

The Meyer Sound B-2A is an active signal processor designed for use with Meyer Sound 650-R2 and USW-1 subwoofers. It occupies a single 1 $\frac{1}{4}$ -inch rack space. The functions of the B-2A are:

- Active crossover, 12 dB/octave slope
- Subwoofer frequency response alignment
- SpeakerSense™ driver protection
- 3-way system master level control
- Two channel input summing to produce a mono subwoofer signal

The B-2A also incorporates the Meyer Sound Bass Extender, a switch-selectable effects circuit which adds a subjective impression of fullness to the subwoofer sound without affecting system headroom or frequency response.

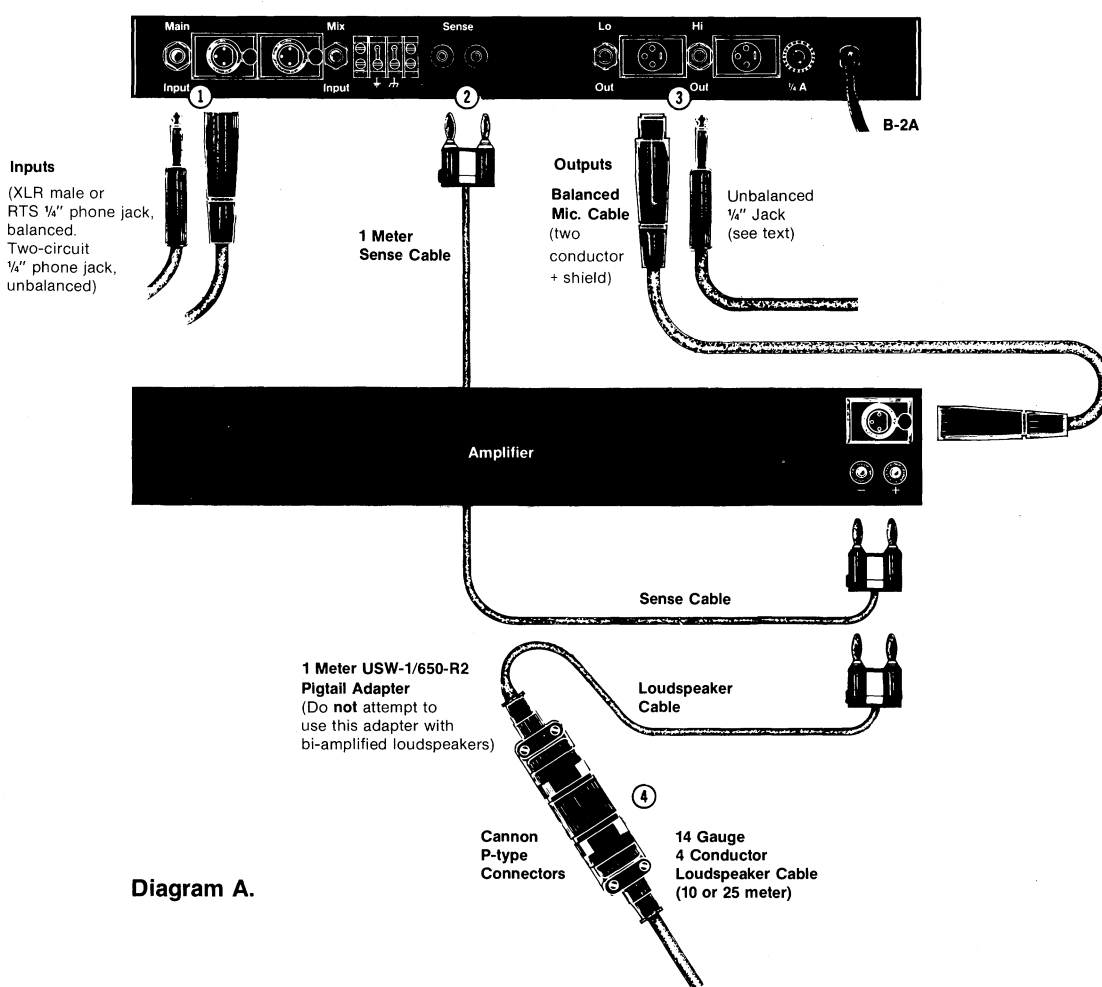


Diagram A.

Connections

The B-2A operates at line level and is designed to be the last component in the chain before the subwoofer power amplifier. Connections to the B-2A should be made according to diagram A.

1. Signal **Inputs** to the B-2A may be either balanced or unbalanced. For best signal-to-noise ratio, the average input level should be at least 1 volt RMS. The B-2A will accept peak inputs of up to +26dBv balanced, or +20dBv unbalanced. If a two channel signal is to be combined for mono sub-bass, use both **Main** and **Mix** inputs.

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

3. Signal **Outputs** from the B-2A may be either balanced or unbalanced. The maximum output levels before

clipping are +26dBv balanced, +20dBv unbalanced. The **Lo** output drives the subwoofer amplifier, and the **Hi** output is designed to drive the Meyer Sound M-1 or M-3 Control Electronics Unit **Sub Input**. For other system configurations see **Use with Meyer Sound bi-amplified systems**.

4. Connections between the power amplifier outputs and the Meyer Sound subwoofer used with the B-2A should be made according to the instructions for the particular loudspeaker. These connections **must be verified for correct polarity**.

Note. The grounding strap on the B-2A rear panel connects signal common (circuit ground) to earth ground (U-ground). Lifting this strap from the terminal block disconnects signal common from earth ground (the chassis remains connected to U-ground). This feature may be used to control ground loops in the system.

Operation

Once all the connections have been made and verified, the subwoofer system must be balanced with the bi-amplified main system for flat frequency response. To do this, use a pink noise test signal and a spectrum analyzer to measure the system frequency response.

- The B-2A **Level** control should be set at minimum
- Switch on AC to the B-2A first, then to the power amplifier
- Remove the cover plate of the B-2A Preset Panel to expose the setup controls
- Set the **EQ** switch to Flat
- Loosen the shaft locking nut on the **Sub Level** control (this control is preset at 10, or maximum, when the unit is shipped from the factory)
- Set the **Power** control to Max
- Set the **Bass Extender** switch to Out
- Set the **Crossover** switch to Crossover

- Set the power amplifier level controls (if any) to maximum

To Balance the system:

1. Advance the B-2A **Level** control (the 3-way system master) to a convenient measuring level.

2. Adjust the **Sub Level** control to balance the subwoofers with the main system

Note. If a dip occurs in the frequency response at about 100Hz, the subwoofers are out of phase with the main system. Reverse the polarity of the connection to the subwoofer system at the power amplifier output. **It is essential** that polarity is consistent within the subwoofer system as a polarity reversal can result in severe damage to the woofers.

3. When balance has been achieved, lock the **Sub Level** control. The B-2A input **Level** control is now the system master level control.

Note. When operating the subwoofer system independently from the main system, leave the Sub Level control at maximum and adjust the subwoofer system balance by using the front panel Level control.

Preset Panel Controls

The setup controls on the B-2A Preset Panel are designed to tailor the system response for different applications.

EQ Switch. If you desire an impression of heavier bass, switch the EQ switch to the EQ position. This will introduce a broad peak in the system of about 7dB centered at 55Hz.

Sub Level Control. This control is used to balance the Lo Output with the Hi Output (see **Operation** section above for setup procedure).

Power Control. The **Power** control adjusts the threshold of the subwoofer protection limiter. When the Power control is set to **MAX**, the maximum acoustic power is available from the subwoofers. When it is set to **MIN**, the limiter threshold is 12dB below the MAX setting. Response of the control is logarithmic, the center position being approximately 6dB below maximum. The Power control may be used to set an approximate maximum low frequency SPL, or to provide soft compression for effects purposes.

Bass Extender. The B-2A incorporates a Meyer Sound exclusive low frequency effects circuit called the **Bass Extender**. The circuit is engaged when the switch is in the up position, and the effect is introduced with the **Resonance** control. To defeat the Bass Extender, set the switch to **Out**.

The effect of this circuit is to approximate the sound of a loose, boomy cabinet, and it is most apparent on transient signals, such as kick drum or plucked bass. The Bass Extender acts only in the phase domain, and is virtually undetectable in frequency response testing. The effect of the Bass Extender is psycho-acoustically level-dependent, and is more pronounced at high signal levels.

Crossover Switch. This switch defeats the active crossover poles, permitting wide-range operation of the subwoofers (Crossover switch set to **Out**). This mode of operation may be used when a Meyer Sound subwoofer is used for instrument amplification, or when the subwoofers are used for effects.

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

SpeakerSense™ Driver Protection

Through the **Sense** connection back to the B-2A from the power amplifier, the **SpeakerSense** circuitry of the B-2A continually monitors the voltage across the low frequency drivers. If the amplifier output exceeds the safe operating limits of the drivers, an RMS limiter is automatically activated, holding down the power level of the B-2A Lo output (the Hi output level is unaffected). The operation of the SpeakerSense circuitry is indicated by a pair of LEDs located on the front panel.

- **Sense** Indicator. This functions as a signal presence indicator, and verifies that the **Sense** connection back

to the B-2A is made. This indicator will be lit whenever a signal is present, or will flicker at low signal levels.

- **Limit** Indicator. This indicator will come on whenever the subwoofer protection limiter is activated (threshold is adjustable with the **Power** control—see above). A moderate amount of flashing of this indicator is acceptable. The limiter takes about 100msec. to come on and will **not** substantially affect peaks in the program material, nor will it prevent momentary amplifier clipping on peaks.

Limiter Operation

To verify limiter operation in the field:

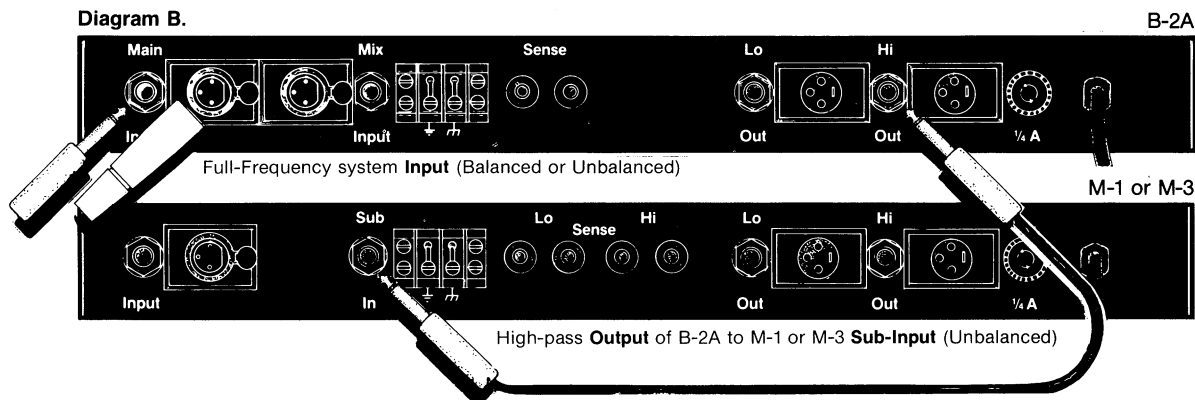
- Disconnect subwoofers, leaving the amplifier and the B-2A in their standard connection configuration
- If your amplifier requires a load, use resistive loads sufficient to dissipate the full power of the amplifier
- Turn on both the B-2A and the amplifier
- Set the **EQ** switch to EQ, the **Power Control** to MIN, the **Bass Extender** to Out and the **Crossover** switch to Crossover
- Supply an input to the B-2A, preferably a sine-wave oscillator. If you do not have an oscillator, use a microphone and a mixer to produce a line level signal
- Set the oscillator input frequency to 55Hz, or make low growling noises into the microphone
- Bring up the input until you see the limit indicator come on. Since the indicator will light **only** if the limiter actually operates, it provides a positive indication that the limiter is functioning

Use With Meyer Sound bi-amplified systems

All Meyer Sound loudspeaker systems are designed to be used with their respective Control Electronics Units. For the UM-1A Ultramonitor and UPA-1A loudspeaker systems the CEU is the M-1; for the MSL-3 loudspeaker system it is the M-3. When these systems are used with Meyer Sound subwoofers, the B-2A **Hi** output should be connected to the M-1 or M-3

Sub-Input. Integral to this input jack are switches which bypass the M-1 or M-3 **Level** control and engage the **Lo Cut** switch, automatically setting the low frequency response of the bi-amplified system for a smooth crossover to the subwoofers. The **Level** control of the B-2A then becomes the system master level control (see diagram B).

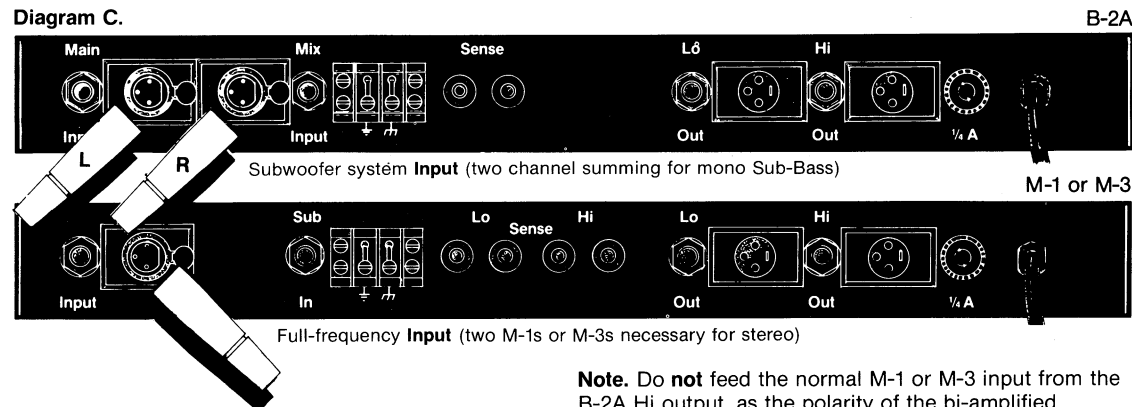
Diagram B.



For increased flexibility, however, you may prefer to retain separate control of the bi-amplified and subwoofer system levels. To do so, you should connect your

system according to diagram C. Note that the **Hi** output of the B-2A is left unconnected. For proper crossover, **you must switch the M-1 or M-3 Lo Cut in.**

Diagram C.



Note. Do **not** feed the normal M-1 or M-3 input from the B-2A **Hi** output, as the polarity of the bi-amplified loudspeaker system will be reversed, resulting in a response dip at crossover.

Specifications

Input Type	Balanced (active), 47k ohms
Output Type	Active push-pull, will drive 600 ohms
Maximum Input/Output Level	
Balanced	+26dBv
Unbalanced	+20dBv
Hum and Noise	-90dBv ("A" weighted)
Dynamic Range	110dB
Sense Inputs	10k ohm true differential
Electronic Crossover Frequency	95Hz (Crossover switch In)
Driver Protection Circuitry	RMS limiter, 100msec. integration time
Indicators	
Sense	Green LED
Limit	Red LED
Power	Green LED
Controls	
Front Panel	Level control, AC on/off switch
Preset Panel	EQ/Flat switch, Sub Level control, Power control, Extender In/Out switch, Extender Resonance control, Crossover In/Out switch
Connectors	
Balanced Inputs/Outputs	XLR-type (A-3), 1/4" RTS phone jacks
Sense Inputs	Banana jacks
Power	120V AC 240V AC option available
Physical Dimensions	19"W x 1 3/4"H x 7 3/4"D
Weight	8 lbs. (3.25 kg)

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