RM22

Dual 12 inch Coaxial Reference Monitor

reference MONITOR

Overview

The RM22 is a bi-amplified, 3-way coaxial reference monitor that provides the accuracy, pristine imaging and precise transient response required of a studio monitor but with the directional control, power handling and output capability required in larger spaces. The RM22 is typically installed behind perforated cinema screens or acoustically transparent cloth, flush-mounted in walls, or mounted in free space in A/V studio control rooms. This makes it an ideal choice for cinemas, planetariums, museum exhibit spaces, A/V production suites, multimedia presentation facilities, and high end home theaters: any environment in which pristine audio quality is desired and a protective grille is not necessary.

Fulcrum Acoustic's **TQ**™ processing is an integral part of the RM22 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.

The coaxial and low frequency transducers are mounted in independent, asymmetrical chambers designed to minimize standing waves. In addition, the internal volume and porting are optimized for extended low frequency response. This combination results in a highly articulate low mid transient response and surprisingly visceral low frequency extension. The absence of a grille and its supporting structures reduces reflections and diffraction, which contributes to the RM22's spacious, well defined image and open sound stage. Its shallow enclosure includes numerous M10 mounting points, while its rotatable 90° x 45° coaxial transducer supports either vertical or horizontal orientation.

Performance Specifications[1]

Operating Mode
Bi-amplified w/ DSP

Operating Range [2]
38 Hz to 20 kHz

Nominal Beamwidth
90° x 45°

Transducers
LF: 12.0" ceramic magnet woofer, 4.0" voice coil
HF/LF: Coaxial 3.0" titanium diaphragm compression driver; 12.0" woofer, 3.0" voice coil; single neodymium magnet

Power Handling @ Nominal Impedance [3]
LF: 75 V / 700 W @ 8 Ω
HF/LF: 57 V / 400 W @ 8 Ω

Nominal Sensitivity @ Input Voltage [4] (whole space)
LF: 91 dB @ 2.83 V
HF/LF: 104 dB @ 2.83 V

Nominal Maximum Continuous SPL
LF: 120 dB
HF/LF: 130 dB

Equalized Sensitivity @ Input Voltage [5]
95 dB @ 2.83 V

Equalized Maximum SPL [6]
126 dB

Recommended Power Amplifiers
LF: 700 W to 1400 W @ 8 Ω
HF/LF: 400 W to 800 W @ 8 Ω

Physical Specifications

Connections
(2) Neutrik NL4 Speakon
Pin 1+/-: LF
Pin 2+/-: HF/LF

Mounting / Suspension Points
(12) M10 eye bolt angle points, (2) M10 yoke points, (1) M10 pull back point

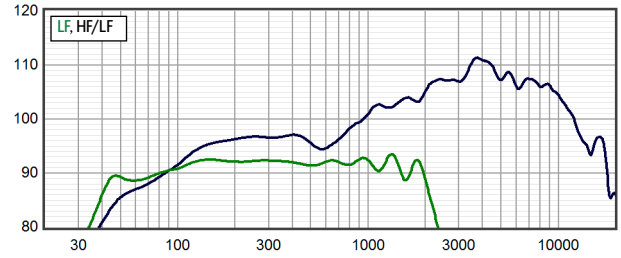
Dimensions / Weight
See page 5

Finish
Black or white painted enclosure

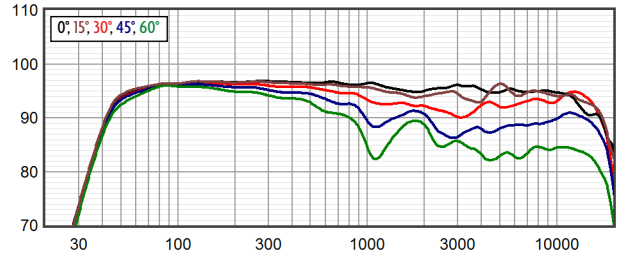
Options

Terminal strip input, Custom color finish

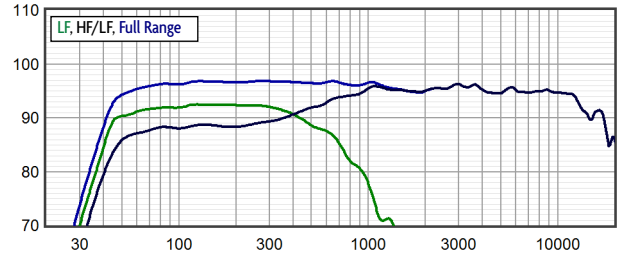
Axial Sensitivity (dB SPL, 2.83 V @ 1 m)[7, 8]



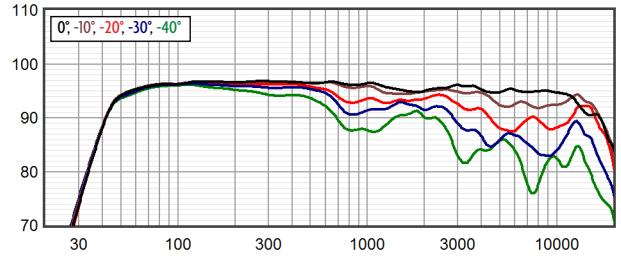
Horizontal Off Axis Response[7, 11]



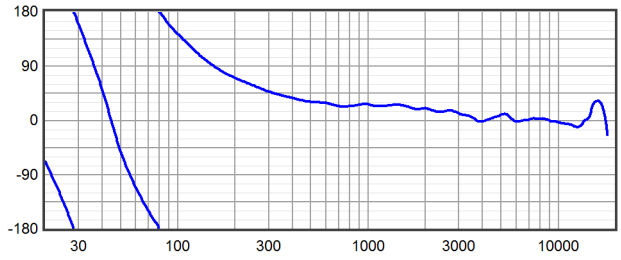
Axial Processed Response (dB)[7, 9]



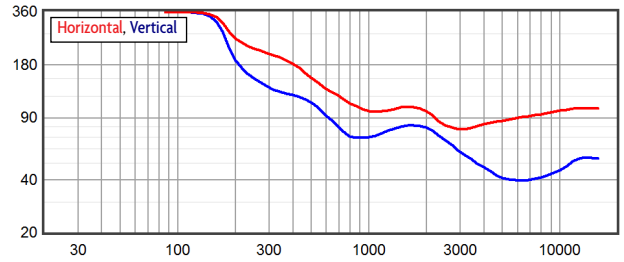
Vertical Off Axis Response[7, 11]



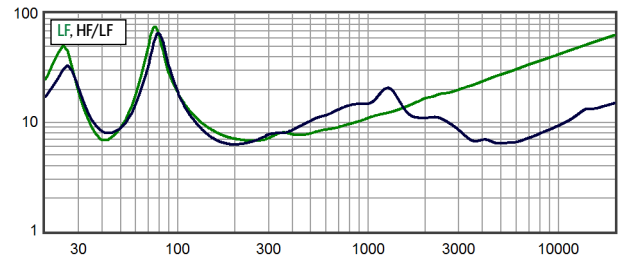
Axial Processed Phase Response (degrees)[7, 10]



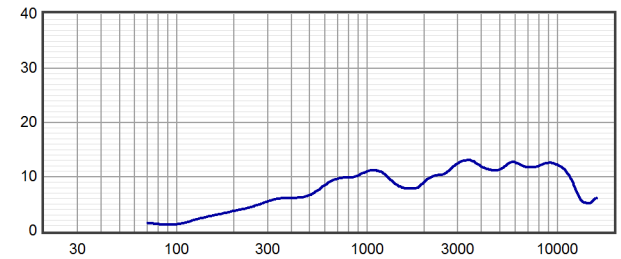
Beamwidth[7, 12]



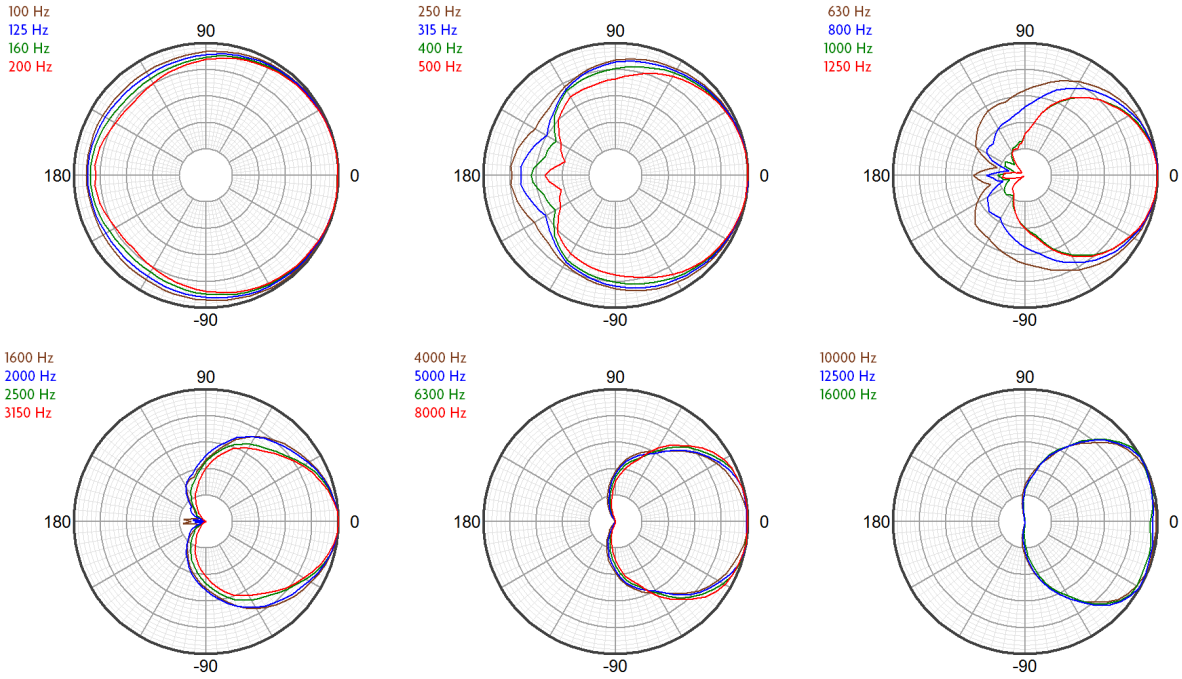
Impedance (ohms)



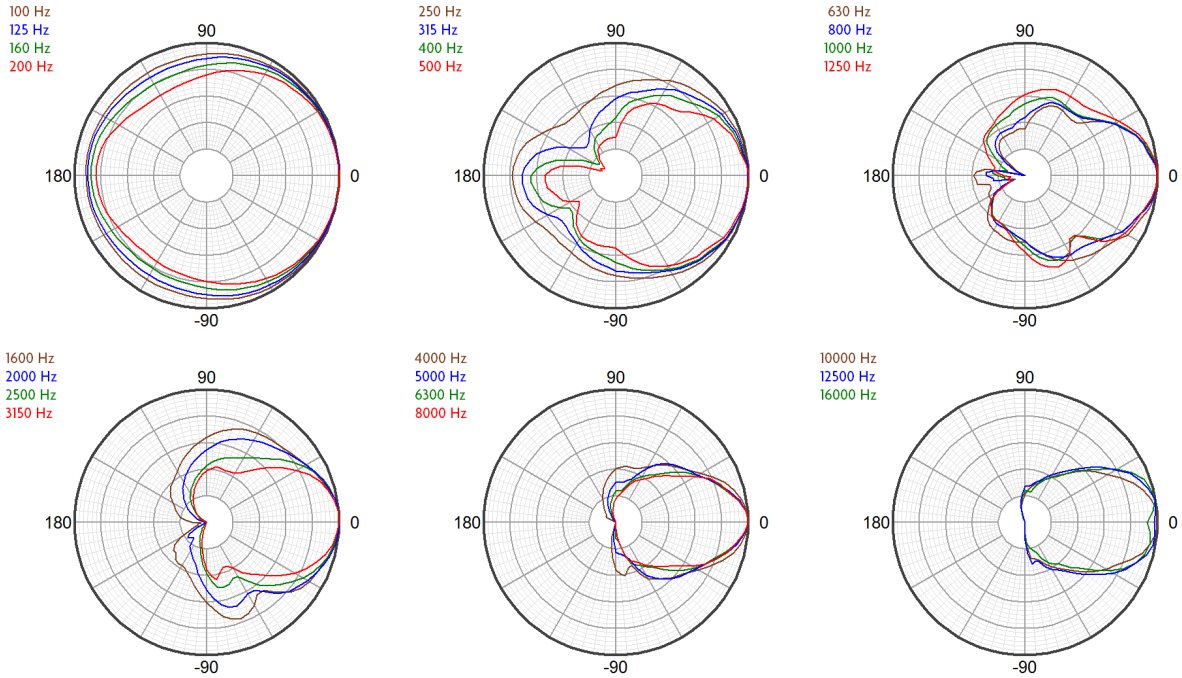
Directivity Index (dB)[13]



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



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



Technologies

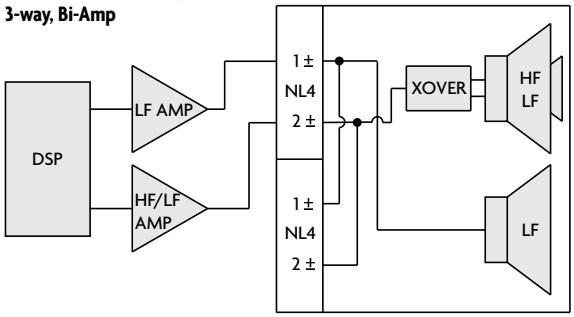
The RM series represents a modern digital-signal-processing-aware update to the traditional horn-loaded coaxial monitor concept. The well-known benefits of the coaxial approach have been realized without the familiar shortcomings of historical designs. Fulcrum **Temporal Equalization™ (TQ™)** digital signal processing techniques provide precise transient response and accurate voicing, while ensuring smooth, seamless coverage 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 RM22 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 directional 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 high frequency horn to improve directional control at the low frequency end of the horn's operating range, increasing directional control beyond what can be accomplished by the horn alone.

Connection Diagram

3-way, Bi-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 proceessing 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* $10^{Di/10}$.