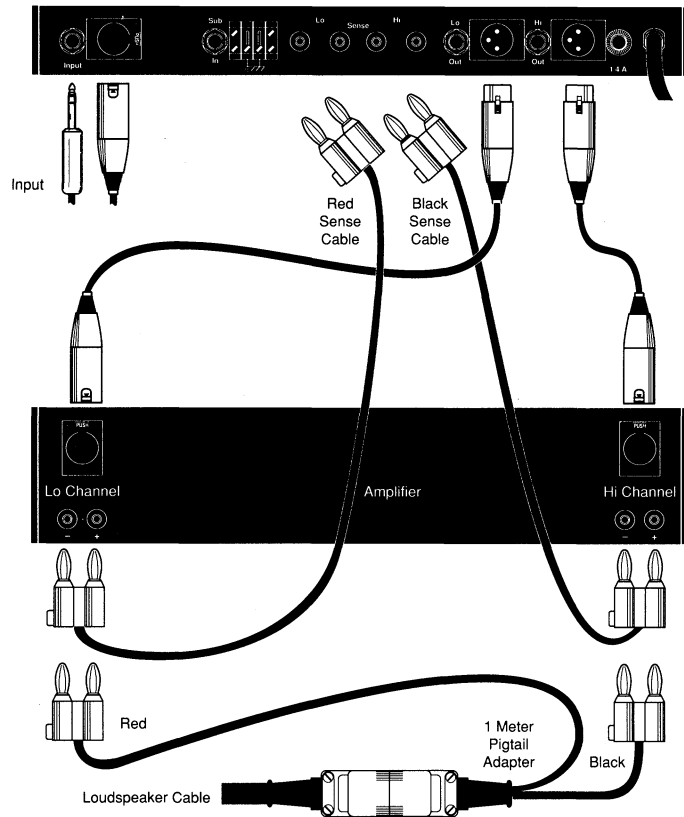


The Meyer Sound M-1A is an active signal processor designed for use with Meyer Sound UPA-1C and UM-1C loudspeakers. It is a single channel device, and it occupies a single 1¾-inch rack space. The functions of the M-1A are:

- Active crossover for bi-amplification
- Loudspeaker frequency response and phase response alignment
- SpeakerSense™ driver protection



**Connections**

The M-1A operates at line level and is designed to be the last component in the chain before the power amplifier. Connections to the M-1A should be made according to the diagram above.

1. **Signal inputs** to the M-1A may be either balanced or unbalanced. For best signal-to-noise ratio, the average input level should be at least 1 volt RMS. The M-1A will accept peak inputs of up to +26 dBv balanced, or +20 dBv unbalanced.
2. The **Sub input** is used only when the M-1A is operated in conjunction with Meyer Sound B-2, B-2A or B-2AEX subwoofer Controllers.
3. **SpeakerSense™** connections are made from the output of the power amplifier back to the M-1A Sense inputs. The Hi output of the power amplifier must be connected to the Hi Sense input, and the Lo output of the power amplifier to the Lo Sense input in order for the SpeakerSense driver protection circuitry to operate properly.

**Note.** Polarity of these connections does not matter.

4. **Signal outputs** from the M-1A may be either balanced or unbalanced. The maximum output levels before clipping are +26 dBv balanced, +20 dBv unbalanced.
5. Connections between the power amplifier outputs and the Meyer Sound loudspeaker used with the M-1A should be made according to the instructions for the particular loudspeaker (UPA-1C or UM-1C). These connections **must be verified for correct polarity**, and correct channel assignment (Hi to Hi, Lo to Lo). Color codes given in the diagram are those used for Meyer Sound cables and adapters.

**Note.** The grounding strap on the M-1A rear panel connects circuit ground (signal common) to earth ground (U-ground). Lifting this strap from the terminal block disconnects circuit ground from earth ground (the chassis remains connected to U-ground). If hum problems occur, 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 system is ready to operate.

- The M-1A Level control should be set at minimum.
- Switch on AC to the M-1A first, then to the power amplifier.

- Set the power amplifier level controls (if any) to maximum.
- Advance the M-1A Level control to set the system sensitivity. If the system is not operating properly, recheck all connections.

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**Preset Panel Controls**

The setup controls on the M-1A Preset Panel are designed to be used to tailor the system response for particular applications. Remove the Preset Panel cover plate to adjust the controls.

**Safe Switch.** The M-1A incorporates three limiters in the SpeakerSense driver protection circuitry (see detailed description, below). When the Safe switch is engaged, the RMS limiters come on at 6 dB lower power levels, affording added protection when heavy continuous power demands are placed on the system. (The VHF peak limiter threshold is unaffected.) For operator convenience, a green LED indicator is provided on the M-1A front panel and when the Safe switch is engaged, this indicator will light. **Note:** It is recommended that the Safe switch be engaged until the operator is familiar with the system's capabilities.

**VHF Switch and Control.** The VHF Switch affects the very high frequency response of the system. It selects either a preset (CAL)

high frequency response or variable response (VAR). In the VAR position, system response around 16 kHz is adjustable (single-turn screwdriver adjustment) from +6 dB to -4 dB around the preset point (CCW for increased level at 16 kHz). This feature may be used to emphasize or de-emphasize sibilants, compensate for room acoustics, etc. **Note:** Because of the difference in high frequency directivity patterns between the UPA-1C and the UM-1C UltraMonitor, it is recommended that the VHF switch be set in the CAL position for the UM-1C UltraMonitor, and in the VAR position — with the VAR control fully CCW — for the UPA-1C.

**Lo Cut Switch.** This switch introduces a 6 dB/octave high pass filter at 160 Hz. It is designed to provide an alternative crossover slope when using Meyer Sound subwoofers, but can also be used to compensate for the proximity effect of cardioid microphones. This filter is automatically inserted when the Sub Input is used.

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**SpeakerSense™  
Driver Protection**

Through the Sense connections back to the M-1A from the power amplifiers, the SpeakerSense circuitry of the M-1A continuously monitors the voltages across both high and low frequency drivers. If the amplifier output exceeds the safe operating limits of the drivers, independent limiters are automatically activated, holding down the level of the M-1A's outputs.

The operation of the SpeakerSense circuitry is indicated by a set of five LEDs located on the front panel.

- **Sense Indicators.** These function as signal presence indicators, and verify that the

Sense connections back to the M-1A are made. These indicators will be lit whenever a signal is present, or will flicker at low signal levels.

- **Limit Indicators.** These indicators will come on whenever the corresponding limiter is activated and a moderate amount of flashing of these indicators is acceptable. The HF and LF limiters have an attack time of 100 msec, so they will not affect peaks in the program material, nor will they prevent momentary amplifier clipping on peaks.

**Verifying Limiter  
Operation**

To verify limiter operation in the field:

- Disconnect loudspeakers, leaving the amplifier and the M-1A 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 M-1A and the amplifier.
- Set the VHF switch to CAL, the Lo Cut out and the Safe switch in.
- Supply an input to the M-1A, preferably a sine wave oscillator. If you do not have an

oscillator, use a compact disc with dense program material and a mixer to produce a line level signal.

If you are using an oscillator, set the frequency according to this table:

<u>LF limiter</u>	<u>HF limiter</u>	<u>VHF limiter</u>
200 Hz	5,000 Hz	16,000 Hz

Bring up the input level until you see the corresponding limit indicator come on. Since in each case the indicator will light only if the limiter actually operates, it provides a positive indication that the limiter is functioning.

**Balancing Amplifier  
Gain**

The standard connection configuration for the M-1A Control Electronics Unit uses a single two-channel amplifier as a bi-amplifier, one channel for the lows and one for the highs. In large systems where a number of M-1As are used, some users prefer to assign one or more amplifiers only to the lows, and other amplifiers only to the highs. In either case the Lo and Hi amplifiers must have equal voltage gain. To balance your system, you will need an oscillator and an RMS-reading voltmeter.

- Connect the M-1A and amplifiers as you wish to use them, leaving speakers disconnected.
- If an amplifier requires a load, use an 8 ohm resistor sufficient to dissipate the full power of the amplifier.

- Input the oscillator to the M-1A and set its frequency to 1600 Hz  $\pm$  5 Hz (use a frequency counter if you have one).

- Set the M-1A Lo Cut switch out, the VHF switch to CAL, and the Safe switch out.

- Measuring with the voltmeter at the Hi amplifier output, advance the M-1A Level control to a convenient reading (a few volts).

- Now measure at the Lo amplifier output. If the level is different, adjust the input level control of whichever amplifier is higher in output until the Hi and Lo outputs are equal.

The amplifier gains are now calibrated.

**Using the Sub Input**

The M-1A **Sub** input is designed for use with the Meyer Sound B-2, B-2A and B-2AEX subwoofer Control Electronics Units.

If you are using one of these CEUs to control a subwoofer system that is augmenting the M-1A system, you have the option of connecting the subwoofer controller's Hi output to the M-1A Sub input. For details, refer to the **Operating Instructions** for the subwoofer CEU.

The Meyer Sound B-2EX Control Electronics Unit does not incorporate a Hi output, and is designed to be connected in parallel with the input of the full-range CEU that it is supplementing. If you are using a B-2EX CEU, do **not** use the M-1A Sub input. Instead, connect the system input signal to both the M-1A Input and the B-2EX Input. For further information, consult the **B-2EX Operating Instructions**.

**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
Electronic Crossover Frequency	1600 Hz
Low Frequency Delay Type	Active all-pass
Driver Protection Circuitry	
Low Frequency	RMS limiter, 100 msec. integration time
High Frequency	RMS limiter, 100 msec. integration time VHF Peak limiter, 2 msec. on-time, 35 msec. release time
Indicators	
Sense: Hi and Lo	Green LEDs
Limit: Hi, Lo and VHF	Red LEDs
Safe	Green LED
Power Supply, Positive and Negative	Green LEDs
Controls	
Front Panel	Level control, AC on/off switch
Preset Panel	Lo Cut switch, Safe switch, VHF var/cal switch VHF control (single-turn screwdriver adjust)
Connectors	
Balanced Inputs/Outputs	XLR-type (A-3), 1/4" RTS phone receptacles
Subwoofer Circuit Input	Unbalanced, 1/4" phone receptacle (inserts Lo Cut, disables Level control)
Sense Inputs	Banana receptacles
Power	120V AC 240V AC option available
Physical Dimensions	19"W x 1 3/4" H x 7 3/4" D
Weight	8 lbs (3.4 kg)