**SPECIFICATIONS**

- **Frequency Response (measured in farfield, calculated to one meter on axis, swept sine wave, one watt into midbass section, anechoic environment; see Figure 1):**
  - 150-20,000 Hz
- **Recommended Crossover Frequencies:**
  - 160 Hz, 1,600 Hz
- **Efficiency, MB/HF:**
  - 1625% over an octave
- **Long-Term Average Power-Handling Capacity** (per EIA RS-426-A 1980; see Power Handling Section),
  - MB/HF: 600/150 watts
- **Maximum Long-Term Average Midband Acoustic Output:**
  - 130 watts
- **Sensitivity (SPL at one meter, indicated input power, anechoic environment, band-limited pink-noise signal), MB/HF,**
  - 1/1 Watt: 105.5/111.5 dB
  - 600/150 Watts: 133.5/133.5 dB
- **Beamwidth (angle included by 6-dB-down points on polar responses, indicated one-third-octave bands of pink noise; see Figures 3 and 4),**
  - 400-20,000 Hz, Horizontal:
    - 60° (+20°, −10°)
    - 900-20,000 Hz, Vertical:
      - 40° (+20°, −10°)
- **Directivity Factor $$R_d$$ (Q), 600- to 20,000-Hz Median** (see Figure 5),
  - 19.5 (+14.0, −10.1)
- **Directivity Index $$D$$, 600- to 20,000-Hz Median** (see Figure 5),
  - 10.9 dB (+2.4 dB, −3.1 dB)
- **Distortion, 120 dB SPL at 1 Meter, Shaped Spectrum (see Figure 6),**
  - Second Harmonic, 200 Hz: 1.6%
  - 1,000 Hz: 1.4%
  - 3,000 Hz: 1.9%
  - 10,000 Hz: 2.5%
  - Third Harmonic, 200 Hz: 0.9%
  - 1,000 Hz: 1.3%
  - 3,000 Hz: 0.1%
  - 10,000 Hz: 1.8%
- **Transducer Complement,**
  - MB: Two DL10X 10-inch drivers, 60° x 40° fiberglass horn
  - HF: Two DH1A variant compression drivers, HP64S, 60° x 40° horn
- **Impedance (see Figures 2 & 7),**
  - Nominal, MB/HF: 8/ohms
  - Minimum, MB/HF: 4.6/7.0 ohms
- **Input Connections:**
  - Two Neutrik Speakon® NL4MPR
- **Enclosure Materials, Structural, All Models:**
  - Manifold Technology®
- **Dimensions,**
  - Height: 91.4 cm (36.00 in.)
  - Width: 57.2 cm (22.50 in.)
  - Depth: 75.9 cm (29.88 in.)
- **Net Weight:**
  - 93.0 kg (205 lb)
  - Shipping Weight:
    - 97.5 kg (215 lb)

**DESCRIPTION**

The Electro-Voice MTH-2.5/64B midbass/high-frequency loudspeaker system is a member of the family of Manifold Technology® MT loudspeaker systems designed for high-level sound reinforcement in concert-sound touring and permanent-installation applications. The MTH-2.5/64B is an active, two-way, horn-loaded, 60° x 40° constant-directivity system with a rectangular enclosure, utilizing two high-power midbass drivers in the midbass-frequency band and two high-power compression drivers in the high-frequency band. Both the midbass and high-frequency horns may be rotated in the enclosure. This configuration results in remarkably high acoustic output from a small enclosure. The MTH-2.5/64B may be combined with other members of the MT-2 and MT-4 loudspeaker family. The combination of the MTH-2.5/64B loudspeaker system and the MTL-2B low-frequency loudspeaker system form the MT-2/94B full-range system. There are two models in the MTH-2.5/64B series: the MTH-2.5/64B (carpeted finish with flying hardware), and the MTH-2.5/64BC (carpeted finish without flying hardware).

The MTH-2.5/64B midbass section utilizes two high-efficiency, low-distortion DL10X 10-inch midbass drivers coupled to a unique phase plug (U.S. Patent No. 4,718,517). An Aperiodic Enhancer™, this phase plug extends the upper-end response by making use of the fact that only the apex area of the cone near the voice coil is in motion at the higher frequencies, and automatically adjusts the acoustic loading to maximize acoustic output. The output of the two drivers is summed through a midbass manifold (U.S. Patent No. 4,923,021) and coupled to a 60° x 40° constant-directivity horn. The square midbass horn may be rotated to tailor the directivity of the system to match specific acoustic requirements.

The MTH-2.5/64B high-frequency section contains two modified DH1Amp-16 compression drivers manifolded onto a 60° x 40° constant-directivity horn. The modified DH1Amp-16 (16-ohm, 1.375-inch bolt-on version of the DH1A, with a modified magnetic structure) features a powerful motor structure and titanium diaphragm for maximum linear acoustic output, extended high-frequency response and accurate transient response. The outputs of the two drivers
are summed through the MTA-22 high-frequency manifold (U.S. Patent No. 4,629,029) and coupled to an HP645 horn. The HP645 is a member of the HP TransPlanar™ horn series (U.S. Patent No. 4,685,532) that features beamwidth-control variances as part of the waveguide to correct the very-high-frequency beamwidth anomalies that typically plague 2.0-inch-throat horns. The square high-frequency horn may be rotated to tailor the directivity of the system to match specific acoustic requirements.

All versions of the MTH-2.5/64B are constructed of 0.75-inch-thick, 14-ply birch plywood and extremely well braced to survive the rigors of the road. The MTH-2.5/64BCF (flying) and MTH-2.5/64BCF (non-flying) systems are covered with black Ozie Super TNT carpeting, the most rugged in the industry. The MTH-2.5/64BCF system incorporates a two-point flying system. All models feature a black nylon cloth grille. The RD-1 removable dolly is available for transporting the MTH-2.5/64BCF and MTH-2.5/64BC on their sides.

APPLICATIONS

The MTH-2.5/64B is ideal for any professional concert-sound-touring or permanent-installation application requiring high sound pressure levels with low distortion from a compact enclosure. The Manifesto Technology® design maximizes the acoustic output per enclosure frontal area, acoustic output per enclosure bulk volume, and acoustic output per enclosure weight of the loudspeaker system. This enables loudspeaker arrays to be constructed that are significantly smaller and lighter than would be obtainable with conventional loudspeaker-system designs. The MTH-2.5/64B may be combined with other members of the MT-2B and MT-4B loudspeaker family, providing the array designer a variety of coverage angles, acoustic output and enclosure sizes from which to choose. For full-range applications, the MTH-2.5/64B may be combined with any of the MTL-2 or MTL-4 low-frequency sound-reinforcement systems. (The MTL-2B is a low-frequency system with a rectangular enclosure that is dimensionally identical to the MTH-2.5/64B.) For optimal acoustic performance of the MT loudspeaker systems, the Electro-Voice Dx34 digital electronic crossover/equalization/time-delay/limiter unit is recommended. Careful attention was paid to details to provide both the touring company and sound contractor a convenient and timesaving sound reinforce- ment package. The MTH-2.5/64B dimensions were chosen for efficient truck pack and high-density array design. The systems may be stacked four high and three wide (or three high and four wide) in a standard truck box, enabling 12,000 watts of sound system to be accommodated in only three feet of truck-floor length. The two-point rigging system offers flexible array design and efficient assembly. To facilitate service, a variety of screws, washers and hex key wrenches are provided with each loudspeaker system. In addition, there are wiring diagram labels in convenient locations inside the enclosure.

FREQUENCY RESPONSE

The MTH-2.5/64B frequency response (shown in Figure 1) was measured on axis in the farfield in an anechoic environment using a swept sine wave signal. The Dx34 digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. No high-pass crossover filters were applied to the low end of the midbass section. One watt of power (2.83 volts rms at 500 Hz) was applied to the midband of the midbass section. The sound pressure level was normalized for an equivalent one-meter distance.

DIRECTIVITY

The directional response of the MTH-2.5/64B was measured in an anechoic environment at a distance of 6.1 meters (20 feet) using 1/3-octave-filtered pink noise. A full spherical measurement system was used. The Dx34 digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. The polar response of the loudspeaker system at selected 1/3-octave frequencies is shown in Figure 3. The frequencies selected are fully representative of the polar response of the system. The beamwidth of the system utilizing the complete 1/3-octave polar data is shown in Figure 4. The Directivity Factor, Q, and Directivity Index, D, are shown in Figure 5. Complete AcoustacADD™ data is available for the MTH-2.5/64B loudspeaker system.

DISTORTION

Distortion for the MTH-2.5/64B (shown in Figure 6) was measured on axis in the farfield in an anechoic environment with an input signal that would result in a sound pressure level of 120 dB at one meter. The Dx34 digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. A 24-dB per-octave, high-pass crossover filter at 160 Hz was applied to the low end of the midbass section. A frequency spectrum typical of close-miked rock music was employed. The sound pressure level was normalized for an equivalent one-meter distance. Plots of second- and third-harmonic distortion are shown referenced to the fundamental.

POWER-HANDLING CAPACITY

Electro-Voice components and systems are manufactured to a quality level to ensure reliability in continuous use in arduous real-life conditions. Besides utilizing industry-standard power tests, extreme in-house power tests which push the performance boundaries of the loudspeakers are also performed for an extra measure of reliability. The MT systems are rated as per the EIA RS-426-A 1980 Loudspeaker Power Rating, Full Range Test, which uses a shaped-random-noise signal to simulate typical music to test the mechanical and thermal capabilities of the loudspeakers. The Dx34 digital electronic unit was used to provide the necessary crossover filters and equalization during power testing. Specifically, the MTH-2.5/64B passes the EIA RS-426-A 1980 power test with the following test parameters:

**Midbass Section:**

P****max****: 600 watts

Test Voltages: 45.5 volts rms

R****in**** (1.15 x R****n****): 3.45 ohms each input

**High-Frequency Section:**

P****max****: 150 watts

Test Voltages: 30.2 volts rms

R****in**** (1.15 x R****n****): 6.10 ohms

CROSSOVER, EQ AND TIME DELAY

The usable frequency ranges of the individual MTH-2.5/64B sections are 150-2,000 Hz for the midbass section and 1,200-20,000 Hz for the high-frequency section. Crossover frequencies of 160 and 1,600 Hz with 24-dB-per-octave slopes are recommended. For full-range applications, one of the MTL-2 low-frequency loudspeaker systems is recommended for use with the MTH-2.5/64B. For optimal acoustic performance, the Electro-Voice Dx34 digital electronic crossover/equalization/time-delay unit is recommended.

The Dx34 is a programmable, two-in-four/out, digital electronic unit which may be configured for either two-way, mono three-way plus subwoofer, or mono four-way operation. Each output section includes crossover filters, equalization, limiting, time delay, polarity and gain adjustment; the parameters of which all may be programmed and stored by the user. In the mono, three-way configuration, the Dx34 includes a factory preset for optimal performance of the MT-2/64B loudspeaker system (the MTH-2.5/64B and MTL-2B systems combined) that utilizes Linkwitz-Riley 24-dB-per-octave crossover filters at 160 and 1,600 Hz. Each output section has equalization specifically matched to the loudspeaker system, and time delay set to achieve zero lobing error and time alignment between frequency bands. In addition, the output levels of each frequency band are set so that, with the output level controls set in the seld B position, the loudspeaker system will have a flat frequency response in an anechoic environment when used with amplifiers having identical gain.

ELECTRICAL CONNECTION AND SYSTEM WIRING

Electrical connections to the MTH-2.5/64B are made on the back of the enclosure via a 4-pin connector. There are two connectors on the input panel to allow parallelling of other MTH-2.5/64B systems. The Neutrik Speakon® NL4MPR is used for both connections. One mating Neutrik Speakon® NL4FC cable-end connector is supplied with each loudspeaker system. The pin assignments are as follows:

| Pin 1+: MB (+) | Pin 1+: MB (+) |
| Pin 2+: HF (+) | Pin 2+: HF (+) |

The midbass section has two 8-ohm drivers; however, the acoustic loading of the phase plugs and horn increases their electrical impedance to a nominal 16 ohms each. These two drivers are wired in parallel, resulting in a single 8-ohm nominal load connected to Pins 1+/1-. The high-frequency section has two 16-ohm drivers wired in parallel, resulting in a single 8-ohm nominal load connected to Pins 2+/2-. A wiring diagram of the loudspeaker system is shown in Figure 7. The electrical impedance versus frequency is shown in Figure 2.

FLYING THE MT SYSTEMS

A manual entitled the MT Flying Manual is available from Electro-Voice, and is included with each flying MT loudspeaker system. A brief introductory overview is included here. The MT Flying Manual should be consulted for complete structural specifications and detailed information on safely suspending and using the MT systems.

The MTH-2.5/64BCF (carpeted) is the version of the MTH-2.5/64B loudspeaker system that includes flying hardware. The MT systems incor-
porate a unique two-point flying system that permits a wide range of vertical angle adjustment, and offers maximum flexibility in array design and implementation for both touring sound and permanent installations. The quick-release, aircraft L-track-type, hardware design allows arrays of loudspeakers to be assembled (and disassembled) very quickly, and offers such flexibility in the vertical angling of cabinets that the projector's projection angle can be modified as necessary. Furthermore, all of the flying MT-2B and MT-4B loudspeaker models include the same rigging hardware, allowing the different models to be mixed as necessary throughout an array.

The rigging track accepts New Haven NH32102-1 double-stud ring fittings. Individual rigging points have typical break-strength ratings of 3,750-4,000 pounds; which translates to working-load ratings of 750-800 pounds for a 5:1 safety factor. (Consult the MT Flying Manual for specific structural strength ratings and limitations.) The enclosures may be oriented with the rigging track on the sides of the enclosure, or on the top and bottom, and may be daisy chained together using a #2 Phillips screwdriver, each individually coupled to a midbass phase plug, then collectively manifol­ded and coupled to a 60° x 40° constant-directivity horn, have a total input impedance of 8 ohms, and have a power rating of 600 watts as per EIA RS-426-A 1980. The high-frequency section shall operate from 150-20,000 Hz with a sensitivity of 105.5 dB for one watt at one meter, and consist of two 10-inch cone drivers, each individually coupled to a midbass phase plug, then collectively mani­folded and coupled to a 60° x 40° constant-directivity horn, have a total input impedance of 8 ohms, and have a power rating of 150 watts as per EIA RS-426-A 1980. The overall system shall have a uniform on-axis frequency re­sponse from 150-20,000 Hz, and shall have a nominal horizontal beamwidth of 60° and a nominal vertical beamwidth of 40°. The loudspeaker system shall have an enclosure constructed from 0.75-inch thick, 14-ply birch plywood, be finished with a black carpet (or a black textured vinyl), have a black nylon grille, and have a two-point rigging system that will accept New Haven NH32102-1 type double-stud ring fittings (if applicable). The loudspeaker enclosure shall be 91.4 cm (36.00 in.) high, 57.2 cm (22.50 in.) wide, and 76.2 cm (29.98 in.) deep, and shall weigh 93.0 kg. (205 lb.) The loudspeaker sys­tem shall be the Electro-Voice MTH-2.5/64B (MTH-2.5/64BCF or MTH-2.5/64BC).

UNIFORM LIMITED WARRANTY

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) personnel damage or malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repair or replacement and return to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. Other Rights: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Speakers and Speaker Systems are guaranteed against malfunction due to defects in materials or workmanship for a period of five (5) years from the date of original purchase. The Limited Warranty does not apply to burned voice coils or malfunctions such as cone and/or coil damage resulting from improperly designed enclosures. Electro-Voice active electronics associated with the speaker systems are guaranteed for three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Electro-Voice Flying Hardware (including enclosure-mounted hardware and rigging accessories) is guaranteed against malfunction due to defects in materials or workmanship for a period of one (1) year from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Electro-Voice Accessories are guaranteed against malfunction due to defects in materials or workmanship for a period of one (1) year from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (616/695-6831 or 800/234-6831).

Specifications subject to change without notice.