



FA12

12 inch Coaxial Loudspeaker

faPORTABLE.



Overview

The FA12 is a portable, coaxial loudspeaker that is well suited for a variety of sound reinforcement applications. Its neodymium coaxial transducer and 90° x 45° horn provide broad coverage that is beneficial in both stage monitor and mains operation. Its multi-faceted enclosure includes a pole mount socket, 40° and 55° rear angles for stage monitor use, and M10 threaded accessory plates for use with optional suspension hardware such as the FA12 Yoke Bracket. The enclosure is horizontally-oriented for a visually pleasing, low profile aesthetic. If a vertical orientation is desired, it can be easily obtained by exchanging the pole socket with one of the M10 accessory plates and rotating the coaxial transducer to provide appropriate coverage angles.

Fulcrum Acoustic's **TQ™** processing is an integral part of the FA12 design. Sound, innovative acoustical design combined with state of the art digital processing leads to exceptional clarity and precise transient response, even at very high sound pressure levels. The required digital signal processing can be provided by one of many supported platforms. Free air and stage monitor presets are available for all platforms.

The FA12's unique **TQPassive™** internal crossover is designed to work in conjunction with **TQ™** processing. It provides the high efficiency, excellent damping, and precise directional control normally associated with bi-amplified operation, but it does not require a second amplifier and processor channel. There are no resistive components in the crossover to heat up, so its response remains consistent even at high levels.

The FA12's versatility, high performance, aesthetic appeal, and cost effective operation makes it a compelling choice for A/V rental companies, live performance venues, corporate A/V, nightclub PA, theatrical productions, and more.

Performance Specifications¹

Operating Mode

Single-amplified w/ DSP

Operating Range²

46 Hz to 20 kHz

Nominal Beamwidth (rotatable)

90° x 45°

Transducers

HF/LF: Coaxial 3.0" titanium diaphragm compression driver; 12.0" woofer, 3.0" voice coil; single neodymium magnet

Power Handling @ Nominal Impedance³

57 V / 400 W @ 8 Ω

Nominal Sensitivity @ Input Voltage⁴ (whole space)

105 dB @ 2.83 V

Nominal Maximum SPL (peak / continuous)

137 dB / 131 dB

Equalized Sensitivity @ Input Voltage⁵

96 dB @ 2.83 V

Equalized Maximum SPL⁶ (peak / continuous)

128 dB / 122 dB

Recommended Power Amplifier

400 W to 800 W @ 8 Ω

Physical Specifications

Connections

(2) Neutrik NL4 Speakon

Pin 1+/-: Full Range

Pin 2+/-: NC

Mounting / Suspension Points

(1) 35 mm / 1.38 inch pole socket

(3) M10 nut plates

(2) M10 accessory plates*

*M10 thread is sealed. Use bolts with 15-20 mm shank length.

Dimensions / Weight

See page 5

Finish

Black painted enclosure w/ matte black grille

Options

FA12 Padded Bag w/ Logo

FA12 Yoke Bracket (see page 6)

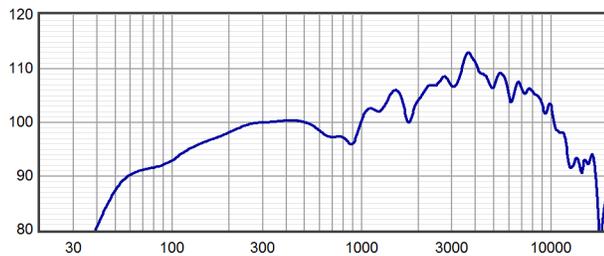
SPI Speaker Pole

Mounts to subwoofers with M20-threaded connector plate.

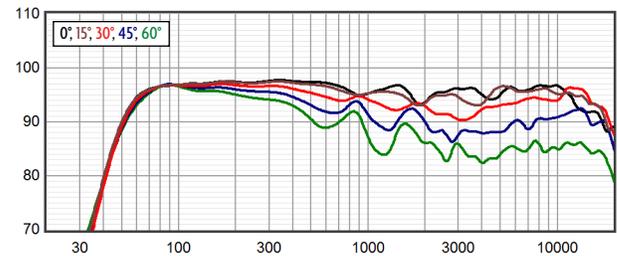
Height-adjustable between 905 mm / 35.6 in and 1450 mm / 57.1 in



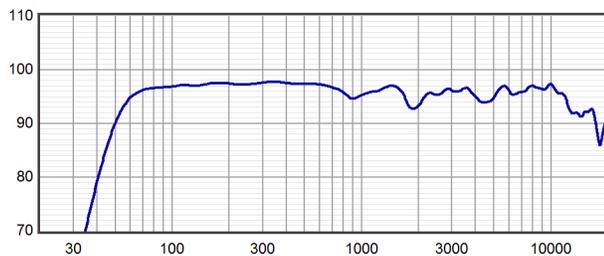
Axial Sensitivity (dB SPL, 2.83 V @ 1 m)^{7,8}



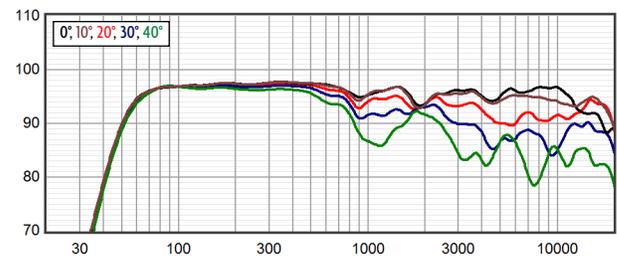
Horizontal Off Axis Response^{7,11}



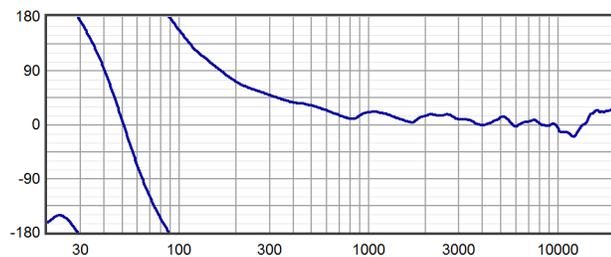
Axial Processed Response (dB)^{7,9}



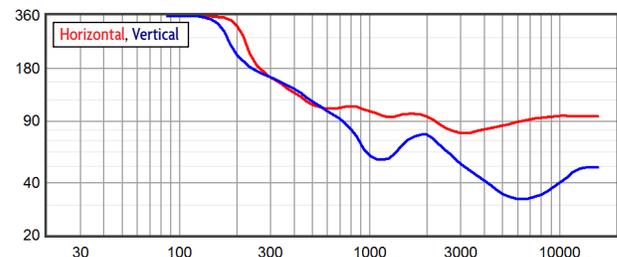
Vertical Off Axis Response^{7,11}



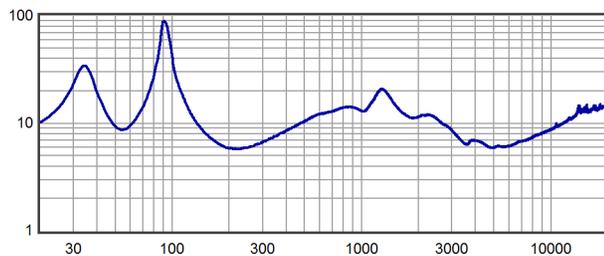
Axial Processed Phase Response (degrees)^{7,10}



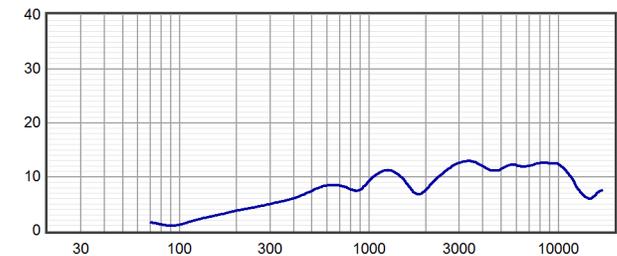
Beamwidth^{7,12}



Impedance (ohms)

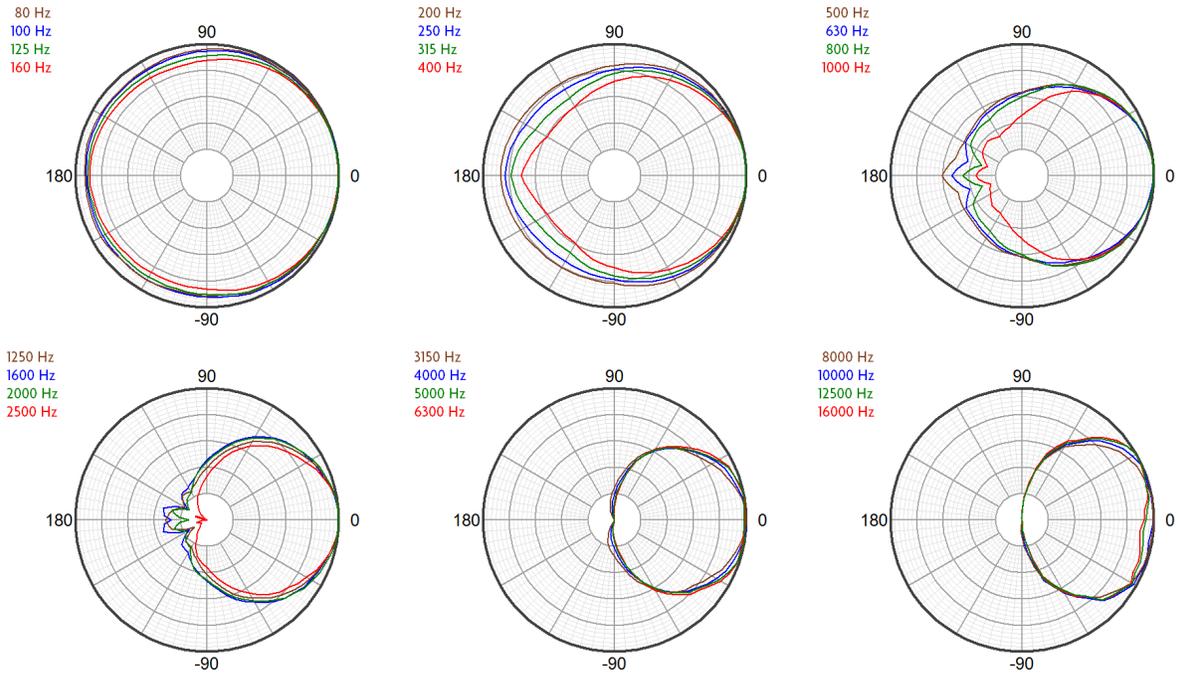


Directivity Index (dB)¹³

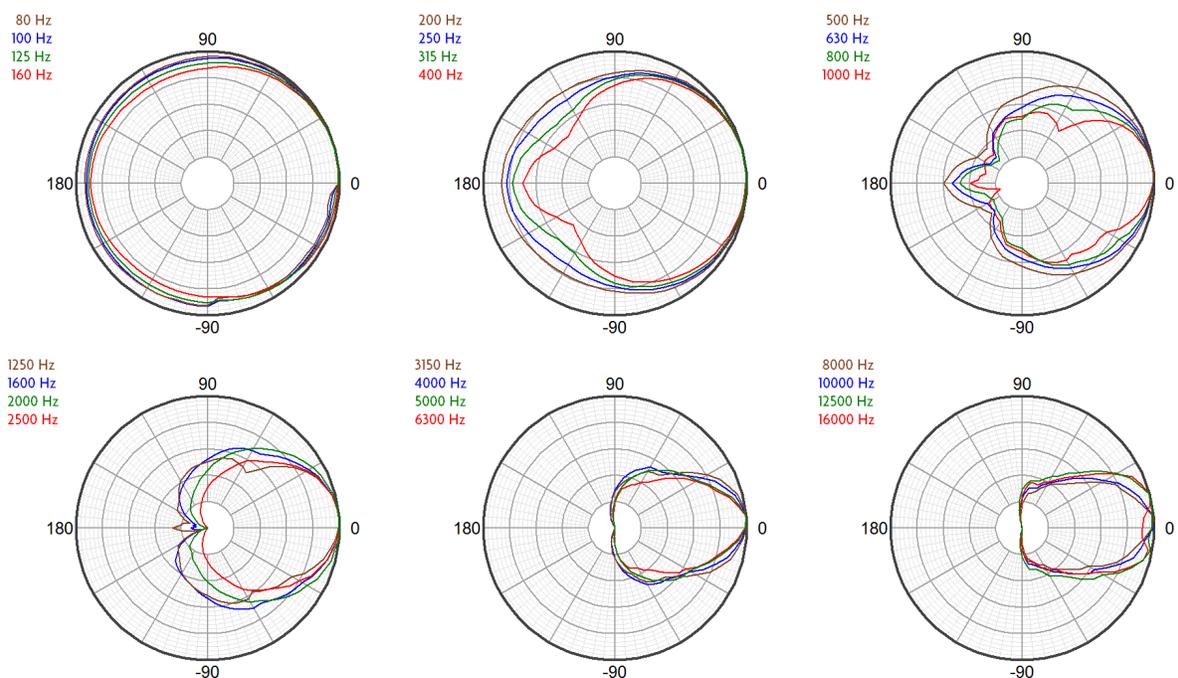




Horizontal Polar Response (30 dB Scale, 6 dB per Major Division)



Vertical Polar Response (30 dB Scale, 6 dB per Major Division)





product specification

Technologies

The proprietary horn employed in the FA12 represents a modern digital-signal-processing-aware update to the traditional horn-loaded coaxial loudspeaker concept. The well-known benefits of the coaxial approach have been realized without the familiar shortcomings of historical designs. Fulcrum Acoustic's **Temporal Equalization™ (TQ™)** digital signal processing techniques eliminate midrange colorations and high frequency harshness while producing a smooth, seamless coverage pattern through the crossover range. In fact, the coaxial transducers were designed from the ground up to take advantage of the unique capabilities of TQ™.

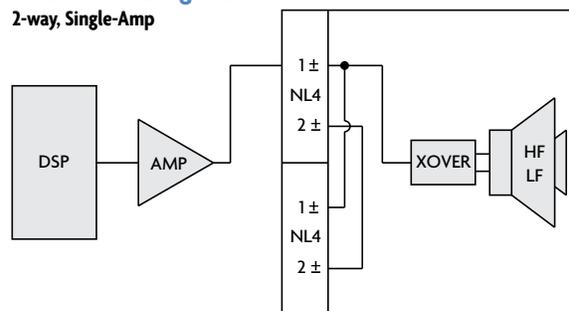
The coaxial transducer in the FA12 includes a 3 inch diaphragm compression driver. The large diaphragm area permits the compression driver to operate at frequencies too low for smaller

compression drivers to handle. This allows the high frequency horn to smooth the polar response of the low frequency section in the frequency range where the horn would otherwise cause shadowing. It also allows the compression driver to produce extreme sound pressure levels with an effortless sonic character.

The coaxial woofer's large radiating surface works in conjunction with the HF horn to improve directional control at the bottom of the horn's operating range, increasing directional control beyond what can be accomplished by the horn alone. The coaxial transducer's compact, neodymium magnet not only minimizes weight, but also allows very tight spacing between the compression driver and woofer voice coils. The delay between the driver outputs is thereby minimized, which allows the coaxial device to work well with a passive crossover.

Connection Diagram

2-way, Single-Amp



Mechanical Specification Drawings

2D and 3D DXF dimensional drawings are available for download at www.fulcrum-acoustic.com/support.

Notes

- ¹ **Performance Specifications** All acoustic specifications rounded to nearest whole number. External DSP with Fulcrum Acoustic-provided settings is required to achieve the specified performance.
- ² **Operating Range** The frequency range within which the processed response is within 10 dB of the average.
- ³ **Power Handling** Based on the AES power handling of the transducers.
- ⁴ **Nominal Sensitivity** The 1-meter-referenced SPL produced by a 1 watt band limited pink noise signal, with no processing applied.
- ⁵ **Equalized Sensitivity** The 1-meter-referenced SPL produced when an EIA-426-B signal is applied to an equalized loudspeaker system, at a level which produces a total power of 1 watt, in sum, to the loudspeaker subsections.
- ⁶ **Equalized Maximum SPL** The 1-meter-referenced SPL produced when an EIA-426-B signal is applied to an equalized loudspeaker system, at a level which drives at least one subsection to its rated power.
- ⁷ **Resolution** All response graphs are subjected to 1/6 octave cepstral smoothing with a gaussian weighting function.
- ⁸ **Axial Sensitivity** The SPL plotted against frequency for a 1 watt swept sine wave, referenced to 1 m with no signal processing.
- ⁹ **Axial Processed Response** The axial magnitude response with recommended signal processing applied.
- ¹⁰ **Axial Processed Phase Response** The axial phase response with recommended signal processing applied, and latency removed.
- ¹¹ **Horizontal / Vertical Off Axis Responses** The magnitude response at various angles off axis, with recommended signal processing applied.
- ¹² **Beamwidth** The angle between the -6 dB points in a loudspeaker's polar response.
- ¹³ **Directivity Index (Di)** The ratio of the on-axis sound pressure squared to the spherical average of the sound pressure squared at a particular frequency expressed in dB. To convert the directivity index to directivity factor (Q) use the formula $10^{Di/10}$.