Electro-Voice®

DH2As1/ DH2As1-16

High-Frequency Reproducers

- **"Short nose" yields compact size for installation in tight places**
- **1.3-inch exit for MTA-22 two-driver Manifold Technology® adapter**
- **1,000-Hz minimum crossover**
- **Pure titanium dome provides extended high-frequency response**
- **Lightweight aluminum voice coil for maximum efficiency**
- **Unique, convex-drive phase plug**
- **Large, #10 screw terminals accept a pair of 12-gauge wires**

SPECIFICATIONS

The following specifications are in accordance with or exceed the AES Recommended Practice for Specification of Loudspeaker Components Used in Professional Audio and Sound Reinforcement (AES2-1984/ANSI S4.26-1984). See AES Recommended Practice section.

Power Frequency Response (see Figure 1):
1,000-20,000 Hz (essentially flat 1,000-3,000 Hz with 6-dB-per-octave roll-off to 20,000 Hz, rapid roll-off beyond)

Nominal Impedance, on HP Series Horns above 1,000 Hz,
DH2As1:
8 ohms
DH2As1-16:
16 ohms

Minimum Impedance at 7,000 Hz,
DH2As1:
6 ohms
DH2As1-16:
12 ohms

dc Resistance,
DH2As1:
4.5 ohms
DH2As1-16:
11.0 ohms

Long-Term Average Power Capacity on HP Horns, Indicated Bands of Pink Noise, 8-Ohm Impedance Assumed,
24 Hours, 10-dB Crest Factor:
30 watts (1,000-20,000 Hz)
2 Hours, 6-dB Crest Factor:
40 watts (1,000-10,000 Hz);
60 watts (1,500-15,000 Hz)

Nominal Efficiency, 1,000- to 3,000-Hz Pink Noise, 8-Ohm Impedance Assumed:
25%

Maximum Long-Term Acoustic Power Output (24 hours):
7.5 watts

Recommended Minimum Crossover Frequency:
1,000 Hz

Sound Pressure Level at 1 Meter, 1 Watt Input Averaged from 1,000 Hz to 5,000 Hz,[1]
HP64, HP66, HP94:
111 dB
HP420 horn:
114 dB
HP640 horn:
112 dB
HP940 horn:
110 dB
HP1240 horn:
108 dB

Displacement Limit of Diaphragm:
6.1 mm (0.024 in.)

Throat Diameter:
3.30 cm (1.30 in.)

Voice-Coil Diameter:
5.08 cm (2.00 in.)

Voice-Coil Construction:
Pure aluminum wire wound on high-temperature polyimide coil form

Diaphragm Construction:
Integral all-titanium construction consisting of spherical diaphragm dome and geometrically optimized suspension; high-temperature, long-duration-cure adhesive bonds the coil form to the diaphragm.

Thermal Rise After Power Test:
37 °C (99 °F)

1. Two DH2As1's on a MTA-22 adapter mounted on indicated horns, measured on axis in the far field with 1 watt input of band-limited pink noise from 1,000-5,000 Hz and calculated to 1 meter equivalent by inverse square law.

Electrical Connection:
#10 screw terminals, each of which will accept a pair of 12-gauge wires and any smaller size.

Polarity:
A positive voltage applied to the positive (red) terminal produces a positive acoustic pressure in the throat

Mechanical Connection:
Bolt on, four equally spaced holes on a 8.89-cm (3.5-in.) diameter, 1/4-20 threads

Dimensions (see Figure 3),
Overall Diameter:
17.1 cm (6.75 in.)
Overall Depth:
9.22 cm (3.63 in.)

Net Weight:
5.35 kg (11.8 lb)

Shipping Weight:
5.72 kg (12.6 lb)

DESCRIPTION

The Electro-Voice DH2As1/DH2As1-16 is a "short-nose" version of the DH2A/DH2A-16 with a 3.30-cm (1.3-in.) exit, for use on the MTA-22 Manifold Technology® two-driver adapter and, singly, where space is at a premium. The DH2As1/DH2As1-16 is a high-performance, high-frequency driver capable of unprecedentedly high acoustic power output over a wide frequency range.

This performance results from careful engineering and design, involving expert choices of materials and advanced driver architecture which are ideally suited for efficient presentation of high-quality musical and communication program material. Features of the DH2As1/DH2As1-16 include:

1. A unique, geometrically optimized diaphragm consisting of a one-piece ribbed

DH2As1/DH2As1-16 SPECIFICATION GRAPHICS

All measurements obtained using two DH2As1-16's on an MTA22 manifold adapter, 8-ohm nominal impedance, except Figure 6, which used a single DH2As1 8-ohm driver.

FIGURE 1 — Axial Frequency Response 1 Watt/1 Meter on HP640 Horn

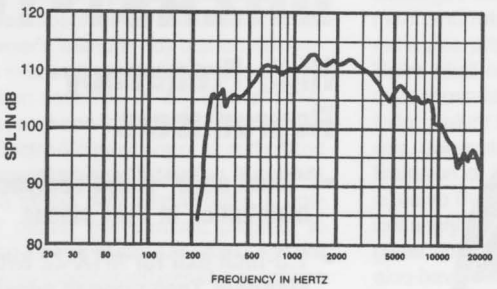


FIGURE 2 — Axial Frequency Response with and without EQ, 1 Watt/1 Meter into midband on HP640 Horn

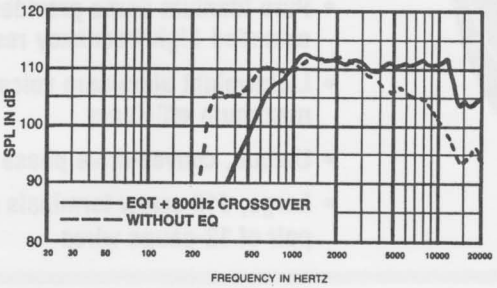


FIGURE 3 — Dimensions

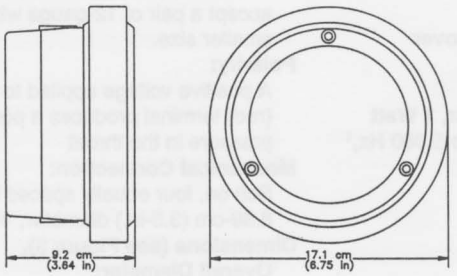


FIGURE 4 — Distortion Response at 10% (12 watts) Maximum Input Power on 2-Inch Plane-Wave Tube

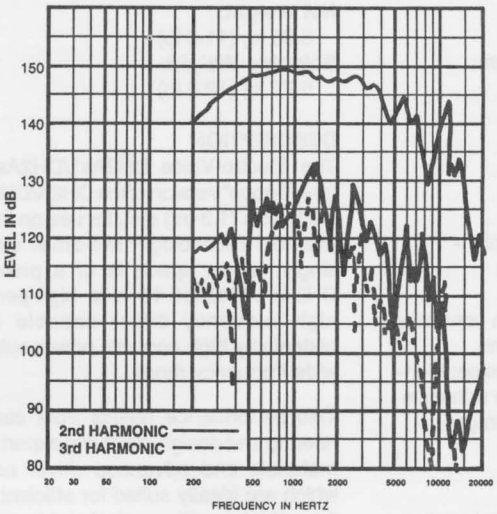


FIGURE 5 — Distortion Response at 10% (12 watts) Maximum Input Power on HP640 Horn

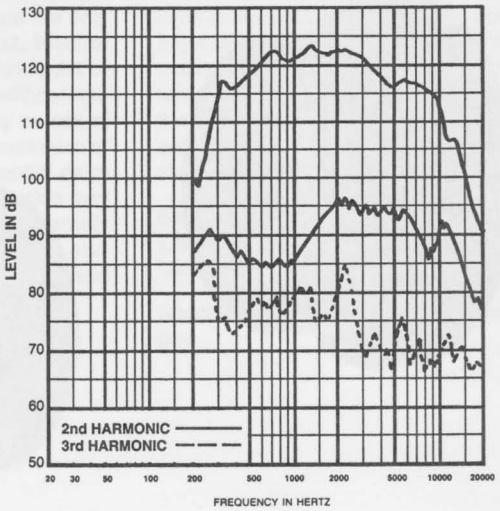


FIGURE 6 — Impedence Response, Plane-Wave Tube, DH2As1 8-Ohm Driver

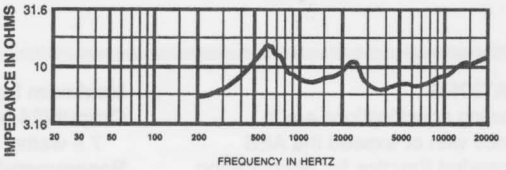


FIGURE 7 — Impedance Response, on HP640 Horn

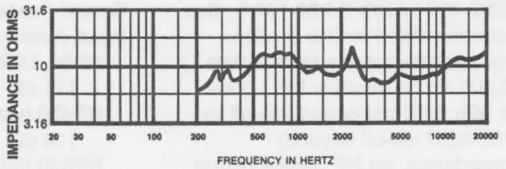
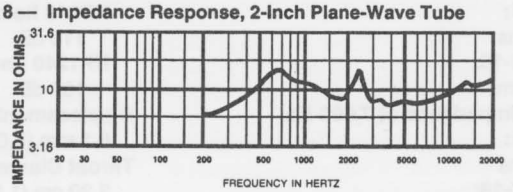


FIGURE 8 — Impedance Response, 2-Inch Plane-Wave Tube



dome and suspension fabricated from pure titanium. Advanced metal forming and processing technology developed by EV engineers allows this high-elongation diaphragm design to be formed from stock a mere 0.031-mm (0.0012-in.) thick. The combination of diaphragm geometry and material choice gives the DH2As1/DH2As1-16 diaphragm an ideal combination of superb high-frequency response and resistance to fatigue from stress.

2. A precision, lightweight voice coil made from pure aluminum wire, which gives the DH2As1/DH2As1-16 high magnetic motor strength and maximum efficiency. Proprietary high-temperature winding and electrical bonding technologies assure excellent coil reliability and performance.

3. A new, convex-drive phase-plug design giving optimum upper-octave response.

4. Screw-type input terminals which are an EV exclusive. They provide an unusually positive electrical connection. Each terminal will easily accept a pair of 12-gauge wires, and any smaller size. These special terminals were designed using the results of an extensive field survey of consultants and sound-system installers.

5. The DH2As1/DH2As1-16 was conceived and designed to be used with the MTA-22 Manifold Technology® adaptor without the addition of extra "plumbing." It has a 1.3-inch exit, allowing two drivers to be bolted directly to the MTA-22. In this configuration, the DH2As1-16 (16 ohm) would be used so the drivers could be connected in parallel to present a nominal 8-ohm load to the amplifier. The power-handling specifications listed can be doubled when two drivers are used with the MTA-22.

6. The DH2As1 8-ohm driver is available to be used with any 1.3-inch horn with the correct bolt-hole configuration (four 1/4-20 threaded holes on a 3.5-inch diameter).

The DH2As1/DH2As1-16 has been designed and optiminzed for today's systems where space and weight are premium. A consequence of this optimization is an increased flare rate. This means Electro-Voice does not recommend the DH2As1/DH2As1-16 be used with Electro-Voice large format horns (HP9040, HP6040 and HP4020) where traditional crossover points of 500 Hz or 800 Hz would be used. A mimimum crossover frequency of 1.000 Hz is recommended with 1,600 Hz being more typical when used as a single device without the MTA-22.

RECOMMENDED HORNS

The following Electro-Voice horns are recommended for use with the DH2As1/DH2As1-16 and MTA-22: HP64, HP66, HP94, HP420, HP640, HP940 and HP1240. While the DH2As1/DH2As1-16 may be used with the large-format HP4020, HP6040 and HP9040 horns, the 1,000-Hz minimum crossover frequency of the DH2As1/DH2As1-16 means that the low-frequency directivity control of these horns cannot be taken advantage of (see above).

IMPEDANCE

The impedance response of the DH2As1 on a 2-inch plane-wave tube is shown in Figure 6. Figure 8 shows the impedance response of two DH2As1-16's on a 2-inch plane-wave tube, and Figure 7 shows the impedance response of these two drivers on the HP640 horn.

CROSSOVER AND EQUALIZATION

As with all horn/driver combinations that combine high overall efficiency with constant directivity, the DH2As1/DH2As1-16 and HP series horns provide "raw" or unequalized frequency response that rolls off above 3,000 Hz or so at about 6 dB per octave. Figure 2 shows the DH2As1/DH2As1-16 on an HP640 horn, with and without equalization. The equalization has been provided by an Electro-Voice XEQ-2/XEQ-3 crossover/equalizer equipped with the EQT equalization module. While the equalization of a constant-directivity horn/driver combination can be achieved with a conventional one-third-octave equalizer, the use of the XEQ-2/XEQ-3 crossover/equalizer with the appropriate accessory EQ module is recommended. This way, the broadband equalization required by the horn/driver combination is supplied by the crossover/equalizer network, and the one-third-octave equalizer can be devoted to correcting the more subtle room- and array-related response anomalies. The following EQ modules are available for the DH2As1/DH2As1-16:

Module	Horn(s)
EQR	HP940
EQS	HP1240
EQT	HP640
EQV	HP420
EQW	HP64, HP66, HP94

Refer to the XEQ-2/XEQ-3 engineering data sheets for more information on XEQ-2/XEQ-3 performance and application.

DISTORTION

Distortion levels at 10% maximum input power (12 watts) on a 2-inch plane-wave tube are shown in Figure 4; Figure 5 describes distortion levels (at the same input power) on the HP640 horn.

FIELD REPLACEMENT

In case of voice-coil or diaphragm failure, the diaphragm cover subassembly can be replaced by simply removing the driver from the front housing, then replacing the cover subassembly itself by the removal of six cover screws. A replacement kit with instructions may be ordered under Electro-Voice Part No. 81161XX (DH2As1) and 82816XX (DH2As1-16) from the Electro-Voice Service Department in Buchanan, Michigan. If desired, the complete driver may be returned for service.

AES RECOMMENDED PRACTICE

The DH2As1/DH2As1-16's specifications conform to the AES Recommended Practice for Specification of Components Used in Professional Audio and Sound Reinforcement (AES2-1984/ANSI S4.26-1984). This recommended practice was developed over a number of years by consultants, manufacturers and government agencies from around the world, so that the detailed performance information required in professional applications could be provided in a unified format. The recommended practice has been published in the October, 1984, issue of the Journal of the Audio Engineering Society (vol. 26, pp. 771-780). Individual copies of the recommended practice are available from the Audio Engineering Society, 60 East 42nd Street, New York, New York 10165, USA. Also appearing in this issue is an article which comments on the recommended practice from an engineering point of view (C.A. Henricksen, "Engineering Justifications for Selected Portions of the AES Recommended Practice for Specification of Loudspeaker Components," pp. 763-769). The comments in this article will be particularly of interest to those not involved in the day-to-day design and testing of loudspeakers.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker shall be of the compression-driver type consisting of a 0.031-mm (0.0012-in.) thick titanium diaphragm joined to an edge-wound aluminum ribbon voice coil on a polyimide form.

The nominal impedance shall be 8 ohms (DH2As1) or 16 ohms (DH2As1-16). The loudspeaker shall exhibit essentially flat power response from 1,000 to 3,000 Hz, with a smoothly rolled-off response from 3,000 to 20,000 Hz. Its mid-band efficiency shall not be less than 25%. Its sensitivity, when two drivers are mounted on an EV HP640 horn, shall be 112 dB (1 W/1 m) with a 1,000- to 5,000-Hz pink-noise signal applied.

The loudspeaker shall be capable of handling a 30-watt, 1,000- to 20,000-Hz pink-noise signal with a 10-dB crest factor (300 watts peak) for a period of 24 hours. In addition, it shall be capable of handling a 40-watt, 1,000- to 10,000-Hz pink-noise signal and a 60-watt, 1,500- to 15,000-Hz pink-noise signal, both with 6-dB crest factors for a period of two hours.

The loudspeaker shall have a diameter of 17.1 cm (6.75 in.) and a depth of 9.2 cm (3.63 in.). It shall have a 3.30-cm (1.3-in.) throat opening, with four 1/4-20 threaded bolt holes on an 8.89-cm (3.5-in.) diameter for mounting.

The unit shall weigh no more than 5.35 kg (11.8 lb).

The loudspeaker shall be the Electro-Voice model DH2As1 (DH2As1-16) compression driver.

WARRANTY (Limited)

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 Lim-

ited 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) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided 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.

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

Specifications subject to change without notice.

ELECTRO-VOICE a MARK IV company **600 Cecil Street, Buchanan, Michigan 49107**
MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ OKLAHOMA CITY, OK ■ GANANOQUE, ONT.

Part Number 532206 — 9406