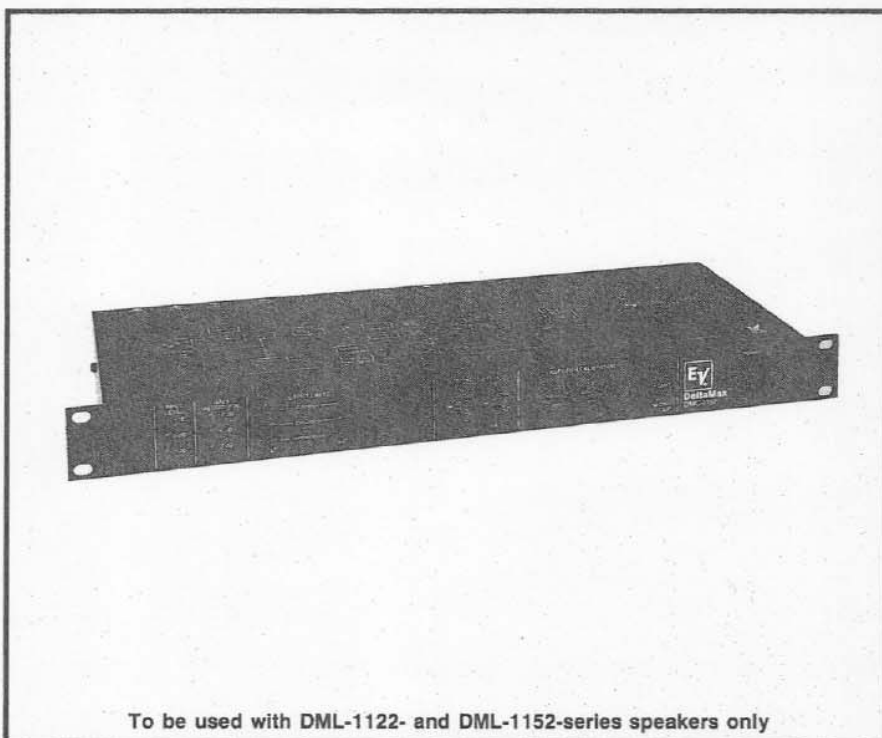




To be used with DML-1122- and DML-1152-series speakers only

Electro-Voice®

a MARK IV company

DMC-1122A

DMC-1152A

DeltaMax™

**Controllers for
DML-1122- and
DML-1152-Series
Speaker Systems**

SYSTEM SPECIFICATIONS¹

System Frequency Response, DMC-1122A with DML-1122-series speaker, on Axis in Anechoic Environment:

70-20,000 Hz, ± 3 dB (see Figure 1)

System Frequency Response, DMC-1152A with DML-1152-series speaker, on Axis in Anechoic Environment:

50-20,000 Hz, ± 3 dB (see Figure 2)

CONTROLLER SPECIFICATIONS

Basic Function:

Two-way crossover, frequency and time-delay equalizer, and protection system for DML-1122- and DML-1152-series speaker systems, respectively

Channel Configuration:

Single channel two-way; two sense channels (LF and HF)

Signal-Path Equalization, DMC-1122A (see Figure 3),

LF EQ: -3 dB at 32 Hz, $+15$ dB at 80 Hz

LF Time Delay: 0.03 ms at crossover frequency

Crossover Frequency: 1250 Hz

Crossover Filter: 4th-order Linkwitz-Riley

HF EQ: 4th-order optimized for DML-1122-series driver and horn

Signal-Path Equalization, DMC-1152A (see Figure 4),

LF EQ: -3 dB at 28 Hz, $+14$ dB at 50 Hz

LF Time Delay: 0.49 ms at crossover frequency

Crossover Frequency: 1100 Hz

Crossover Filter: 4th-order Linkwitz-Riley

HF EQ: 4th-order optimized for DML-1152-series HF driver and horn

Total Harmonic Distortion, 20-20,000 Hz:

0.03% typical, 0.1% maximum

Noise, Each Output, 20-20,000 Hz

Bandwidth, Typical:

-86 dBu²

Signal Input,

Type: Active differential

Maximum Level: $+18$ dBu

Impedance: 27,000 ohms and .0015 μ f

Common-Mode Range: ± 24 volts

CMRR, Typical: -55 dB

Connector: Female 3-pin XLR-type

Signal Outputs (LF and HF),

Type: Transformer floating differential

Maximum Level: $+18$ dBu

Minimum Load Impedance for Full Level: 600 ohms

Protection: Safe for short circuit or ± 25 volts dc

Connectors: Male 3-pin XLR-type

Sense Channel Inputs (LF and HF),

Type: Active differential

Impedance: 200,000 ohms differential

Connector: Two binding posts/banana jacks, spaced 1.9 cm (0.75 in.)

Controls (all except power switch are screwdriver operated):

Output level, each output; amplifier limit calibration, each sense channel; amplifier clip/limit switch; power switch

Indicators:

3-LED input level (-20 , 0, and $+16$ dBu)

3-LED gain reduction (3, 6, and 12 dB)

3-LED LF output limits (amplifier, excursion, temperature)

3-LED HF output limits (amplifier, excursion, temperature)

1-LED power on

Power Requirements:

100, 120, 220, or 240 volts ac, 50-60 Hz, 13 watts

Chassis Construction:

Painted steel

Color:

Gray front panel and black chassis with white graphics

Mounting and Dimensions:

EIA 19-inch rack mount, 4.45 cm (1.75 in.) high, 20.9 cm (8.25 in.) behind panel (excluding connectors) (see Figure 6)

Supplied with front-panel security cover for controls

Weight,

Net: 3.6 kg (8 lb)

Shipping: 4.2 kg (9 lb, 3 oz)

1. See DML-1122- and DML-1152-series engineering data sheets for detailed speaker system specifications.
2. 0 dBu is 0.775 volts RMS sine wave.

DESCRIPTION:

The DeltaMax™ system consists of a two-way biamped, high-performance speaker system and a companion electronic controller. The electronic protection technology in the DMC-1122A and DMC-1152A DeltaMax controllers allows the loudspeakers to be operated at full capacity with maximum fidelity and reliability. The DML-1122 and DML-1152 series are compact full-range loudspeaker systems, intended for high-level sound reinforcement in touring sound and permanent installations.

The electronic circuits are designed to provide optimum audio performance, even when the audio drive level is increased for maximum loudness. A high-performance compressor, with automatically variable compression ratio, is controlled by special speaker modeling circuits to provide speaker temperature protection and amplifier anti-clip limiting. Speaker excursion protection is accomplished with a voltage-limit system which operates from an excursion-vs.-frequency modeling circuit.

Front-panel indicator lights show input level, compressor gain reduction, and HF and LF output limit thresholds for excursion, temperature, and amplifier power. Operation of all protection functions is completely automatic.

The DeltaMax system will work with any professional power amplifier within the stated power and gain range. See Amplifier Requirements section.

IMPORTANT CAUTION!

Optimum performance and maximum protection of the DML-1122- and DML-1152-series speaker systems can only be attained in conjunction with the DMC-1122A and DMC-1152A electronic controllers, respectively. **DO NOT DRIVE THESE SPEAKERS WITH THEIR ELECTRONIC CROSSOVERS OR PROCESSORS. DO NOT USE THE DMC-1122A AND DMC-1152A CONTROLLERS ON OTHER SPEAKERS AS ALL PARAMETERS ARE SPECIFIC TO THE DML-1122 AND DML-1152 SERIES.**

PRINCIPLE OF OPERATION

Refer to the block diagram in Figure 5.

The signal path consists of an active differential input circuit which drives a VCA, which is controlled by a special compressor circuit. After the VCA is a fourth-order Linkwitz-Riley crossover circuit.

The high-frequency output has an equalizer which flattens the frequency response of the constant-directivity horn and compression driver from their natural mass-loaded response characteristic.

The low-frequency output has a delay equalizer to compensate for the relative physical positioning of the LF and HF drivers, and their actual phase response at the crossover frequency. An underdamped second-order high-pass filter, combined with a variation of a first-order shelving low-boost function provides optimum low-frequency response with the DeltaMax loudspeakers.

The output sections provide transformer-isolated, low-distortion differential drive signals.

The compressor has both a signal control input and a compression-ratio control input. The control voltages are developed from the sense channels. The primary dynamic action (gain reduction) of the compressor is controlled by a dual-time-constant detection circuit driven by rectified audio sensed at the speaker terminals. The compression ratio above the threshold is determined by the

condition of the speakers. Temperature modeling circuits will increase this compression ratio when it becomes necessary. Also, compression will increase to prevent amplifier clipping, when this function is selected.

The compressor gain transfer has a gradually changing slope across its threshold. This soft-knee design reduces the audibility of the compression. The compression ratio above the threshold can vary from 1:1 (no effect) to about 20:1 (hard limiting).

A dynamic frequency-sensitive voltage limiter at the output of each frequency band protects the speakers from excursion damage. If one of the speakers approaches its excursion limit, the peak of the output waveform is clamped at a level above which excursion damage would occur.

INSTALLATION

Mounting

The unit is one rack-space high, 4.5 cm (1.75 in.), and fits a standard EIA 19-inch rack. Mount the DMC controller in a rack cabinet near the power amplifier(s) to make wiring easy.

Grounding

A widely accepted grounding technique for audio systems is the star connection (single-point) ground. The final configuration will be determined by the size of the system and the equipment used in the system. However, the star-connection grounding system is recommended as a starting point.

Never lift the third wire safety ground of the ac power cable. It protects against possible shock hazard.

Ventilation

Adequate ventilation should be provided in the rack to maintain a reasonable operating temperature. Under any conditions the ambient temperature inside the rack cabinet should not exceed 60°C (140°F).

Security

A security cover and attachment screws are supplied to protect the control settings against uninvited adjustments.

CONNECTIONS

The DeltaMax controller has XLR-type connectors for signal input and outputs. Pin 1 is shield, pin 2 is high (+), and pin 3 is low (-). The input is active differential and the outputs are transformer-balanced differential. When used in an unbalanced configuration,

pin 3 should be shorted to ground.

The LF and HF sense connections are dual binding post/banana jacks (five-way binding posts). The sense inputs are active differential, enabling connection to the output of mono-bridged amplifiers, and are high impedance, allowing small gauge wire (e.g. #22 AWG) to be used for the sense connection. Although current flow in the sense lines is miniscule, they must be capable of handling the high-output voltages of the amplifiers.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The controller shall consist of a single-channel two-way crossover circuit with fourth-order Linkwitz-Riley filters, a compressor system with variable compression ratio and dual-time-constant detector, a voltage clamping circuit for excursion protection, and speaker modeling circuits which control the compressor and clamp circuits to prevent destruction of the high-frequency and low-frequency drivers due to excessive drive level without shifting high-pass, low-pass or crossover filters. Included in the signal path shall be special frequency and time-delay equalization to provide flat (± 3 dB) on-axis anechoic frequency response in the range of 50 Hz to 20 kHz for the DML-1152-series loudspeakers and 70 Hz to 20 kHz for the DML-1122-series loudspeakers.

The total harmonic distortion through the signal path shall be nominally 0.03% and no greater than 0.1% from 20 Hz to 20 kHz, within the output's passband. The noise at the outputs, measured with a 20-20,000-Hz equivalent-noise-bandwidth filter, shall be typically -86 dBu.

The signal input shall be active differential with a level capability of +18 dBu, and a female 3-pin XLR-type connector. The outputs shall be transformer isolated with a level capability of +18 dBu into 600 ohms, and male 3-pin XLR-type connectors. There shall be two active differential sense inputs for speaker protection, with binding-post/banana-jack connectors.

Front panel controls shall include LF and HF level controls, LF and HF amplifier calibration controls, and a switch to control the amplifier limit function, all accessible with a screwdriver, after removing the security cover. There shall be a power switch on the front panel.

Front panel indicators shall include input level, gain reduction, LF output limits (for

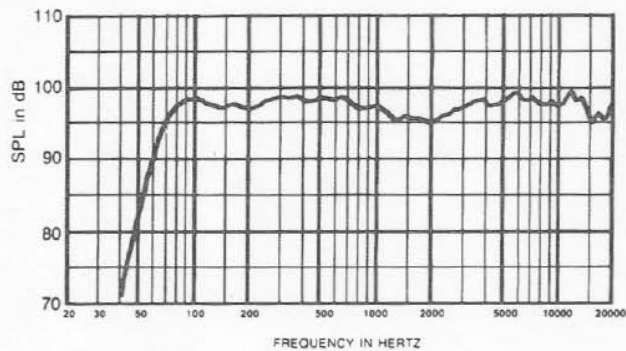


FIGURE 1
DMC-1122A/DML-1122-Series Frequency Response,
on Axis in Anechoic Environment

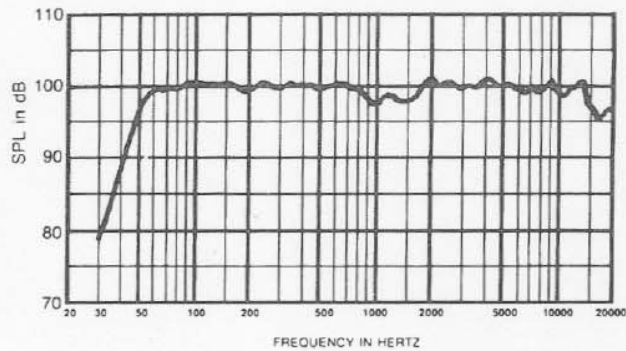


FIGURE 2
DMC-1152A/DML-1152-Series Frequency Response,
on Axis in Anechoic Environment

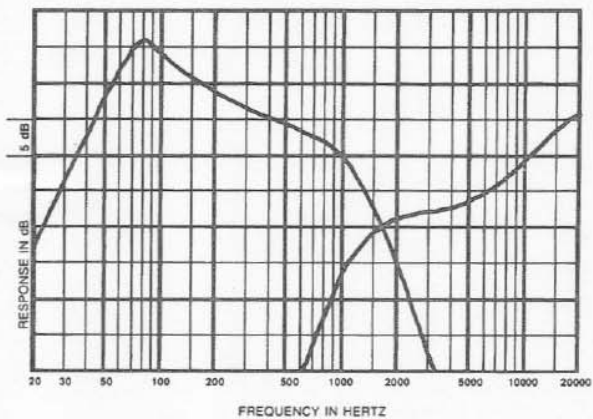


FIGURE 3 — DMC-1122A Frequency Response

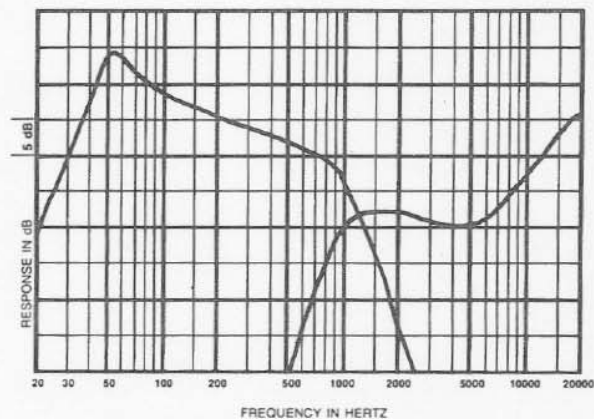


FIGURE 4 — DMC-1152A Frequency Response

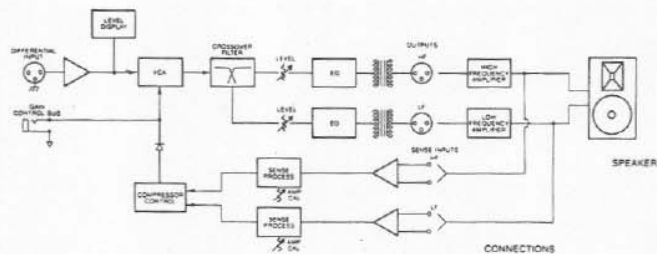


FIGURE 5 — Block Diagram

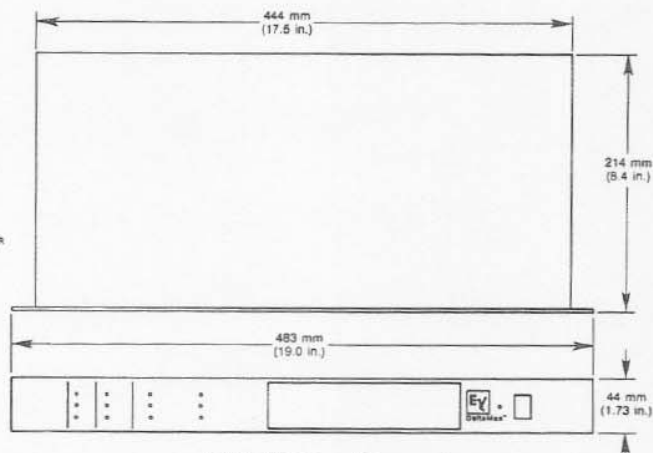


FIGURE 6 — Dimensions

amplifier, excursion and temperature), HF output limits (for amplifier, excursion and temperature), and power on.

The chassis shall be made of painted steel with a gray front panel and white graphics. It shall be rack mountable in a 19-inch EIA rack, and be 4.45 cm (1.75 in.) high and 21.4 cm (8.4 in.) deep, excluding connectors. The unit shall weigh 3.6 kg (8 lb). The unit shall be an Electro-Voice DMC-1122A or Electro-Voice DMC-1152A.

WARRANTY (Limited)

Electro-Voice DML Speakers and Speaker Systems (excluding active electronics) are guaranteed for five years from the date of original purchase against malfunction due to defects in workmanship and materials. Electro-Voice DML flying hardware (DMS rigging straps, fittings and enclosure-mounted flying hardware) is guaranteed for one year from date of original purchase against malfunction due to defects in workmanship and materials. Electro-Voice DMC electronic controllers are guaranteed for two years from date of original purchase against malfunction due to defects in workmanship and materials. Electro-Voice DML speaker accessories are guaranteed for one year from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not extend to finish, appearance items, burned coils, or malfunction due to abuse or operation under other than specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the limitation or exclusion of incidental or consequential damages, so the above exclusion may not apply to you. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee. A list of authorized warranty service agencies is available from Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107 (AC/616-695-6831); or Electro-Voice West, 8234 Doe Avenue, Visalia, CA 93291 (AC/209-651-7777). Or Mark IV Audio Canada, Inc., 345 Herbert St., Gananoque, Ontario, Canada K7G 2V1 (AC/613-382-2141); Electro-Voice, S.A., Kellenstrasse 5, CH-2563 IPSACH, Switzerland (41)32-51-58-33; Electro-Voice, Ltd., 2-5-80 Izumi, Suginami-ku, Tokyo, Japan 168, (81)3-325-7900; Mark IV Vertriebs GmbH, Larchenstrasse 99, 6230 Frankfurt/Main 80, Germany (49)69-380-100; Electro-Voice Pty., 59 Waratah St., Kirrawee N.S.W. 2232, Australia (61)2-521-5322. This warranty gives you specific legal rights and you may also have other rights which vary from state to state or province to province.

Service and repair address for this product:
Electro-Voice, Inc., 600 Cecil Street,
Buchanan, MI 49107.

Specifications subject to change
without notice.



ELECTRO-VOICE, INC., 600 Cecil Street, Buchanan, Michigan 49107

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