# EX896

## Triple 8 inch Coaxial Loudspeaker

### Overview

The EX896 coaxial loudspeaker is a narrow profile, high fidelity sound reinforcement loudspeaker. Its three 8 inch woofers provides the output capability of a single 12 inch loudspeaker but with additional low-frequency vertical pattern control  Its 90° x 60° high frequency horn is carefully matched to the LF directivity through crossover, resulting in consistent off-axis performance. An optional yoke bracket allows the enclosure to be mounted close to walls and tilted 0° to -12.5° in 2.5° increments.

Fulcrum Acoustic's **TQ**™ processing is an integral part of the EX896 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 EX896 is especially effective as a wall-mounted solution where its unique combination of small size and vertical pattern control are beneficial – particularly reverberant spaces and rooms with low ceilings - like churches, nightclubs, restaurants, theme parks, A/V screening rooms, and more.

The EX896 is particularly suited for lateral and rear channels in immersive performance environments, including support for Fulcrum's object-based mixing and active acoustics technologies. Its broadband pattern control and integral wall mount hardware allows for easy integration in immersive systems, maximizing coverage linearity across large seating areas.

### Performance Specifications[1]

**Operating Mode**
Single-amplified w/ DSP

**Operating Range [2]**
57 Hz to 20 kHz

**Nominal Beamwidth**
90° x 60°

**Transducers**
LF:  (2) 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 [3]**
55 V / 750 W @ 4 Ω

**Nominal Sensitivity @ Input Voltage [4] (whole space)**
100 dB @ 2.00 V

**Nominal Maximum SPL (peak / continuous)**
134 dB / 128 dB

**Equalized Sensitivity @ Input Voltage [5]**
96 dB @ 2.00 V

**Equalized Maximum SPL [6] (peak / continuous)**
131 dB / 125 dB

**AES75 Maximum Linear Sound Levels [7]**
120.6 dBZ / 137.4 dBZpk / 117.0 dBA
at an RMS input level of 33.3 dBV (46.1 V)

**Recommended Power Amplifier**
750 W to 1500 W @ 4 Ω

### Physical Specifications

**Connections**
(2) Neutrik NL4 Speakon
Pin 1+/-:  Full Range  Pin 2+/-:  NC

**Mounting / Suspension Points**
(12) M10 x 1.5 eye bolt angle points, (4) M10 x 1.5 yoke points, (1) M10 x 1.5 pull back point, (2) M10 x 1.5 points for 3rd party stand adapter, (4) M6 x 1.0 points for 3rd party pan/tilt bracket

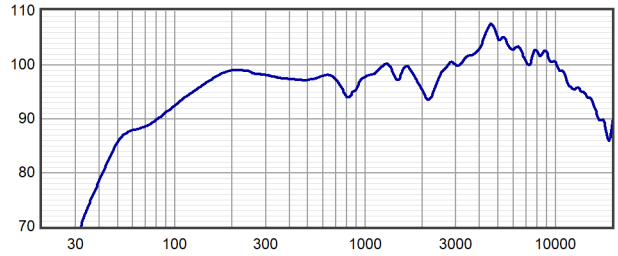
**Dimensions / Weight**
See page 5

**Finish**
Black painted enclosure w/ matte black grille, or
White painted enclosure w/ matte white grille

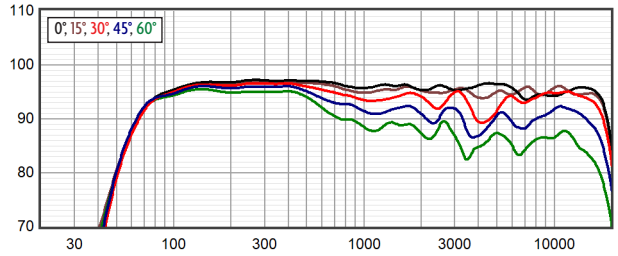
### Options

YK-EX8 yoke bracket, Phoenix block input, Custom color finish, IP55 Weather-resistant (WR) enclosure & hardware

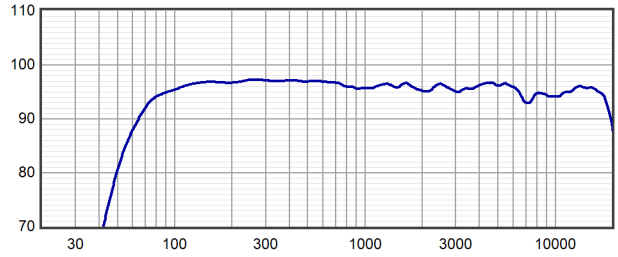
Axial Sensitivity (dB SPL, 2.00 V @ 1 m)[8, 9]



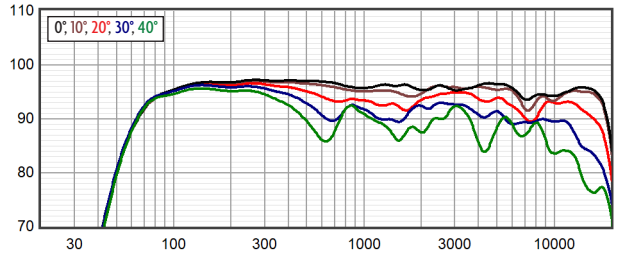

Horizontal Off Axis Response[8, 12]



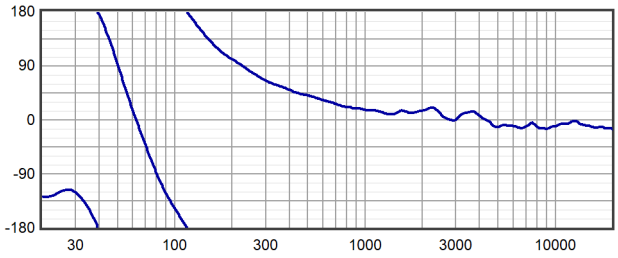

Axial Processed Response (dB)[8, 10]



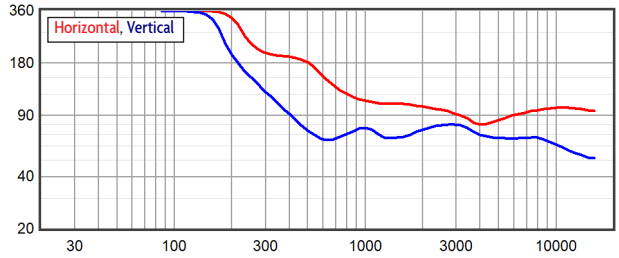

Vertical Off Axis Response[8, 12]



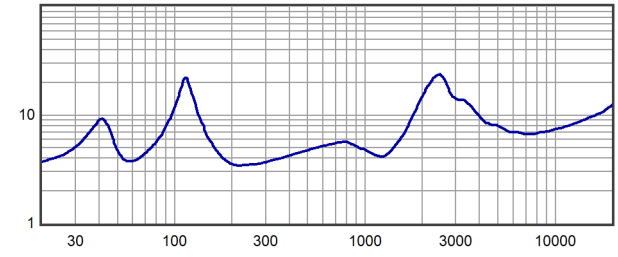

Axial Processed Phase Response (degrees)[8, 11]



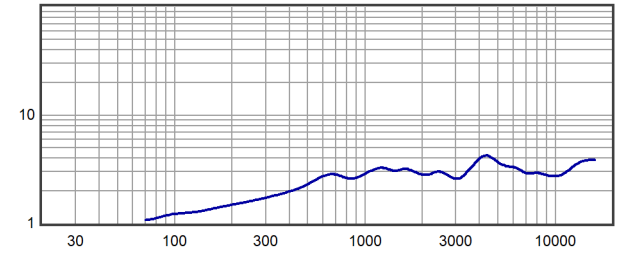

Beamwidth[8, 13]



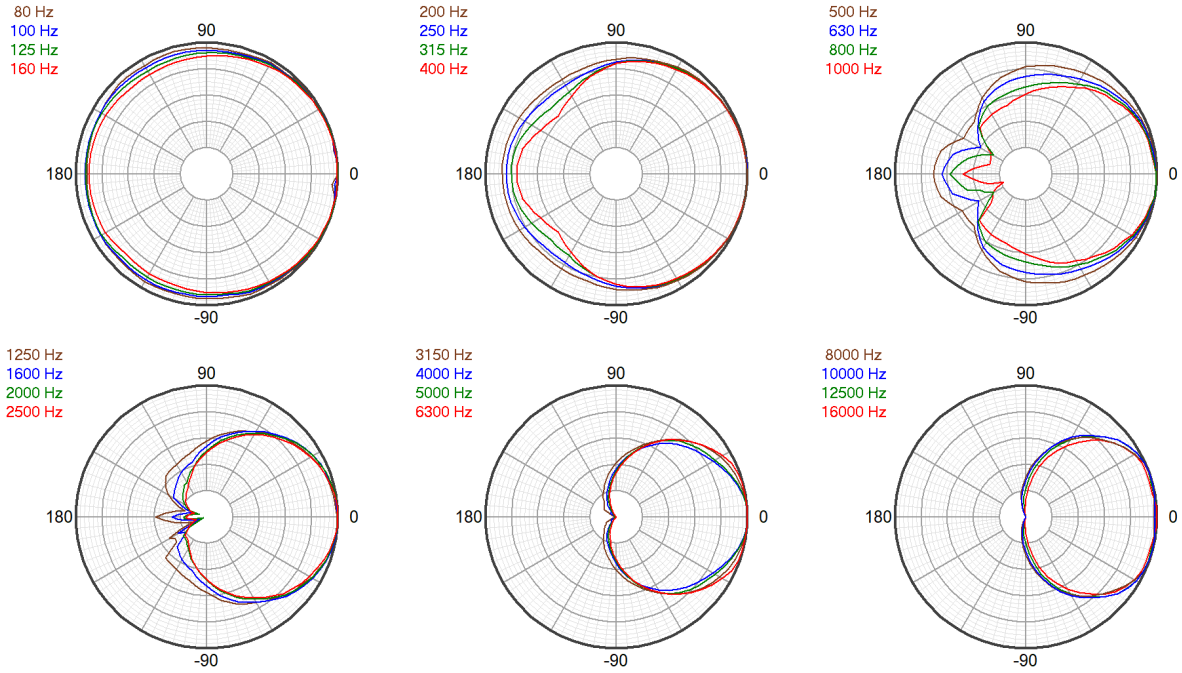

Impedance (ohms)



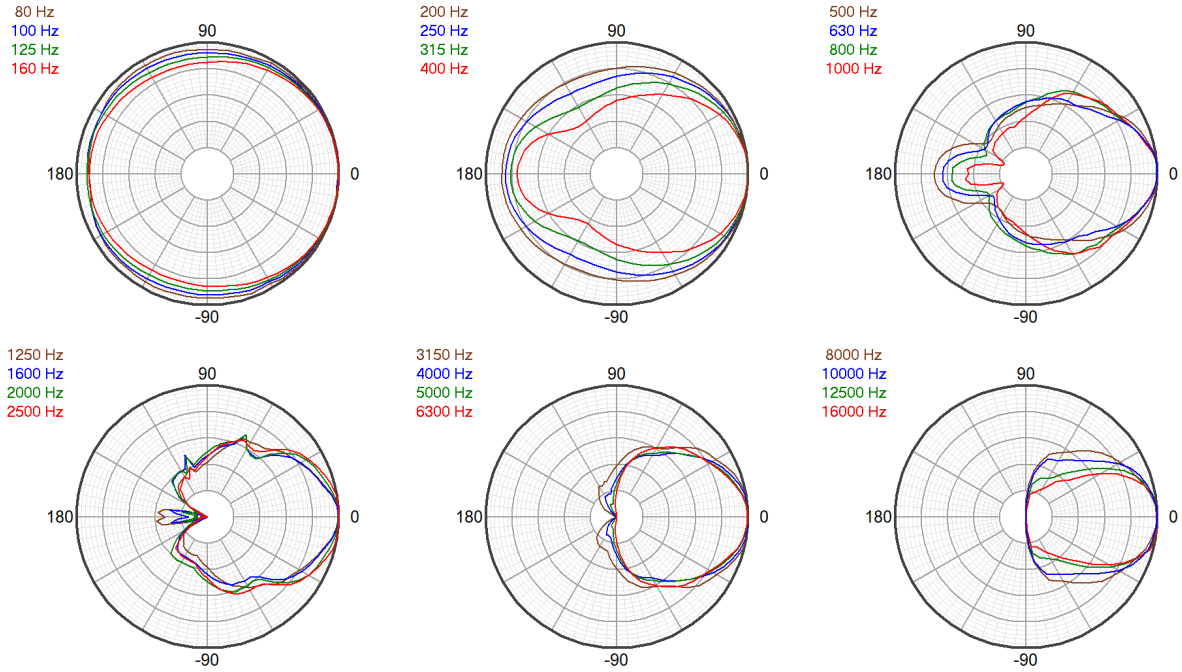

Directivity Index (dB)[14]



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




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



## Technologies

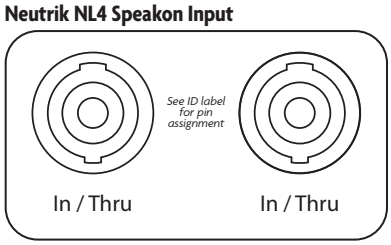
The EX896 includes a neodymium based coaxial driver, which allows the compression driver diaphragm to be positioned very close to the woofer voice coil. This allows the system to maintain coherent summation and consistent off axis response through a 3-way passive crossover, allowing it to be driven with a single amplifier channel.

The compression driver's 1.75 inch diameter diaphragm 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 low frequency limit of the horn's operating range, increasing directional control beyond what can be accomplished by the horn alone.

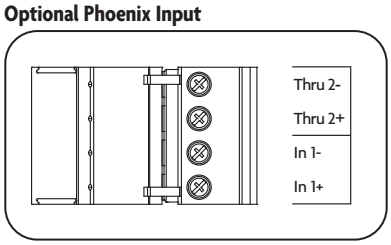
The three low frequency devices operate down to the lowest frequencies, resulting in mutual coupling that provides unusually high efficiency and impact in the critical 80 Hz to 500 Hz range.

## Connections

**Neutrik NL4 Speakon Input**




**Optional Phoenix Input**




Phoenix 1777749 plug:
*Min* 24 AWG / 0.2 $mm^2$
*Max* 10 AWG / 6.0 $mm^2$

## Mechanical Specification Drawings

2D and 3D DWG 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] **AES75 Maximum Linear Sound Levels** *Per AES75-2023: "AES standard for acoustics – Measuring loudspeaker maximum linear sound levels using noise".*

[8] **Resolution** *All response graphs are subjected to 1/6 octave cepstral smoothing with a gaussian weighting function.*

[9] **Axial Sensitivity** *The SPL plotted against frequency for a 1 watt swept sine wave, referenced to 1 m with no signal processing.*

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

[11] **Axial Processed Phase Response** *The axial phase response with recommended signal processing applied, and latency removed.*

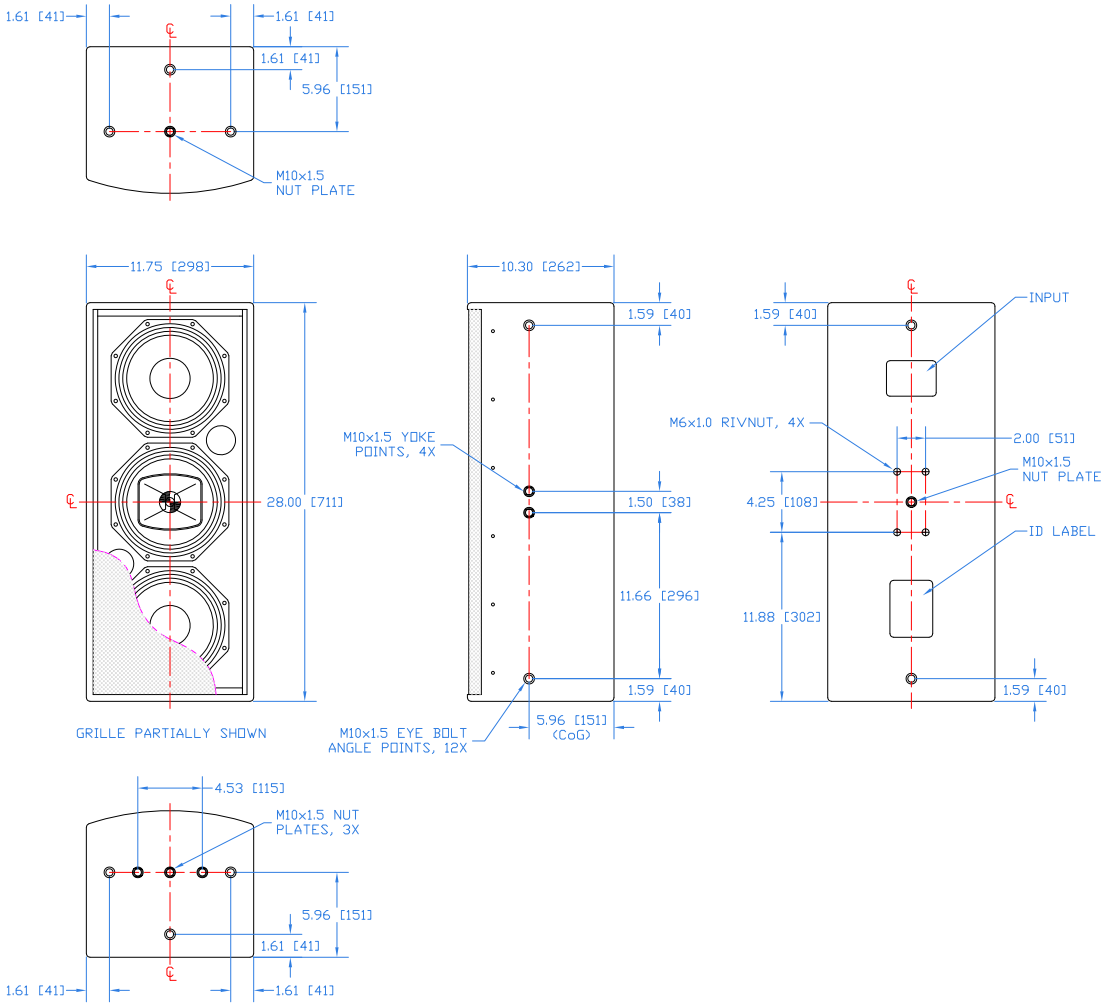
[12] **Horizontal / Vertical Off Axis Responses** *The magnitude response at various angles off axis, with recommended signal proceessing applied.*

[13] **Beamwidth** *The angle between the -6 dB points in a loudspeaker's polar response.*

[14] **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* $10^{Di/10}$.

| REVISIONS | | |
|---|---|---|
| REV | DESCRIPTION | APPR / DATE |
| 1 | NEW ISSUE | RAF 12/17/24 |
| 2 | ADD BOTTOM NUT PLATES FOR EXT ADAPTER | RAF 01/03/25 |

Notes:
1. Net Weight = Approx. 45.0 lb / 20.4 kg
2. Symbol ◎ = M10x1.5 eye bolt angle point
3. Symbol ○ = M10x1.5 nut plate
4. Symbol ⊕ = M6x1.0 rivnut
5. Symbol ◔ = CoG
6. Drawing representative of: EX826, EX896

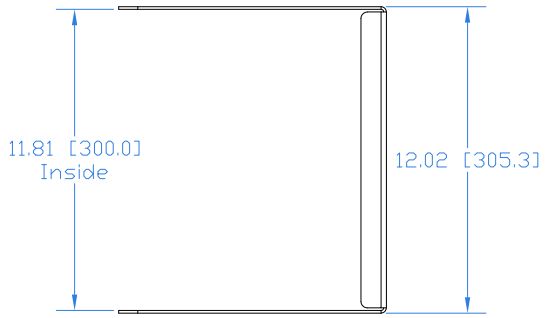


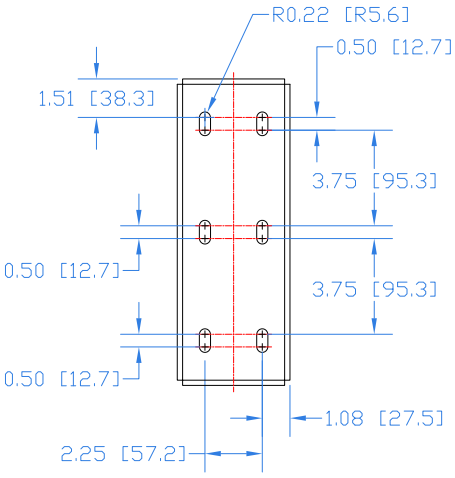

| | | | | | |
|---|---|---|---|---|---|
| THIRD ANGLE PROJECTION | UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES | STATUS | RELEASED | FULCRUM ACOUSTIC, LLC 670 LINWOOD AVE, LINWOOD, MA 01525 USA | |
| | TOLERANCE IN INCHES .X±.1 .XX±.015 .XXX±.005 FRACTIONS ±1/32 ANGLES ±1/2° | APPROVALS | DATE | TITLE: Mechanical Spec, EX8 Series | |
| | (X.XX) = REF DIMS NO TOLERANCE IMPLIED | DRAWN: RAF | 12/17/24 | | |
| | TSC = THEORETICAL SHARP CORNER | CHECKED: DEW | 12/17/24 | | |
| | DIMENSIONS ACROSS CENTERLINES TO BE SYMETRICAL | DES ENG: | | B SHEET 1 OF 1 | SCALE: 1:12 |
| THIS DRAWING IS THE PROPERTY OF FULCRUM ACOUSTIC, AND SHALL NOT BE COPIED, REPRODUCED, OR USED AS THE BASIS FOR MANUFACTURE OR SALE OF APPARATUS WITHOU WRITTEN AUTHORIZATION. DO NOT SCALE DRAWING. | | MFG ENG: | | DWG. NO. 820-100-179 | REV 2 |

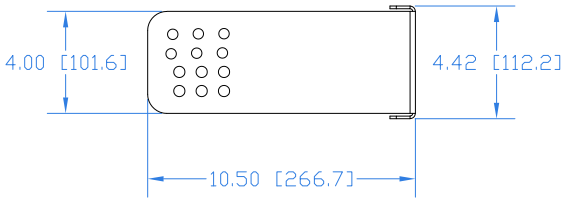
*Drawing is reduced. Do not scale.*

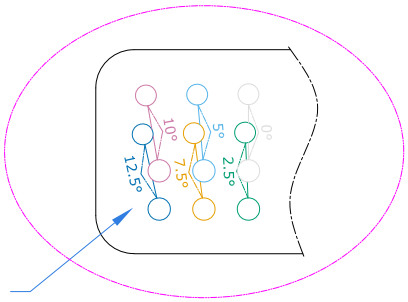
| REVISIONS | | |
|---|---|---|
| REV | DESCRIPTION | APPR / DATE |
| 1 | NEW ISSUE | RAF 01/28/25 |

Notes:
1. Net Weight = Approx. 5.0 lb / 2.3 kg
2. Material: 12 GA (0.105") CRS, weather-resistant coating
3. WLL: 50.0 lb / 22.7 kg
4. Includes 4x each M10 socket head cap screws, split washers, flat washers
5. Fits: EX826, EX896




ENCLOSURE
TILT ANGLES
(SHOWN 2X SCALE)

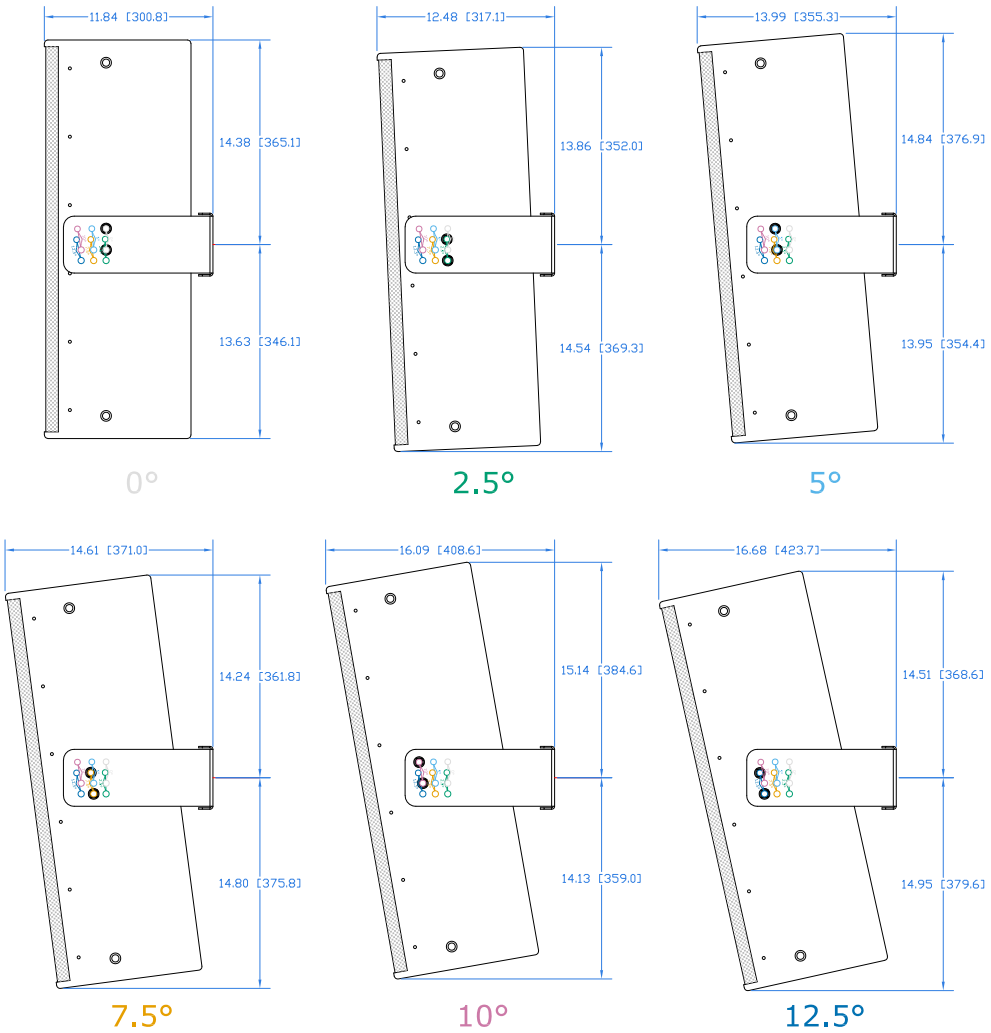
CAUTION: Fulcrum Acoustic's YK yoke brackets are intended to facilitate loudspeaker installation. The installer is solely responsible for determining if the mounting structure is suitable to bear the weight of the loudspeaker plus bracket and for selecting appropriate 3rd party installation hardware. Due to the wide variety of possible installation conditions Fulcrum Acoustic cannot guarantee a bracket's suitability or load rating for every application. The installer should engage persons and/or companies that specialize in rigging disciplines to review the totality of a rigging design and provide a properly engineered solution.

| | | | | |
|---|---|---|---|---|
| THIRD ANGLE PROJECTION | UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES | STATUS RELEASED | FULCRUM ACOUSTIC, LLC | |
| | TOLERANCE IN INCHES .X±.1 .XX±.015 .XXX±.005 FRACTIONS ±1/32 ANGLES ±1/2° | APPROVALS / DATE | 1 MAIN STREET, WHITINSVILLE, MA 01588 USA | |
| | | DRAWN: RAF 01/28/25 | TITLE: Mechanical Spec, YK-EX8 Yoke Bracket | |
| | (X.XX) = REF DIMS NO TOLERANCE IMPLIED | CHECKED: DEW 01/28/25 | | |
| THIS DRAWING IS THE PROPERTY OF FULCRUM ACOUSTIC, AND SHALL NOT BE COPIED, REPRODUCED, OR USED AS THE BASIS FOR MANUFACTURE OR SALE OF APPARATUS WITHOU WRITTEN AUTHORIZATION. DO NOT SCALE DRAWING. | TSC = THEORETICAL SHARP CORNER | DES ENG: | A SHEET 1 OF 1 | SCALE: 1:6 |
| | DIMENSIONS ACROSS CENTERLINES TO BE SYMETRICAL | MFG ENG: | DWG. NO. 820-300-058 | REV 1 |

*Drawing is reduced. Do not scale.*

Notes:
1. Two M10 bolts each side set tilt angle
2. 0°, 5°, & 10° positions are 0.75 in [19 mm] higher than 2.5°, 7.5°, & 12.5° positions

| REVISIONS | | |
|---|---|---|
| REV | DESCRIPTION | APPR / DATE |
| 1 | NEW ISSUE | RAF 01/28/25 |




| | | | |
|---|---|---|---|
| THIRD ANGLE PROJECTION | UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES<br>TOLERANCE IN INCHES<br>.X±.1 .XX±.015 .XXX±.005<br>FRACTIONS ±1/32<br>ANGLES ±1/2°<br>(X.XX) = REF DIMS NO TOLERANCE IMPLIED<br>TSC = THEORETICAL SHARP CORNER<br>DIMENSIONS ACROSS CENTERLINES TO BE SYMETRICAL | STATUS RELEASED | FULCRUM ACOUSTIC, LLC<br>670 LINWOOD AVE, LINWOOD, MA 01525 USA |
| | | APPROVALS / DATE | |
| | | DRAWN: RAF 01/28/25 | TITLE: Mechanical Spec, YK-EX8 + EX8xx Assembly |
| | | CHECKED: DEW 01/28/25 | |
| | | DES ENG: | A SHEET 1 OF 1 SCALE: 1:12 |
| THIS DRAWING IS THE PROPERTY OF FULCRUM ACOUSTIC, AND SHALL NOT BE COPIED, REPRODUCED, OR USED AS THE BASIS FOR MANUFACTURE OR SALE OF APPARATUS WITHOU WRITTEN AUTHORIZATION. DO NOT SCALE DRAWING. | | MFG ENG: | DWG. NO. 820-300-059 REV 1 |

*Drawing is reduced. Do not scale.*