

Sentry® 100EL Professional Powered Monitor System

- Near-field monitor for post production and live sound
- Wide, uniform coverage
- Extremely smooth frequency response
- High power handling
- High-performance, built-in, 50-watt amplifier for remote operation

SYSTEM SPECIFICATIONS

Frequency Response, 1 Meter on Axis,
Anechoic Environment, Swept One-Third-
Octave Pink Noise ± 3 dB:

45-18,000 Hz

Dispersion Angle Included by 6-dB-Down
Points, 10 Foot Microphone Distance,
Anechoic Environment, One-Third Octave
Bands of Pink Noise,

Horizontal:

250-6,300 Hz ($158^\circ \pm 32^\circ$)

8,000-20,000 Hz ($55^\circ \pm 18^\circ$)

Vertical:

250-6,300 Hz ($140^\circ \pm 40^\circ$)

8,000-20,000 Hz ($52^\circ \pm 13^\circ$)

Crossover Frequency:

2,000 Hz

**Sound Pressure Level at 1 Meter,
Maximum Gain, 0 dBu into Balanced
Input, Anechoic Environment, 300-2,000
Hz Average:**

108 dB

Optional Accessory:

SRB-7 rack-mount/wall-mount brackets

Dimensions (see Figure 2),

Height:

43.8 cm (17.25 in.)

Width:

30.5 cm (12.0 in.)

Depth:

29.2 cm (11.5 in.)

Net Weight:

15.0 kg (33 lb)

AMPLIFIER SPECIFICATIONS

**Continuous Sine Wave Power (6-ohm
load, 120 V line):**

50 watts

Dynamic Range:

92 dB minimum

**Residual Noise (maximum gain, 600-ohm
source, 20-20,000 Hz bandwidth):**

400 μ V maximum

Power Bandwidth (-3 dB):

30-20,000 Hz

Frequency Response ($\pm 1/2$ dB):

40-20,000 Hz

**Total Harmonic Distortion (1,000 Hz, 50
watts):**

.05% typical

Low Frequency Filter,

Slope:

12 dB/octave

-3 dB Point:

28 Hz

Balanced Input,

Sensitivity (50 watt output):

.775 V (0 dBu)*

Impedance:

30 kilohms

Maximum Level:

8.0 V (+20 dBu)*

Common Mode Rejection:

40 dB minimum

Connector Type:

3-pin XLR-type female

Polarity (for positive sound pressure):

Pin 2 positive

Unbalanced Input,

Sensitivity (50 watt output):

.39 V (-6 dBu)*

Impedance:

10 kilohms

Maximum Level:

30 V (+32 dBu)*

Connector Type:

1/4-inch phone jack

Polarity (for positive sound pressure):

Tip positive

Power Requirement,

Domestic Model:

120 watts, maximum, 105-130 V 60 Hz

Fuse:

1 1/2 A Slo-Blow, Type 3AG,
MDL or MDX

Export Model:

210-260 V 50/60 Hz

Fuse:

800mA slow acting, Type FTT

DESCRIPTION

The Electro-Voice Sentry® 100EL powered monitor speaker system combines the advantages of the Sentry® 100A monitor with a self-contained, high-performance power amplifier. It is designed with the broadcast/recording studio engineer in mind, although it is well suited for a wide variety of professional applications. The Sentry 100EL offers uniform frequency response and dispersion across a wide range.

A Super-Dome™ tweeter is employed to faithfully reproduce program material at high levels, with response out to 18,000 Hz and uniform dispersion (120° at 5,000 Hz). The low-frequency section is an 8-inch direct radiator woofer installed in an optimally vented enclosure with fourth-order Butterworth tuning.¹ The optimally vented design is responsible for the unusual combination of small size, extended bass response and high efficiency. Such performance is simply not available in other enclosures of similar size.

The Sentry 100EL is housed in a utility cabinet wrapped in a special scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rack mounting. When coupled with the SRB-7 rack-mount/wall-mount kit, the

1. A.N. Thiele, "Loudspeakers in Vented Boxes: Part 1," J. Audio Engineering Society, Vol. 19, No. 5, pp 386-387 (1971).

*Referenced to .775 Volt, RMS.

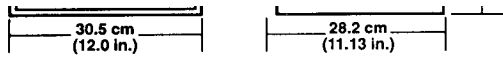


FIGURE 3 — Directivity vs Frequency

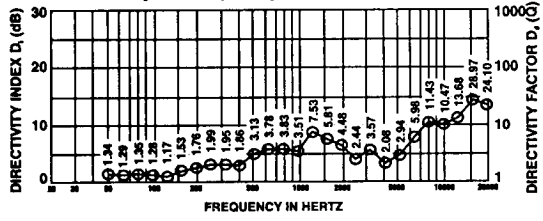
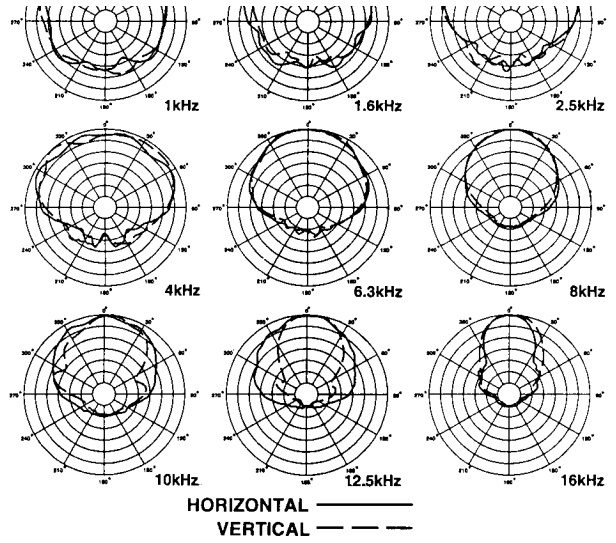
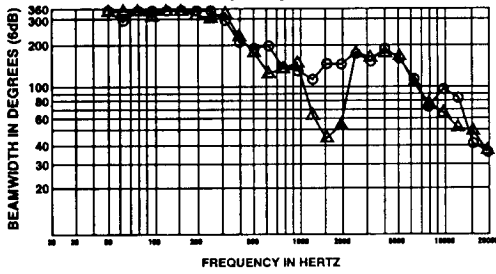


FIGURE 4 — Beamwidth vs Frequency



Sentry 100EL can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel-reinforced grille is covered with a custom gray cloth. This provides maximum protection and a pleasing, aesthetic quality.

AMPLIFIER

A number of advantages are realized by providing, within the enclosure, a power amplifier which is matched to the requirements of the speaker system. No longer must space be provided for a power amplifier mounted externally, or in a rack. By eliminating the metal enclosure from this extra component, additional space is achieved.

The user also is assured that the amplifier is ideally mated to the speaker system. There is no power lost in the resistance of the connecting cable between the amplifier and speaker. This allows electrical damping of the system to remain optimal in all installations, as it is no longer compromised by this resistance. Maximum amplifier power is chosen to optimize acoustic level capability, while minimizing the possibility of speaker damage due to inadvertent signal overload.

Most importantly, a sharp cutoff, high-pass filter is included which has been precisely tailored to the Sentry 100EL response. It provides a dramatic reduction of energy-wasting, sub-sonic signals in the amplifier and woofer. By controlling low-frequency cone excursion and amplifier power, program material may often be reproduced at higher levels without distortion and without any reduction in acoustic low-frequency response.

The Sentry 100EL may be driven from any line-level signal source. An XLR-type connector is provided for use with balanced sources, while a 1/4-inch phone jack accommodates unbalanced lines. Use only the appropriate connector; both should not be connected at the same time. **DO NOT CONNECT EITHER INPUT TO A POWER AMPLIFIER.** Although both inputs are protected against voltage peaks of up to 100 volts, connection from an external power amplifier is redundant and invariably results in increased noise and distortion.

Because the impedance of the inputs is high (bridging), a number of Sentry 100EL systems may be connected to a signal source. For example, up to sixteen may be paralleled across an unbalanced 600-ohm line, or fifty systems across a balanced 600-ohm line. Each system is designed so that a positive-going signal on pin 2 of the XLR-type connector or the tip contact of the phone jack results in an outward movement of the woofer cone.

A system level control is located on the front of the enclosure which varies the gain of the amplifier from zero over a useful range of more than 30 dB. Additionally, a red indicator lamp shows when ac power is applied to the Sentry 100EL. A replaceable ac power fuse is located on the rear panel of the system. The rating and type are identified beside the fuse holder. Under normal conditions, even with momentary overloads, the fuse will not blow. In case of repeated failure, consult a qualified service facility.

LOUDSPEAKER RESPONSE DUE TO THE ACOUSTICAL ENVIRONMENT

Several factors must be considered when determining the overall response of a speaker system in any listening environment. Physical characteristics of the room itself, and placement of speakers and listener can have considerable affect on sound pressure level (SPL) capability, perceived and/or measured frequency response and stereo imaging.

As pointed out in several texts on room acoustics, as the source-listener distance increased, the SPL decreased in the direct field at a steady rate (inverse square law: 6 dB drop for every doubling of distance) until a certain distance is reached. This point is often called the critical distance (D_c). Beyond this point, the SPL approaches a constant value (the reverberation field). The listening position in the sound field determines the amount of acoustic power output of the speaker system needed to produce a certain sound pressure level at the engineer's ears. Generally speaking, the amount of power output needed from the speaker/amplifier system decreases as the room becomes smaller and/or more reverberant (shorter critical distance). In most cases, the audio engineer will be working well within the direct field. If indeed this is the case, the amplifier power requirement is entirely dependent on the loss in SPL due to inverse square law.

The low-frequency response of the overall system can be adversely affected by poor placement of the monitor speakers themselves. The Sentry 100EL was designed for 1/4- to 1/2-space use. This requires that the speaker system be mounted as close as possible to floor or ceiling, and wall surfaces. Placement in loose cavities or resonant mountings can also seriously degrade the overall response.

VENTILATION

The metallic portion of the enclosure back serves as a thermal radiator to maintain the amplifier operating temperature within design limits. It is normal for this panel to become quite warm in use, particularly when the system is operated at high levels for a prolonged period of time. When installing the cabinet, use care to ensure that there is at least one inch of space behind the panel to allow free circulation of air. Maximum temperature rise should not exceed 70° F, with normal operating temperature well below this value.

CROSSOVER NETWORK

The integral crossover network is a 12-dB/octave dual-section type, with crossover occurring at 2,000 Hz. In addition, the Sentry 100EL has a continuously variable, shelf-type high-frequency control which allows adjustment for individual listening preferences, with both boost and cut capability (+2 dB to -4 dB from nominally flat). The high-frequency control is conveniently located on the front panel for easy access.

SRB-7 RACK/WALL MOUNT KIT

One of the fundamental design requirements for the Sentry 100EL provides for the ability to install the system in standard EIA 19 in. racks. The hardware needed for this procedure is available as an optional SRB-7 kit. This same kit provides for flush and angle wall-mounting as well. (Refer to the SRB-7 engineering data sheet for complete details.)

A second nameplate, which can be applied over the original label, has been included for those situations where mounting the Sentry 100EL in an inverted position is preferred (woofer closer to ceiling).

WARNING:

Never mount the Sentry 100EL by the back panel or by only one of the other panels. Failing to comply with this will cause the panel to separate, resulting in the speaker falling. For the safest method of mounting the Sentry 100EL, Electro-Voice strongly suggests using the Model SRB-7 rack/wall mounting kit.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker system shall consist of a 203-mm (8.0-in.) low-frequency transducer, a 38-mm (1.5-in.) dome tweeter, a passive frequency dividing network and a 50-watt power amplifier installed in an optimally vented enclosure with fourth-order Butterworth tuning.

The loudspeaker system shall have an operating bandwidth of 45 Hz to 18,000 Hz. The sound pressure level shall be 108 dB at maximum gain, with an input signal of 0 dBu into the power amplifier's balanced input, measured at 1 meter on the system's axis.

The frequency dividing network shall be a second-order, dual-section type, with a crossover frequency of 2,000 Hz. A continuously variable, shelving-type high-frequency control shall be provided.

The power amplifier section shall be capable of providing 50 watts continuous sine wave power into a 6-ohm load with 0.05% typical total harmonic distortion at 1,000 Hz. The power bandwidth shall extend from 30 Hz to 20,000 Hz and a low-frequency filter with a slope of 12 dB per octave shall provide a cutoff at 28 Hz. The balanced input shall have a maximum sensitivity of 0.775 volts for 50 watts output, an input impedance of 30 kilohms, and a maximum input level of 8.0 volts. The unbalanced input shall have a maximum sensitivity of 0.39 volts for 50 watts output, an input impedance of 10 kilohms, and a maximum input level of 30 volts.

The loudspeaker enclosure shall be finished in a scratch-resistant, matte black vinyl. Overall dimensions shall be 43.8 cm (17.25 in.) high by 30.5 cm (12.0 in.) wide by 29.2 cm (11.5 in.) deep. The weight shall be 15 kg (33.0 lb). The loudspeaker system shall be the Electro-Voice Sentry® 100EL.

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

