



CS121

21 inch Subcardioid Subwoofer



Overview

The CS121 is a subcardioid subwoofer module intended for permanent installation in a wide range of venues. It includes a single, high power 21 inch direct-radiating woofer in a compact enclosure. A variety of mounting points facilitate suspension via user-supplied shoulder eye bolts or an optional yoke bracket.

The CS121 incorporates Fulcrum's patent-pending *Passive Cardioid Technology™* to overcome one of the major challenges of many loudspeakers: excessive rear LF radiation. Unlike active cardioid loudspeakers, Fulcrum's passive cardioid technology does not require an additional amplifier channel or additional transducer to achieve its impressive low frequency directional control: 10 dB of rear rejection over the subwoofer's operating range.

The subcardioid behavior is produced by a meticulously conceived acoustical circuit which balances the position of the low frequency driver, the enclosure depth and volume, and specially constructed rear-mounted ports which include a calibrated resistive element. By opting for a subcardioid pattern as opposed to a pure, hyper or super cardioid pattern, the rear rejection increases when the modules are deployed in a subwoofer array.

Fulcrum Acoustic's **TQ™** processing is an integral part of the CS121 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.

Performance Specifications¹

Operating Mode

Single-amplified w/ DSP

Operating Range²

29 Hz to 143 Hz

Nominal Beamwidth

Subcardioid (10 dB rear rejection) within operating range

Transducers

LF: 21.0" woofer, 6.0" voice coil; neodymium magnet

Power Handling @ Nominal Impedance³

126 V / 2000 W @ 8 Ω

Nominal Sensitivity @ Input Voltage⁴ (half / whole space)

105 dB / 99 dB @ 2.83 V

Nominal Maximum Continuous SPL (half / whole space)

144 dB / 138 dB peak
138 dB / 132 dB continuous

Equalized Sensitivity @ Input Voltage⁵ (half / whole space)

99 dB / 93 dB @ 2.83 V

Equalized Maximum SPL⁶ (half / whole space)

138 dB / 132 dB peak
132 dB / 126 dB continuous

Recommended Power Amplifier

2000 W to 3000 W @ 8 Ω

Physical Specifications

Connections

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

Mounting / Suspension Points

(16) M10 x 1.5 eye bolt angle points, (2) M12 x 1.75 yoke points,
(3) vibration isolation feet*

* For flown applications CS121 may be ordered with filler bolts rather than feet

Dimensions / Weight

See page 4

Finish

Black painted enclosure w/ matte black grille

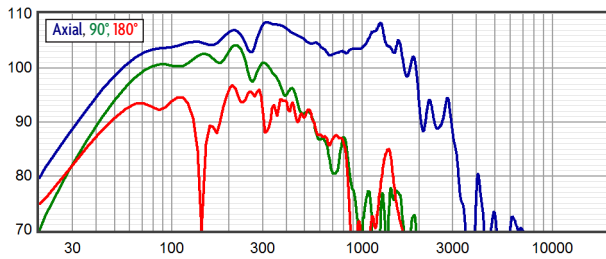
Options

YK-FH15 Yoke Bracket, Terminal strip input, Custom color finish,
Weather-resistant (WR) enclosure & hardware

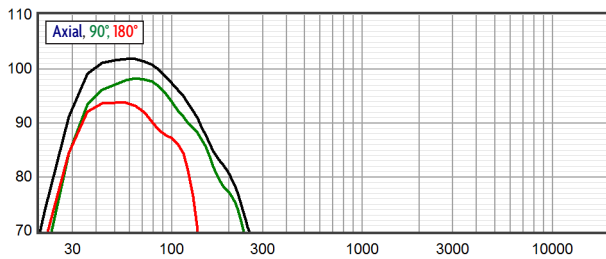


product specification

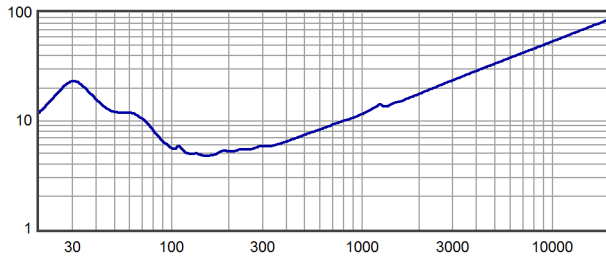
Sensitivity (dB SPL, 2.83 V @ 1 m, half space)^{7,8}



Processed Response (dB, half space)^{7,9}



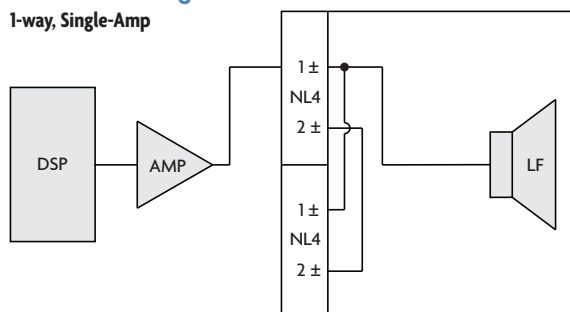
Impedance (ohms)





Connection Diagram

1-way, Single-Amp

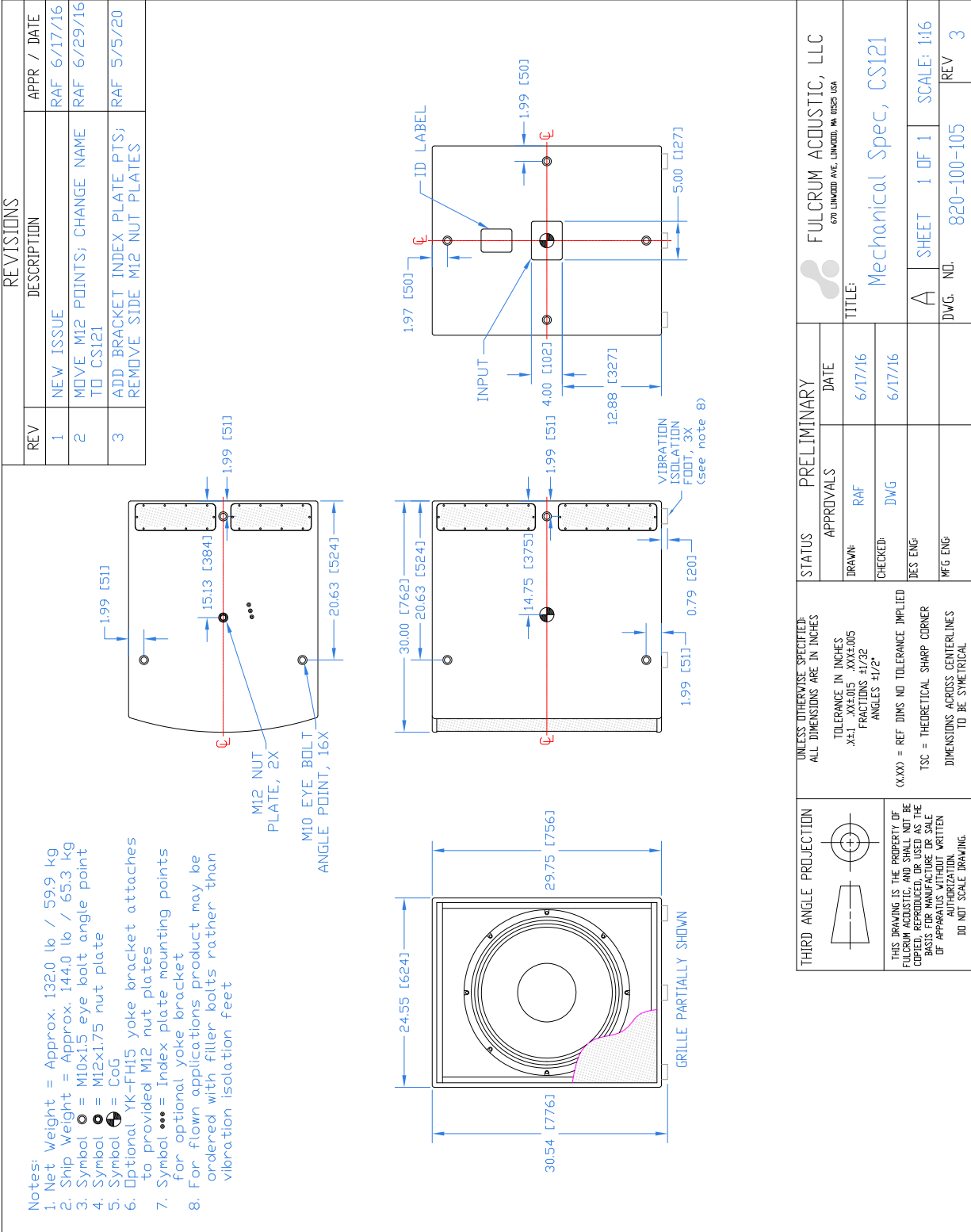


Mechanical Specification Drawings

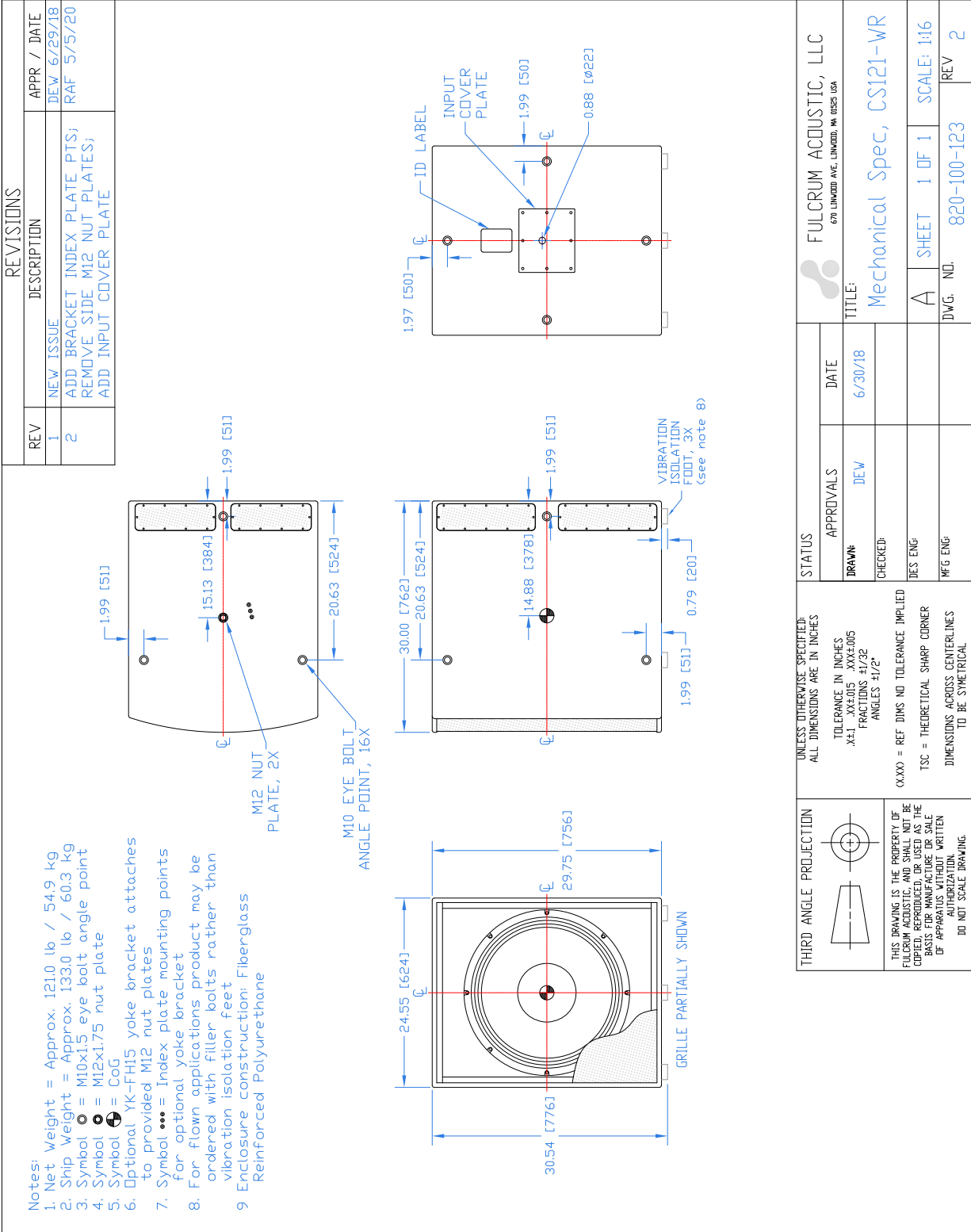
2D and 3D DXF dimensional drawings are available for download at www.fulcrum-acoustic.com/support.

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.



Drawing is reduced. Do not scale.



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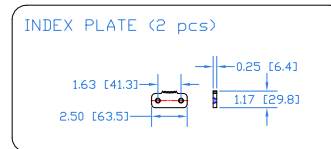
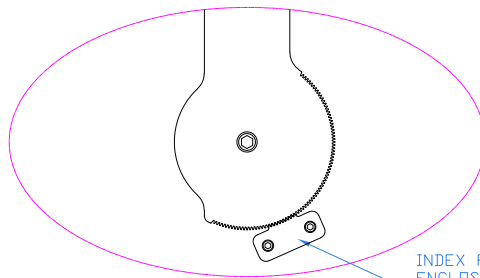
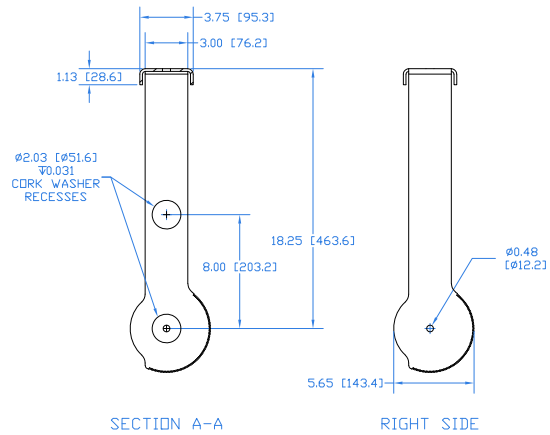
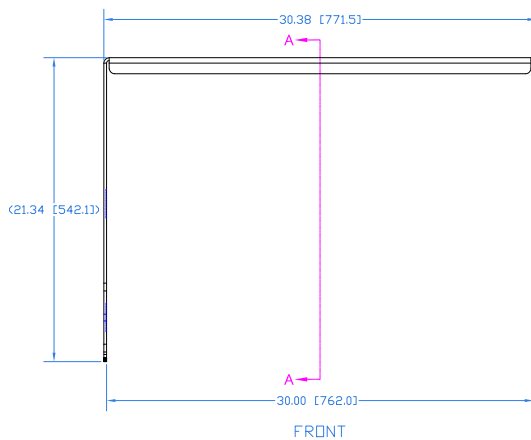
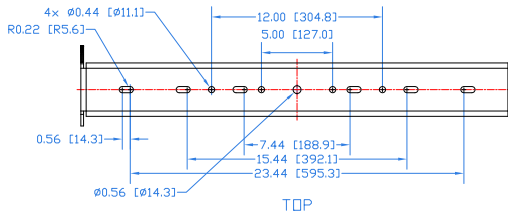


optional accessory

NOTES:

1. FITS: FH15xx Series, CS118, CS121
2. NET WEIGHT: 17.0 lb / 7.7 kg
3. MATERIAL: 7 GA ASTM A36 STEEL
4. INCLUDES HARDWARE KIT

REVISIONS		
REV	DESCRIPTION	APPR / DATE
1	NEW ISSUE	RAF 4/21/20
2	ADD CS SUBS TO NOTE 1	RAF 5/6/20
3	ADD BRACKET MATERIAL TO NOTES	RAF 8/5/21



INDEX PLATE BOLTS TO ENCLOSURE TO FIX TILT ANGLE IN 2° INCREMENTS (SHOWN 2X SCALE)

<p>THIRD ANGLE PROJECTION</p>	<p>UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES</p> <p>TOLERANCE IN INCHES .XX1 .XX±.015 .XXX±.005 FRACTIONS ±1/32 ANGLES ±1/2°</p> <p>(XXX) = REF DIMS NO TOLERANCE IMPLIED</p> <p>TSC = THEORETICAL SHARP CORNER</p> <p>DIMENSIONS ACROSS CENTERLINES TO BE SYMMETRICAL</p>	<p>STATUS RELEASED</p>		<p>FULCRUM ACOUSTIC, LLC 670 LINWOOD AVE, LINWOOD, MA 01525 USA</p>
		<p>APPROVALS</p> <p>DRAWN: RAF</p> <p>CHECKED: DEW</p> <p>DES ENG:</p> <p>MFG ENG:</p>	<p>DATE</p> <p>4/21/20</p> <p>4/21/20</p>	
<p>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 WITHOUT WRITTEN AUTHORIZATION. DO NOT SCALE DRAWING.</p>		<p>A</p>	<p>SHEET 1 OF 1</p>	<p>SCALE: 1:12</p>
		<p>DWG. NO. 820-300-025</p>	<p>REV 3</p>	

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