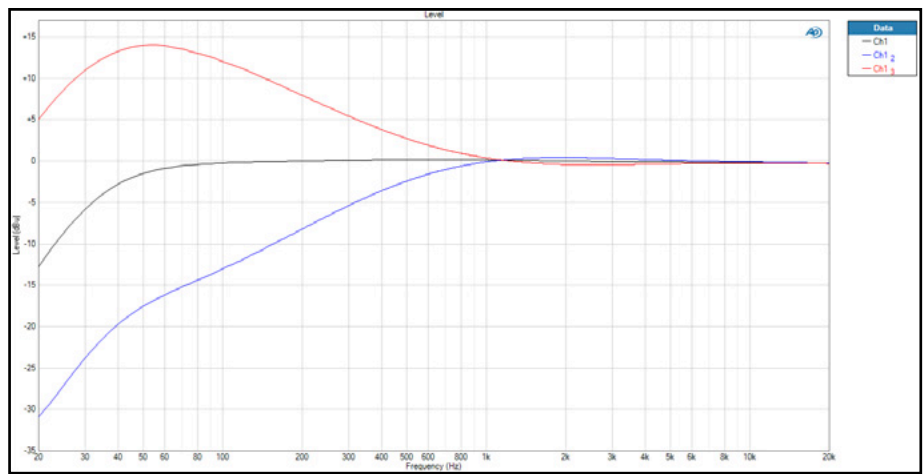


FIG. 1 EDM-1 Bass sweep

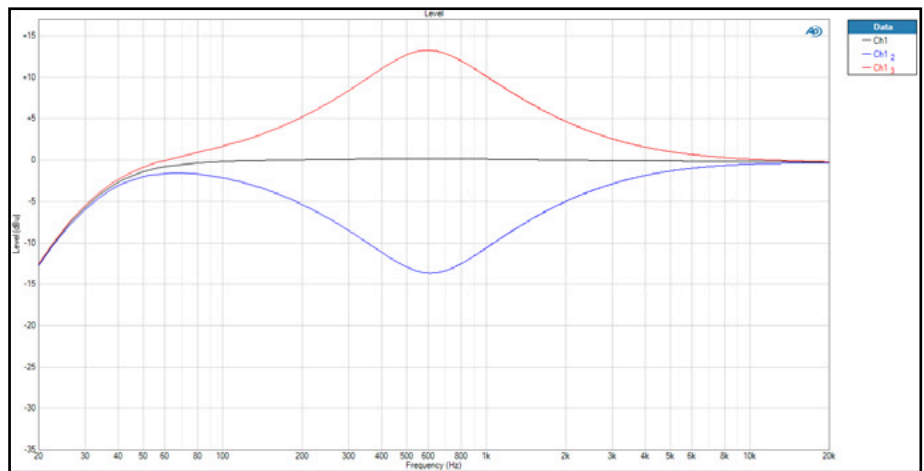


FIG. 2 EDM-1 Mid sweep

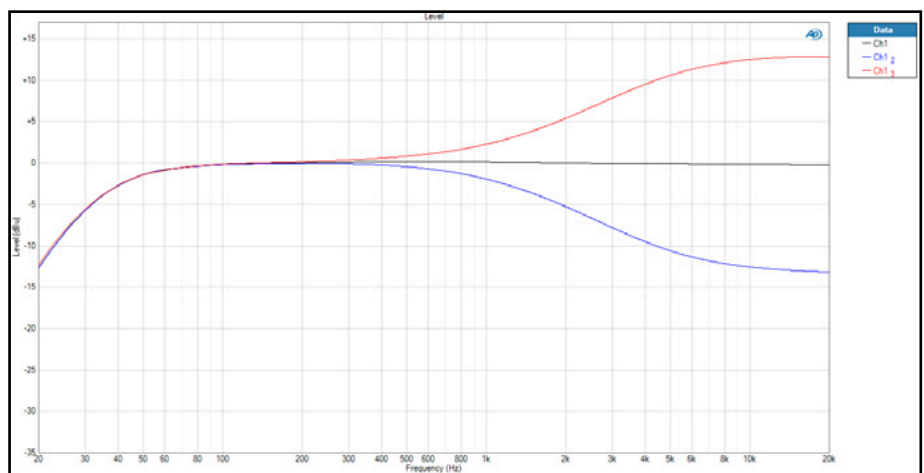


FIG. 3 EDM-1 Treble sweep

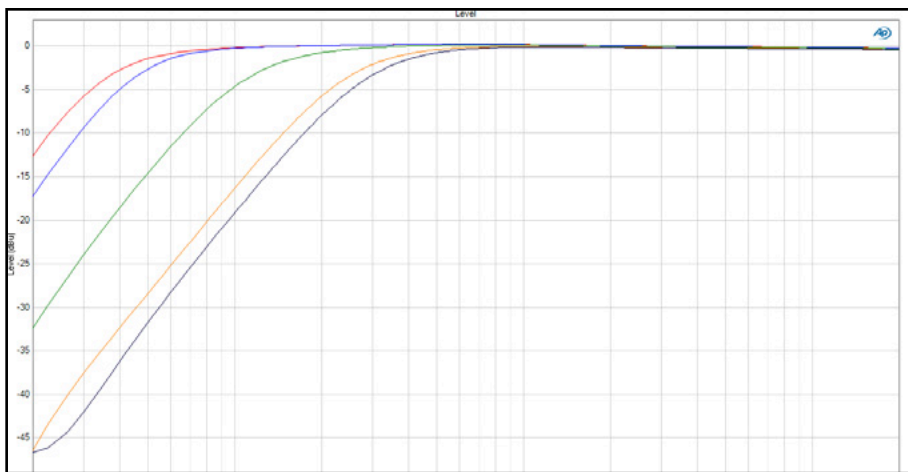


FIG. 4 EDM-1 Variable high pass filter

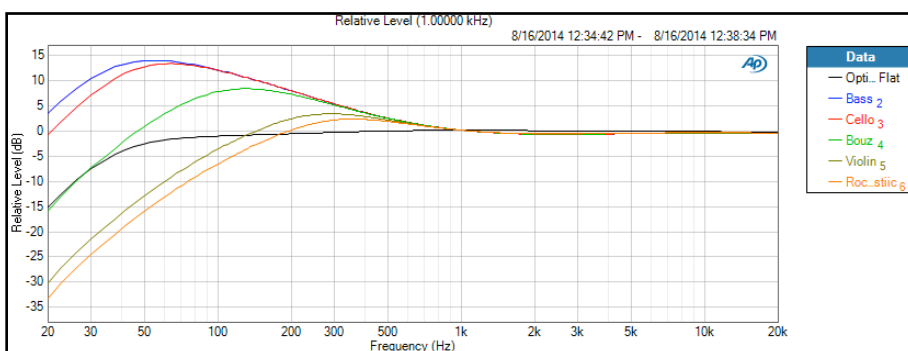


FIG. 5 Bass vs. Range

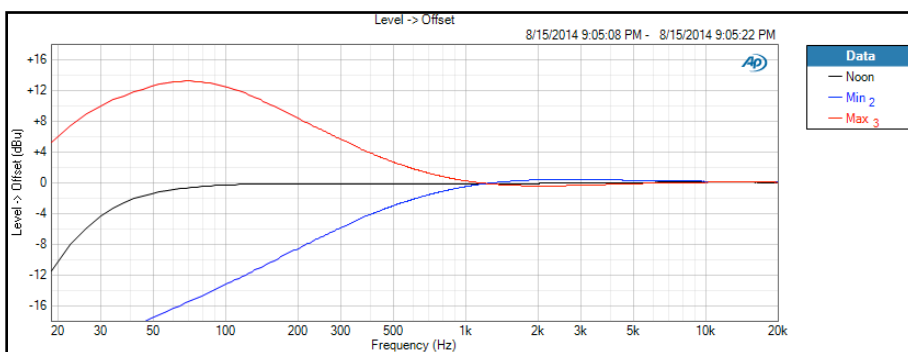


FIG. 6 EDB-2 Bass sweep

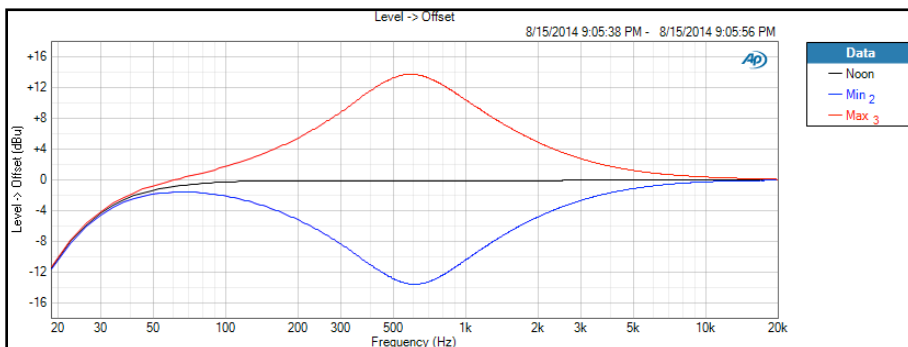


FIG. 7 EDB-2 Lo Mid sweep

Channel 2 may be sourced from a stereo  $\frac{1}{4}$ " jack or an XLR microphone input. By default, Channel 2 connects to the stereo  $\frac{1}{4}$ " jack. However, a switch on the front panel allows selection of the XLR microphone input, with or without 18V phantom power. Channel 3 is an  $\frac{1}{8}$ " post-EQ input intended for iPods, mp3 players and like audio devices. Whereas, the EDM-1 has a  $\frac{1}{4}$ " output, the EDB-2 includes both a  $\frac{1}{4}$ " line out and an XLR direct out, providing a bit more flexibility in signal routing. Note that the EDB-2 XLR does not accept phantom power from a mixing desk.

The EDB-2 divides tone shaping into three general sections, including a traditional main EQ section, a Notch filter section, and a Range section.

The main EQ section features Bass, Lo Mid, Hi Mid, Presence and Treble. The EQ section is switchable between Channel 1, Channel 2, or both Channel 1 and Channel 2. As such, this EQ section is always in at least one channel path. The EQ section is illustrated in Figs. 6-10. In these EQ plots, the black trace is all of the EQ controls at their noon position. The red trace is the control fully clockwise (full on position) and the blue trace is the control fully counterclockwise (full off position).

Referring to Fig. 6, the low frequency sweep shows a low shelving control with just over 12dB boost and cut. Note that the Bass EQ looks similar to the Bass control of the EDM-1. However, the peak in our test unit appears to be shifted about 15Hz higher (from about 55Hz in the EDM-1 to about 70Hz in the EDB-2). Like the EDM-1, there appears to be essentially no high-band interaction throughout the range of adjustments of the Bass control.

Referring to Fig. 7, the Lo Mid control is a traditional bell curve, with over 12dB of boost and cut around 590-600Hz. This control appears very similar to the Mid control of the EDM-1.

Referring to Fig. 8, the Hi Mid control is a bell curve, providing about 12dB of boost and cut at about 900Hz.

Referring to *Fig. 9*, the Presence sweep is a cool EQ addition. The Presence control sits above the Hi Mid control and provides a boost or cut of just under 8dB, centered at about 2.5kHz in our test unit. In my experience with acoustic instruments, I find a lot of mileage to be had through careful adjustment of EQ in this range. Careful control here can be the difference between cutting through a mix, controlling feedback, and eliminating dominating but ugly piezo tones affectionately referred to as “piezo quack.” The Presence control is a nice, gentle, and wide equalization control, which should also allow the addition of air and clarity to your instrument.

Referring to *Fig. 10*, the Treble sweep is a shelving filter that resembles the Treble of the EDM-1, providing over 12dB of boost and cut available.

The Notch Filter section provides a semi-parametric EQ band, with user control of Q width and frequency. The Notch Filter can be assigned to either Channel 1 or Channel 2, and has a bypass switch to remove the Notch Filter from the signal path of both channels.

Referring to *Figs. 11 and 12*, the Notch Filter is illustrated in various positions. Particularly, *Fig. 11* illustrates the frequency control at its minimum setting centered at just over 50Hz with the Q control set to wide (red trace), its middle position (dark blue trace), and narrow (blue trace). *Fig. 11* also illustrates the frequency control at its maximum setting centered at 6kHz with the Q control set to wide (teal trace), its middle position (green trace), and narrow (mustard trace). Referring to *Fig. 12*, the notch filter is shown with the frequency control set to its noon position, centered at about 350Hz, with the Q control set to wide (green trace), its middle position (mustard trace), and narrow (purple trace). Notably, there is no control over the gain of the Notch filter. Rather, the gain is both frequency and Q dependent.

The notch control can be used to carve out unwanted frequencies with razor precision, or with wide coarseness, depending upon your need. As such, this control can be used to great effect as a

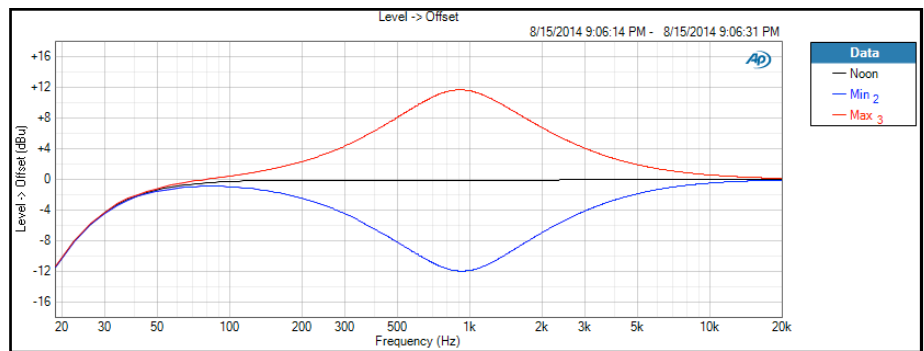


FIG. 8 EDB-2 Hi Mid sweep

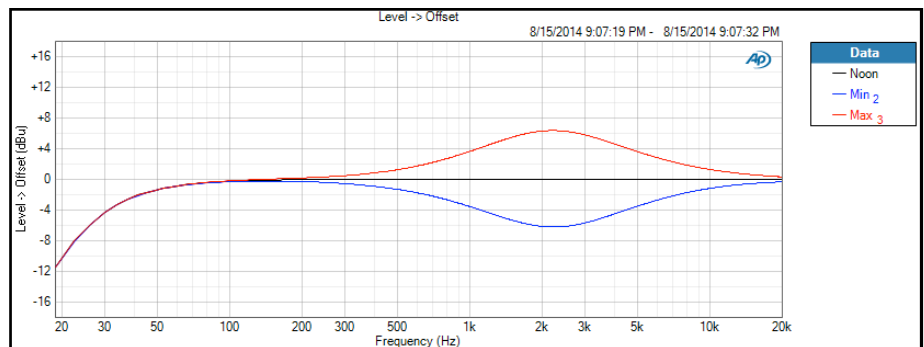


FIG. 9 EDB-2 Presence sweep

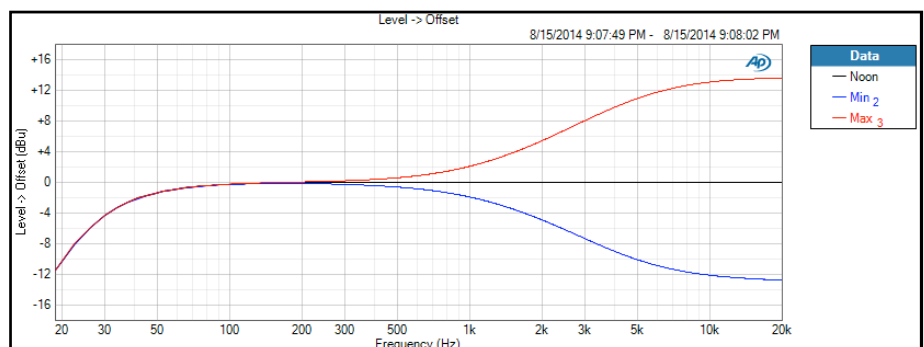


FIG. 10 EDB-2 Treble sweep

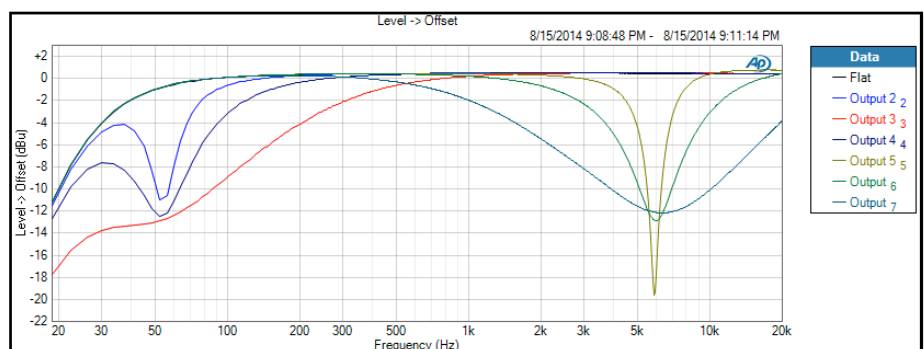


FIG. 11 EDB-2 Notch min and max frequency

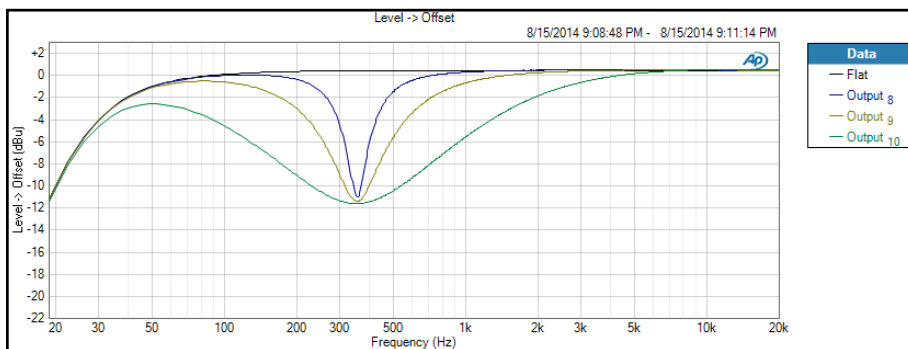


FIG. 12 EDB-2 Notch min and max frequency

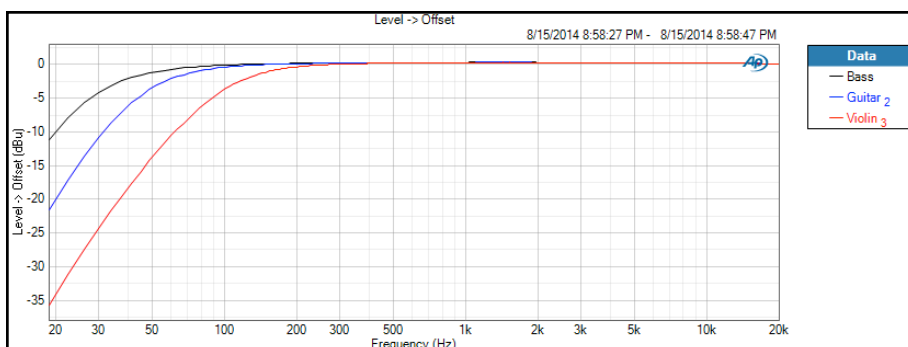


FIG. 13 Variable low pass filter

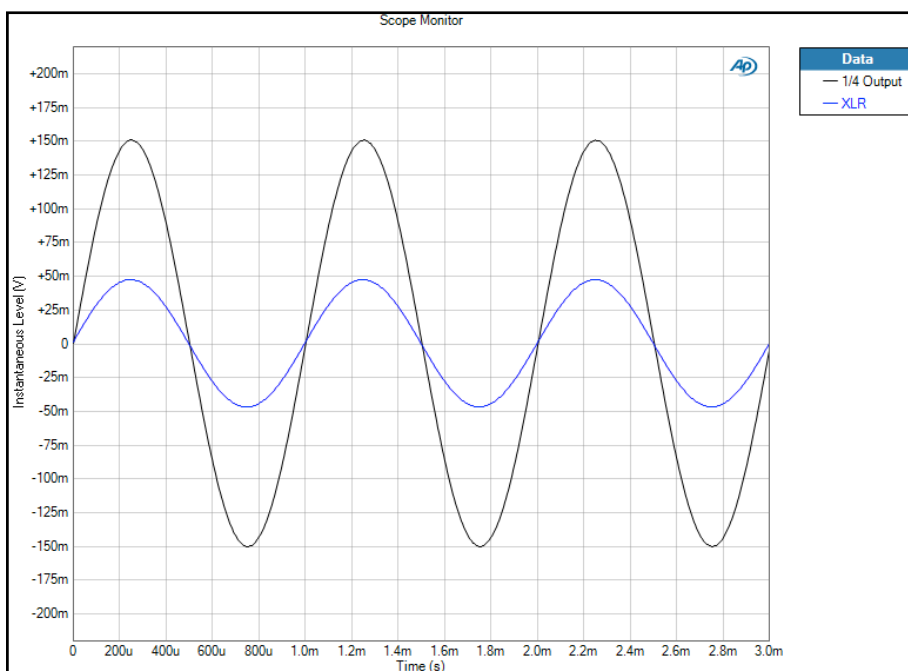


FIG. 14 EDB-2 Comparing Line output to XLR output

tone shaping element, or to eliminate problem frequencies, e.g., prone to feedback, rumble, noise, etc.

The Range section provides a switch allowing selection of three possible high-pass filter settings. Referring to *Fig. 13*, these settings are Bass (black trace), Guitar (blue trace), and Violin (red trace). Comparing *Fig. 13* to *Fig. 4*, it appears that the Violin and Guitar settings are not the same between the EDM-1 and EDB-2. The EDB-2 appears to be more conservative with the cut-off positioning, favoring more low-end interaction. While I believe that Headway selected reasonable ranges for the Range switch of the EDB-2, I much prefer the variable high-pass filter of the EDM-1.

## Gain

### EDM-1:

We need to spend a minute talking about headroom and performance. With the volume control fully cranked (maximum clockwise), we swept an input signal from about 10 mVrms to 1 Vrms. Up to the point of overdrive, we measured a gain of about 23dB. What does that mean? If you put in 100 mVrms, you will get about 1.4 Vrms out. The maximum input before clipping with the Volume cranked, was measured at about 470 mVrms. For signals below this level, we measured an impressive range from 0.05% THD+N to about 0.2% THD+N up to the knee where clipping begins. In these tests, we also measured signal to noise ratios approaching 100dB.

Dialing down the volume control, we were able to inject signals as large as 5 Vrms with well under 1% THD+N. Likewise, tweaking the volume control, we were able to achieve clean output as high as 5 Vrms 0.3% THD+N by setting the volume to its maximum position and constraining the input to > 470 mVrms.

### EDB-2:

We performed the same gain tests as we did with the EDM-1. With the volume control fully cranked (maximum clockwise) and the Master fully cranked (maximum clockwise), we swept an input signal from about 10 mVrms to 1 Vrms. Up to the point of overdrive, we measured a gain of about 32dB.

What does that mean? If you put in 100 mVrms, you will get just shy of 4 Vrms out. As such, the EDB-2 really ups the level of available gain compared to the EDM-1.

The maximum input before clipping was measured at about 150 mVrms with both the Gain and Master cranked to their full positions. For signals below this level, we measured an impressive range from 0.02% THD+N to about 0.1% THD+N up to the knee where clipping begins. Thus, the EDB-2 again outperforms the EDM-1 for cleanliness.

In these tests, we also measured signal to noise ratios over 90dB. Here, the EDM-1 might have slightly nudged out the EDB-2 in overall performance. Dialing down the volume control, we were once again able to inject signals as large as 5 Vrms with well under 1% THD+N. Likewise, tweaking the volume control, we were able to achieve clean output as high as 5 Vrms at under 1% THD+N.

### Miscellaneous

Turning attention to the EDB-2, since two outputs are simultaneously available, we took a look to see how well they tracked each other. We set the Master and Gain to their middle positions and injected a 1kHz sin wave. As illustrated in *Fig. 14*, the XLR output is about 10 dB lower in output compared to the line output (1/4" output).

With reference to *Fig. 15*, in certain situations, it is possible that the XLR output will clip before the Line output. For instance, we cranked the Master to its fully clockwise position and set the Gain to about 1:30. Applying a 400 mVrms, 1kHz sine, we observe the XLR output begin to clip, whereas the Line output remains clean. Indeed, we needed to up the input signal by about another 50 mVrms before we began to see signs of the Line output clipping.

A cool feature of the EDM-1 and the EDB-2 is the input impedance switch that provides Low, Hi and +Hi settings. This switch allows the device

to present a low impedance input, optimized for low noise with active pickup instruments, a high impedance for passive pickups, and an ultra-high impedance for high impedance, non-powered pickups, such as piezo pickups.

### Conclusion

Kudos for the variable high-pass filter on the EDM-1. This is such a simple concept, but the result is exceptionally usable and functional. Of these devices, this was hands-down, my favorite feature. The EDB-2 replaces the Range knob of the EDM-1 with a three-position switch. I understand this compromise. However, I would have loved to see one three-position switch for each input channel. Sharing a variable low-pass filter between channels misses opportunities for even more effective use in live settings, such as for solo musicians that might want to plug in an acoustic guitar or mandolin into Channel 1 and a bass or foot drum etc., into Channel 2. Better yet, if Channel 1 of the EDB-2 had the Range control of the EDM-1, and Channel 2 got away with the current Range switch, that would really be something.

With specific regard to the EDM-1, providing the 1/4" to XLR adapter in the box is a nice touch. However, the

adapter causes the XLR output cable to stick out about 4-1/2" and adds weight to the unit, which can cause the unit to become top-light. This weight distribution can cause the top of the unit to tip up. I understand that adding an XLR in place of the 1/4" could complicate the output jack-based power switching, but I would be willing to forego a slightly larger package for an integrated XLR output.

At least when configured properly, both the EDM-1 and EDB-2 are capable of handling extremely large signals. Indeed, I am currently unaware of an instrument that would be capable of clipping either the EDM-1 or EDB-2 if set up properly. Still, it would have been nice to see a clip LED, especially on the EDB-2, given the complex nature of the tool, serving as an equalizer, DI and mixer/blend control.

The weight of these units is refreshing. The devices simply feel pro-grade, which instills confidence in use. The belt clip and mic stand threading are nice touches, as well. The manuals look like they are intended to be part of the product, not just an afterthought. Take the time to read the manuals and the devices will be easy to care for and use. **BGM**

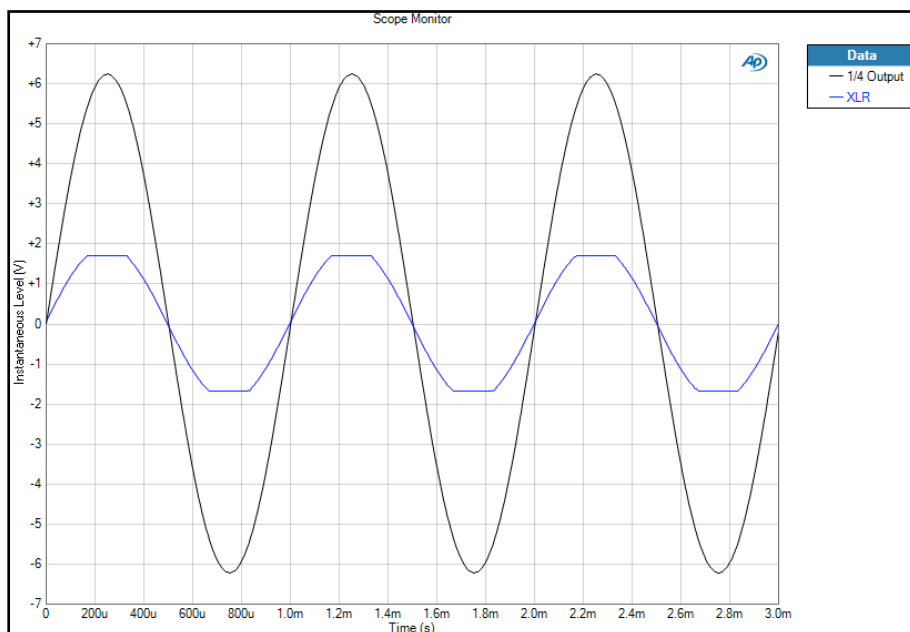


FIG. 15 EDB-2 XLR clipping before Line output