![SELENIUM PRO]

WOOFER 18WS600

18" Woofer for low and mid bass professional sound reinforcement, offering high power capacity, outstanding low end response and exceptionally smooth transition into the vocal range. This new design is capable of handling up to 1,200 Watts Continous Music.

The 18WS600 is ideal for side fill as well as front of house cabinets. This woofer exhibits outstanding acoustics with work horse construction. Designed for smaller enclosures, the 18WS600 is a versatile, high performance woofer. General construction includes a sturdy cast frame, an impregnated cloth surround, impregnated long fiber paper cone and stable double spider.

The 18WS600 woofer incorporates, a large magnetic assembly central hole and 6 windows on the frame which increases heat dissipation and reduces operating temperature increasing the output power with reduced power compression.

SPECIFICATIONS

Nominal diameter	460 (18)	mm (in)
Nominal impedance	8	
Minimum impedance @ 132 Hz	7.0	
Power handling		
Peak	2,400	W
Continous Music[1]	1,200	W
NBR[2]	600	W
AES[3]	450	W
Sensitivity (2.83V@1m) averaged from 100 to 500 Hz	98	dB SPL
Power compression @ 0 dB (nom. power)	2.6	dB
Power compression @ -3 dB (nom. power)/2	1.6	dB
Power compression @ -10 dB (nom. power)/10	0.7	dB
Frequency response @ -10 dB	35 to 3,000	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] NBR Standard (10,303 Brasilian Standard).
[3] AES Standard (60 - 600 Hz).

THIELE-SMALL PARAMETERS

Fs	33	Hz
Vas	375 (13.24)	l (ft^3)
Qts	0.43	
Qes	0.44	
Qms	18.79	
o (half space)	2.99	%
Sd	0.1194 (184.45)	m^2 (in^2)
Vd (Sd x Xmax)	447.8 (27.67)	cm^3 (in^3)
Xmax (max. excursion (peak) with 10% distortion)	3.8 (0.15)	mm (in)
Xlim (max.excursion (peak) before physical damage)	21 (0.82)	mm (in)

Atmospheric conditions at TS parameter measurements:

Temperature	24 (75)	°C (°F)
Atmospheric pressure	1,005	mb
Humidity	56	%

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

ADDITIONAL PARAMETERS

L	19.2	Tm
Flux density	0.98	T
Voice coil diameter	100 (4)	mm (in)
Voice coil winding length	29.7 (97.4)	m (ft)
Wire temperature coefficient of resistance ( )	0.00388	1/°C
Maximum voice coil operation temperature	251 (484)	°C (°F)
vc (max.voice coil operation temp./max.power)	0.56 (1.07)	°C/W(°F/W)
Hvc (voice coil winding depth)	17.0 (0.71)	mm (in)
Hag (air gap height)	9.5 (0.37)	mm (in)
Re	6.3	
Mms	123.5 (0.27)	g (lb)
Cms	1 90	m/N
Rms	1.37	kg/s

NON-LINEAR PARAMETERS

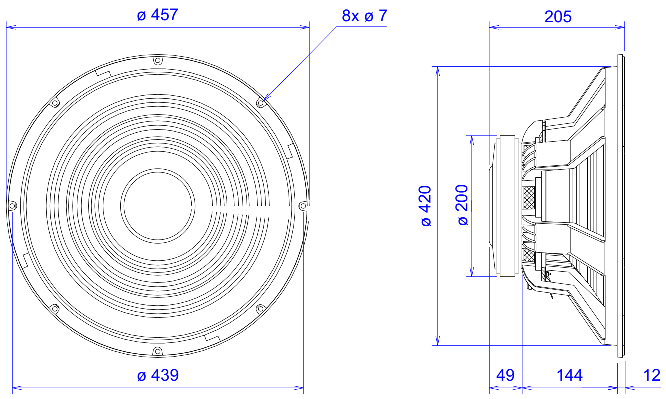
Le @ Fs (voice coil inductance @ Fs)	4.569	mH
Le @ 1 kHz (voice coil inductance @ 1 kHz)	1.702	mH
Le @ 20 kHz (voice coil inductance @ 20 kHz)	0.714	mH
Red @ Fs	0.201	
Red @ 1 kHz	4.769	
Red @ 20 kHz	77.338	
Krm	1.4	m
Kxm	21.5	mH
Erm	0.93	
Exm	0.71	

ADDITIONAL INFORMATION

Magnet material	Barium ferrite	
Magnet weight	2,640 (92)	g (oz)
Magnet diameter x depth	200 x 24 (7.87 x 0.95)	mm (in)
Magnetic assembly weight	7,000 (17.20)	g (lb)
Frame material	Aluminum	
Frame finish	Black-Silver Epoxy	
Voice coil material	Cooper	
Voice coil former material	Til	
Cone material	Long fiber pulp	
Volume displaced by woofer	8.0 (0.282)	l (ft^3)
Net weight	8,840(25.24)	g (lb)
Gross weight	10,380 (27.34)	g (lb)
Carton dimensions (W x D x H)	46.5 x 46.5 x 21.5 (18.3 x 18.3 x 8.5)	cm (in)

MOUNTING INFORMATION

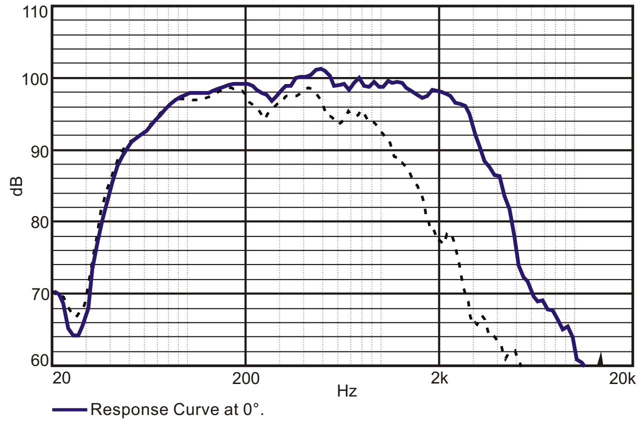
Number of bolt-holes	8	
Bolt-hole diameter	7.0 (0.27)	mm (in)
Bolt-circle diameter	439 (17.28)	mm (in)
Baffle cutout diameter (front mount)	422 (16.61)	mm (in)
Baffle cutout diameter (rear mount)	412 (16.22)	mm (in)
Connectors	Silver-plated push terminals	
Polarity	Positive voltage applied to the positive 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.

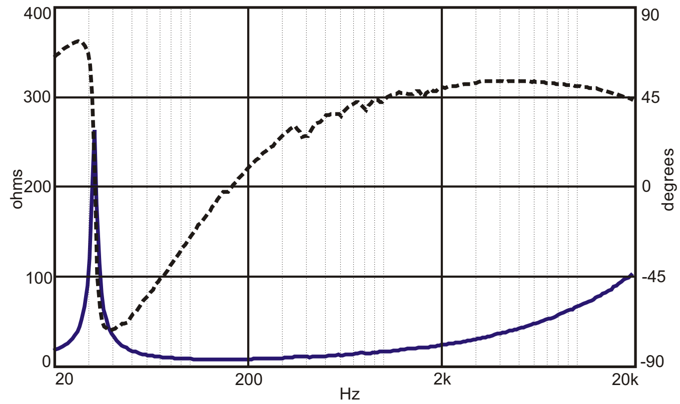
WOOFER
18WS600

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



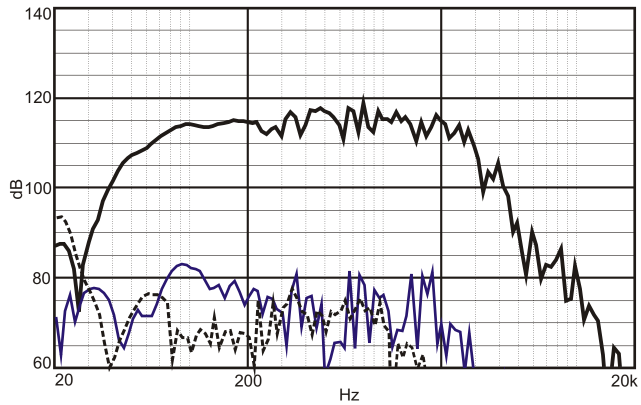
Response Curve at 0°.
Response Curve at 45°.

IMPEDANCE AND PHASE CURVES MEASURED IN FREE-AIR



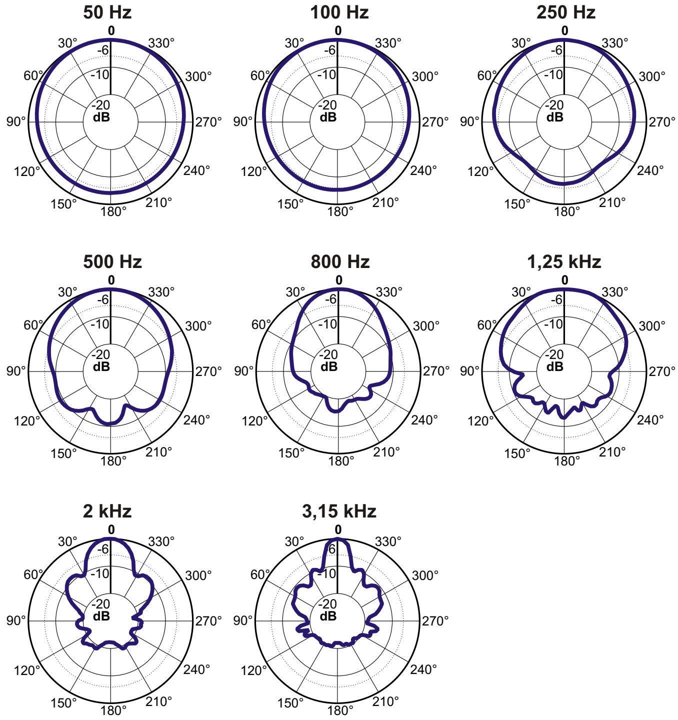
Impedance Curve.
Phase Curve.

HARMONIC DISTORTION CURVES MEASURED AT 10 INPUT POWER, 1 m



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

POLAR RESPONSE CURVES



Polar Response Curve.

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:

$$T_B \quad T_A \quad \frac{R_B}{R_A} \quad 1 \quad T_A \quad 25 \quad \frac{1}{\ _{25}}$$

T_A , T_B= voice coil temperatures in °C.
R_A , R_B= voice coil resistances at temperatures T_A and T_B, respectively.
= 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

HB1805A1 HB1805B1 HB1805C1 VB1805A1 PAS1G1 PAS2G1 PAS3G1
For additional project suggestions, please access our website.

TEST ENCLOSURE

170-liter volume with 3 ducts ø 4” by 11” length.

Specifications subject to change without prior notice.