

# SELENIUM



# COAXIAL 12CO2P / 12CO2P-SLF\*

Coaxial loudspeaker designed for professional use in touring or fixed applications. It employs a 1" titanium compression driver coupled with a 12" woofer damped and cooled with ferrofluid (Ferrosound®). High performance compact systems can be designed easily with the added advantage of the almost point source characteristic that a coaxial offers, virtually eliminating the delay problem between adjacent acoustic sources. This coaxial loudspeaker can be successfully used in floor monitor applications or in sound reinforcement systems. Any suitable designed, bi-amplified system will deliver outstanding power with a superb frequency response.

\*12CO2P-SLF: Product without Selenium logo printed on the dust cap.

## SPECIFICATIONS

Nominal diameter.....	305 (12)	mm (in)
Nominal impedance.....	8	Ω
Minimum impedance		
@ 236 Hz (woofer) .....	6.9	Ω
@ 2,580 Hz (driver).....	7.2	Ω
Power handling		
Musical Program (woofer) <sup>1</sup> .....	500	W
Musical Program (driver w/ xover 1,200 Hz / oct) <sup>2</sup> .....	100	W
Sensitivity (2.83V @ 1m)		
averaged from 100 to 2,000 Hz (woofer) .....	94	dB SPL
averaged from 1,200 to 5,000 Hz (driver).....	101	dB SPL
Frequency response @ -10 dB		
(woofer) .....	55 to 5,000	Hz
(driver) .....	800 to 18,000	Hz

<sup>1</sup> Power handling specifications refer to normal speech and/or music program material, reproduced by an amplifier producing no more than 5% distortion. Power is calculated as true RMS voltage squared divided by the nominal impedance of the loudspeaker.

<sup>2</sup> Power handling specifications refer to normal speech and/or music program material, reproduced by an amplifier producing no more than 5% distortion. Power is calculated as true RMS voltage squared divided by the nominal impedance of the loudspeaker. This voltage is measured at the input of the recommended passive crossover when placed between the power amplifier and loudspeaker.  
Musical Program= 2 x W RMS.

## THIELE-SMALL PARAMETERS (WOOFER)

Fs .....	47	Hz
Vas .....	93 (3.28)	l (ft <sup>3</sup> )
Qts .....	0.46	
Qes .....	0.52	
Qms .....	4.49	
ηo (half space) .....	1.79	%
Sd .....	0.0510 (79.1)	m <sup>2</sup> (in <sup>2</sup> )
Vd (Sd x Xmax) .....	63.75 (3.89)	cm <sup>3</sup> (in <sup>3</sup> )
Xmax (max. excursion (peak) with 10% distortion) .....	3.0 (0.12)	mm (in)
Xlim (max. excursion (peak) before physical damage) .....	9.5 (0.37)	mm (in)
βL .....	12.8	Tm
Re .....	6.3	Ω

Atmospheric conditions at TS parameter measurements:

Temperature .....	27 (81)	°C (°F)
Atmospheric pressure .....	1,000	mb
Humidity .....	43	%

Thiele-Small parameters are measured after a 2-hour power test using half AES power. A variation of ± 15% is allowed.

## NON-LINEAR PARAMETERS (WOOFER)

Le @ Fs (voice coil inductance @ Fs) .....	2.287	mH
Le @ 1 kHz (voice coil inductance @ 1 kHz) .....	0.863	mH
Le @ 20 kHz (voice coil inductance @ 20 kHz) .....	0.334	mH
Red @ Fs .....	0.16	Ω
Red @ 1 kHz .....	2.26	Ω
Red @ 20 kHz .....	30.03	Ω
Krm .....	1.191	mΩ
Kxm .....	13.833	mH
Erm .....	0.863	
Exm .....	0.683	

## ADDITIONAL INFORMATION

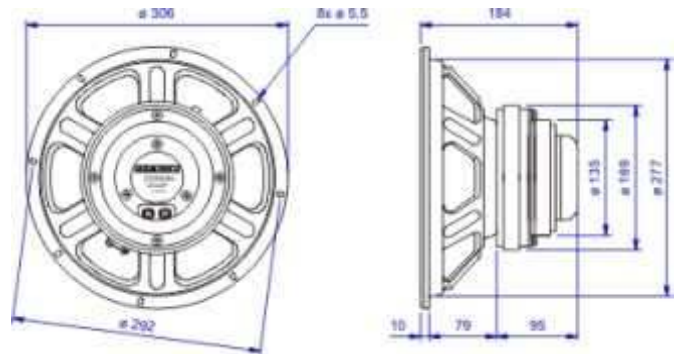
Magnet material (woofer and driver) .....	Barium ferrite
Magnet weight (woofer) .....	1,600 (57) g (oz)
Magnet weight (driver) .....	920 (33) g (oz)
Magnet diameter x depth (woofer) .....	169 x 19 (6.65 x 0.75) mm (in)
Magnet diameter x depth (driver) .....	134 x 18 (5.28 x 0.71) mm (in)
Magnetic assembly weight (woofer) .....	4,200 (9.26) g (lb)
Magnetic assembly weight (driver) .....	2,500 (5.51) g (lb)
Frame material (woofer) .....	Steel
Housing material (driver) .....	Plastic
Frame finish (woofer) .....	Black epoxy
Housing finish (driver) .....	Black
Voice coil material (woofer and driver) .....	Copper
Voice coil former material (woofer and driver) .....	Polyimide (Kapton®)
Cone material (woofer) .....	Long fiber pulp
Diaphragm material (driver) .....	Titanium
Volume displaced by coaxial .....	2.3 (0.081) l (ft <sup>3</sup> )
Net weight .....	8,000 (17.64) g (lb)
Gross weight .....	9,500 (20.94) g (lb)
Carton dimensions (W x D x H) .....	34 x 34 x 23 (13.39 x 13.39 x 9.06) cm (in)

## MOUNTING INFORMATION

Number of bolt-holes .....	8
Bolt-hole diameter .....	5.5 (0.22) mm (in)
Bolt-circle diameter .....	292 (11.50) mm (in)
Baffle cutout diameter (front mount) .....	280 (11.02) mm (in)
Baffle cutout diameter (rear mount) .....	275 (10.83) mm (in)
Connectors .....	Silver-plated push terminals
Polarity .....	Positive voltage applied to the positive (+) terminal gives forward cone motion

Minimum clearance between the back of the magnetic assembly and the enclosure wall .....

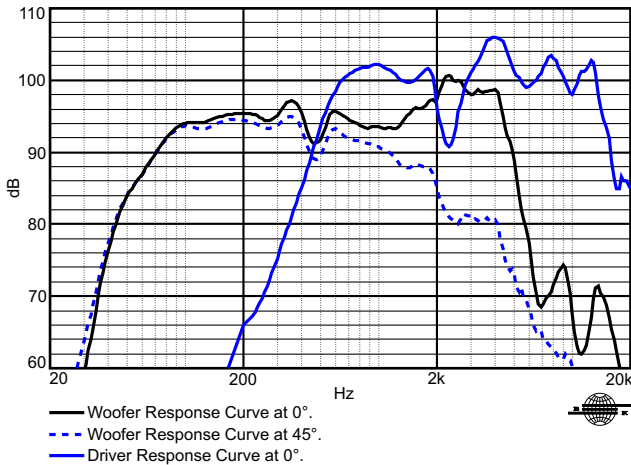
75 (3)	mm (in)
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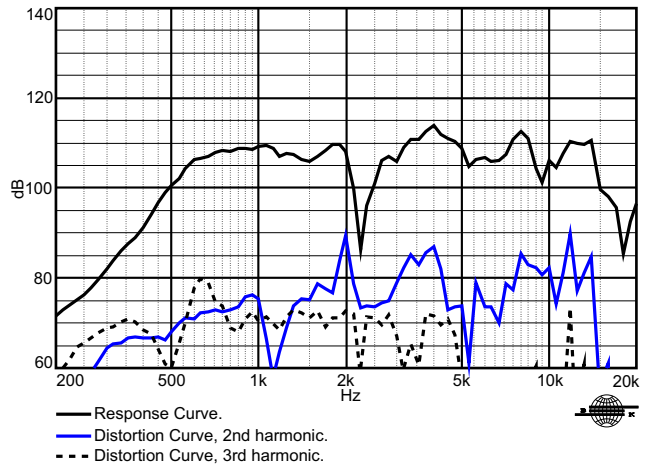
Dimensions in mm.



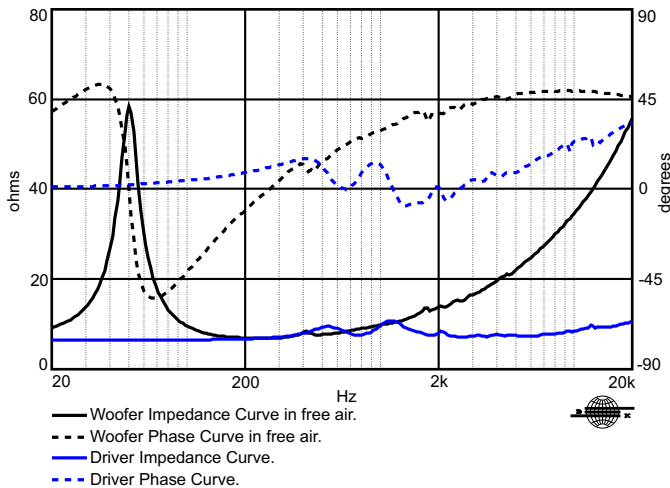
## WOOFER AND DRIVER RESPONSE CURVES IN A TEST ENCLOSURE INSIDE AN ANECHOIC CHAMBER, 1 W / 1 m



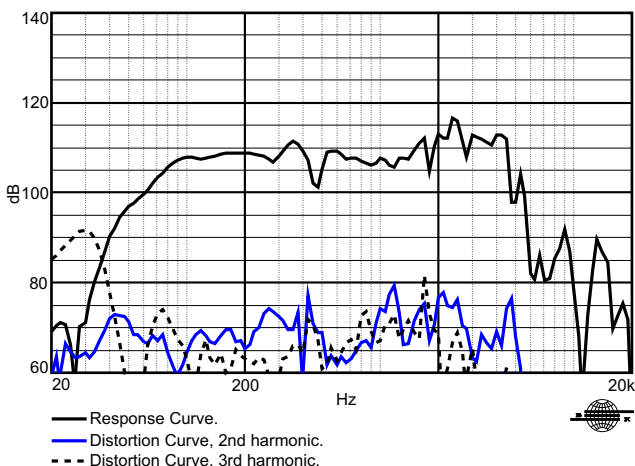
## DRIVER HARMONIC DISTORTION CURVES, 5 W / 1 m.



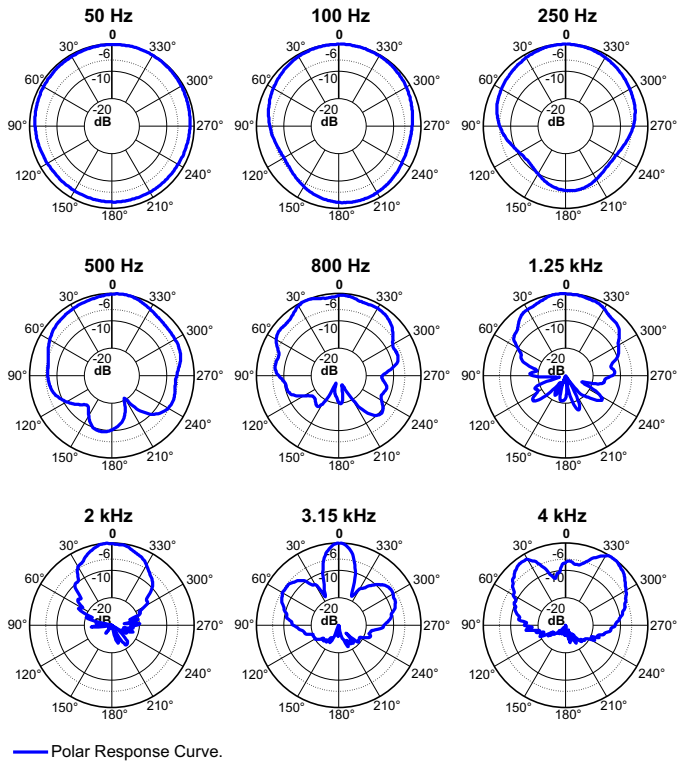
## WOOFER AND DRIVER IMPEDANCE AND PHASE CURVES



## WOOFER HARMONIC DISTORTION CURVES MEASURED AT 10% AES INPUT POWER, 1 m



## POLAR RESPONSE CURVES



## HOW TO CHOOSE THE RIGHT AMPLIFIER

The power amplifier must be able to supply twice the RMS driver power. This 3 dB headroom is necessary to handle the peaks that are common to musical programs. When the amplifier clips those peaks, high distortion arises and this may damage the transducer due to excessive heat. The use of compressors is a good practice to reduce music dynamics to safe levels.

## NON-LINEAR VOICE COIL PARAMETERS

Due to its close coupling with the magnetic assembly, the voice coil in electrodynamic loudspeakers is a very non-linear circuit. Using the non-linear modeling parameters  $K_{rm}$ ,  $K_{xm}$ ,  $E_{rm}$ ,  $E_{xm}$  from an empirical model, we can calculate voice coil impedance with good accuracy.

## SUGGESTED PROJECTS

For additional project suggestions, please access our website.

## TEST ENCLOSURE

65-liter volume with a duct  $\phi$  4" by 0.8" length.  
 Kapton®: Du Pont trademark.  
 Ferrosound®: Ferrofluidics Corporation trademark.

Specifications subject to change without prior notice.

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