SUBWOOFER
15SWS1000

The 15SWS1000 is a high-power 15-inch subwoofer, designed for use in professional applications. It is specifically designed to reproduce the range of 38 to 150 Hz in vented box.

The 15SWS1000 is capable of handling up to 800 watts RMS (AES or 1,600 watts continuous program power).

A bumped and undercut T-yoke assures a minimum of magnetic rectification (off-centering) and a compatible maximum displacement (Xlim). The extended pole ensure a correct magnetic flux distribution and improve the thermal dissipation The magnet circuit was optimized by finite element software. Special attention was given to the driver's behavior under mechanical overload conditions, meaning that all but the most severe abuse will be tolerated - without failure.

The 15SWS1000 employ a 4" (100mm) diameter 4-layer aluminum round wire voice-coil. This is wound on a fiberglass-composite former, twice the thickness of typical formers, to drive the moving assembly with great rigidity.

The non-pressed-long-fiber-pulp cone has the necessary mass and stiffness to withstand the tremendous accelerating forces required, and is precisely centered by two counter-balancing, distortion canceling, polyester-cotton-fiber spiders.

A reinforced aluminum frame is highly effective in withstanding mechanical shocks and vibration. It also acts as a heat-sink for the motor, without removing energy from the loudspeakers intended magnetic gap. The aluminum frame includes six vents that allow air exchange between the spider and the top-plate. This helps to reduce top-plate temperature, in turn cooling the voice-coil. The magnetic-circuit also employs a multi-cooling system (patent pending) consisting of a large diameter center hole, surrounded by six smaller holes that forces cool air across the voice-coil. These features insure an extremely efficient heat transfer from voice-coil to surroundings, resulting in very high thermal power handling.

SPECIFICATIONS

Nominal diameter	380 (15)	mm (in)
Nominal impedance	8	Ω
Minimum impedance @ 119 Hz	7.3	Ω
Power handling		
Peak	4,000	W
Continuous Music[1]	2,000	W
NBR[2]	1000	W
AES[3]	800	W
Sensitivity (2.83V@1m) averaged from 50 to 150 Hz	95	dB SPL
Power compression @ 0 dB (nom. power)	3.23	dB
Power compression @ -3 dB (nom. power)/2	2.32	dB
Power compression @ -10 dB (nom. power)/10	0.83	dB
Frequency response @ -10 dB	38 to 2,000	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	36	Hz
Vas	132 (4.66)	l (ft^3)
Qts	0.31	
Qes	0.32	
Qms	13.7	
ηo (half space)	1.93%	
Sd	0.0814 (126.17)	m^2 (in^2)
Vd (Sd x Xmax)	550.0 (33.56)	cm^3 (in^3)
Xmax (max. excursion (peak) with 10% distortion)	6.75 (0.27)	mm (in)
Xlim (max.excursion (peak) before physical damage)	21.0 (0.83)	mm (in)

Atmospheric conditions at TS parameter measurements:

Temperature	24 (75)	°C (°F)
Atmospheric pressure	1,022	mb
Humidity	45	%

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

ADDITIONAL PARAMETERS

βL	23.9	Tm
Flux density	0.66	T
Voice coil diameter	100 (4)	mm (in)
Voice coil winding length	49.0 (160.7)	m (ft)
Wire temperature coefficient of resistance (α25)	0.00345	1/°C
Maximum voice coil operating temperature	320 (613)	°C (°F)
θvc (max.voice coil operating temp./max.power)	0.40 (0.76)	°C/W(°F/W)
Hvc (voice coil winding depth)	25.0 (0.98)	mm (in)
Hag (air gap height)	11.5 (0.44)	mm (in)
Re	5.7	Ω
Mms	139.6 (0.307)	g (lb)
Cms	140.0	μm/N
Rms	2.1	kg/s

NON-LINEAR PARAMETERS

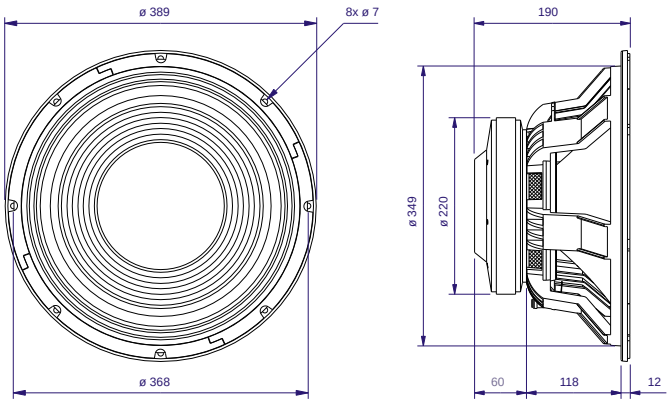
Le @ Fs (voice coil inductance @ Fs)	8,7	mH
Le @ 1 kHz (voice coil inductance @ 1 kHz)	4,6	mH
Le @ 20 kHz (voice coil inductance @ 20 kHz)	2,6	mH
Red @ Fs	0.7	Ω
Red @ 1 kHz	9.1	Ω
Red @ 20 kHz	94.0	Ω
Krm	9.9	Ω
Kxm	24.4	mH
Erm	0.78	
Exm	0.82	

ADDITIONAL INFORMATION

Magnet material	Barium ferrite	
Magnet weight	3,440 (120)	g (oz)
Magnet diameter x depth	220 x 24 (8.66 x 0.95)	mm (in)
Magnetic assembly weight	9,350 (20.61)	g (lb)
Frame material	Aluminum	
Frame finish	Black epoxy	
Voice coil material	Aluminum	
Voice coil former material	Fiberglass	
Cone material	Non pressed long fiber pulp	
Volume displaced by woofer	6.4 (0.120)	l (ft^3)
Net weight	10,960 (24.16)	g (lb)
Gross weight	12,100 (26.67)	g (lb)
Carton dimensions (W x D x H)	43 x 43 x 23 (16.9 x 16.9 x 9.0)	cm (in)

MOUNTING INFORMATION

Number of bolt-holes	8	
Bolt-hole diameter	7.0 (0.27)	mm (in)
Bolt-circle diameter	373 (14.68)	mm (in)
Baffle cutout diameter (front mount)	351 (13.81)	mm (in)
Baffle cutout diameter (rear mount)	345 (13.58)	mm (in)
Connectors	Silver-plated push terminals	
Polarity	Positive voltage applied to the positive terminal (red) gives forward cone motion	
Minimum clearance between the back of the magnetic assembly and the enclosure wall	75 (3)	mm (in)



Dimensions in mm.

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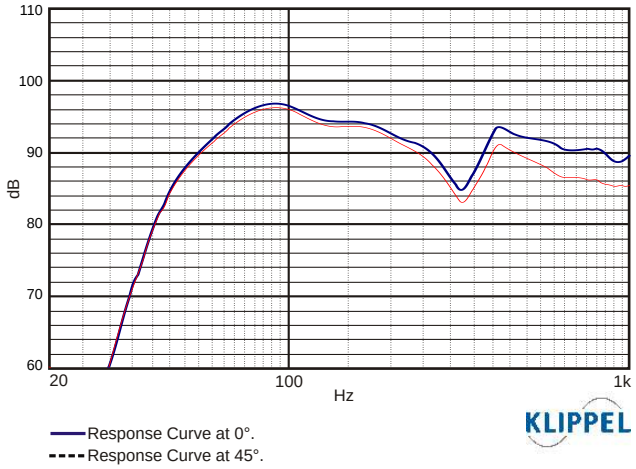
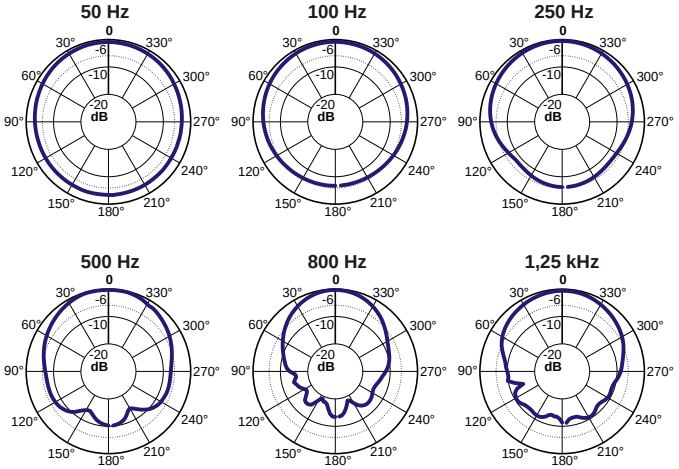
RESPONSE CURVES (0° AND 45°) IN A TEST ENCLOSURE IN ANECHOIC CHAMBER, 1 W / 1m



Response Curve at 0°.
Response Curve at 45°.

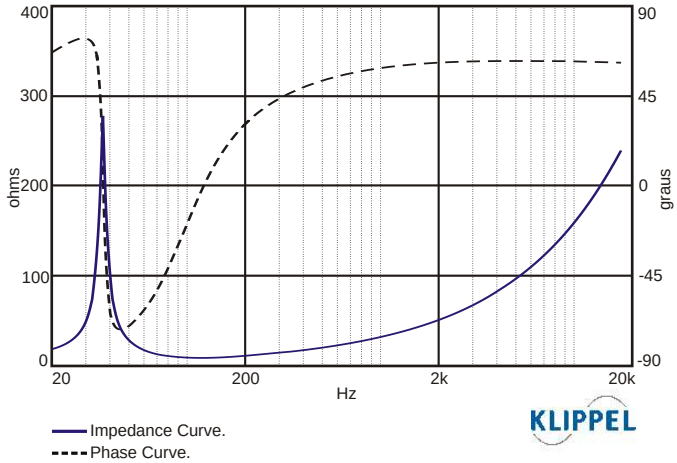
Response curves measured in anechoic chamber with the subwoofer installed in a test enclosure, 1 W / 1 m.

POLAR RESPONSE CURVES



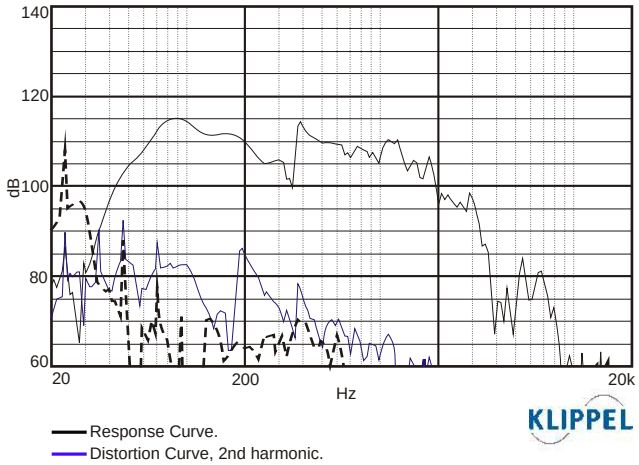
Polar Response Curve.

IMPEDANCE AND PHASE CURVES, MEASURED IN FREE-AIR



Impedance Curve.
Phase Curve.

HARMONIC DISTORTION CURVES MEASURED AT 10% AES INPUT POWER IN A TEST ENCLOSURE INSIDE AN ANECHOIC CHAMBER, 1 m



Response Curve.
Distortion Curve, 2nd harmonic.
Distortion Curve, 3rd harmonic.

TEST ENCLOSURE
100-liter volume with 3 ducts ø 6" by 7.87" length.

SUGGESTED PROJECTS
HB1502A1 HB1502B1 HB1502D1 PAS3G2
For additional project suggestions, please access our website.