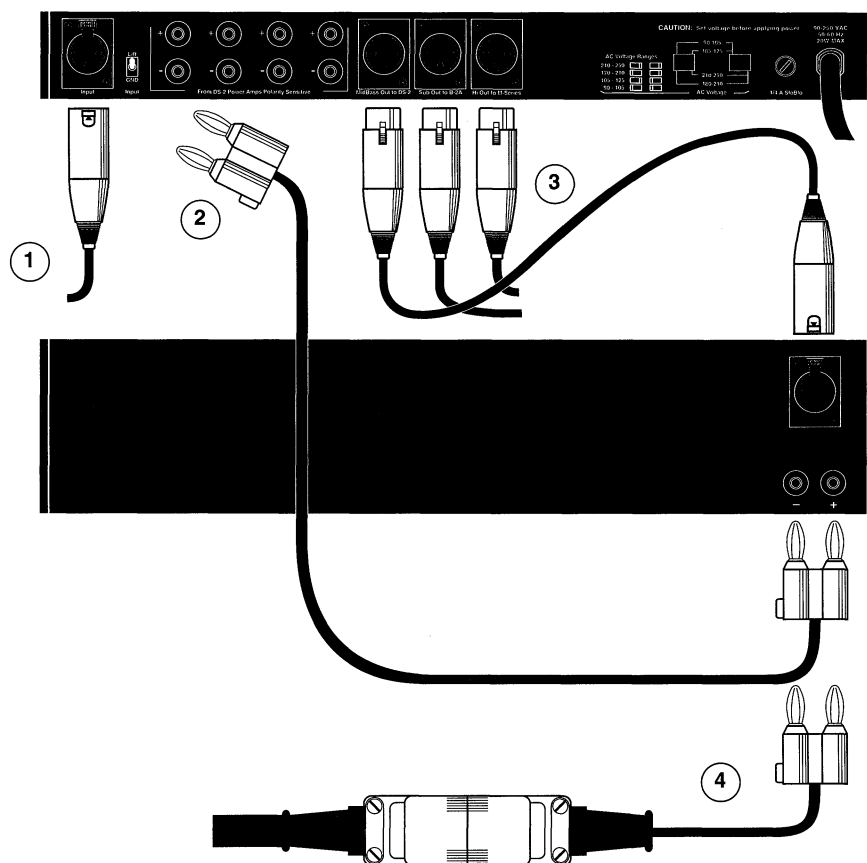


The Meyer Sound D-2 is a single-channel signal processor designed to work with the DS-2 Mid-Bass Loudspeaker. It occupies a single 1 3/4-inch rack space. The functions of the D-2 are:

- Active crossover from DS-2 to main system
- SpeakerSense™ driver protection with MultiSense™ function
- True excursion limiting to protect DS-2 drivers
- Switchable active crossover to optional subwoofer system with output polarity switch



## Connections

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

**1. Signal inputs** to the D-2 may be either balanced or unbalanced. For best signal-to-noise ratio, use balanced connections operating at +4 dBu nominal. The D-2 will accept peak input levels up to +21 dBu.

**Note:** The D-2 utilizes Meyer Sound's exclusive ISO™ Input. Pins 1, 2 and 3 are transformer-isolated, and the connector shell is connected to earth ground (pin 3 positive for positive pressure out from the DS-2). The Input ISO Defeat switch controls the connection between pin 1 and circuit common, which is tied to AC/chassis ground through a 200 ohm resistance.

**2. SpeakerSense connections** are made from the output of the power amplifier back to the D-2 Sense inputs. The connection **must** be made in order for the D-2 protection circuitry to operate.

**Note:** The D-2 Sense inputs incorporate Meyer Sound's exclusive MultiSense™ function, which allows use of

multiple power amplifiers driven in parallel from a single D-2 and having different voltage gains and/or power ratings. The D-2 accommodates up to four power amplifiers, and provides a separate Sense input for each. The MultiSense circuit automatically tracks the power amplifier with the greatest output swing to control the system protection circuitry.

Where more than one DS-2 power amplifier is driven from the MidBass Output of the D-2, connect the output of each to one of the four Sense inputs. *These inputs are polarity-sensitive: be certain that they are connected with correct polarity as indicated on the D-2 rear panel.*

**3. Signal outputs** from the D-2 are active balanced at +4 dBu nominal operating level, and AC coupled with pin 1 tied to tied to AC/chassis ground through a 200 ohm resistance. The maximum output level is +26 dBu balanced (+20 dBu unbalanced). The MidBass Output drives the DS-2 power amplifier, and the Hi Output is to drive the main system input. A subwoofer system may be driven from the Sub Out (see **System Configurations**).

**4. Connections** between the power amplifier output and the DS-2 should be made in accordance with the **DS-2 Operating Instructions**. These connections **must** be verified for correct polarity.

## Operation

Once all connections have been made and verified, the DS-2 Mid-Bass units must be balanced with the main system. The procedure requires a spectrum analyzer or other means of measuring frequency response ( $\frac{1}{3}$ <sup>rd</sup> octave minimum frequency resolution).

- Set the D-2 Attn control and system master at minimum and position the analyzer microphone on the axis of the system, 6 feet or more distant.
- Apply power to the D-2 first, then to the power amplifier(s). Remove the cover to the D-2 Preset Panel to expose the setup controls.
- Set the DS-2 Power control to maximum, and the Mode switch to "DS-2 Only." (In this Mode, the crossover to the Sub Output is defeated, and the DS-2 low-frequency limit extends to approximately 55 Hz.)
- Advance the system master to a comfortable level and observe the analyzer display.
- Adjust the D-2 Attn control to balance the DS-2s with the main system.

**Note:** The DS-2/D-2 in normal polarity will provide correct phasing through crossover with MSL-3 systems (M-3T Lo Cut engaged) and MSL-10A systems when configured in uniform arrays. Very tall or physically offset arrays may exhibit a cancellation at crossover, however, due to propagation delay. If you observe a cancellation of approximately 6 dB centered at 160 Hz, reverse the connections to the DS-2s at the power amplifier output(s).

If you are using subwoofers to cover the 30-60 Hz octave, these must now be fitted into the system response. The procedure is as follows:

- Set the subwoofer level control at minimum, the D-2 Sub Polarity switch to "0°" and the D-2 Mode switch to "DS-2 & Sub."
- Advance the subwoofer level control while observing the analyzer display to balance the subwoofers with the rest of the system.

**Note:** If you observe a cancellation of approximately 6 dB centered at about 60 Hz, place the Sub Polarity switch in the "180°" position.

## SpeakerSense™ Driver Protection

Through the Sense connection back to the D-2 from the power amplifier, the SpeakerSense circuitry of the D-2 continually monitors the voltage across the DS-2 drivers. If the amplifier output exceeds the safe continuous operating area of the drivers, an RMS limiter is automatically activated, holding down the level of the D-2 MidBass output (the Hi and Sub outputs are unaffected). A separate, true excursion limiter is activated when the amplifier's instantaneous output voltage exceeds the DS-2 excursion limits.

The operation of the SpeakerSense circuitry is indicated by three LEDs located on the front panel to the left of the Preset Panel.

- **Sense** — This LED functions as a signal presence indicator, verifying that the Sense connections back from the power amplifier are made and passing signal. The indicator will be lit whenever a signal is present, or flicker at low signal levels.
- **Limit** — These indicators come on whenever the MidBass protection limiters are activated. The RMS LED signals activation of the RMS limiter, and the Ex LED indicates that of the excursion limiter. A moderate amount of flashing of these indicators is acceptable.

## Power Amplifier Gain

To assure proper operation of the D-2 SpeakerSense limiters, the DS-2/D-2 System requires a power amplifier with a voltage gain in the range of 14 dB (minimum) to 32 dB (maximum). Optimum amplifier gain for the system is between 20 dB and 26 dB. Use of high-power amplifiers with voltage gain exceeding 32 dB may endanger the DS-2 drivers.

To see whether your power amplifier's gain exceeds 32 dB, watch the D-2 Sense and Limit indicators while the system is operating. If the LEDs all turn red at moderate levels, the amplifier gain is outside the safe limits and must be adjusted. The procedure requires a sine wave oscillator and RMS-reading voltmeter.

- Connect the oscillator to the amplifier input and the voltmeter to its output. Adjust the oscillator frequency to 1 kHz, and its output amplitude to 1 vrms.
- Apply power to the amplifier and observe the output voltage. Adjust the amplifier level control according to the chart below.

Gain	Output (1 Vrms in)
20 dB	10.0 Vrms
23 dB	14.1 Vrms
27 dB	22.4 Vrms
30 dB	31.6 Vrms

## System Configurations

The DS-2/D-2 System is designed to supplement Meyer Sound MSL-3 and MSL-10A reinforcement loudspeaker systems in the 50-160 Hz range. Optionally, a subwoofer system such as the Meyer Sound 650-R2 may be used to cover the lowest octave of the audio spectrum. Each of these Meyer Sound systems utilizes its own Control Electronics Unit (the M-3T for the MSL-3, M-10A for the MSL-10A, and B-2A for the 650-R2).

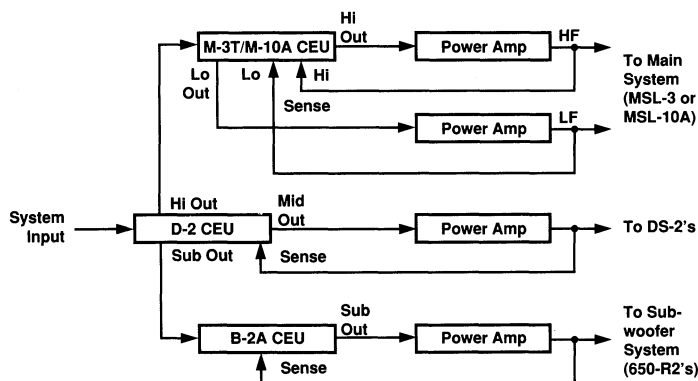
When these systems are used with the D-2/DS-2 system, the optimum interconnection scheme is the serial configuration shown in Figure A, below. Here, the D-2 functions as the master system input and its MidBass Output feeds the DS-2 amplifiers, accommodating up to four amplifiers with separate Sense connections for each. The D-2 Hi Output feeds the M-3T or M-10A CEU, and its Sub Output feeds the B-2A CEU.

In the serial configuration, the D-2 provides the optimum crossover points to fit the DS-2s into the system response. The D-2's Sub Polarity switch affords a convenient method for controlling the subwoofer polarity to accommodate acoustical or positional factors that affect the subwoofer crossover. Because the D-2 Attn control affects only its MidBass Output, independent control of the level of each system component is preserved.

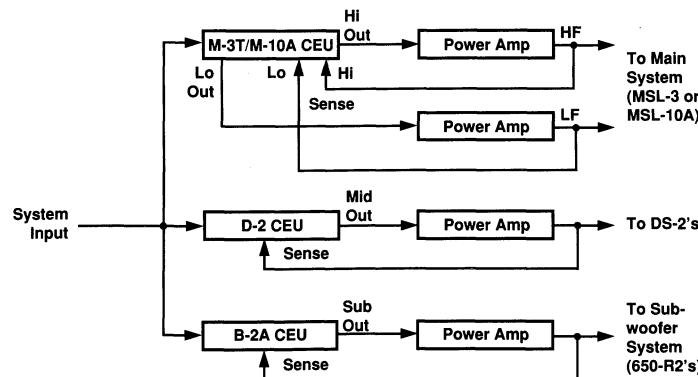
In larger touring systems, it may be more convenient to connect the system as shown in Figure B. Here, the inputs to all CEUs are fed in parallel from the console output. In this case, where MSL-3s are used for the main system, the M-3T Lo Cut switch should be engaged to provide the correct response at crossover.

The parallel configuration works reasonably well, but is somewhat less optimal than the serial configuration since it does not afford as much control of the system crossover points as does the serial configuration. The response of the subwoofers, in particular, will overlap significantly with that of the DS-2s, causing a low-frequency response peak. The effect may be augmented in the case of very large DS-2 arrays, since the low frequency limit of the mid-bass array moves down as the array size increases.

In most cases, therefore, systems connected in parallel will require equalization to achieve the best response. The preferred equalizer is the Meyer Sound CP-10 Complementary Phase Parametric. Such equalization should be guided by accurate, high-resolution measurement equipment such as the Meyer Sound SIM® System II. (For more information on SIM, contact your dealer or Meyer Sound.)



**A. Serial Input Configuration**



**B. Parallel Input Configuration**

**Specifications**

Input Type <sup>1</sup>	Balanced ISO-Input™ 10k ohms, 5k ohms per leg
Output Type	Active push-pull, 300 ohms output impedance
Maximum Input Level	
Balanced	+21 dBu
Unbalanced	+21 dBu
Maximum Output Level	
Balanced	+26 dBu
Unbalanced	+20 dBu
Hum and Noise <sup>2</sup>	<-90 dBV
Dynamic Range <sup>3</sup>	120 dB
Sense Inputs	100k ohms true differential, opto-isolated
Crossover Frequency	
Upper	160 Hz
Lower (Mode switch in "DS-2 & Sub" position)	65 Hz
Driver Protection Circuitry	RMS limiter, true excursion limiter
Indicators	
Sense/Amplifier Gain Detect	Green/Red LED
RMS Limiter, Excursion Limiter	Red LEDs
Power Supply	Green LED
Controls	
Front Panel	Input attenuator, AC power switch
Preset Panel	Mode switch, sub polarity switch, DS-2 power control
Rear Panel	Ground lift switch, AC range switches
Connectors	
Balanced Input/Output	3-pin XLR (A-3) female/male (front panel input optional)
Sense Inputs	Banana jacks (4 dual)
Power	100-120/200-240V AC, 50/60 Hz (rear-panel switchable)
Physical Dimensions	19" W x 1¾" H x 7¾" D, standard rack mount
Weight	8 lbs. (3.6 kg)

**Note 1:**

**ISO™ Input: Pins 1, 2 and 3 are transformer-isolated, and shell is connected to chassis/AC earth ground. Pin 3 positive for positive pressure output.**

**Note 2:**

**"A"-weighted, unbalanced.**

**Note 3:**

**"A"-weighted noise floor to maximum output.**