FA22ac

Self-Powered Dual 12 inch Coaxial Loudspeaker

faPORTABLE

Overview

The FA22ac is a portable, self-powered 3-way 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, and its dedicated neodymium low frequency transducer provides additional low frequency directivity and mid bass impact. 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 FA22 Yoke Bracket. The compact enclosure is vertically-oriented, but if a horizontal 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.

Sound, innovative acoustical design combined with on-board **TQ**™, Level 1 processing provides exceptional clarity and stability, and precise transient response even at high sound pressure levels. Four back panel selectable presets optimize the response for either mains or floor monitor use, with or without a subwoofer. A full complement of input filters and delay, as well as signal levels and amplifier status, may be accessed via Ethernet, using **Armonía 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 FA22ac's transducers are powered by two 1050 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 FA22ac's versatility, high performance, and aesthetic appeal make it a compelling choice for A/V rental companies, live performance venues, corporate A/V, nightclub PA, theatrical productions, and more.

Performance Specifications[1]

Operating Mode
Self-Powered, w/ On-Board DSP

Operating Range [2]
44 Hz to 20 kHz

Nominal Beamwidth (rotatable)
90° x 45°

Transducers
LF: 12.0" neodymium magnet woofer, 3.0" 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: 57 V / 400 W @ 8 Ω
HF/LF: 57 V / 400 W @ 8 Ω

Nominal Sensitivity @ Input Voltage [4] (whole space)
LF: 99 dB @ 2.83 V
HF/LF: 105 dB @ 2.83 V

Nominal Maximum SPL (peak / continuous)
LF: 131 dB / 125 dB
HF: 137 dB /131 dB

Equalized Sensitivity @ Input Voltage [5]
Full Range: 96 dB @ 2.83 V
80 Hz HPF: 100 dB @ 2.83 V

Equalized Maximum SPL [6] (peak / continuous)
Full Range: 130 dB / 124 dB
80 Hz HPF: 133 dB / 127 dB

Physical Specifications

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 6

Finish
Black painted enclosure w/ matte black grille

Options

FA22 Padded Bag w/ Logo
SP1 Speaker Pole
Mounts to subwoofers with M20-threaded connector plate. Height-adjustable between 905 mm / 35.6 in and 1450 mm / 57.1 in

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 kΩ 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 1050 W @ 8 Ω
Maximum Output Voltage: 2x 129 V peak

Frequency Response

10 Hz to 25 kHz, ±3 dB, for 1 W @ 8 Ω

S/N Ratio

> 112 dBA, 20 Hz to 20 kHz

Crosstalk Separation

>70 dB @ 1 kHz

Slew Rate

50 V / microsecond @ 8 Ω, 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

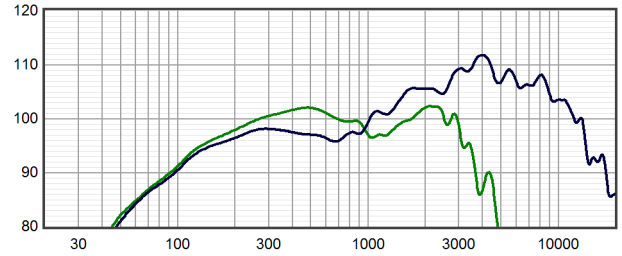
Current Draw (1/8 max output power)

5.5 to 2.9 A

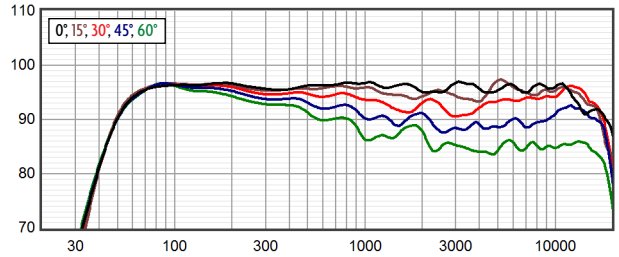
Thermal Emission (1/8 power @ 4 Ω)

282 BTU/h 71 kcal/h

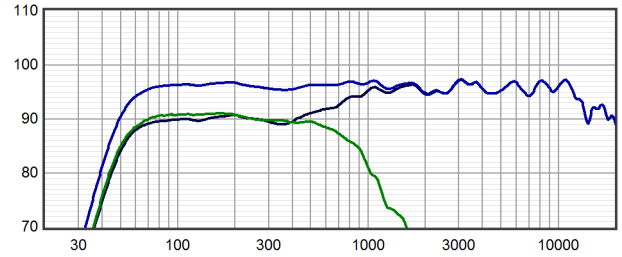
Axial Sensitivity (dB SPL, 2.83 V @ 1 m)[7, 8]



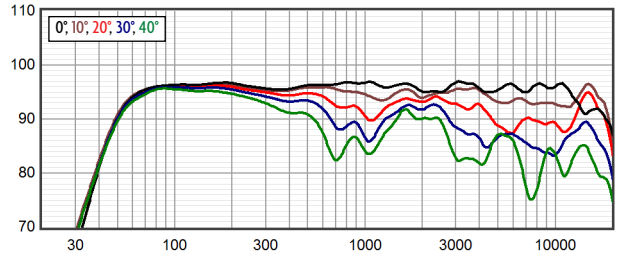
Horizontal Off Axis Response[7, 11]



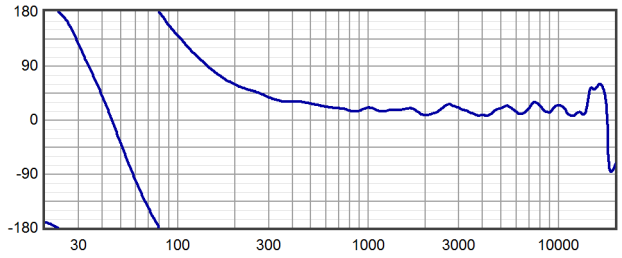
Axial Processed Response (dB)[7, 9]



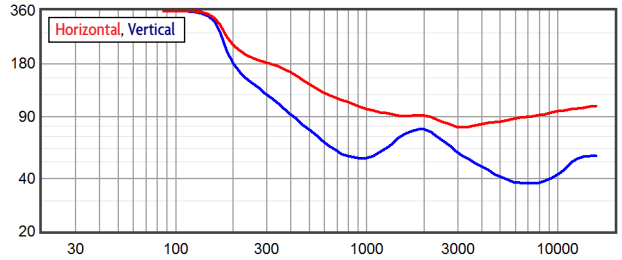
Vertical Off Axis Response[7, 11]



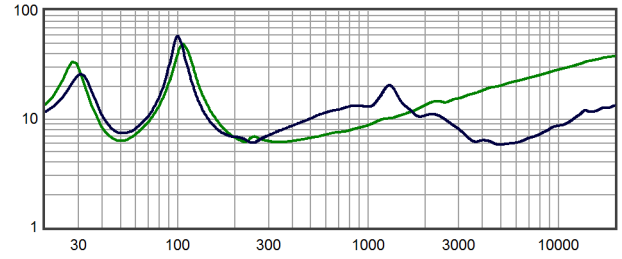
Axial Processed Phase Response (degrees)[7, 10]



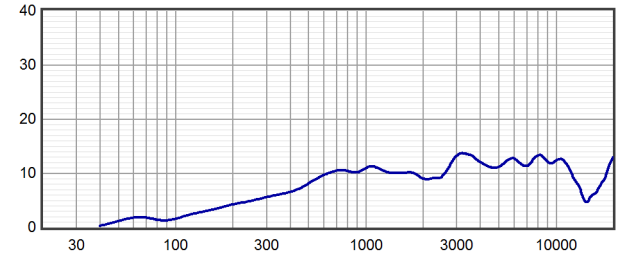
Beamwidth[7, 12]



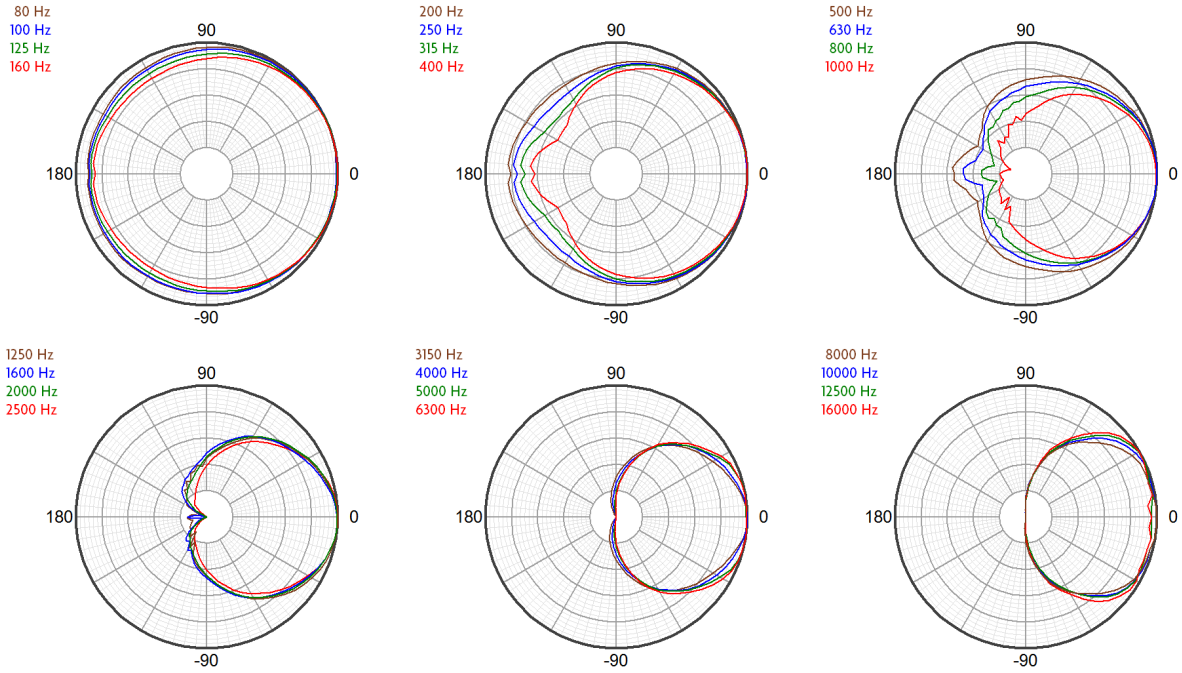
Impedance (ohms)



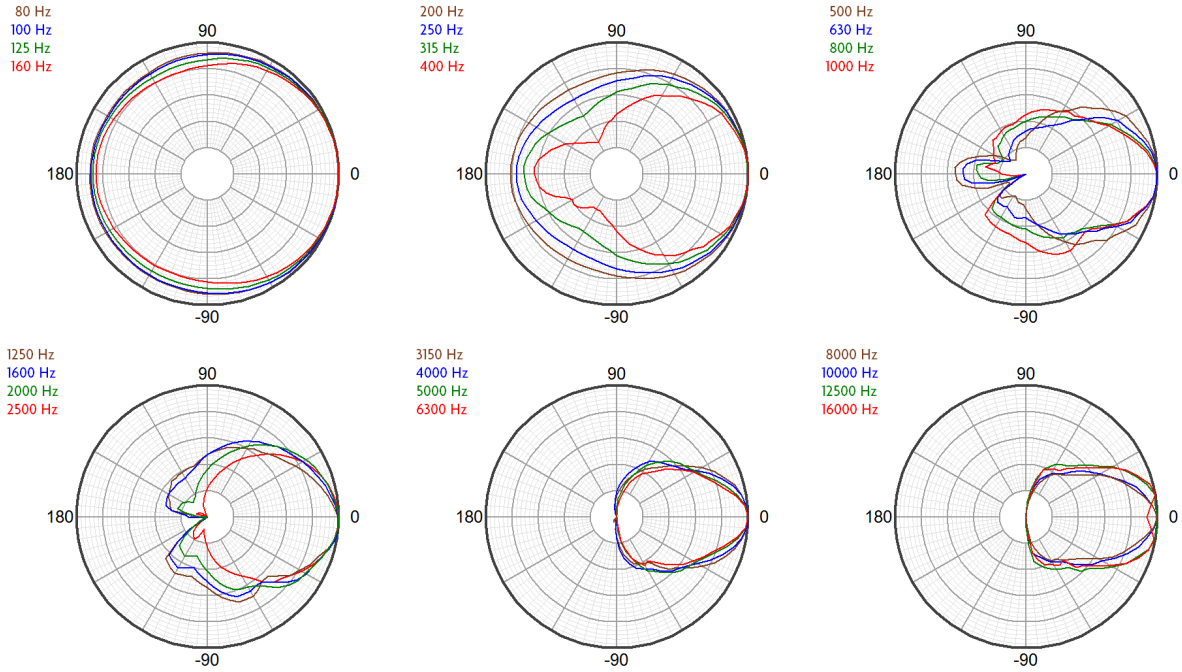
Directivity Index (dB)[13]



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



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



Technologies

The proprietary horn employed in the FA22ac 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™**.

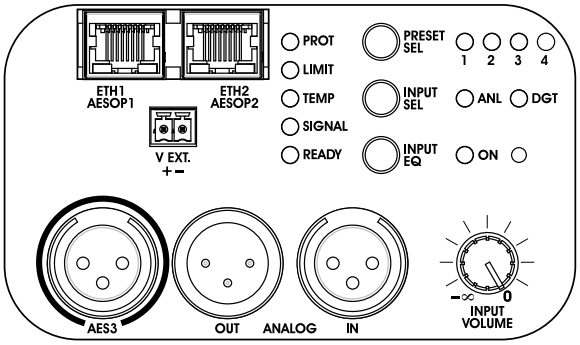
The coaxial transducer in the FA22ac includes a 3 inch (75 mm) diaphragm compression driver that operates to a relatively low frequency. This allows the high frequency horn to smooth the polar response of the low frequency section in the frequency range where the horn would otherwise cause shadowing. 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 40 Hz to 500 Hz range.

Mechanical Specification Drawings

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

Input Panel



FA22ac Presets

Preset 1	Full Range
Preset 2	With Subwoofer
Preset 3	Stage Monitor
Preset 4	Stage Monitor With Subwoofer

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

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.*

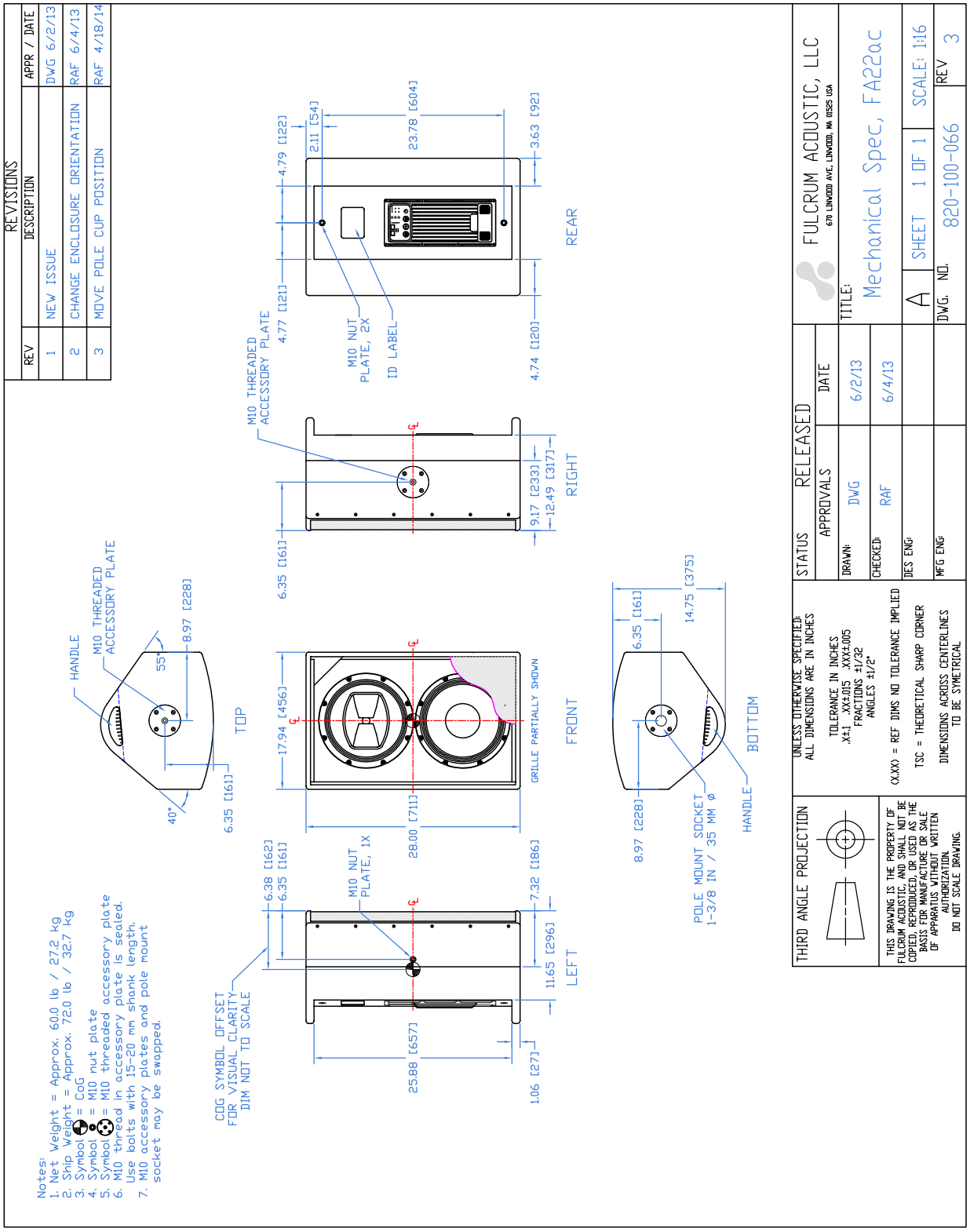
[9] **Axial Processed Response** *The axial magnitude response with recommended signal processing applied.*

[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* $10^{Di/10}$.



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