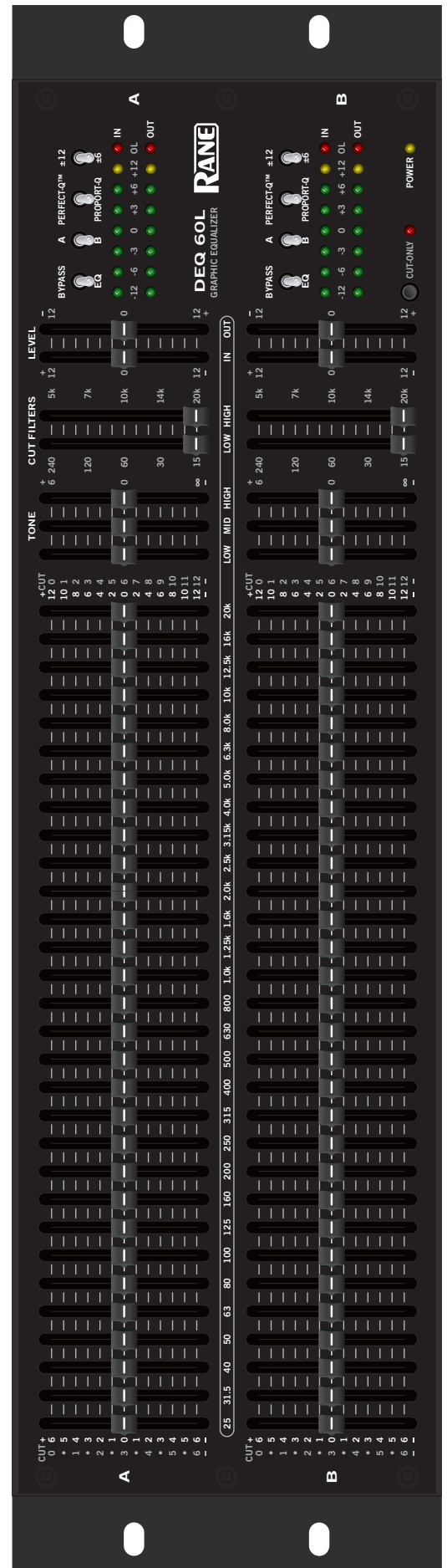
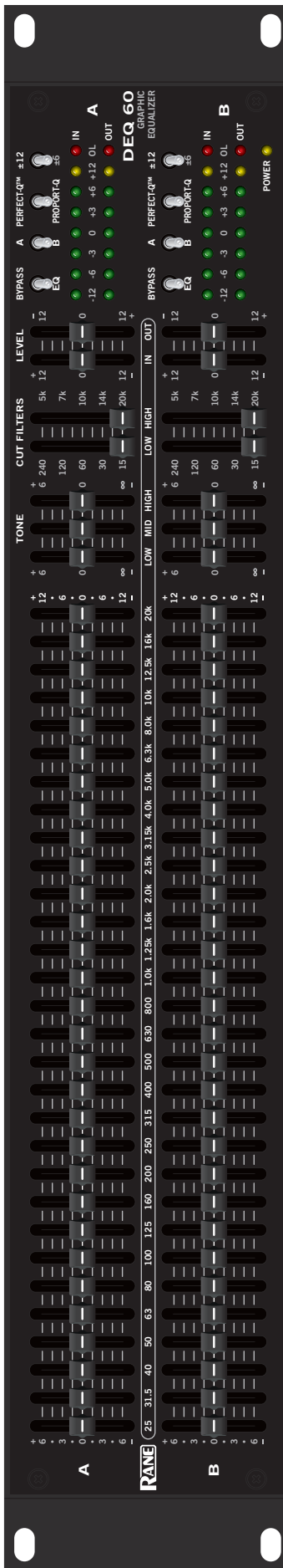




DEQ 60 DEQ 60L

GRAPHIC EQUALIZERS



IMPORTANT SAFETY INSTRUCTIONS



1. Read these instructions.
 2. Keep these instructions.
 3. Heed all warnings.
 4. Follow all instructions.
 5. Do not use this apparatus near water.
 6. Clean only with a dry cloth.
 7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
 8. Do not install near any heat sources such as radiators, registers, stoves, or other apparatus (including amplifiers) that produce heat.
 9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
 10. Protect the power cord and plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
 11. Only use attachments and accessories specified by Rane.
 12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
 13. Unplug this apparatus during lightning storms or when unused for long periods of time.
 14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
 15. The plug on the power cord is the AC mains disconnect device and must remain readily operable. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
 16. This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
 17. When permanently connected, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.
 18. If rackmounting, provide adequate ventilation. Equipment may be located above or below this apparatus, but some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this apparatus.
 19. This apparatus may be installed in an industry standard equipment rack. Use screws through all mounting holes to provide the best support.
- WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

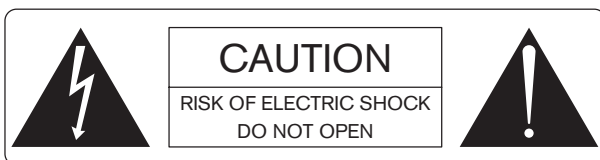
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by Rane Corporation could void the user's authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

WARNING



To reduce the risk of electrical shock, do not open the unit. No user serviceable parts inside. Refer servicing to qualified service personnel.

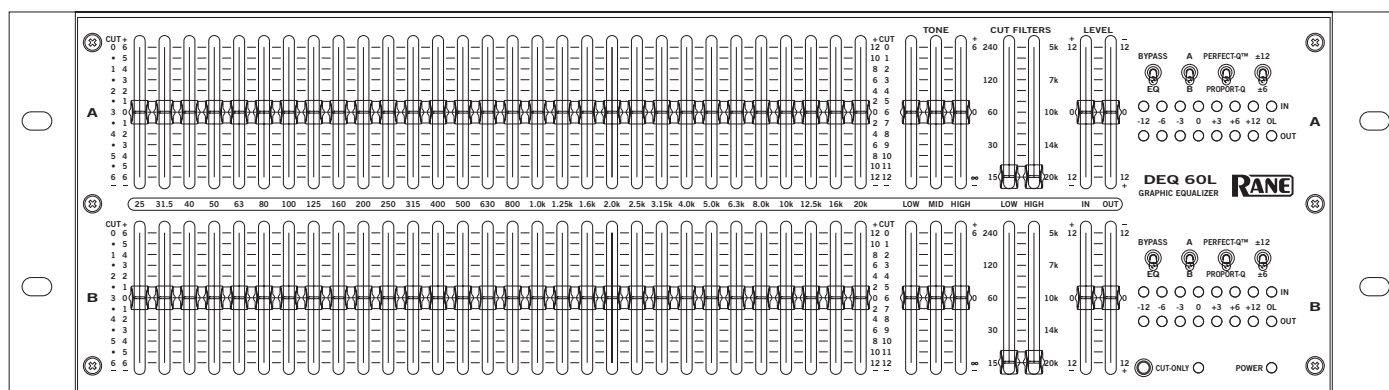
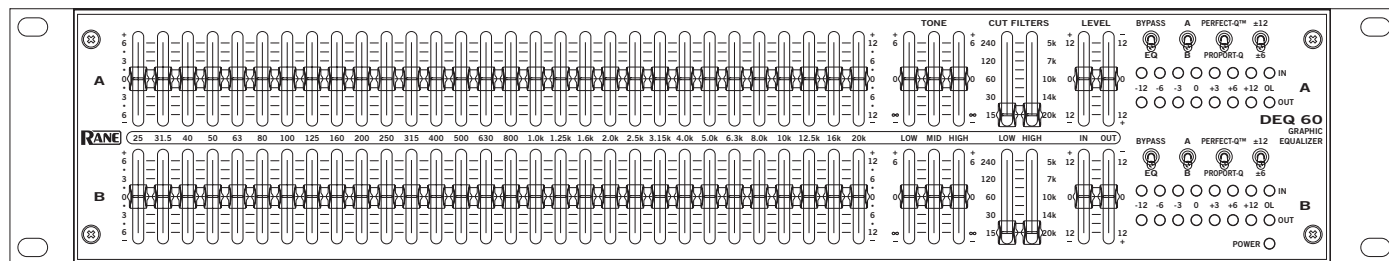
The symbols shown below are internationally accepted symbols that warn of potential hazards with electrical products.



This symbol indicates that a dangerous voltage constituting a risk of electric shock is present within this unit.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.



QUICK START

We know you know how to use an equalizer. Just read this section for the unique things to be aware of in the DEQ 60 and DEQ 60L.

Both units have the same features, in short and long throw versions. One exception: the DEQ 60L's **CUT-ONLY** mode. Activating this switch puts both equalizer channels in the high resolution **CUT 0 to -12 dB** (gray number scale). To prevent unwanted sudden volume shifts when switched, the DEQ 60L outputs mute for a moment, then slowly increases in volume.

We know you know how to use a realtime analyzer, but using **PERFECT-Q** mode will make that job a lot easier. Since there is no interaction between filters, the multiple adjustments through all the bands just to get the analyzer to read flat is a thing of the past. One pass should do the trick. Then use the **TONE** controls or **CUT FILTERS** for general sweetening. We know your sound is important and your time is valuable.

If you want to compare the sound of your old (non-Rane) EQ to this one, and you are used to the way the slider bands interact, then use **PROPORTIONAL-Q** mode.

The **A** and **B** switches are like memories or control assigns.

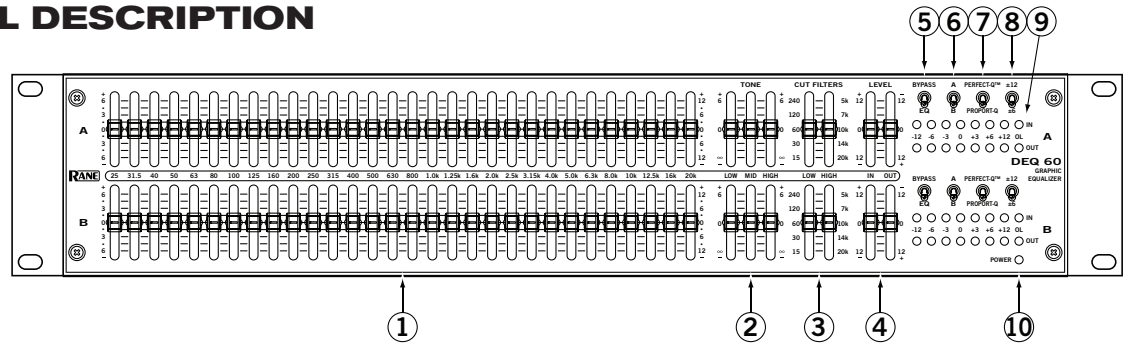
Normal stereo use would set the top row **A** (Left), and the bottom row to **B** (Right). But if you are running in stereo, and both sides use the same EQ curve, you can set both switches to **A**. Now the top EQ curve controls both left and right channels. Switching these to **B** will use the bottom EQ curve for both channels. This is great for switching EQ when a source changes. Just be aware of where these switches are, an unassigned EQ row will have no audible effect. These switches also affect the **CUT FILTERS**, **TONE CONTROLS**, and **LEVELS**.

The channel **BYPASS** switches have two modes, set by the rear panel switch. When set to **FILTERS**, the **BYPASS** switch only bypasses the **EQ**, **TONE** and **CUT FILTERS**. The **LEVEL** controls and other switches remain active. When set to **ALL**, the **BYPASS** switches ignore everything *including* the **LEVEL** controls.

You have several connector choices on the rear. However, use only *ONE* type of **INPUT** on each channel. *These Inputs do not sum*. But you may use any combination of **OUTPUTS** simultaneously if desired. Polarity convention on the XLR jacks is pin 2 positive, pin 3 negative and pin 1 shield (chassis ground).

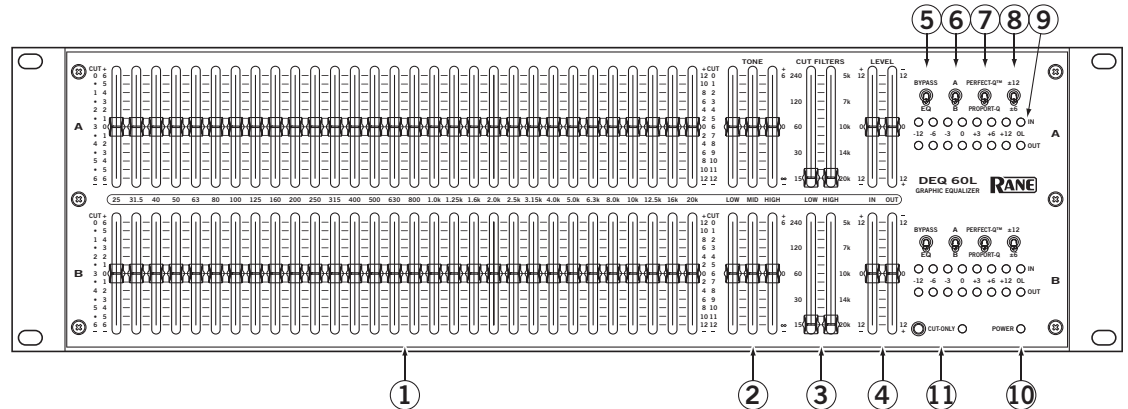
FRONT PANEL DESCRIPTION

DEQ 60



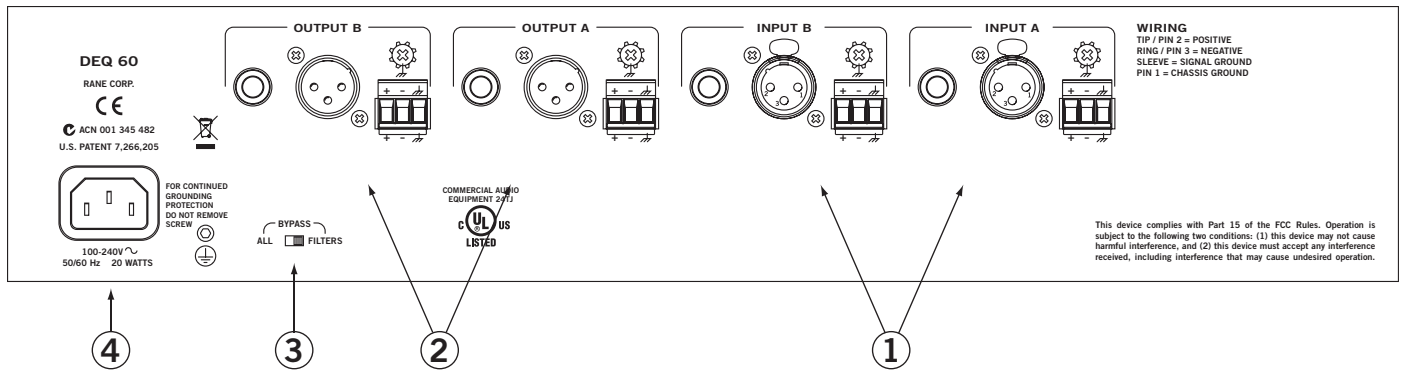
DEQ 60L

adds CUT-ONLY mode switch ⑪



- ① **Graphic EQ controls:** Thirty bands are provided for each channel. Each EQ slider has a resolution of 256 steps. The center detent position guarantees a flat response. Slide control travel is 25mm (DEQ 60) or 45mm (DEQ 60L) with easy-to-read soft-touch handles.
- ② **LOW, MID, and HIGH TONE controls:** Independent, *Accelerated-slope*[™], 3-band **TONE** controls allow easy, intuitive adjustment of tone response without the hassle of adjusting 30 bands. The **TONE** controls use 12 dB per octave Linkwitz-Riley filters. The Low/Mid crossover point is 300 Hz. The Mid/High crossover point is 4 kHz. As with the EQ sliders, center detent provides a guaranteed flat response. The range of control is +6 dB to *off*. Control resolution is 256 steps.
- ③ **LOW CUT and HIGH CUT FILTERS:** The **LOW** Cut Filter is adjustable over four octaves in 64 steps with a frequency range of 15 Hz to 240 Hz. The **HIGH** Cut Filter is adjustable over two octaves in 64 steps from 5 kHz to 20 kHz.
- ④ **LEVEL controls** serve two purposes, when used with the Meters (⑨):
 - 1) Adjust the INPUT signal level to 0 dBu for good headroom and signal to noise.
 - 2) Compensate for changes in signal level due to filter boost/cut settings by adjusting the OUTPUT signal level to 0 dBu.
 The operation of the OUTPUT LEVEL control is reversed. Pushing the control up *reduces* gain. Pushing the control down *increases* the gain. This allows the user to easily adjust *sensitivity* without affecting the output signal level. Simply grasp both input and output controls and move together. The ranges of both controls is ± 12 dB with a resolution of 256 steps.
- ⑤ **BYPASS switches** have two possible modes of operation. If the rear panel switch is set to BYPASS ALL, all filters and level controls are bypassed. If the rear panel switch is set to BYPASS FILTERS, only the filters are bypassed. Filters include EQ, TONE and CUT. Automatic relay bypass hardwires Inputs to Outputs in the event of a power failure.
- ⑥ **A / B switches** determine which set of controls is used by the A-channel or B-channel. Controls affected by the A / B switch are EQ, TONE, CUT FILTERS, LEVEL, Q switches and ± 12 / ± 6 dB switches. Bypass switches are not affected.
- ⑦ **PERFECT-Q[™]:** What you see is what you get. **PROPORTional-Q:** Classic smooth response. Most users will prefer the PERFECT-Q position. Some users may prefer the PROPORT-Q setting. See Graphic EQ Controls on page Manual-4.
- ⑧ **± 12 / ± 6 dB switch** changes the boost / cut of the Graphic EQ (①) for each channel. Use the ± 6 dB unless you really need ± 12 dB, the resolution is better.
- ⑨ **Input and Output Meters** are peak responding and indicate the signal level in dBu. Peak-dBu is held and displayed for 1.5 seconds. Attack is instantaneous. Decay is 500 ms for a 20 dB step.
- ⑩ When the **POWER indicator** is on, it indicates that power is turned on. This works with ④ on the Rear Panel (next page).
- ⑪ **DEQ 60L CUT-ONLY** mode switch: when pressed in, as shown by the LED, sets the range of the DEQ 60L EQ sliders **0 to -12 dB** (gray number scale). When the switch is actuated, the DEQ 60L output audio is muted and slowly increased to prevent volume surprises.

REAR PANEL DESCRIPTION



The DEQ 60 and DEQ 60L rear panels are identical except in height.

- ① **Channel A and B INPUTS:** Plug the outputs of the mixer or other source to these Inputs. *Choose between the XLR, the ¼" TRS, or the Euro-block Input jack—use only one—they do not sum.*

Rane adheres to the international and U.S. standard for balanced pin configurations: Pin 1 is chassis ground (neutral), pin 2 is hot (positive), and pin 3 is signal return (negative).

Avoid the temptation to use unbalanced tip-sleeve ¼" TS plugs, but if you must, keep them short as possible, 10 feet (3 meters) maximum. Long unbalanced cables invite hum, noise and other undesirables. Balanced TRS ¼" are much better at rejecting noise.

The Euroblocks normally connect the cable shield to the ground terminal. For those installations where the internal shield-to-chassis connection causes interference, connect each shield directly to the chassis grounding screw located above each Euroblock connector, keeping the shield wrapped around the audio conductors as much as possible. For optimum Electromagnetic Interference (EMI) immunity, connect the shields at both ends of the cable to chassis ground.

See the RaneNote "Sound System Interconnection" for more information on system connections and proper grounding practices.

- ② **Channel A and B OUTPUTS:** Any Output can be used simultaneously with the others, take your pick. Same wiring as above...keep cables short, always wire balanced when possible, eat your vegetables, yadda yadda.
- ③ **BYPASS mode switch:** See ⑤, Front Panel, previous page.
- ④ **Power connector:** Uses the standard cord provided. Inside the DEQ 60 is a universal internal switching power supply that accepts 100 to 240 VAC at 50 to 60 Hz, allowing it to work in most countries.

Feature

- 1) *Perfect-Q™*: What you see is what you get
- 2) Proportional-Q: Classic smooth response
- 3) Independent *Accelerated-slope™* 3-band tone controls
- 4) Low-cut and High-cut filters
- 5) Input and Output level controls
- 6) Eight segment metering for each input and output
- 7) Two Boost / Cut ranges: ± 6 dB or ± 12 dB
- 8) Each audio channel may use A or B controls
- 9) Analog controls
- 10) XLR, TRS and Euroblock Phoenix connectors
- 11) Bypass switch (DSP)
- 12) Bypass relay (power failure)
- 13) Exceptional RF and Magnetic immunity
- 14) Universal switching power supply
- 15) DEQ 60L: Cut-Only mode

Benefit

- 1) **No** EQ filter interaction. Response matches slider settings.
- 2) Familiar response. Smooth tone contouring.
- 3) Adjust Tone response without moving a dozen EQ sliders.
- 4) Band limit for application: Voice, Music, Headphones, etc.
- 5) Optimize dynamic range. Match level after EQ.
- 6) Allows accurate use of level controls.
- 7) Select control resolution and range for the application.
- 8) Stereo Linking; Two “analog memories”; A-curve / B-curve comparison.
- 9) Quick control access with one control, one function, no confusion.
- 10) Connector matches your cables.
- 11) EQ in/out compare. Bypass Filters only or bypass Filters and Level controls.
- 12) No pops on turn-on or turn-off. Passes signal when power is off.
- 13) Works in high RF environments. Works next to power amps.
- 14) Works virtually anywhere in the world.
- 15) Maximum level of precision.

Graphic EQ Controls

Control each of the thirty bands of EQ with high resolution, 256 step slide controls. The center detent position guarantees a flat response. *Perfect-Q™* filters guarantee accurate graphic response and **no** band interaction.

The elimination of band interaction means the DEQ filters are suitable for “ringing out a room” and capable of the very subtle adjustments required by the most demanding user. Unlike previous designs that act upon a bandwidth of up to one octave when cut 12 dB, Perfect-Q only affects the intended 1/3 octave. For the first time, the user is able to adjust a single 1/3 octave band with no affect on adjacent bands. The lack of band interaction guarantees slider settings accurately indicate frequency response.

For full details and comparisons to previous EQs, see “Perfect-Q: The Next Step in EQ Design” included with this manual.

Control Surface

All graphics are screened on the reverse side of a durable Lexan surface. The graphics remain clear even after years of life on the road.

Universal Switching Power Supply

The DEQ 60 or DEQ 60L operates on any AC mains from 100 VAC to 240 VAC, 50 Hz or 60 Hz. The line cord attaches to a standard IEC appliance inlet, shipped with each unit.

Security

The DEQ 60 model includes a 3.5" security cover in the box. An optional 5.2" security cover is available as an accessory for the DEQ 60L.