



# RM28ac

Self-Powered Dual 8 inch Coaxial Reference Monitor

reference  
MONITOR



## Overview

The RM28ac is a self-powered 3-way coaxial reference monitor that provides the accuracy, pristine imaging and precise transient response required of all professional studio monitors, but with the high output capability demanded by high-energy genres. Its 90° x 60° coaxial transducer may be rotated 90° to provide optimal coverage in a vertical orientation as a main monitor, or in horizontal orientation to present a low profile over the meter bridge.

Sound, innovative acoustical design combined with on-board TQ™, Level 1 processing provides exceptional clarity and stability, and precise transient response even at very high sound pressure levels. Four back panel selectable presets optimize the response for either vertical or horizontal orientations, whole or half space. A full complement of input filters and delay, as well as signal levels and amplifier status, may be accessed via Ethernet, using **Armonia Pro Audio Suite™** control software. In addition, a pre-output EQ stage is available for programming custom presets. These presets may be saved and later recalled using the back panel Preset Select button or software.

The RM28ac's robust transducers are powered by two 570 watt amplifier channels, designed and manufactured in Italy by Powersoft. Powersoft amplifiers incorporate state-of-the-art Class-D technology to produce extremely high efficiency, low noise, and low intermodulation distortion in compact and lightweight packages.

The RM28ac is primarily intended for use as a near or mid-field monitor in recording studios and A/V production suites; but it is also an ideal choice for cinemas, museum exhibit spaces, multimedia presentation facilities, boardrooms, and high end home theaters: any environment in which pristine audio quality is desired and a protective grille is not necessary.

## Performance Specifications<sup>1</sup>

### Operating Mode

Self-Powered, w/ On-Board DSP

### Operating Range<sup>2</sup>

40 Hz to 24 kHz

### Nominal Beamwidth (rotatable)

90° x 60°

### Transducers

LF: 8.0" ceramic magnet woofer, 2.0" voice coil  
HF/LF: Coaxial 1.7" titanium diaphragm compression driver;  
8.0" woofer, 2.0" voice coil; single neodymium magnet

### Power Handling @ Nominal Impedance<sup>3</sup>

LF: 63 V / 250 W @ 16 Ω  
HF/LF: 69 V / 300 W @ 16 Ω

### Nominal Sensitivity @ Input Voltage<sup>4</sup> (whole space)

LF: 95 dB @ 4.00 V  
HF/LF: 103 dB @ 4.00 V

### Nominal Maximum Continuous SPL

LF: 119 dB  
HF/LF: 127 dB

### Equalized Sensitivity @ Input Voltage<sup>5</sup>

Full Range: 93 dB @ 4.00 V  
80 Hz HPF: 96 dB @ 4.00 V

### Equalized Maximum SPL<sup>6</sup>

Full Range: 120 dB  
80 Hz HPF: 123 dB

## Physical Specifications

### Mounting / Suspension Points

(4) M10 yoke points

### Dimensions / Weight

See page 6

### Finish

Black or white painted enclosure

### Options

Custom color finish



## product specification

### Audio Input

#### Connectors

Analog In: Female XLR  
Analog Out: Male XLR  
AES3 In: Female XLR  
Ethernet / AESOP: 2x 8P8C (RJ45)

#### Analog Input Wiring

Pin 1: Chassis  
Pin 2: Signal +  
Pin 3: Signal -

#### Input Impedance

10 k $\Omega$  balanced to ground

#### Input Sensitivity

1.5 Vrms / 6.0 dBu

#### Maximum Input Voltage

6.3 Vrms / 18.2 dBu

#### Controls

Preset Select: 1 thru 4, press and hold 3 sec to access 5 thru 8  
Input Select: Analog, AES3 A, AES3 B, AES3 A+B  
Input EQ: In / Out  
Input Volume: Full clockwise = nominal gain

#### LED Indicators

Ready, signal, temp, limit, protect, selected preset,  
selected input, input EQ in

### Digital Signal Processing

#### DSP Encoding

24 bit / 48 kHz

#### DSP Latency

Analog Input: 3.52 ms

#### Input Processing (software accessible)

Three layers raised cosine parametric or graphic EQ  
Filter Types: Peaking, asymmetrical, low and high shelf, low and high pass  
Delay: 2 seconds  
Gain  
Polarity  
Mute

#### Pre-Output Processing (software accessible)

Sixteen bands parametric EQ  
Filter Types: Peaking, low and high shelf, low and high pass, band pass, band stop, all pass  
Delay: 2 seconds  
Gain  
Mute

### Amplifier

#### Type

Two-channel Class D

#### Output Power

EIAJ test, 1 kHz, 1% THD: 2x 570 W @ 16  $\Omega$

#### Frequency Response

10 Hz to 25 kHz,  $\pm 3$  dB, for 1 W @ 8  $\Omega$

#### S/N Ratio

> 112 dBA, 20 Hz to 20 kHz

#### Crosstalk Separation

> 70 dB @ 1 kHz

#### Slew Rate

50 V / microsecond @ 8  $\Omega$ , input filter bypassed

#### Damping Factor

> 500 @ 100 Hz

#### Distortion

THD+N: < 0.05% from 0.1 W to full power (typically < 0.01%)  
SMPTE IMD: < 0.05% from 0.1 W to full power (typically < 0.01%)  
DIM100 IMD: < 0.02% from 0.1 W to full power (typically < 0.005%)

#### Efficiency

> 80% (typical)

#### Cooling

Temperature-controlled variable speed internal fan

#### Maximum Operating Ambient Temperature

40° C

#### Protection Systems

Over-temp power limiting, thermal shutdown, short-circuit, overload output protection

### AC Mains

#### Connections

Mains In: Neutrik powerCON NAC3MPA  
Mains Out: Neutrik powerCON NAC3MPB

#### Mains Voltage

100 to 240 V-, 50/60 Hz

#### Current Draw (1/8 max output power)

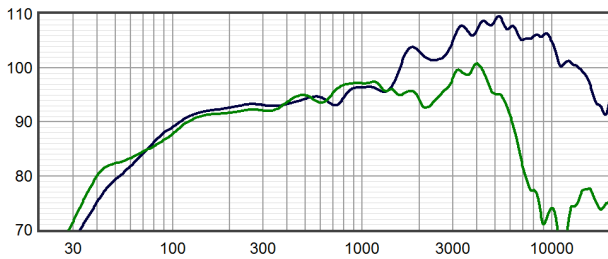
5.5 to 2.9 A

#### Thermal Emission (1/8 power @ 4 $\Omega$ )

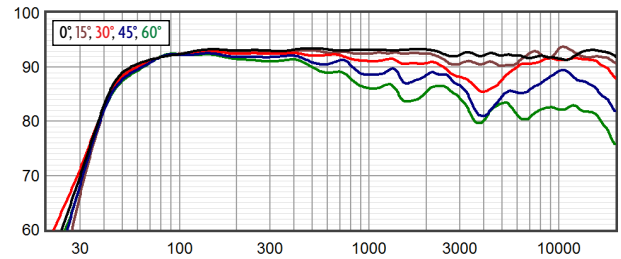
282 BTU/h 71 kcal/h



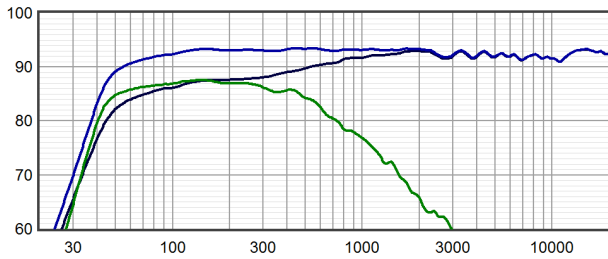
Axial Sensitivity (dB SPL, 4.00 V @ 1 m)<sup>7,8</sup>



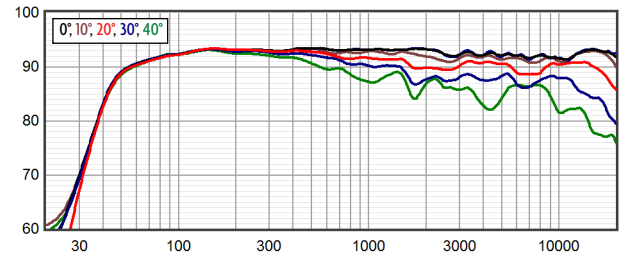
Horizontal Off Axis Response<sup>7,11</sup>



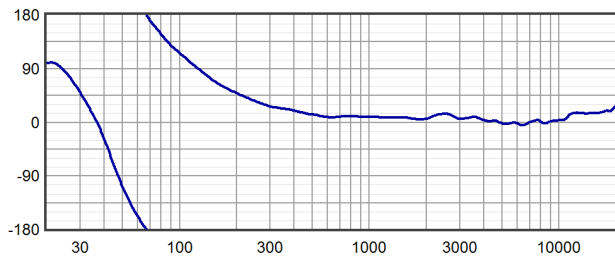
Axial Processed Response (dB)<sup>7,9</sup>



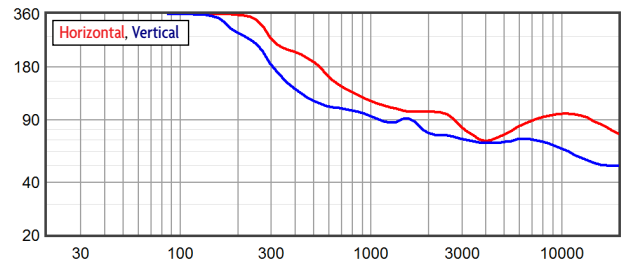
Vertical Off Axis Response<sup>7,11</sup>



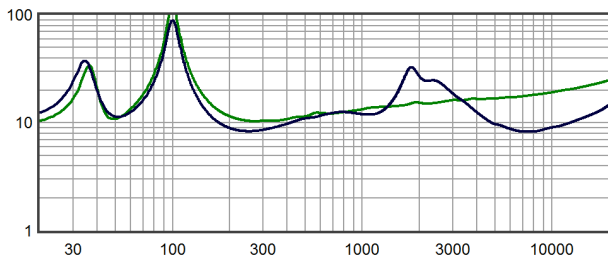
Axial Processed Phase Response (degrees)<sup>7,10</sup>



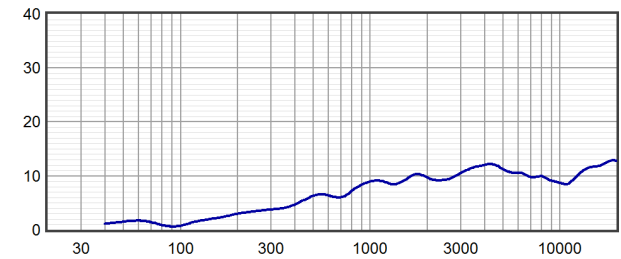
Beamwidth<sup>7,12</sup>



Impedance (ohms)

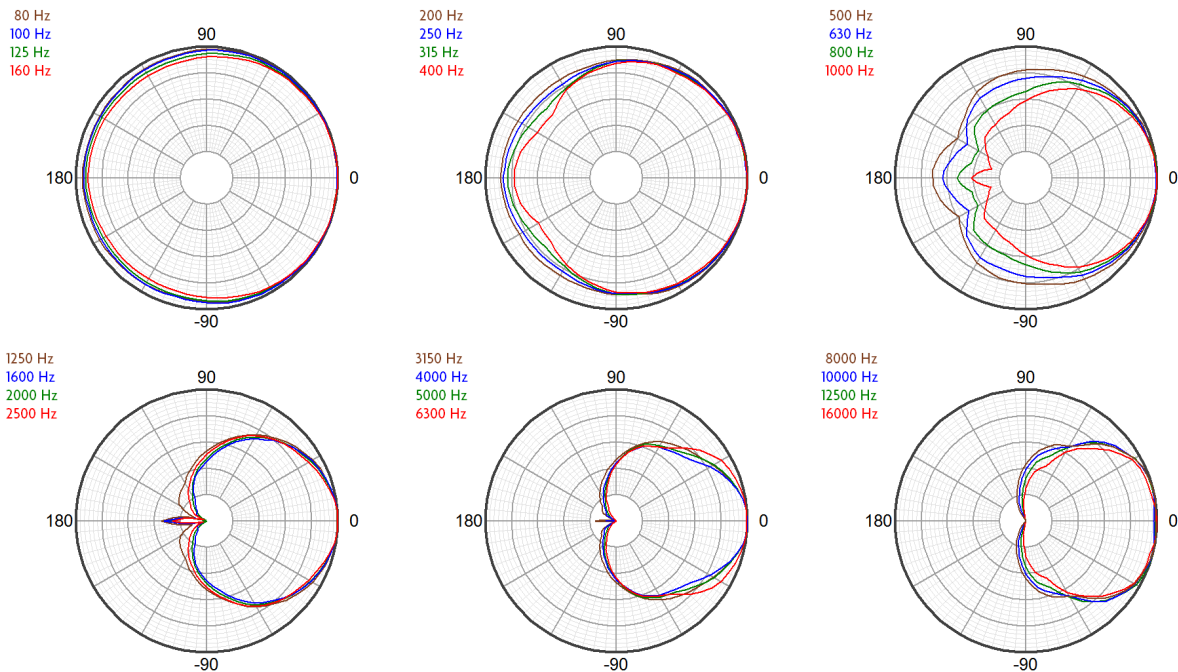


Directivity Index (dB)<sup>13</sup>

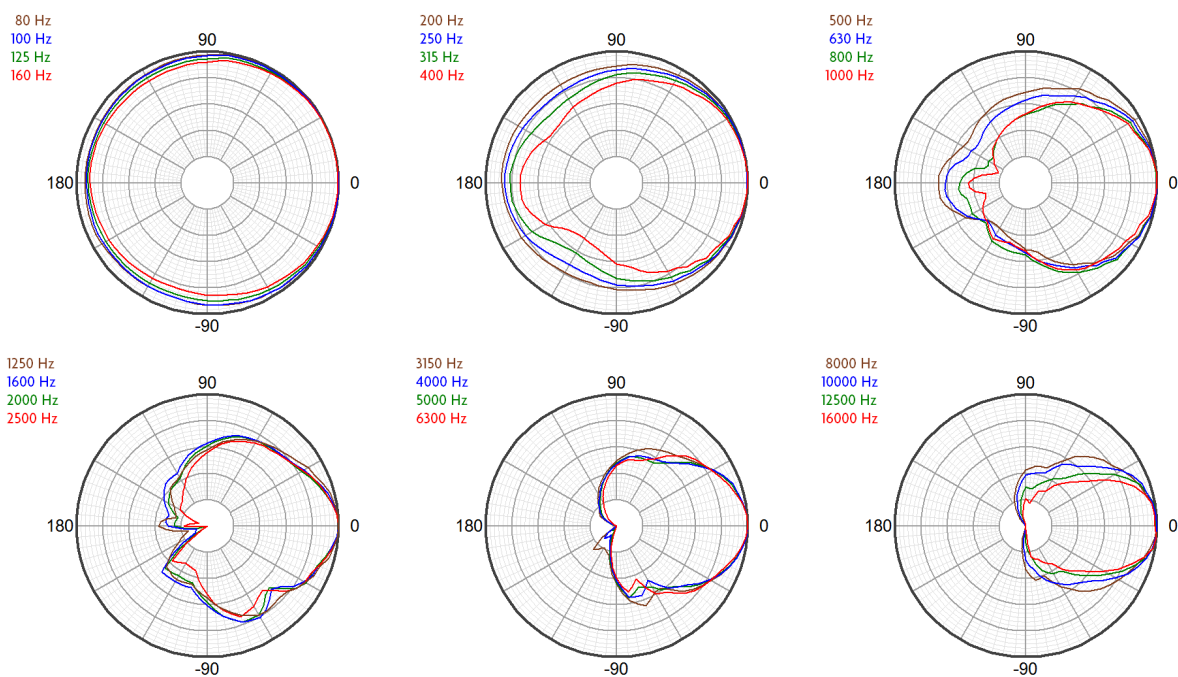




Horizontal Polar Response (30 dB Scale, 6 dB per Major Division)



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 Acoustic's **Temporal Equalization™ (TQ™)** digital signal processing techniques provide precise transient response and accurate voicing, while ensuring smooth, seamless coverage through the crossover range.

The coaxial transducer in the FA28ac includes a 1.75 inch (44 mm) diaphragm compression driver that operates to a relatively low frequency. 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. 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 two low frequency devices both operate down to the lowest frequencies, resulting in mutual coupling that provides unusually high efficiency and impact in the critical 80 Hz to 500 Hz range.

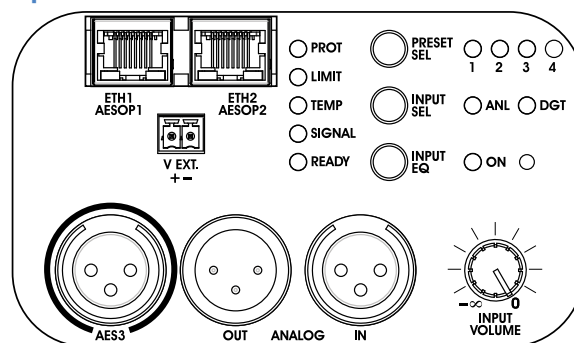
### Mechanical Specification Drawings

2D and 3D DXF dimensional drawings are available for download at [www.fulcrum-acoustic.com/support](http://www.fulcrum-acoustic.com/support).

### Notes

- <sup>1</sup> **Performance Specifications** All acoustic specifications rounded to nearest whole number. External DSP with Fulcrum Acoustic-provided settings is required to achieve the specified performance.
- <sup>2</sup> **Operating Range** The frequency range within which the processed response is within 10 dB of the average.
- <sup>3</sup> **Power Handling** Based on the AES power handling of the transducers.
- <sup>4</sup> **Nominal Sensitivity** The 1-meter-referenced SPL produced by a 1 watt band limited pink noise signal, with no processing applied.
- <sup>5</sup> **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.
- <sup>6</sup> **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.
- <sup>7</sup> **Resolution** All response graphs are subjected to 1/6 octave cepstral smoothing with a gaussian weighting function.
- <sup>8</sup> **Axial Sensitivity** The SPL plotted against frequency for a 1 watt swept sine wave, referenced to 1 m with no signal processing.
- <sup>9</sup> **Axial Processed Response** The axial magnitude response with recommended signal processing applied.
- <sup>10</sup> **Axial Processed Phase Response** The axial phase response with recommended signal processing applied, and latency removed.
- <sup>11</sup> **Horizontal / Vertical Off Axis Responses** The magnitude response at various angles off axis, with recommended signal processing applied.
- <sup>12</sup> **Beamwidth** The angle between the -6 dB points in a loudspeaker's polar response.
- <sup>13</sup> **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  $10^{Di/10}$ .

### Input Panel



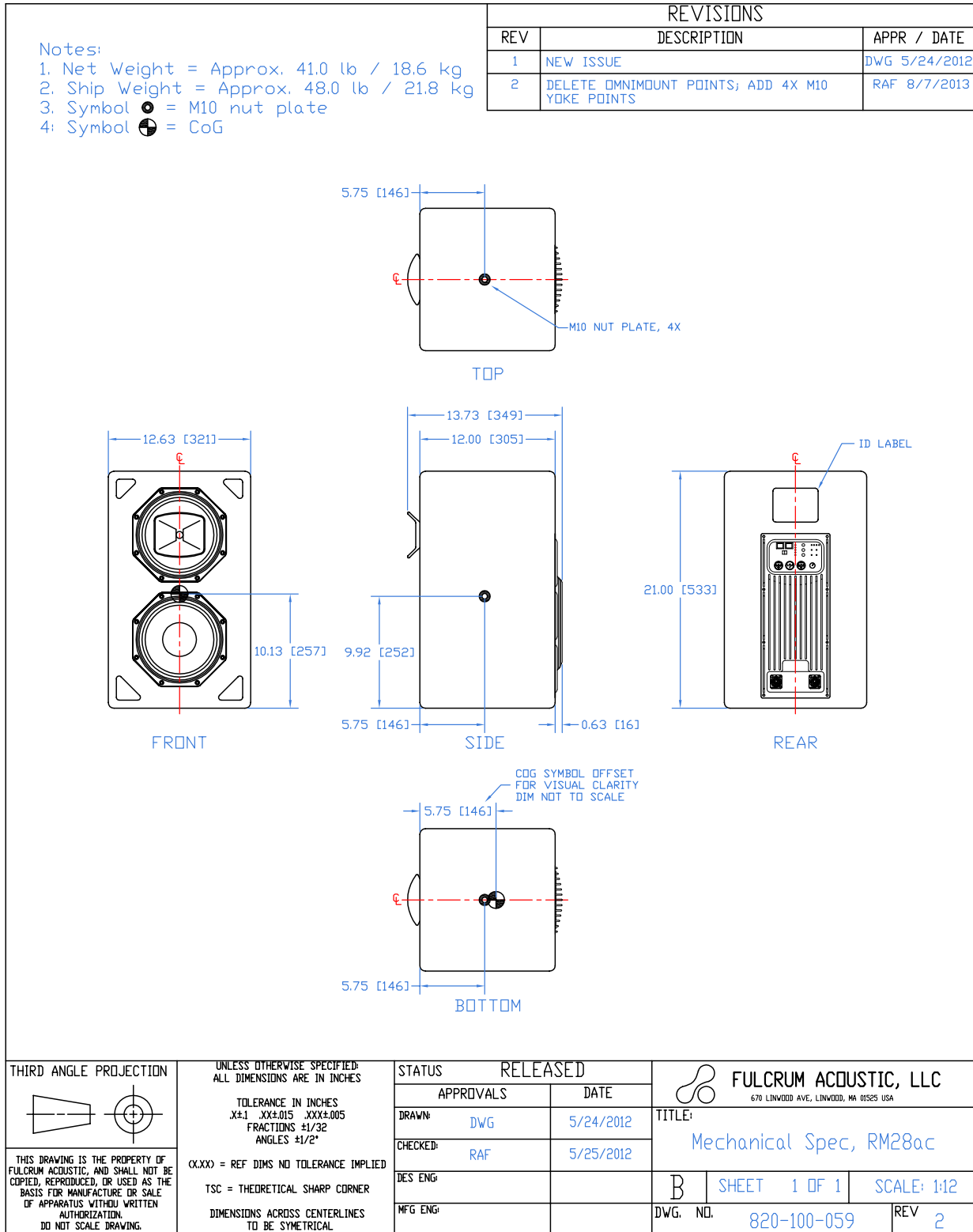
### RM28ac Presets

Preset 1	Vertical Orientation, Whole Space
Preset 2	Vertical Orientation, Half Space
Preset 3	Horizontal Orientation, Whole Space
Preset 4	Horizontal Orientation, Half Space

Presets 5-8 user-programmable in **Armonia Pro Audio Suite™** control software. Press and hold rear panel Preset Select button 3 seconds to access these presets.



product specification



Drawing is reduced. Do not scale.