



US221-4

Dual 21 inch Direct-Radiating Subwoofer

VLF Install



Overview

The US221-4 is a dual 21 inch, ultra-compact, direct radiating subwoofer that is designed to provide gut churning impact and solid musicality – not just infrasonic effects. Its 6 inch voice coils, unusually rigid cones, and innovative low-turbulence ports permit an optimal tuning to be achieved in an enclosure that is smaller than most dual 18 inch subwoofers.

For overhead suspension, sixteen M10 suspension points allow either horizontal or vertical orientation. For ground stacking, the supplied vibration isolators may be threaded into any four M10 mounting points to prevent spurious vibrations and “walking”. When stacking enclosures, the vibration isolators nest in recesses surrounding the mounting points in the cabinet below. The input is mounted on a chamfer at the rear of the enclosure, allowing cable access without requiring additional space between the enclosure and a wall or stage.

The US221-4 is perfectly suited for highly dynamic live performance venues and nightclubs, A/V screening rooms, and low frequency effects in theme parks. And, its small size allows it to be used under stages, built into small cavities, and surprisingly, in many situations where a double 18 inch subwoofer would normally be too large.

Performance Specifications¹

Operating Mode

Single-amplified w/ DSP

Operating Range²

27 Hz to 152 Hz

Nominal Beamwidth

Spherical within operating range

Transducers

LF: 2x 21.0" woofers, 6.0" voice coil; neodymium magnet

Power Handling @ Nominal Impedance³

126 V / 4000 W @ 4 Ω (2x 2000 W @ 8 Ω)

Nominal Sensitivity @ Input Voltage⁴ (half / whole space)

104 dB / 98 dB @ 2.00 V

Nominal Maximum Continuous SPL (half / whole space)

146 dB / 140 dB peak
140 dB / 134 dB continuous

Equalized Sensitivity @ Input Voltage⁵ (half / whole space)

101 dB / 95 dB @ 2.00 V

Equalized Maximum SPL⁶ (half / whole space)

143 dB / 137 dB peak
137 dB / 131 dB continuous

Recommended Power Amplifier

4000 W to 6000 W @ 4 Ω

Physical Specifications

Connections

(2) Neutrik NL4 Speakon
Pin 1+/-: LF1
Pin 2+/-: LF2

Mounting / Suspension Points

(16) M10 x 1.5 eye bolt angle points

Dimensions / Weight

See page 4

Finish

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

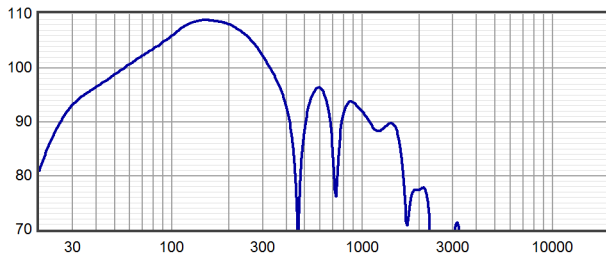
Options

Terminal strip input, Custom color finish,
Weather-resistant (WR) enclosure

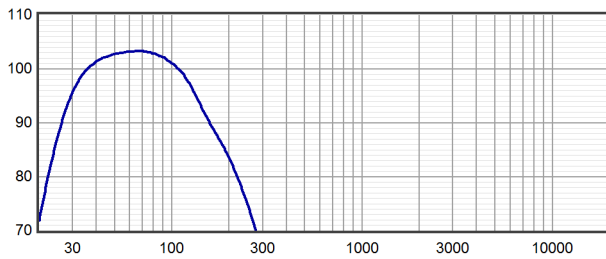


product specification

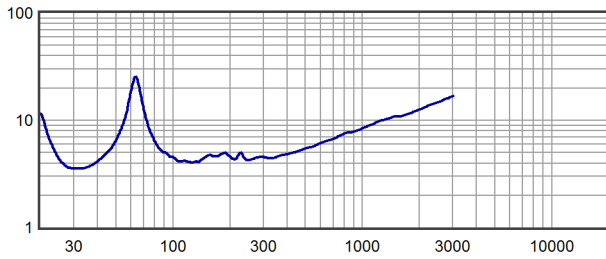
Axial Sensitivity (dB SPL, 2.00 V @ 1 m, half space)^{7,8}



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



Impedance (ohms)





product specification

Variant

Also available is the US221-2, which has two 4 ohm woofers instead of two 8 ohm woofers. The US221-2 version can be powered by amplifiers with less voltage swing.

Technologies

The 21 inch woofers in the US221-4 have 6 inch voice coils, unusually strong cones, and a dual-spider suspension that allows 60 mm peak-to-peak excursion capability. This allows the pair of woofers to handle 4000 watts of long term power, and provides the motor strength required to operate effectively in such a small enclosure.

The enclosure shell is constructed of 18 mm Baltic birch plywood,

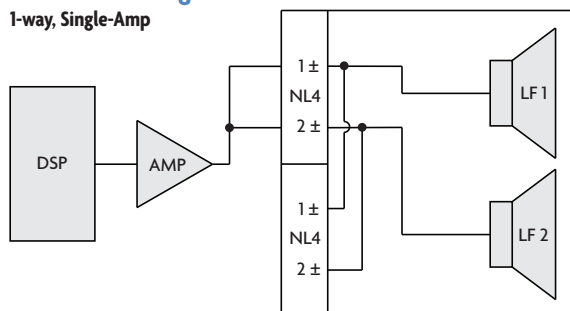
while the ports are constructed of curved plywood. The port design makes use of all available frontal area, minimizes turbulence, and smoothly guides the air flow around the woofers' 20 kg magnet structures.

The specially-selected vibration isolators are much more effective than conventional loudspeaker feet. They are constructed of high-compliance neoprene for a high coefficient of friction, with a special shape that allows up to 8 mm of lateral displacement.

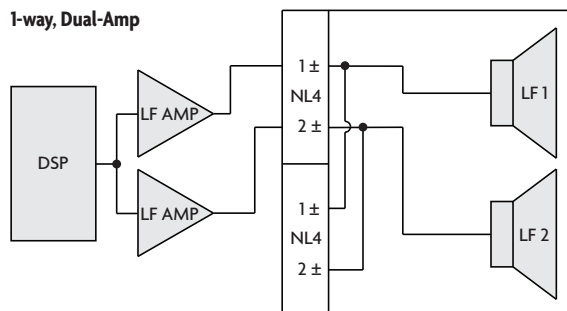
The net result is a subwoofer that provides low frequencies with a very authoritative character in a package that is less than half the size and weight of most competitive products.

Connection Diagram

1-way, Single-Amp



1-way, Dual-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.

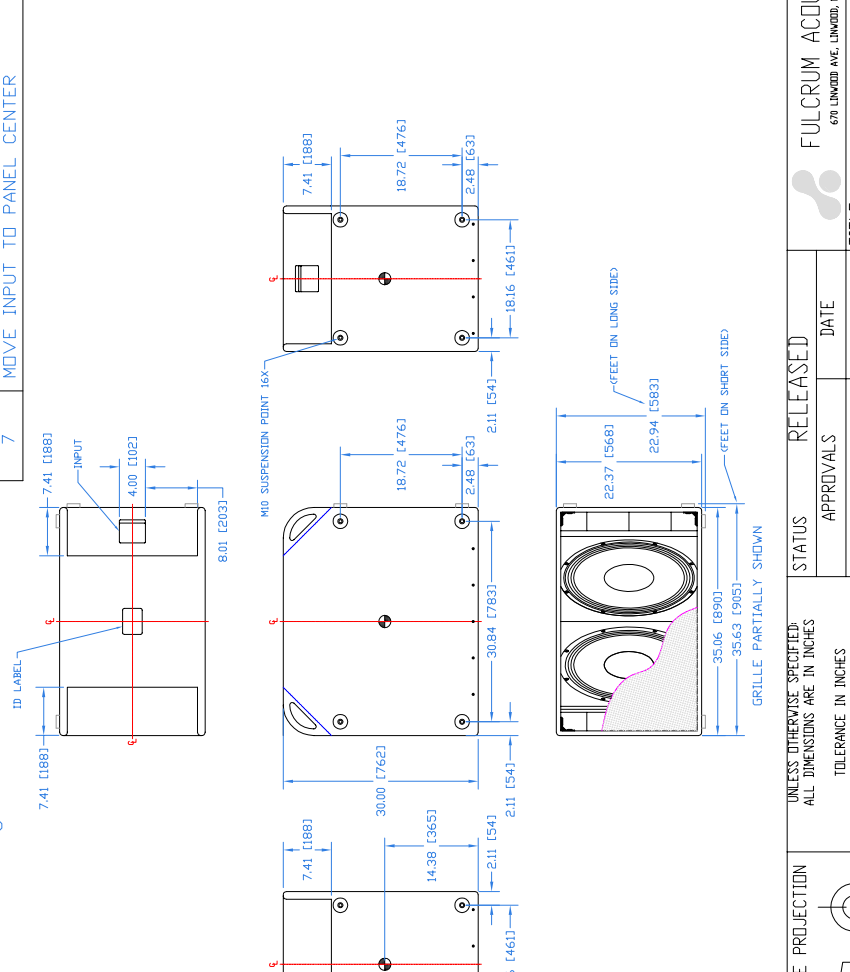
⁸ **Axial Sensitivity** The SPL plotted against frequency for a 1 watt swept sine wave, referenced to 1 m with no signal processing.


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

REVISIONS		
REV	DESCRIPTION	APPR / DATE
2	CORRECTED REAR CHAMFER	RAF 8/28/09
3	ROTATED VIEW 90 DEG	RAF 9/22/09
4	REMOVE FRONT HANDLES	RAF 8/31/11
5	ADD SHIPPING WEIGHT	RAF 8/31/11
6	UPDATE FOOT DRAWING	RAF 1/25/16
7	MOVE INPUT TO PANEL CENTER	RAF 11/21/19

Notes:

1. Net Weight = Approx. 177.0 lb / 80.3 kg
2. Ship Weight = Approx. 187.0 lb / 84.8 kg
3. Symbol  = M10 eye bolt angle point in foot recess
4. Symbol  = CoG
5. Four vibration isolating feet thread into suspension points on either short or long side (shown on both).





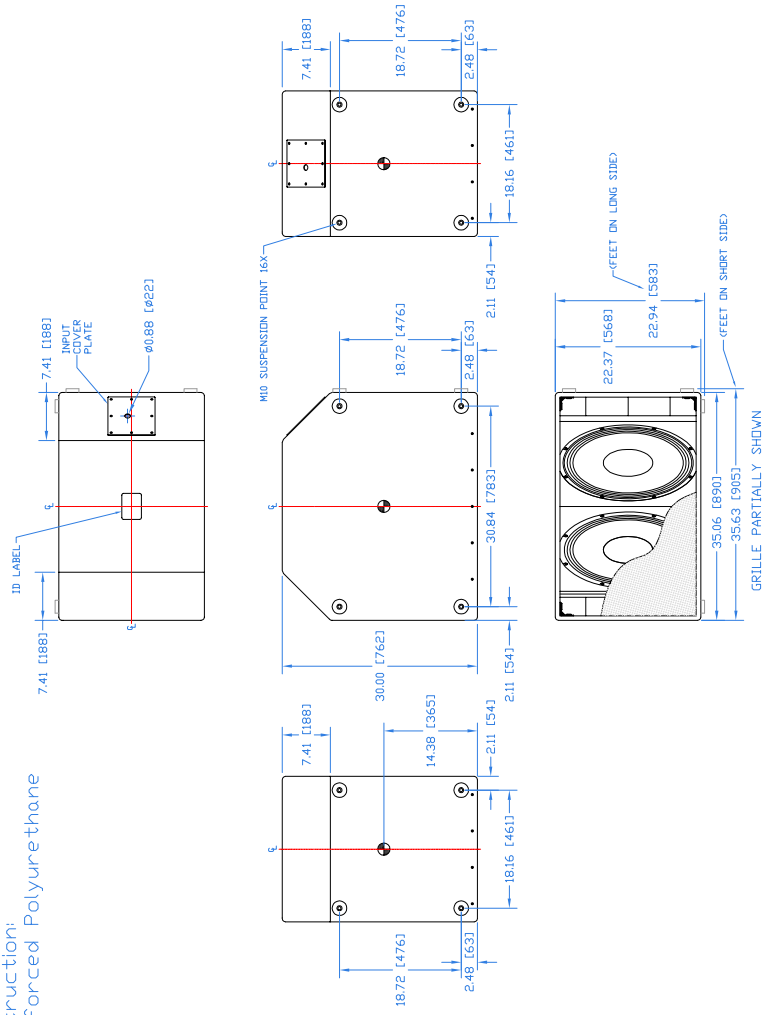
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	(XXX) = REF DIMS NO TOLERANCE IMPLIED TSC = THEORETICAL SHARP CORNER DIMENSIONS ACROSS CENTERLINES TO BE SYMMETRICAL.	DRAWN: DWG	8/22/09
		CHECKED: RAF	9/22/09
		DES'G: MFG ENG	
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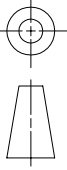
FULCRUM ACOUSTIC, LLC 670 LINWOOD AVE. LINWOOD, MA 01825 USA	
TITLE: Mechanical Spec, US221	
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DWG. NO.	820-100-023
SCALE:	1:24
REV	7

Drawing is reduced. Do not scale.

REVISIONS		
REV	DESCRIPTION	APPR / DATE
1	RELEASED TO PRODUCTION	DWG 7/19/13
2	UPDATE FOOT DRAWING	RAF 1/25/16
3	UPDATE WEIGHT & DIMS FOR FRP.	DEW 6/22/18
4	PURGE HANDLES, ADD COVER PLATE	RAF 11/22/19

- Notes:
1. Net Weight = Approx. 152.0 lb / 68.9 kg
 2. Ship Weight = Approx. 162.0 lb / 73.5 kg
 3. Symbol  = M10 eye bolt angle point
 4. Symbol  = CoG
 5. Four vibration isolating feet thread into suspension points on either short or long side (shown on both)
 6. Enclosure construction: Fiberglass Reinforced Polyurethane



THIRD ANGLE PROJECTION		STATUS		RELEASED	
	THIS DRAWING IS THE PROPERTY OF FULCRUM ACOUSTIC, AND SHALL NOT BE COPIED, REPRODUCED, OR USED AS THE BASIS FOR ANY PROJECT OR SCALE OF APPARATUS WITHOUT THE WRITTEN AUTHORIZATION OF FULCRUM ACOUSTIC. DO NOT SCALE DRAWING.	UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES	APPROVALS	DATE	FULCRUM ACOUSTIC, LLC 670 LINWOOD AVE. LINWOOD, MA 01825 USA
		TOLERANCE IN INCHES .X411 .XX4.015 .XXX4.005 FRACTIONS 1/16 1/32 ANGLES 1/2°	DWG	7/18/13	TITLE: Mechanical Spec, US221-WR
		(X.XX) = REF DIMS NO TOLERANCE IMPLIED	RAF	7/19/13	A SHEET 1 OF 1
		TSC = THEORETICAL SHARP CORNER	DES' ENG		SCALE: 1:24
		DIMENSIONS ACROSS CENTERLINES TO BE SYMMETRICAL	MFG ENG		DWG. NO. 820-100-070
					REV 4

Drawing is reduced. Do not scale.