SELENIUM PRO

# MIDBASS
# 8MB4P

8” woofer for midbass professional sound reinforcement.

Offering high power capacity, outstanding mid range response and exceptional long-term performance, this transducer is ideal for compact enclosures (closed, vented or horns). This transducer exhibits excellent acoustics with work horse construction. Designed for smaller enclosures, the 8MB4P is a versatile high performance midbass.

General construction includes a sturdy cast frame, impregnated cloth surround, stable spider and a large central vent channel for reducing long-term heat build-up.

8MB4P-SLF: No logo printed on dust cap.


## SPECIFICATIONS

| | | |
|---|---|---|
| Nominal diameter | 203 (8) | mm (in) |
| Nominal impedance | 8 | Ω |
| Minimum impedance @ 350 Hz | 6.3 | Ω |
| Power handling | | |
| Musical program[1] | 500 | W |
| AES[2] | 250 | W |
| Sensitivity (2.83V@1m) averaged from 120 to 3,500 Hz | 97 | dB SPL |
| Power compression @ 0 dB (nom. power) | 3.8 | dB |
| Power compression @ -3 dB (nom. power)/2 | 1.8 | dB |
| Power compression @ -10 dB (nom. power)/10 | 0.7 | dB |
| Frequency response @ -10 dB | 80 to 5,000 | 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 (200 - 2,000 Hz).

## THIELE-SMALL PARAMETERS

| | | |
|---|---|---|
| Fs | 105 | Hz |
| Vas | 9.4 (0.33) | l (ft³) |
| Qts | 0.76 | |
| Qes | 0.82 | |
| Qms | 10.62 | |
| ηo (half space) | 1.4 | % |
| Sd | 0.025 (38.7) | m² (in²) |
| Vd (Sd x Xmax) | 81.25 (4.95) | cm³ (in³) |
| Xmax (max. excursion (peak) with 10% distortion) | 3.25 (0.12) | mm (in) |
| Xlim (max.excursion (peak) before physical damage) | 12.4 (0.49) | mm (in) |

Atmospheric conditions at TS parameter measurements:

| | | |
|---|---|---|
| Temperature | 25 (77) | °C (°F) |
| Atmospheric pressure | 1,022 | mb |
| Humidity | 50 | % |

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

## ADDITIONAL PARAMETERS

| | | |
|---|---|---|
| βL | 9.5 | Tm |
| Flux density | 1.12 | T |
| Voice coil diameter | 47 (1.85) | mm (in) |
| Voice coil winding length | 12.8 (42.0) | m (ft) |
| Wire temperature coefficient of resistance (α25) | 0.00395 | 1/°C |
| Maximum voice coil operation temperature | 310 (590) | °C (°F) |
| θvc (max.voice coil operation temp./max.power) | 1.24 (2.36) | °C/W(°F/W) |
| Hvc (voice coil winding depth) | 14.5 (0.57) | mm (in) |
| Hag (air gap height) | 8.0 (0.32) | mm (in) |
| Re | 5.5 | Ω |
| Mms | 20.0 (0.044) | g (lb) |
| Cms | 110 | µm/N |
| Rms | 1.23 | kg/s |

## NON-LINEAR PARAMETERS

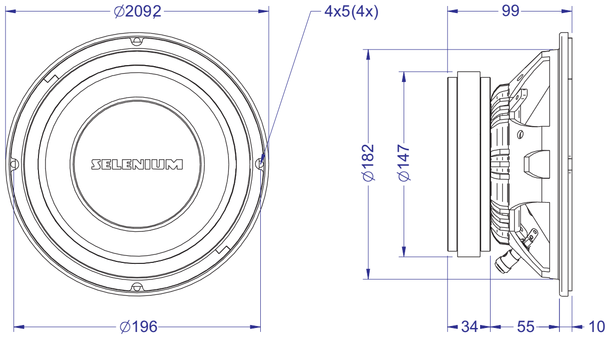
| | | |
|---|---|---|
| Le @ Fs (voice coil inductance @ Fs) | 1.09 | mH |
| Le @ 1 kHz (voice coil inductance @ 1 kHz) | 0.664 | mH |
| Le @ 20 kHz (voice coil inductance @ 20 kHz) | 0.376 | mH |
| Red @ Fs | 0.242 | Ω |
| Red @ 1 kHz | 1.834 | Ω |
| Red @ 20 kHz | 27.189 | Ω |
| Krm | 0.7 | mΩ |
| Kxm | 3.5 | mH |
| Erm | 0.90 | |
| Exm | 0.81 | |

## ADDITIONAL INFORMATION

| | | |
|---|---|---|
| Magnet material | Barium ferrite | |
| Magnet weight | 1,280 (45) | g (oz) |
| Magnet diameter x depth | 147 x 18 (5.78 x 0.71) | mm (in) |
| Magnetic assembly weight | 3,100 (6.83) | g (lb) |
| Frame material | Aluminum | |
| Frame finish | Black epoxy | |
| Voice coil material | Aluminum | |
| Voice coil former material | Polyimide (kapton) | |
| Cone material | Long fiber pulp | |
| Volume displaced by woofer | 1.26 (0.044) | l (ft³) |
| Net weight | 3,500 (7.71) | g (lb) |
| Gross weight | 3,780 (8.33) | g (lb) |
| Carton dimensions (W x D x H) | 23 x 23 x 14 (9 x 9 x 5.5) | cm (in) |

## MOUNTING INFORMATION

| | | |
|---|---|---|
| Number of bolt-holes | 4 | |
| Bolt-hole dimension | 4 x 5 (0.16 x 0.2) | mm (in) |
| Bolt-circle diameter | 196 (7.72) | mm (in) |
| Baffle cutout diameter (front mount) | 184 (7.24) | mm (in) |
| Baffle cutout diameter (rear mount) | 190 (7.48) | 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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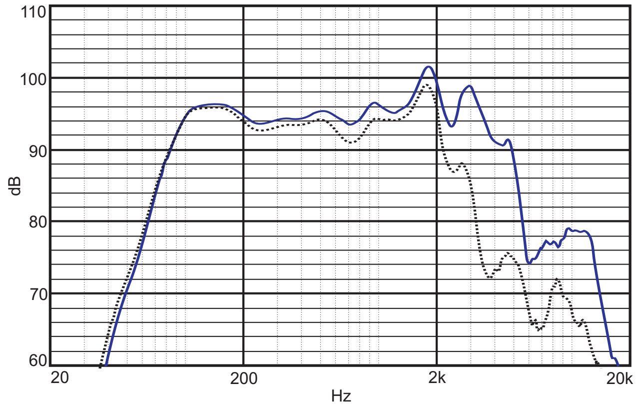
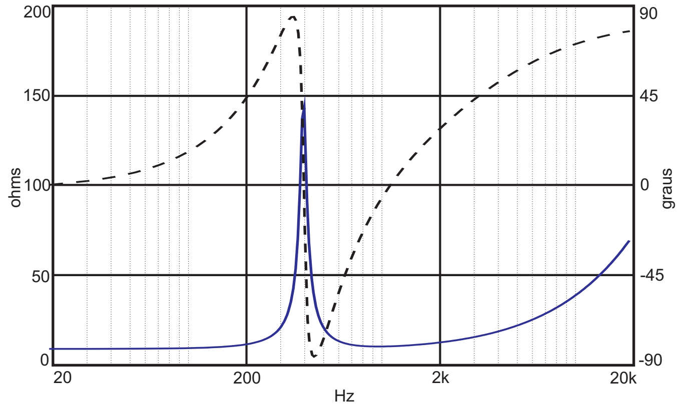
## RESPONSE CURVES (0° AND 45°) IN A TEST ENCLOSURE INSIDE AN ANECHOIC CHAMBER, 1 W / 1m



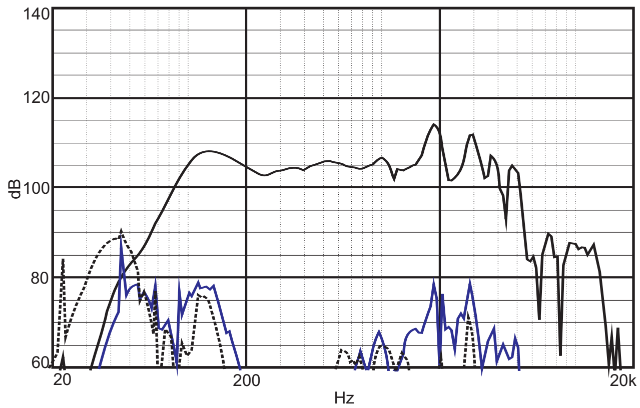

Response Curve at 0°.
Response Curve at 45°.

## IMPEDANCE AND PHASE CURVES MEASURED IN FREE-AIR



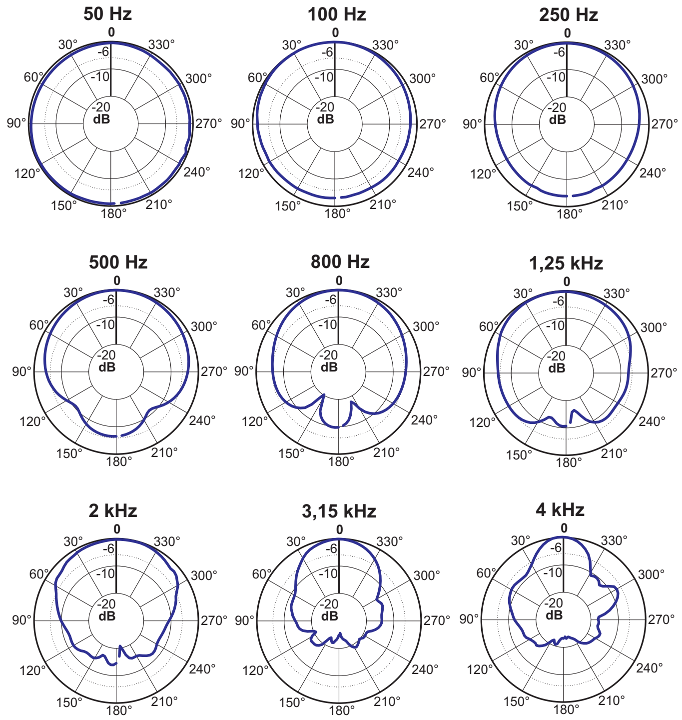

Impedance Curve.
Phase Curve.

## HARMONIC DISTORTION CURVES MEASURED AT 10% AES 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:

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

$T_A$ , $T_B$= voice coil temperatures in °C.
$R_A$ , $R_B$= voice coil resistances at temperatures $T_A$ and $T_B$, respectively.
$\alpha_{25}$= 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

For additional project suggestions, please access our website.

## TEST ENCLOSURE

19.6-liter volume, vented box.