



## SM-4 LD and HS Superphone™ Geophone Elements

- Digital-grade, low-distortion geophones with spurious above 180 Hz
- SM-4 HS offers excellent specification tolerances for improved response similarity
- Backward compatible with SM-4 10-Hz strings, allowing equipment flexibility
- 3-year limited warranty



The SM-4 LD and HS Superphones are designed to meet the industrial demand for higher dynamic resolution. Based upon, and backwards compatible with, the field-proven SM-4 geophone, the SM-4 LD Superphone provides a low distortion signal output that is combined with standard geophone specification tolerances. Alternatively, the SM-4 HS Superphone offers a low distortion signal output that is coupled with close tolerance parameters, improving group phase and response similarity.

Applications: 2-D & 3-D seismic exploration with bandwidth from 10 Hz up to 180 Hz.

Implementations: Can be installed in any standard I/O Sensor geophone case.

# Specifications

INPUT/OUTPUT, INC.

**SM-4/U-B 10 Hz 375 Ω**  
**LD Superphone™ HS Superphone**

**Frequency**

Natural frequency ( $f_n$ )	10 Hz	10 Hz
Tolerance	±5%	±2.5%
Max. tilt angle for specified $f_n$	20°	10°
Typical spurious frequency	180 Hz	180 Hz

**Distortion**

Distortion with 0.7 in/s p.p. coil-to-case velocity	≤0.1%	≤0.1%
Distortion measurement frequency	12 Hz	12 Hz
Max. tilt angle for distortion specification	10°	10°

**Damping**

Typical open-circuit damping	0.25	0.25
Damping calibration-shunt resistance	1,339 Ω	1,339 Ω
Damping with calibration-shunt	0.6	0.6
Tolerance with calibration-shunt	±5%	+5%, -0%

**Resistance**

Standard	375 Ω	375 Ω
Tolerance	±5%	±2.5%

**Sensitivity**

Sensitivity	28.8 V/m/s	28.8 V/m/s	(0.73 V/in/s)
Tolerance	±5%	±2.5%	
$R_i B_c f_n$	6,000 ΩHz	6,000 ΩHz	
Moving mass	11 g	11 g	(0.38 oz)
Maximum coil excursion p.p.	2 mm	2 mm	(0.08 in)

**Physical Characteristics**

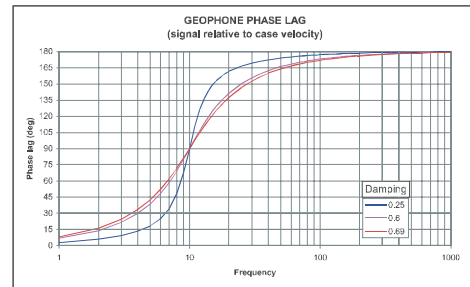
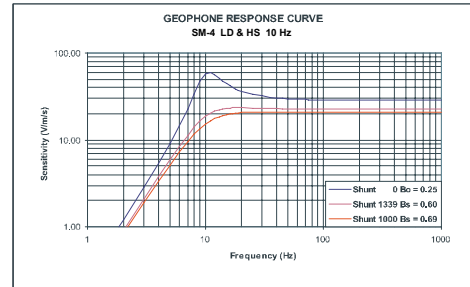
Diameter	25.4 mm	25.4 mm	(1.00 in)
Height	32 mm	32 mm	(1.25 in)
Weight	74 g	74 g	(2.59 oz)
Operating temperature	-40°C to +100°C	-40°C to +100°C	(-40°F to +212°F)

**Limited Warranty Period\***

3 years	3 years
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\* Warranty excludes damage caused by high-voltage or physical damage to the element case.

All parameters are specified at +20°C in the vertical position unless otherwise stated.



# Ordering Information

INPUT/OUTPUT, INC.

**SM-4 LD Superphone**

SM-4/U-B 10 Hz 375 Ω LD Superphone  
 (upright basic unit with insulating disc) P/N 1004114

**SM-4 HS Superphone**

SM-4/U-B 10 Hz 375 Ω HS Superphone  
 (upright basic unit with insulating disc) P/N 1004112

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