

## T180 Compact Subwoofer

- EVX-180A 4-inch diameter voice-coil woofer for remarkable low-frequency output
- Internal 300-Hz filter for use as an "add-on" subwoofer in non-biamp systems
- Filter is easily bypassed for biamp operation
- 1,000-watt continuous program power capacity
- 600-watt long-term RMS power capacity
- Compact design allows stacking with other T-Series systems
- Rugged, road-ready cabinet; metal grille; black carpet finish

### SPECIFICATIONS

**Typical Axial Frequency Response (swept one-third-octave pink noise, anechoic environment, 4 volts at 10 feet, normalized for 1 watt/1 meter; see Figure 1)**

50-300 Hz

**Low-Frequency 3-dB-Down Point:**

50 Hz

**Usable Low-Frequency Limit (10-dB-Down Point):**

43 Hz

**Half-Space Reference Efficiency:**

3.4%

**Long-Term Average Power-Handling Capacity per ANSI/EIA RS-426-A 1980 (see Power-Handling Capacity section):**

600 watts

**Maximum Woofer Acoustic Output:**

20.4 watts

**Sensitivity (SPL at 1 meter, 1 watt input, anechoic environment, band-limited pink noise signal, 50 to 200 Hz):**

97 dB

**Dispersion Angle Included by 6-dB-Down Points on Polar Responses:**

Essentially omnidirectional

**Distortion, 0.1 Full Power Input at 100 Hz (see Figure 2),**

**Second Harmonic:**

-49 dB, 0.35%

**Third Harmonic:**

-38 dB, 1.26%

**Transducer Complement:**

EVX-180A

**Box-Tuning Frequency:**

50 Hz

**Recommended Crossover Frequency:**

200 Hz or below

**Recommended Crossover Slope:**

12-dB per octave, minimum

**Impedance,**

**Nominal:**

8 ohms

**Minimum:**

7.4 ohms

**Input Connectors:**

Two Neutrik Speakon® NL4MPR-V

**Materials,**

**Enclosure:**

Black carpet covered 3/4-inch void-free plywood

**Grille:**

Black perforated metal

**Enclosure Dimensions (see Figure 3),**

**Height:**

84.2 cm (33.1 in.)

**Width:**

48.5 cm (19.1 in.)

**Depth:**

60.0 cm (23.6 in.)

**Net Weight:**

36 kg (79 lb)

**Shipping Weight:**

42 kg (92.5 lb)

### DESCRIPTION

The Electro-Voice T180 is a 600-watt compact subwoofer loudspeaker system that has been specifically designed to complement the Electro-Voice T-Series stage systems. It provides rock-solid low-frequency performance to below 50 Hz for a variety of applications. The T180 comes with an internal passive filter that allows it to be added onto existing full-range systems without the extra expense of biamping. The T180 is supplied from the factory with this filter in series with the woofer. For biamp operation, this filter can be easily bypassed.

### AS AN ADD-ON SUBWOOFER (PASSIVE MODE)

The T180 contains an internal passive 300-Hz low-pass filter. This allows it to be connected in parallel with a typical full-range speaker system to provide substantial additional low-frequency reinforcement. In this "passive mode," the T180 should be treated as another 8-ohm load in parallel with the full-range speaker. For

example, if a sound system is operating in stereo with one 8-ohm speaker on each channel, then the net load is 8-ohms per channel. If a pair of T180 systems is then added to this system (one per channel), the load on the amplifier would then be 4 ohms per channel. If, on the other hand, a mono sound system is operating with two 8-ohm speakers on a single channel amplifier, the net load is 4 ohms. If a pair of T180 systems is then added to this system, the load on the amplifier would be 2 ohms. In either of these situations, the "passive mode" of operating the T180 will provide solid low-frequency support with minimum midrange interaction. Care must be taken not to abuse the amplifier by connecting impedances which are too low.

This filter is easily bypassed if the end user wishes to use an active crossover (biamp mode).

### BIAMP MODE

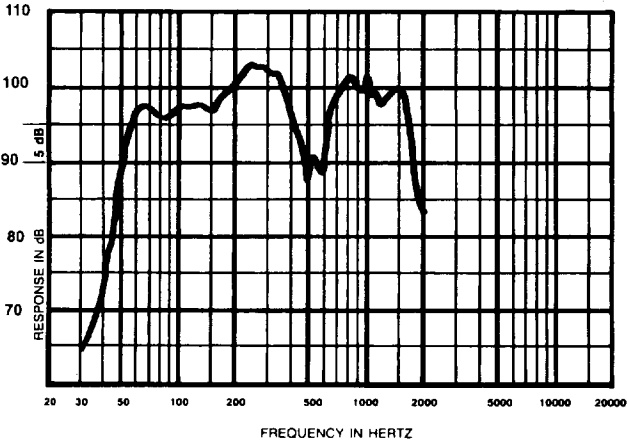
For the ultimate performance, the T180 should be used in conjunction with an active crossover with a minimum slope of 12 dB per octave and a crossover frequency in the range of 100 to 200 Hz. The T180 should then be put in "biamp" mode. This is done by removing the input panel and moving the red wire from the terminal marked "+ WIRE, PASSIVE MODE" to the terminal marked "+ WIRE, BIAMP MODE," then replacing the input panel. The high power-handling capacity of the T180 permits the use of amplifiers with a rating of up to 1,200 watts RMS into 8 ohms.

### USE IN MULTIPLES

The T180 may be used in multiples to increase acoustic output. A 6-dB increase in maximum acoustic output occurs when two speaker systems are placed side-by-side and paralleled, yielding a 4-ohm load. For operation at very-low frequencies, the woofer cones "mutually couple," acting as one system with twice the

T180 SPECIFICATION GRAPHICS

FIGURE 1: Frequency Response Axial Response 1 watt 1 meter Biamp Mode



Axial Response 1 watt 1 meter Passive Mode

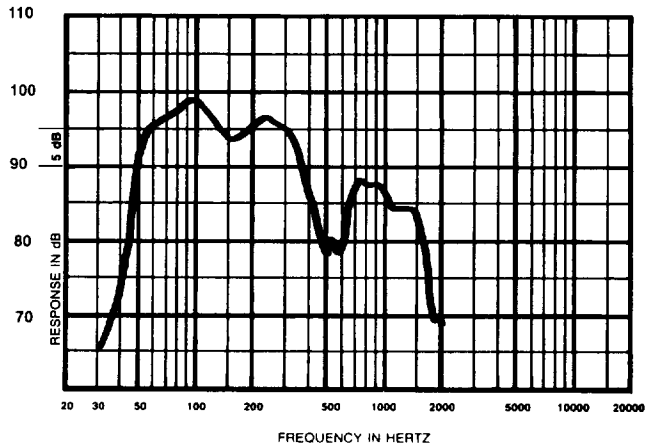


FIGURE 2: Distortion Distortion response (60 w)  
10% rated input power (on axis 1 meter from system)

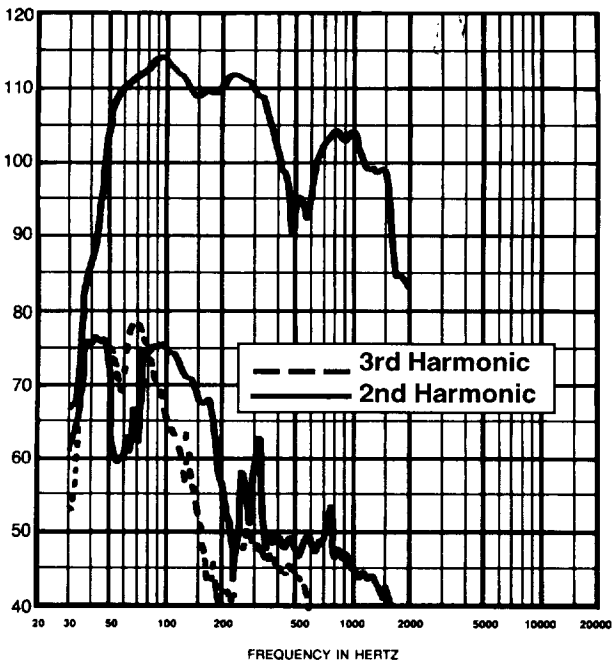


FIGURE 3: Dimensions

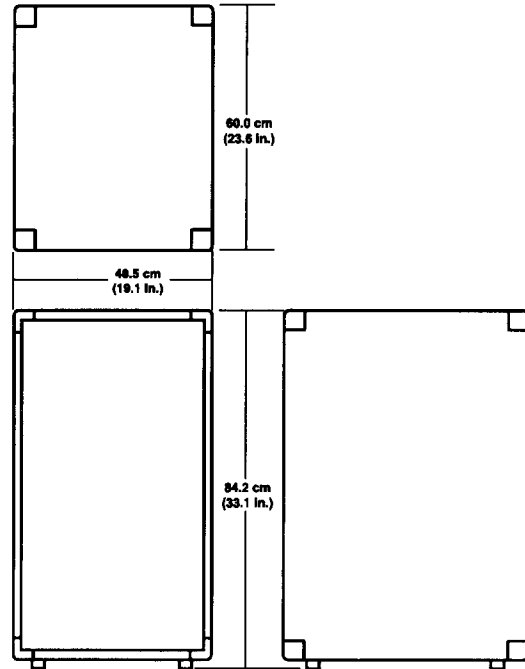


FIGURE 4: Impedance, Biamp Mode

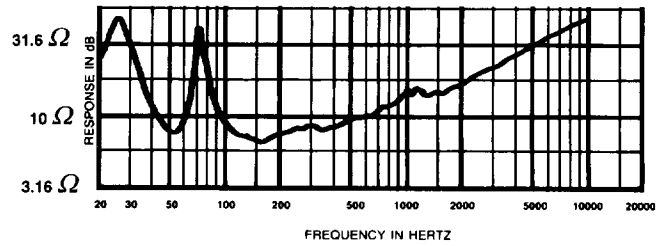
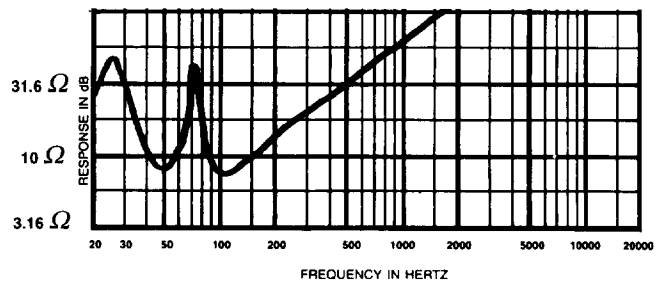


FIGURE 5: Impedance, Passive Mode



effective cone area and power-handling capacity of a single system. Increasing the cone area doubles the efficiency, providing a 3-dB increase in sound pressure level. The doubled power capacity provides the potential for an additional 3-dB gain in maximum acoustic output.

Mutual coupling occurs when the frequency is such that the center-to-center distance between the two woofer manifolds is less than about one-half wavelength. When the distance is greater than one-half wavelength, as would occur if two T180's were widely spaced, the level increase tends to be limited to the 3-dB power-handling increase.

The woofer is connected using one of the Neutrik Speakon® jacks on the input panel on the rear of the enclosure. A parallel woofer can be connected using the other connector. As always, care must be taken not to abuse the amplifier by connecting impedances which are too low.

### SPEAKER PROTECTION

The T180, like all other vented systems, experiences rapidly increasing cone excursion below the box-tuning frequency. The acoustic output is also decreasing rapidly; therefore, it is sensible to protect the T180 and maximize the power output of the subwoofer by inserting an active high-pass filter with a slope of at least 12-dB-per-octave into the circuit. The cutoff frequency should be between 32 and 40 Hz. Such subpassband filters are found in many commercially available crossovers and equalizers, including items manufactured by Electro-Voice.

### FREQUENCY RESPONSE

The T180's frequency response was measured in Electro-Voice's large anechoic chamber at a distance of 3 meters (10 feet) with a swept sine-wave input. Figure 1 has been averaged and corrected for 1 watt at 1 meter.

### ENCLOSURE CONSTRUCTION

Intended to be used as a portable speaker system, the T180 is ruggedly constructed of 3/4-inch void-free plywood. All joints are dado cut, and the cabinet is finished with a densely woven, abuse-resistant carpet that is both attractive and highly durable. A full-length steel grille protects the woofer from damage. Large, heavy-duty metal corner protectors, firmly secured rubber feet and recessed handles complete the picture, ensuring that the T180 speaker system is ideally suited for a long and reliable life on the road.

### T180 CONNECTIONS

The T180 is equipped with two paralleled Neutrik Speakon® NL4MPR-V connectors, selected for their ability to reliably deliver to the speaker components the high currents delivered by high-wattage power amplifiers. The mating connector is the Neutrik Speakon® NL4FC. The NL4FC is a four-pin connector. The usual two-conductor speaker cable should be wired to pins 1+ and 1- of the connector.

Neutrik Speakon® cables, connectors and wiring accessories are available from Pro Co Sound, Inc., and Whirlwind Music Distributors, Inc. To find your local Pro Co, Whirlwind or Neutrik dealer, contact:

Pro Co Sound, Inc.  
135 E. Kalamazoo Ave.  
Kalamazoo, MI 49007  
616/388-9675

Whirlwind Music Distributors, Inc.  
P.O. Box 1075  
Rochester, NY 14603  
716/663-8820

Neutrik USA, Inc.  
195-S3 Lehigh Ave.  
Lakewood, NJ 08701  
908/901-9488

### SERVICE

In the unlikely event the T180 requires service, the woofer can be replaced or serviced from the front. A service data sheet is available from Electro-Voice.

### POWER-HANDLING TEST

Electro-Voice components and systems are manufactured to exacting standards, ensuring they will hold up, not only through the most rigorous of power tests, but also through continued use in arduous, real-life conditions. The EIA Loudspeaker Power Rating Full Range (ANSI/EIA RS-426-A 1980) uses a noise spectrum which mimics typical music and tests the thermal and mechanical capabilities of the components. Electro-Voice will support relevant additional standards as and when they become available. Extreme, in-house power tests, which push the performance boundaries of the woofers, are also performed and passed to ensure years of trouble-free service.

Specifically, the T180 passes ANSI/EIA RS-426-A 1980 with the following values:

$$R_{SR} = 5.75 \text{ ohms } (1.15 \times R_E) \\ P_{E(MAX)} = 600 \text{ watts} \\ \text{Test Voltage} = 58.75 \text{ volts RMS,} \\ 117.5 \text{ volts peak}$$

The "peak" power-handling capacity of a woofer is determined by the peak test voltage amount. For the T180, a 117.5-volt peak test voltage translates into 2,400 watts short-term peak power-handling capacity. This is the equivalent of four times the "average" power-handling capacity and is a peak that can be sustained for only a few milliseconds. However, this sort of short-duration peak is very typical in speech and music. Provided the amplifier can reproduce the signal accurately, without clipping, the woofer will also perform accurately and reliably, even at these levels.

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker shall be a compact vented-box type. The low frequencies shall be reproduced with a 600-watt (ANSI/EIA RS-426-A 1980) EVX-180A 46-cm (18-in.) woofer. The system will reproduce the frequencies from 50 to 300 Hz. The system shall be capable of producing average sound levels in excess of 124.5 dB in the long term, and short-term peaks of 130.5 dB.

The loudspeaker shall have an internal, 6-dB-per-octave low-pass filter, allowing it to be used as an add-on system. This filter will be bypassable for biamp operation.

The enclosure shall be constructed of black, carpeted, multilayer plywood and have a metal grille which attaches with six screws. The dimensions shall be 84.2 cm (33.1 in.) tall, 48.5 cm (19.1 in.) wide and 60.0 cm (23.6 in.) deep. The system shall weigh 36 kg (79 lb). Neutrik Speakon® connections shall be provided.

The loudspeaker system shall be the Electro-Voice T180 compact subwoofer.

### UNIFORM LIMITED WARRANTY STATEMENT

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) 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 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 and 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 an enclosure design inappropriate for the program material. Electro-Voice flying hardware (including enclosure-mounted hardware and rigging accessories) is guaranteed for one (1) year from the date of original purchase. 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.