MODEL 163X

OverEasy®
COMPRESSOR/LIMITER

dbx®

OPERATION MANUAL

CONTENTS

Quick Setup is on the following page.

OPERATING CONTROLS

Front Panel

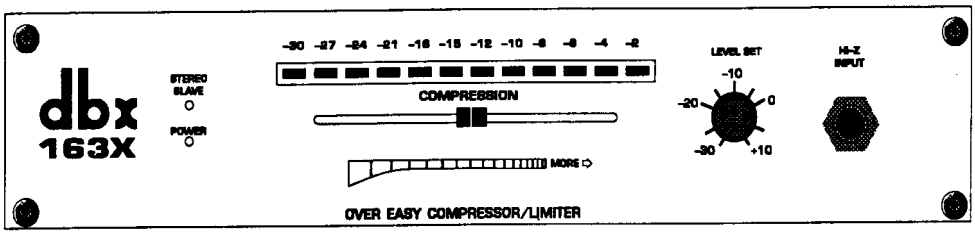

Figure 2: Front Panel

POWER LED Indicator: The red POWER indicator illuminates when AC power is applied to the unit via the captive power cord.

STEREO SLAVE LED Indicator: The yellow STEREO SLAVE indicator indicates that the unit has been set by its rear panel switch to be the Slave in a connected pair of 163Xs.

Gain Reduction LEDs: These 12 LEDs display in dB how much the signal is being compressed (i.e., the amount of gain reduction).

COMPRESSION Slider: Moving this to the right (MORE) increases the amount of compression — compressing more of the signal sent to it (the compression "reaches down" to lower levels) as well as compressing the signals more (the compression ratio for any given signal level gets higher).

LEVEL SET Control: This control sets the operating (output) level that the 163X will always "aim toward" as compression is increased; the circuit automatically adjusts the gain to maintain a constant output level.

Hi-Z INPUT Jack: This jack connects to the 163X's internal low-noise FET preamp. The gain is such that virtually all low-level instruments (guitars, basses, keyboards, even some high-impedance mics) can be plugged in directly using ¼" phone connectors. If necessary, use the rear panel Hi-Z TRIM to curb the gain of very hot instruments (e.g., some synthesizers). Note that this jack overrides the rear panel line-level INPUT.

Rear Panel

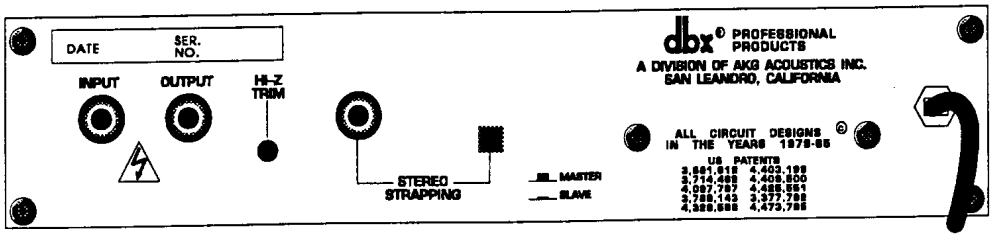

Figure 3: Rear Panel

INPUT Jack: Use mono (or TRS) ¼" phone connectors to connect this input to your line-level audio source (e.g., instrument, microphone or mixer).

OUTPUT Jack: Use mono (or TRS) ¼" phone connectors to connect these outputs to the line inputs on your load (e.g., mixer, amplifier, etc.).

Hi-Z TRIM Control: This screwdriver-adjustable control sets the gain of the preamp for the Hi-Z INPUT only (see Front Panel). The gain is factory-set at +20dB (all the way right, or clockwise) and shouldn't be changed unless your instruments output is very hot. All the way left (counter-clockwise) is unity gain (0dB).

STEREO STRAPPING Jack and Button: Connect this jack to the same jack on another 163X and you have a true RMS-detecting stereo compressor/limiter. Use TRS ¼" stereo phone connectors only. Press the button In to set the unit as the SLAVE. For normal mono use (as well as for the stereo MASTER), leave the switch Out.

AC Cord: Plug into mains power. Note that the 163X does not have a power switch. It is recommended that the 163X be "On" at all times. Power consumption is low. If you do not plan to use the 163X for an extended period of time, unplug it.

WARNING: Be sure to verify both your actual line voltage and the voltage for which your Model 163X was wired, as indicated on the rear panel of your unit. Connection to an inappropriate power source may result in extensive damage which is not covered by the warranty.

OPERATING NOTES

Preparation/Level Adjustments

For best operation, the 163X should be reset for your application each time it's used in a different studio or with a different set of performance gear.

1. Set the LEVEL SET Control

To determine the amount of gain to add to your sound, adjust the LEVEL SET Control according to the following steps:

A. Play your instrument (or the track to be compressed) at a typical, moderate level through the 163X with the COMPRESSION Slider all the way to the left. Concentrate on how loud it sounds.

B. Move the COMPRESSION Slider all the way to the right and play the same way again (or play the same passage from the tape). Again, listen to how loud it sounds.

C. Now adjust the level by turning the LEVEL SET Control so that the volume with the slider right is the same as with the slider left.

> When properly adjusted, there will be little difference in level as you move the slider, but to the right, the sound will be fatter, with more sustain, evenness, and bite to the attacks.

2. Set the COMPRESSION Slider

This is the heart of the 163x. Move the slider to the right and more of the input signal is compressed; the compression ratio is increased and more gain is added. That's why it's labeled MORE — you get more effect.

In actual use, start by playing music through the 163X with the slider to the left, then gradually move it right until you hear enough compression. Remember that dbx's OverEasy compression curve keeps the music sounding natural even under extreme amounts of compression, so listen carefully to gauge the right amount.

3. Set the Hi-Z TRIM (if necessary)

This trim rarely requires adjustment in practical applications. It should be reset ONLY if you hear distortion (overdriving) while using the front panel Hi-Z INPUT even when the slider is all the way to the right. The instrument is probably overdriving the Hi-Z INPUT and the gain must be changed (with the TRIM).

Specific Applications

Smoothing Out Bass Guitar

Bass lines often are inconsistent in level and lack the sustain needed to give a solid bottom end. Set the MORE slider so that peaks cause 10dB to 12dB of compression. Use more for increased sustain and for more percussive attacks on the transients.

Fattening Kick Drums and Compressing Other Drum Sounds

Weak, flabby kick drums often have too much boom and not enough slap. Tighten them up by setting the slider for 15dB of compression on the peak of the kick. Because the 163X takes some time to react, this will emphasize the slap at the beginning of the note and reduce the boominess of its body. The 163X also works well for tightening snare drums and tom toms and can be used with drum machines to effectively alter the character of any electronic drum sound.

Variations in Mic Levels

The 163X works with microphones used in musical applications, paging systems, churches, speaking events, etc. As the distance between the microphone and a speaker or vocalist changes, signal levels change. Set the slider so that average levels cause 6dB to 8dB of compression, as indicated on the front meter. Use more for less-experienced speakers or vocalists. Ask them to help out by backing off on the mic a bit when speaking louder or singing especially loud notes.

Variations in Instrument Levels

To smooth out instrument levels, set the slider so that 8dB or more of compression occurs on all peaks. Be careful, however: large amounts of compression used on a mixed stereo program can become quite audible. Compression is much less noticeable if the separate tracks are compressed before mixing.

Raising the Signal Out of a Mix

Since reducing dynamic range can increase the *average* signal level and meter readings, a single track can be brought up out of a mix by boosting its level slightly and applying compression. Set the slider for 4dB to 6dB.

Preventing Sound System Overload

To get the benefits of the Infinity:1 part of the compression curve to prevent sound system overload (whether you're doing auditorium, church, or club sound engineering, or are a mobile DJ for small dances), set the slider to provide 15dB or more dB of compression just a few dB below the input clip. For low-level signals, the 163X won't change gain, but if large signals come along, the gain will be reduced to prevent clipping and save sensitive system components from damage.

As a rule, to give the best protection, your 163X should be as close as possible in the signal path to the power amp. For maximum SPLs (watch your ears), large sound-reinforcement systems frequently have a separate compressor on each output of the electronic crossover.

CONNECTING THE 163X TO YOUR SYSTEM

Basic Connection

The 163X can be connected for basic operation as shown in Figure 4.

For more specific installation information, refer to Installation Considerations, page 12.

Rear Panel INPUT

Use the rear panel (line) INPUT in recording when the instrument to be compressed is already preamplified, such as through a direct box or console. Synthesizers sometimes can plug in here, too. And of course, when mixing or submixing (e.g., to open up a track in a crowded tape), the signal from the deck (or console/mixer) goes here.

In live performance, this input is again useful for connection to synthesizer high-level outputs or line-level outputs of guitar and bass preamps (before the feed to the power amp). It can also be inserted into the effects loop on a guitar or bass amp if being used primarily to achieve more sustain.

Front panel Hi-Z INPUT

Use the front panel H-Z INPUT in the studio for adding quick (direct input) overdubs, and for the convenience of carrying the guitar or bass into the control room (no hassle of lugging an amp). In performance, any instrument can plug directly into this input (synths included), as well as many high-impedance microphones.

For all connections, refer to the following steps:

A. Turn Off all equipment before making any connections. (Disconnect the 163X from AC power.)

B. Make connections via ¼" phone jacks according to your requirements.

C. Set the rear panel MASTER/SLAVE Button to MASTER (Button not depressed).

D. Plug in the AC power cable to power On the unit.

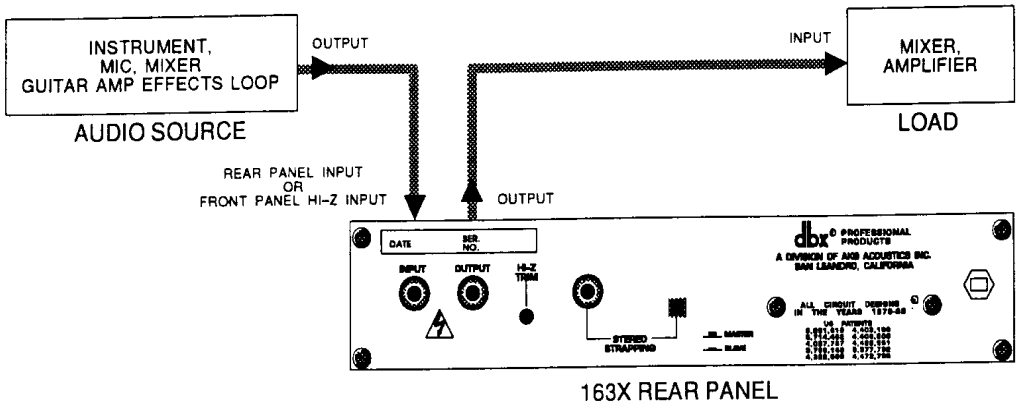

Figure 4: Basic Connection

Stereo Operation

Stereo strapping is essential for all applications where two channels must be compressed and the left/right perspective remain the same. Examples include the L and R overhead mics on a drum kit or piano, a stereo submix of a vocal ensemble, the feed from an X-Y or other pair of mics in a classical recording, a complete stereo mix, etc.

When the rear panel MASTER/SLAVE switches are properly set and the stereo cable connected, the gain changes in the two channels will be identical. The signals at each RMS detector are combined (so the true RMS sum can be sensed) and controlled. All functions of the Master unit control both channels.

To connect two 163Xs together for stereo operation:

A. Turn Off all equipment before making any connections. (Disconnect both 163Xs from AC power.)

B. Connect a TRS ¼" stereo phone plug to the STEREO STRAPPING jacks of each unit. Note that ¼" mono plugs will not work here.

C. Determine which unit is the Slave; press in the MASTER/SLAVE switch located on the unit's rear panel. The yellow SLAVE LED on the front of the unit will illuminate.

D. Plug in the AC power cables to power On the units.

NOTE: For dual mono operation — when you want to have two independent compressors — you have to remove the cable attached to the STEREO STRAPPING jacks, if any, and leave both MASTER buttons Out.

INSTALLATION CONSIDERATIONS

Mounting the 163X in a 1U Rack Space

The 163X requires one rack space (height) and ½ rack space (width). It can be mounted above or below anything that doesn't generate excessive heat, since it requires no special ventilation. Ambient temperatures should not exceed 113°F (45°C) when equipment is powered. Hardware for mounting your 163X is provided in the Accessory Kit included in your 163X package.

To save rack space, two 163X units may be mounted side-by-side. In addition, the 163X can be mounted next to other dbx "half-rack" units: 760X Mic Preamplifier, 1024 Buffer Amplifier, 140X Type II Noise Reduction, 263X De-Esser, 363X Dual Noise Gate, 463X OverEasy Noise Gate, or 563X Hiss Reducer. Hardware for side-by-side mounting is included with each half-rack product. If the rubber feet were used for tabletop operation, they should be removed at this time.

Caution: Never remove the cover. There are no user-serviceable parts inside, and you run the risk of an electric shock.