

Electro-Voice®
a gulton company

Sentry® 500 Professional Monitor System

SPECIFICATIONS:

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

40 to 18,000 Hz

Half-Space Reference Efficiency:

2%

Dispersion Angle Included by
6-dB-Down Points, Octave Bands of
Random Noise:

250 to 10,000 Hz horizontal &
vertical:

$110^\circ \pm 30^\circ$

10,000 to 20,000 Hz horizontal
& vertical:

$60^\circ \pm 15^\circ$

Maximum Midband Acoustic Output
Power:

2.0 watts

Crossover Frequency:

1,500 Hz

Sound Pressure Level at 1 Meter,
1 Watt, Anechoic Environment,
300-2,000 Hz Average:

96 dB

Phase Variation 300 Hz-3,000 Hz:

$\pm 30^\circ$

Long-Term Average Power-Handling
Capacity (at 8 ohms) (40 to 4,000Hz*):

100 watts

Short-Term Power Handling Capacity
(10 milliseconds) (40 to 4,000 Hz):

400 watts

Nominal Impedance:

8.0 ohms

Minimum Impedance:

6.0 ohms

Control:

4-position, tweeter attenuation
from flat to -9 dB in 3-dB steps

Dimensions:

60.3 cm (23.75 in.) high

68.6 cm (27 in.) wide

33.0 cm (13 in.) deep

Net Weight:

70 lbs

Accessories:

SEQ low-frequency step-down kit

WB23 wall mount kit

*Consistent with our usual practice,
this rating is based on very rigorous
test conditions. Please see Power
Handling Capacity Section for a further
explanation of these test conditions.

DESCRIPTION

The Electro-Voice Sentry® 500 monitor speaker system has been "human engineered" for the broadcast/recording studio engineer. The no-nonsense design meets the needs of professionals by combining these characteristics: high efficiency with extended low-frequency response, high-power capacity across the entire frequency range, uniform frequency response and constant directivity, all in a well thought-out, attractive package.

The Sentry 500 employs a Super-Dome™ tweeter capable of handling 25 watts of input power (many tweeters operate in the 5-watt range), while faithfully reproducing program material with response out to 18 kHz. Accidental high-frequency blasts from tape head contact in rewind/fast-forward mode are much less likely to destroy the tweeter.

The Super-Dome™ tweeter is coupled to a high frequency, dispersion controlling "director". This unique coupling of a direct radiator to a directivity controlling device channels the acoustic output into a controlled spatial zone. As an additional benefit, it increases the effective power handling ability of the tweeter in its lower 1-1/2 octaves.

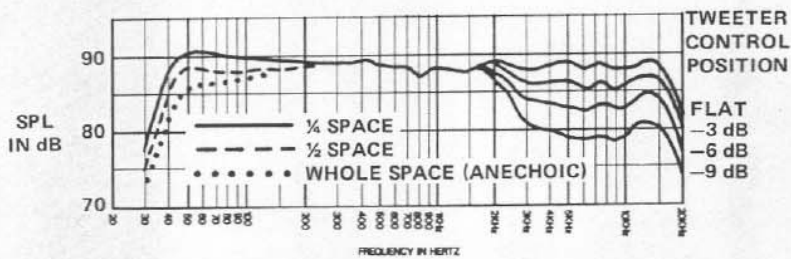


FIGURE 1 - Axial Frequency Response
4 Volts/10 Feet

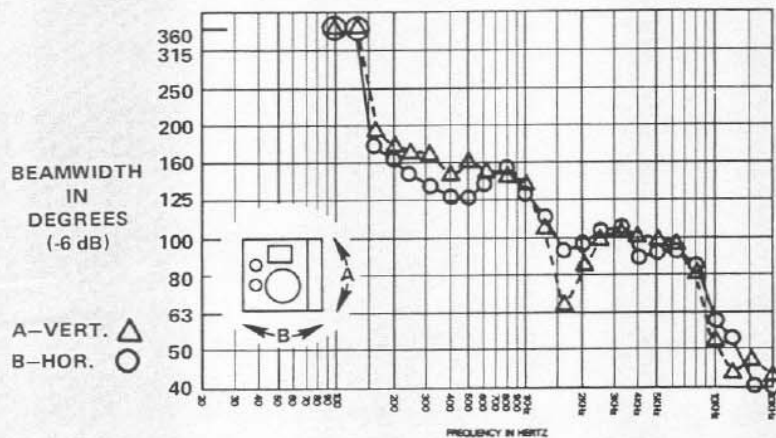


FIGURE 2 - Beamwidth vs Frequency

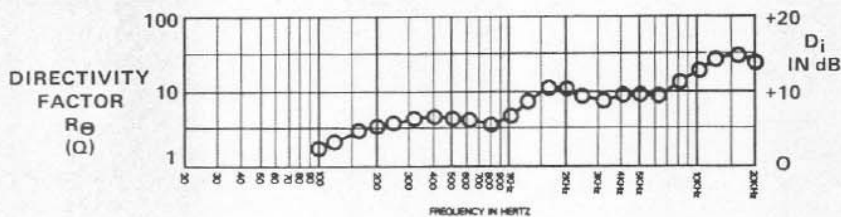


FIGURE 3 - Directivity vs Frequency

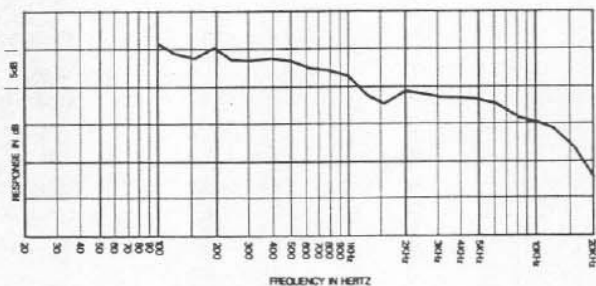


FIGURE 4 - Power Output vs Frequency

The low-frequency section of the Sentry 500 is a 12 inch direct radiator woofer installed in an optimally vented enclosure with fourth-order Butterworth tuning. The combination of high excursion capability, long overhung coil, and vented enclosure provides low distortion at high output levels. The optimally vented design also yields the unusual combination of small size, extended bass response, and high efficiency. Such performance is unattainable in systems that are not based on the design principals of A. N. Thiele¹.

Since the acoustic centers of the drivers are in relative alignment, the critical midband frequencies (through the cross-over area) are produced with minimal phase distortion.

The Sentry 500 is housed in a highly functional cabinet wrapped in a special, scratch-resistant, matte black vinyl. When coupled with the WB23 wall mount kit, the Sentry 500 can be integrated into virtually any environment.

LOUDSPEAKER RESPONSE DUE TO THE ACOUSTICAL ENVIRONMENT

Several factors determine the overall response of a speaker system in a listening environment. The physical characteristics of the room itself, and the placement of speakers and listener all affect the SPL capability, frequency response, and stereo imaging of the system.

The low-frequency response of the overall system can be adversely affected by poor placement of the monitor speakers themselves. The Sentry 500 was designed for 1/4- to 1/2-space use. This implies that the speaker system should be mounted as close as possible to floor/ceiling and/or wall surfaces. Placement in wall cavities or resonant mountings can seriously degrade the overall response.

CONSTANT DIRECTIVITY SPEAKER SYSTEM

In the Sentry 500 the careful selection of coverage angle, woofer size and cross-over frequency results in the creation of a special system type - a constant directivity system. The result is a well-defined, horizontal and vertical coverage zone of acoustic output in the critical frequency range from 500 to 10,000 Hz. This special characteristic means uniform and dependable coverage without "hot spots" or dead zones at certain frequencies. By combining

constant directivity and flat frequency response, the Sentry 500 system delivers essentially flat power response and uniform sound coverage throughout the critical four octaves of midrange frequencies. This is an important and extraordinary feature of the Sentry 500 system.

The constant directivity characteristics of the Sentry 500 enhance the stereo imaging capabilities of the system. Furthermore, off-axis degradation of frequency response cannot be independently corrected through supplementary equalization. Therefore, uniform directivity and smooth on-axis response are highly desirable characteristics of a speaker system designed for critical listening.

POWER HANDLING CAPACITY

There is no generally accepted standard for testing a loudspeaker's power capacity. Often, various power handling specifications are meaningless because they fail to indicate the nature of the test signal and/or how this test signal relates to actual use. The 100-watt specification for the Sentry 500 is based on filtered random noise (FM interstation noise and tape hiss are common forms of random noise), which is fed to the speaker for an extended time.

Random noise testing is used because, like real music and speech program material, it contains many frequencies at once. Low frequencies, which cause large excursions of the woofer suspension, are present as well as mid-bass frequencies which contribute mainly to woofer voice-coil heating. Thus, the woofer is simultaneously tested for mechanical fatigue and voice-coil overheating. Similarly, the tweeter is tested for both mechanical and thermal failure at appropriate power levels.

The test signal actually used in developmental testing of the Sentry 500 is shown in Figure 6. The Sentry 500 will survive 100 watts of this rigorous input for at least 15 hours without failure of any component or permanent change in performance.

This power handling specification applies to long-term application of power. However, the Sentry 500 will handle short-term (10 millisecond) peak inputs at least 6 dB above its long-term average capacity. This means that if the average power level were 100 watts, peak powers of 400 watts would be accommodated.

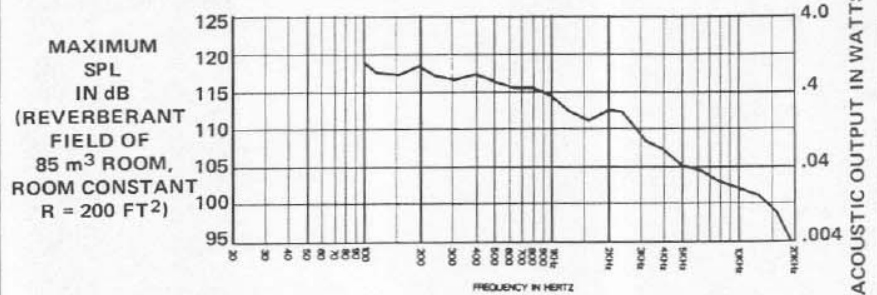


FIGURE 5 – Maximum Acoustic Output

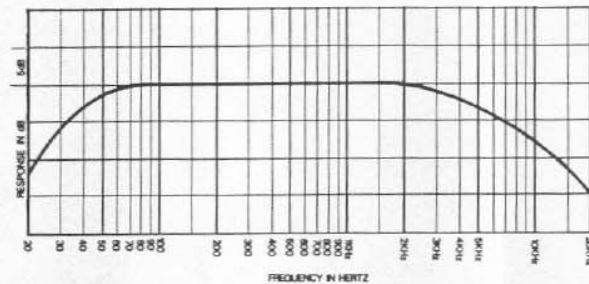


FIGURE 6 – Random Noise Spectrum for Testing Sentry 500

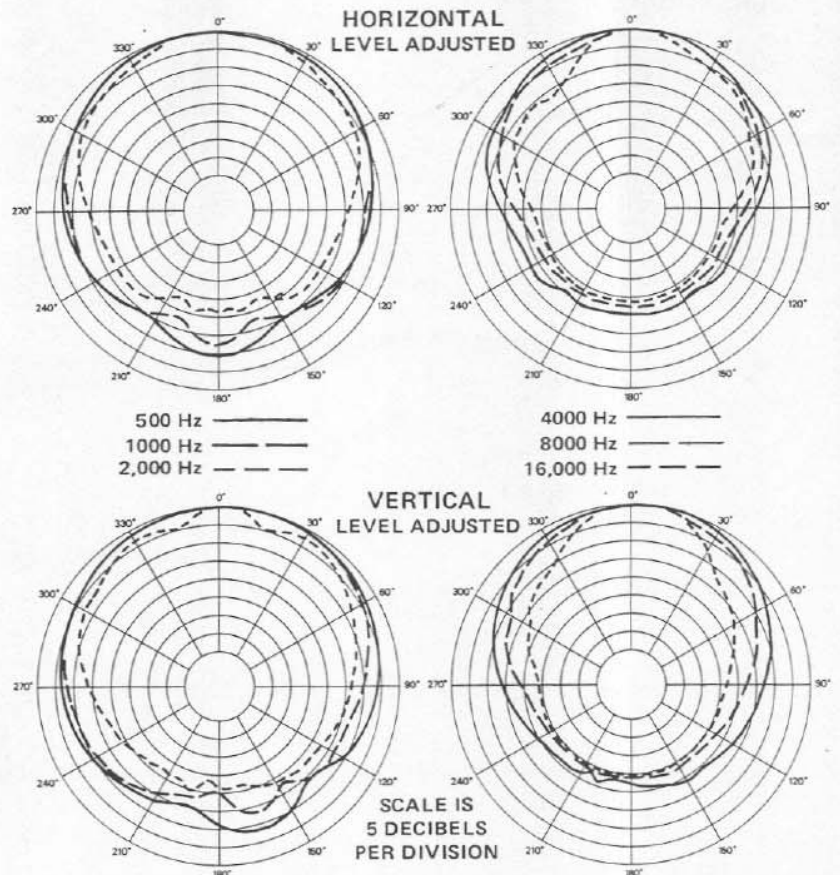


FIGURE 7 – Sentry 500 Polar Response (System Long Axis Vertical)

CROSSOVER NETWORK

The integral crossover network is a 12-dB/octave type with crossover occurring at 1500 Hz. All inductors are air-core and all capacitors are polyester film. Special attention has been given to assure conservative power handling capabilities of crossover elements. Acoustic phase coherence has been maintained through the crossover region.

The Sentry 500 has a four-position high-frequency control with attenuation capability ranging from acoustically flat to -9 dB in 3-dB steps. This control allows for compensation in different room environments. It is located on the front panel for easy access.

Bi-amplification is easily accomplished by removing the "Bi-Amp Access Panel" on the back of the system and placing the "Bi-Amp" plug in the left hand socket. The spare plug may be stored in the right hand socket. The access panel must then be reinstalled. Woofer and tweeter input connections are then made on the system input board.

Since the woofer's short-term power handling capacity is 400 watts, amplifiers as large as 400 watts can be used if care is taken to avoid clipping. Under these conditions typical long-term input power should be 100 watts or less. A tweeter amplifier as large as 100 watts (6-dB headroom) can be used with similar cautions. Please note that there is as much danger of driver failure from an amplifier that is too small and driven into clipping as there is from an amplifier capable of delivering many times the driver's long term power rating. In all usages (bi-amplified or not), the continuous average power level applied to the driver must not exceed the long-term average power handling capacity of the driver (or system).

EXTENDED LOW-FREQUENCY RESPONSE

The SEQ step-down kit will allow the extension of the system's 3-dB-down point (f_3) to 28 Hz. (The port plug supplied with the kit must be used.) The kit will provide the necessary equalization and appropriate shift in box tuning to extend the low-frequency output of the system by 1/2 octave.

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1. A. N. Thiele, "Loudspeakers in Vented Boxes: Part 1," J.AUDIO ENGINEERING SOCIETY, Vol. 19, No 5, p.p. 386-387 (1971)
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WARRANTY (Limited) -

Electro-Voice Sentry Loudspeakers and accessories are guaranteed for five years 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 cover finish or appearance items or malfunction due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For shipping address and instructions on return of Electro-Voice products for repair and locations of authorized service agencies, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, P. O. Box 186, Buchanan, Michigan 49107 (Phone: 616/695-6831), or Electro-Voice West, 8234 Doe Ave., P.O. Box 3297, Visalia, CA 93277 (209/625-1330,-1).

Electro-Voice also maintains complete facilities for non-warranty service.

Specifications subject to change without notice.