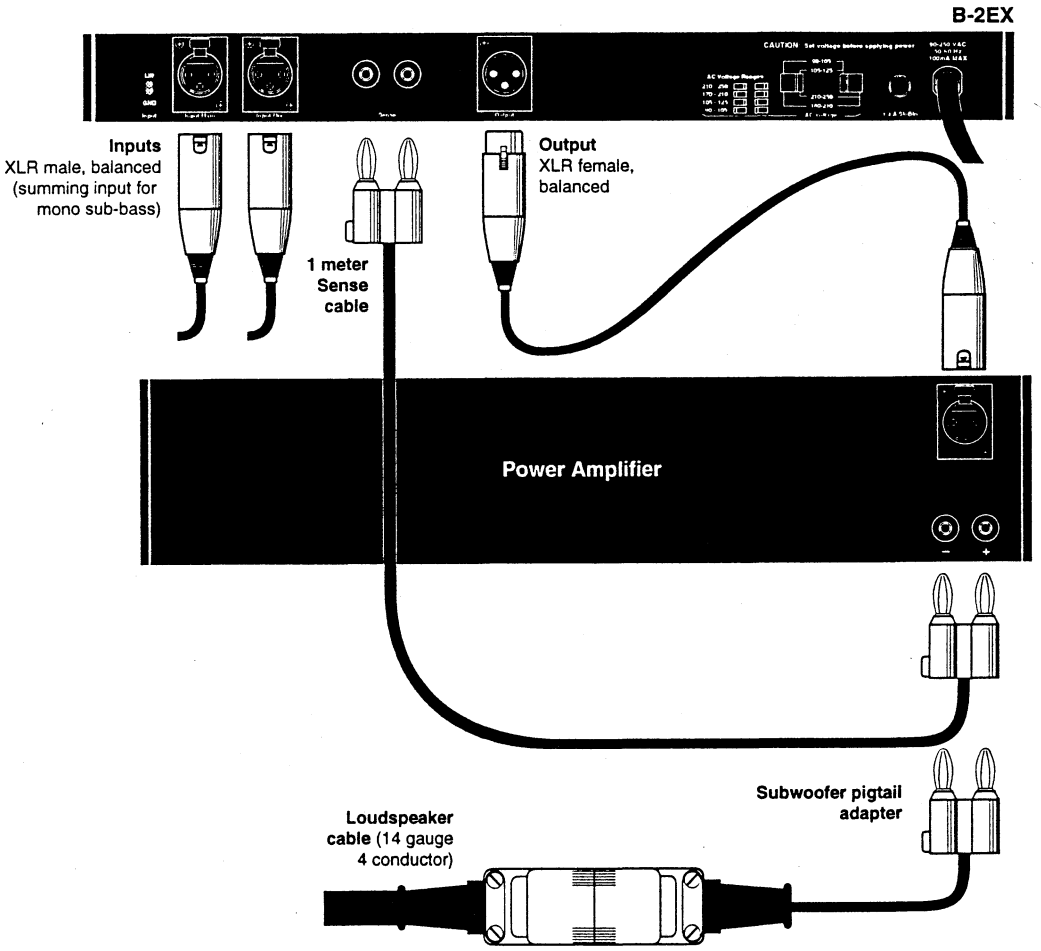
B-2EX Control Electronics Unit

Operating Instructions

The Meyer Sound B-2EX is an active signal processor designed for use with Meyer Sound subwoofers. It occupies a single 1¾ inch rack space. The functions of the B-2EX are:

- Active crossover, 12 dB/ octave slope
- Subwoofer frequency response alignment
- SpeakerSense™ driver protection
- Switch-selectable driver excursion protection
- Two-channel input summing to provide a mono subwoofer signal



Connections

The B-2EX operates at line level and is intended to be the final component in the signal chain before the power amplifier. Connections between the B-2EX and the power amplifier should be made according to the diagram above.

1. Signal inputs to the B-2EX may be either balanced or unbalanced. For best signal-to-noise ratio, use balanced connections operating at +4 dBu nominal. The B-2EX will accept peak input levels up to +21 dBu. If a two-channel signal is to be combined for mono sub-bass, use both the **Main** and **Mix** inputs.

2. SpeakerSense connections are made from the output of the power amplifier back to the B-2EX Sense inputs. The connection **must** be made in order for the B-2EX protection circuitry to operate. **Note.** Polarity of this connection does not matter.

3. Signal output from the B-2EX is active balanced at +4 dBu nominal operating level, and AC coupled with pin 1 tied to AC/chassis ground through a 200 ohm resistance. The maximum output level is +26 dBu balanced (+20 dBu unbalanced). The Output drives the subwoofer power amplifier.

4. Connections between the power amplifier output and the subwoofer should be made in accordance with the particular subwoofer's **Operating Instructions**. These connections **must** be verified for correct polarity.

Note. The grounding switch located next to the Main signal input controls the connection signal ground (circuit ground) and earth ground (chassis ground). In the **Lift** position, signal ground is disconnected from earth. This feature may be used to control ground loops in the system.

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Operation

Once all the connections have been made and verified, the subwoofer system must be balanced with the biamplified main system for flat frequency response. The preferred method for testing Meyer Sound loudspeakers is to use SIM® System II. Alternately, a spectrum analyzer with at least 1/3rd octave resolution may be used.

- Connect the analyzer test signal to the B-2EX and full-range system inputs.
- Remove the B-2EX Preset Panel to expose the setup controls, and set the Crossover switch to **Crossover**.
- Set the level controls of the full-range system and the B-2EX to minimum, and the power amplifier level controls (if any) to maximum.
- Switch on AC power to the B-2EX and full-range system Control Electronics Unit, then to the power amplifiers.
- Place the measurement microphone approximately 1 meter on-axis of the system.
- Advance the full-range system's level control to a comfortable measurement level.
- While monitoring the analyzer display, advance the B-2EX **Attn** control to balance the subwoofers with the full-range system.

Preset Panel Controls

Two setup controls are provided to adjust the response of the subwoofer system and the action of the SpeakerSense circuitry.

Safe switch — The Safe switch adjusts the limiting threshold of the B-2EX and engages/disengages the excursion protection circuitry. When the Safe function is switched out, the B-2EX excursion circuitry is not active, and only RMS limiting is available to protect the subwoofer drivers. This position may be used when the system is not to be driven consistently at very high levels, and will provide adequate protection against coil overheating from long-term amplifier power.

In the **Safe** position, the RMS limiter threshold is reduced by 6 dB (limiters will come on at a lower power level) and the excursion limiting circuitry is engaged. This unique circuit detects energy in two specific frequency bands (below 30 Hz and the octave centered on 70 Hz) through the Sense connection. These are the frequencies at which the subwoofer drivers are most vulnerable to damage from over-excursion. When high peak levels occur in these bands, fast-acting frequency-specific peak limiters act to reduce the signal level to maintain safe operating conditions.

Crossover switch — This switch engages or disengages the B-2EX crossover function (12 dB/octave low pass filter). Its normal position is up (**Crossover**). In the **Out** position, the active crossover poles are defeated, permitting wide-range operation of the subwoofer. This mode of operation may be used when a Meyer Sound subwoofer is employed for instrument amplification or effects.

Note: When the Crossover switch is set to Out, the polarity of the B-2EX output is reversed.

SpeakerSense™ Driver Protection

Through the rear-panel **Sense** connection back to the B-2EX from the power amplifier, the **SpeakerSense** circuitry continually monitors the voltage across the subwoofer drivers. If the amplifier output exceeds the safe operating limits of the drivers, an RMS limiter (and, in the Safe mode, an excursion limiter) is automatically activated, holding down the B-2EX output level. Until the onset of overload, the SpeakerSense circuitry is inactive and has no effect on the sound of the system. The operation of the protection circuitry is indicated by three LEDs located on the front panel.

Sense Indicator — This functions as a signal presence indicator and verifies that the Sense connection has been made between the B-2EX and the power amplifier. It will be lit whenever a signal is present, or flicker at low levels.

Limit Indicator — This indicates the action of the B-2EX RMS limiter. It will come on when the limit threshold is exceeded and the limiter is activated. A moderate amount of flashing of this indicator is acceptable; if the indicator is on continuously, the system drive level should

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be reduced. The RMS limiter takes approximately 100 msec to activate, and will **not** substantially affect peaks in the program material, nor will it prevent momentary amplifier clipping.

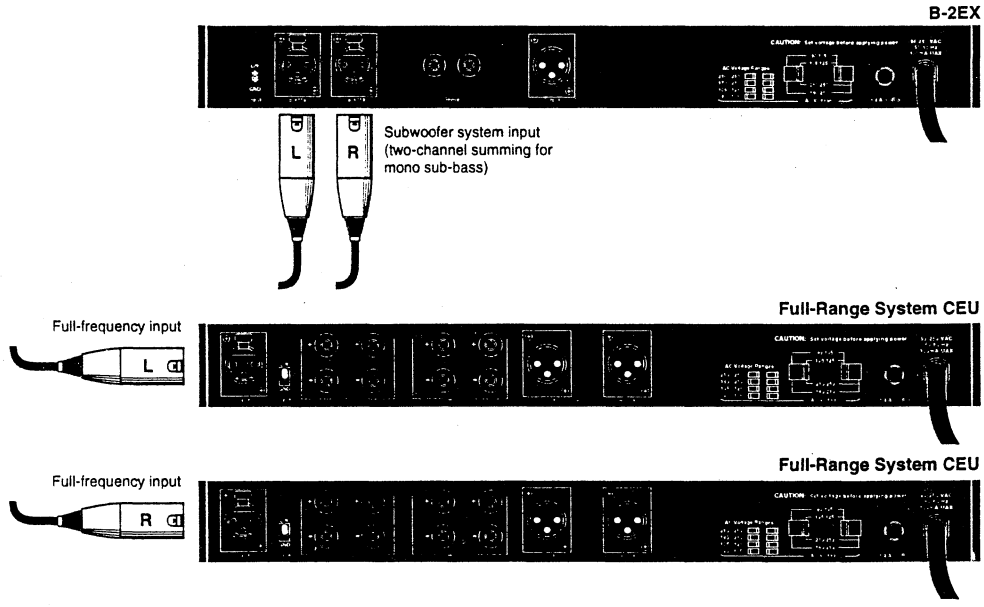
Excursion Indicator — This indicator flashes whenever the threshold of the excursion limiter is exceeded in its frequency bands of operation. When the Safe switch is out and the excursion limiter is defeated, this indicator may be used to monitor over-excursion of the subwoofer drivers. If the indicator flashes frequently, the Safe switch should be engaged to protect the drivers from damage.

Limiter Operation

To verify RMS limiter operation in the field:

- Disconnect the subwoofer(s), leaving the B-2EX and amplifier connected as described on the first page of these instructions.
- In the amplifier requires a load, use a resistive load sufficient to dissipate the full power of the amplifier.
- Turn on the B-2EX and the amplifier.
- Set the **Crossover** switch to Crossover.
- Supply an input to the B-2EX, preferrably a sine wave oscillator. If you do not have an oscillator, a Compact Disc player or cassette tape machine with bass-heavy program material may be used.
- If an oscillator is used, set its frequency to 55 Hz.
- Advance the B-2EX **Attn** control until you see the RMS limit indicator come on. Since the indicator will light **only** if the limiter actually functions, it provides a positive indication of limiter operation.

Use With Meyer Sound Biamplified Systems



All Meyer Sound loudspeaker systems are designed to be used with their respective Control Electronics Units. When such systems are used with Meyer Sound subwoofers, the B-2EX input should be connected in parallel with the full-range (biamplified) system input as shown in the diagram above. Where mono sub-bass is desired, the B-2EX Mix input may be used. The B-2EX **Attn** control provides independent control of subwoofer level. In many cases, the **Lo Cut** switch on the full-range system's CEU may need to be engaged to achieve smoothest response through crossover to the subwoofer.

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Specifications

Input Type	Balanced (active), 47k ohms
Output Type	Active push-pull, will drive 600 ohms
Maximum Input/Output Level	
Balanced	+26 dBv
Unbalanced	+20 dBv
Hum and Noise	-90 dBv ("A" weighted)
Dynamic Range	110 dB
Sense Inputs	10k ohm true differential
Driver Protection Circuitry	RMS limiter, 100 msec integration time Frequency-selective excursion limiter
Indicators	
Sense	Green LED
Limit	Red LED
Excursion	Red LED
Safe	Green LED
Power	Green LED
Controls	
Front Panel	Attn control, AC on/off switch
Preset Panel	Crossover in/out switch, Safe switch
Connectors	
Balanced Inputs/Output	XLR-type (A-3) female/male
Sense Inputs	Banana receptacles
Power	100 - 240 VAC, switchable in four ranges
Physical Dimensions	19"W x 1¾"H x 7¾"D
Weight	8 lbs (3.25 kg)

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