WOOFER CV4
10CV4

10" Professional Woofer designed for low and mid-bass professional sound reinforcement.

It is recommended for portable systems as well as night clubs, small discos, conference halls and auditoriums.

General construction includes a sturdy steel frame, use of high temperature adhesives, Kapton® former, high temp copper coil and long fiber impregnated paper cone, assuring long-term stability and outstanding overall woofer performance.

SPECIFICATIONS

Nominal diameter	254 (10)	mm (in)
Nominal impedance	8	Ω
Minimum impedance @ 208 Hz	6,48	Ω
Power handling		
Musical program[1]	200	W
AES[2]	100	W
Sensitivity (2.83V@1m) averaged from 300 to 3,000 Hz	93	dB SPL
Power compression @ 0 dB (nom. power)	4.5	dB
Power compression @ -3 dB (nom. power)/2	2.5	dB
Power compression @ -10 dB (nom. power)/10	0.9	dB
Frequency response @ -10 dB	70 to 8,000	Hz

[1] 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.
[2] AES Standard (60 - 600 Hz).

THIELE-SMALL PARAMETERS

Fs	77	Hz
Vas	25 (5.44)	l(ft^3)
Qts	1.6	
Qes	1.84	
Qms	12.48	
ηo (half space)	0.59	%
Sd	0.035 (130.2)	m^2 (in^2)
Vd (Sd x Xmax)	80.5 (6.41)	cm^3 (in^3)
Xmax (max. excursion (peak) with 10% distortion)	2.3 (0.05)	mm (in)
Xlim (max.excursion (peak) before physical damage)	7.5 (0.34)	mm (in)

Atmospheric conditions at TS parameter measurements:

Temperature	22 (81)	°C (°F)
Atmospheric pressure	1,003	mb
Humidity	52	%

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

ADDITIONAL PARAMETERS

βL	6.9	Tm
Flux density	1.05	T
Voice coil diameter	32 (1.8)	mm (in)
Voice coil winding length	9 (40.0)	m (ft)
Wire temperature coefficient of resistance (α25)	0.00403	1/°C
Maximum voice coil operation temperature	265 (509)	°C (°F)
θvc (max.voice coil operation temp./max.power)	2,65 (5,09)	°C/W(°F/W)
Hvc (voice coil winding depth)	11 (0,41)	mm (in)
Hag (air gap height)	6.3 (0.32)	mm (in)
Re	6,3	Ω
Mms	30 (0.1411)	g (lb)
Cms	140	µm/N
Rms	1.15	kg/s

NON-LINEAR PARAMETERS

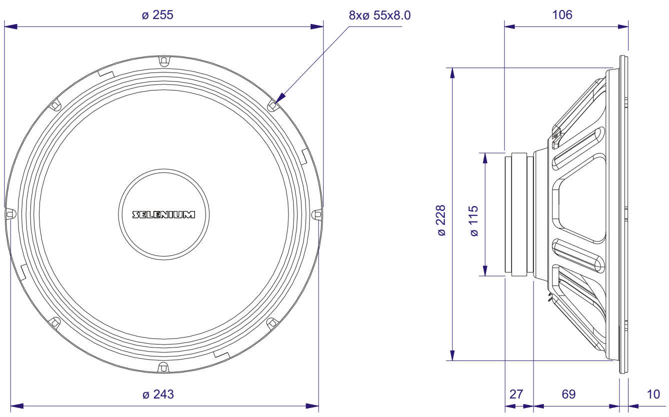
Le @ Fs (voice coil inductance @ Fs)	0.930	mH
Le @ 1 kHz (voice coil inductance @ 1 kHz)	0.617	mH
Le @ 20 kHz (voice coil inductance @ 20 kHz)	0.382	mH
Red @ Fs	0.164	Ω
Red @ 1 kHz	1.395	Ω
Red @ 20 kHz	17,281	Ω
Krm	0.9	mΩ
Kxm	2.5	mH
Erm	0.94	
Exm	0.84	

ADDITIONAL INFORMATION

Magnet material	Barium ferrite	
Magnet weight	560 (44)	g (oz)
Magnet diameter x depth	115 x 14 (5.79 x 0.71)	mm (in)
Magnetic assembly weight	1,560 (7.06)	g (lb)
Frame material	Steel	
Frame finish	Black epoxy	
Voice coil material	Copper	
Voice coil former material	Polyimide (Kapton®)	
Cone material	Long fiber pulp	
Volume displaced by woofer	1.4 (0.134)	l (ft^3)
Net weight	2.020 (9.24)	g (lb)
Gross weight	2,320 (10.49)	g (lb)
Carton dimensions (W x D x H)	26 x 26 x 14 (15.0 x 15.0 x 6.1)	cm (in)

MOUNTING INFORMATION

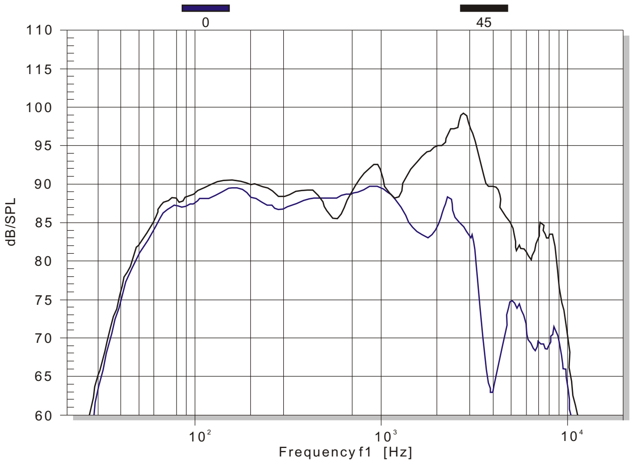
Number of bolt-holes	8	
Bolt-hole dimension	5.5 x 8 (0.22 x 0.31)	mm (in)
Bolt-circle diameter	243 (14.48)	mm (in)
Baffle cutout diameter (front mount)	231 (13.86)	mm (in)
Baffle cutout diameter (rear mount)	225 (13.70)	mm (in)
Connectors	Push on terminals	
Polarity	Positive voltage applied to the positive (+) terminal gives forward cone motion	
Minimum clearance between the back of the magnetic assembly and the enclosure wall	75 (3)	mm (in)



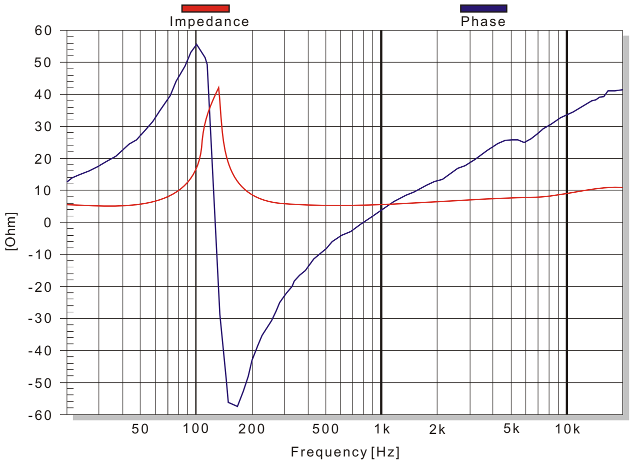
Dimensions in mm.

WOOFER CV4
10CV4

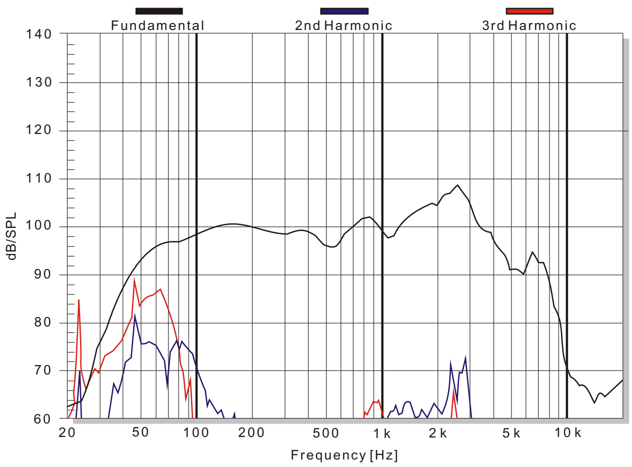
RESPONSE CURVES (0° AND 45°) IN A TEST ENCLOSURE INSIDE AN ANECHOIC CHAMBER,1 W / 1m



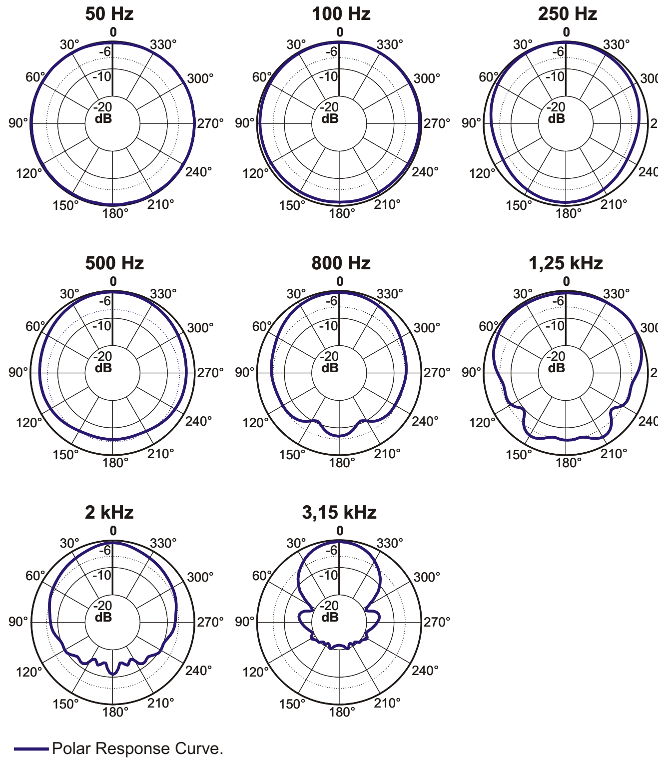
IMPEDANCE AND PHASE CURVES MEASURED IN FREE-AIR



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.

FINDING VOICE COIL TEMPERATURE

It is very important to avoid maximum voice coil temperature. Since moving coil resistance (R_E) varies with temperature according to a well known law, we can calculate the temperature inside the voice coil by measuring the voice coil DC resistance:

$$T_B = T_A + \left(\frac{R_B}{R_A} - 1\right)\left(T_A - 25 + \frac{1}{\alpha_{25}}\right)$$

T_A , T_B= voice coil temperatures in °C.
R_A , R_B= voice coil resistances at temperatures T_A and T_B, respectively.
α_{25}= voice coil wire temperature coefficient at 25 °C.

POWER COMPRESSION

Voice coil resistance rises with temperature, which leads to efficiency reduction. Therefore, if after doubling the applied electric power to the driver we get a 2 dB rise in SPL instead of the expected 3 dB, we can say that power compression equals 1 dB. An efficient cooling system to dissipate voice coil heat is very important to reduce power compression.

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 Krm, Kxm, Erm and Exm from an empirical model, we can calculate voice coil impedance with good accuracy.

SUGGESTED PROJECTS

Auditorium Kit Electoral Kit
For additional project suggestions, please access our website.

TEST ENCLOSURE

100-liter volume with a duct ø 3” by 4.3” in length.

Kapton®: Du Pont trademark.