

SM-6 Geophone

- Long travel version of the SM-4 (8-Hz, 10-Hz, & 14-Hz) geophone; also available in 4.5-Hz natural frequency
- Special orientations upon request beyond the normal vertical and horizontal options
- Widely used in industrial vibration-monitoring systems
- Rugged construction with precious-metal, rotating-coil contacts
- 2-year limited warranty



The SM-6 geophone is a long coil travel version of the time-proven SM-4 geophone. The extra coil travel offers an advantage for higher tilt requirements and where larger amplitude signals may be encountered, for example, in industrial vibration monitoring. A range of natural frequencies is available from 4.5 Hz to 14 Hz, providing choice of the correct geophone for a wide variety of applications.

The SM-6 can be supplied for vertical and horizontal orientation. Other specialized versions are available upon request, for example, Galperin (54.7°), 45°.

The SM-6 is an ideal choice for the shear-wave horizontal elements, partnering an SM-4 vertical geophone in a 3-component package.

A variety of I/O Sensor land cases can accommodate the SM-6 geophone elements, making them suitable for an extensive range of field applications.

Specifications

INPUT/OUTPUT, INC.

SM-6/U-B

Frequency

Natural frequency (f_n)	8 Hz	10 Hz	14 Hz
Tolerance	±0.5 Hz	±5%	±5%
Maximum tilt angle for specified f_n	20°	25°	25°
Typical spurious frequency	150 Hz	170 Hz	190 Hz

Distortion

Distortion with 0.7 in/s p.p coil-to-case velocity	<0.2%	<0.2%	<0.2%
Distortion measurement frequency	12 Hz	12 Hz	14 Hz
Maximum tilt angle for distortion specification	15°	20°	20°

Damping

Open-circuit damping	0.315	0.25	0.18
Damping calibration-shunt resistance	2,257 Ω	1,339 Ω	645 Ω
Damping with shunt	0.6	0.6	0.6
Tolerance with shunt	±5%	±5%	±5%

Resistance

Standard coil resistance	375 Ω	375 Ω	375 Ω
Tolerance	±5%	±5%	±5%

Sensitivity

Open-circuit sensitivity	28.8 V/m/s	28.8 V/m/s	28.8 V/m/s	(0.73 V/in/s)
Tolerance	±5%	±5%	±5%	
$R_t B_c f_n$	6,000 Ω Hz	6,000 Ω Hz	6,000 Ω Hz	
Moving mass	11.1 g	11.1 g	11.1 g	(0.39 oz)
Maximum coil excursion p.p.	4 mm	4 mm	4 mm	(0.16 in)

Physical Characteristics

Diameter	25.4 mm	25.4 mm	25.4 mm	(1 in)
Height	36 mm	36 mm	36 mm	(1.42 in)
Weight	81 g	81 g	81 g	(2.85 oz)
Operating temperature range	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	(-40°F to +212°F)

Limited Warranty Period*

2 years	2 years	2 years
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* Warranty excludes damage caused by high-voltage and physical damage to the element case.

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

Specifications (cont.)

INPUT/OUTPUT, INC.

SM-6 LOW FREQUENCY GEOPHONE

A-Coil

B-Coil

Frequency

Natural frequency (f_n)
Tolerance
Maximum tilt angle for specified f_n
Typical spurious frequency

4.5 Hz
 ± 0.5 Hz
0°
140 Hz

4.5 Hz
 ± 0.5 Hz
0°
140 Hz

Distortion

Distortion with 0.7 ips p.p. coil-to-case velocity
Distortion measurement frequency
Maximum tilt angle for distortion specification

<0.3%
12 Hz
0°

<0.3%
12 Hz
0°

Damping

Open-circuit damping
Open-circuit damping tolerance

0.265
 $\pm 5\%$

0.56
 $\pm 5\%$

Resistance

Standard coil resistance
Tolerance

375 Ω
 $\pm 5\%$

375 Ω
 $\pm 5\%$

Sensitivity

Open-circuit sensitivity
Tolerance
 $R_1 B_C f_n$
Moving mass
Maximum coil excursion p.p.

28.0 V/m/s (0.71 V/in/s)
 $\pm 5\%$
3,875 Ω Hz
16.1 g (0.57 oz)
4 mm (0.16 in)

28.8 V/m/s (0.73 V/in/s)
 $\pm 5\%$
6,000 Ω Hz
11.1 g (0.39 oz)
4mm (0.16 in)

Physical

Diameter
Height
Weight
Operating temperature range

25.4 mm (1 in)
36 mm (1.42 in)
81 g (2.85 oz)
-40°C to +100°C (-40°F to +212°F)

25.4 mm (1 in)
36 mm (1.42 in)
81 g (2.85 oz)
-40°C to +100°C (-40°F to +212°F)

Limited Warranty Period*

1 year

1 year

* Warranty excludes damage caused by high-voltage and physical damage to the element case.

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

Ordering Information

SM-6 4.5 Hz

SM-6/U-A 4.5 Hz 375 Ω (upright A-coil) P/N 1006050
SM-6/H-A 4.5 Hz 375 Ω (horizontal A-coil) P/N 1006090
SM-6/U-B 4.5 Hz 375 Ω (upright B-coil) P/N 1006060
SM-6/H-B 4.5 Hz 375 Ω (horizontal B-coil) P/N 1006100

SM-6 8 Hz

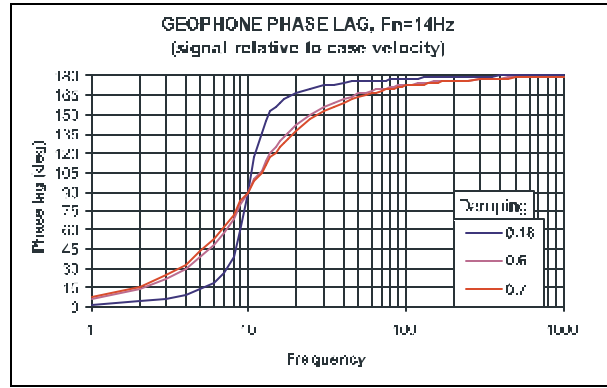
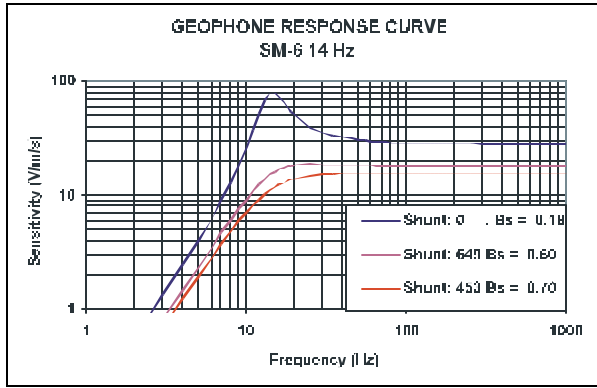
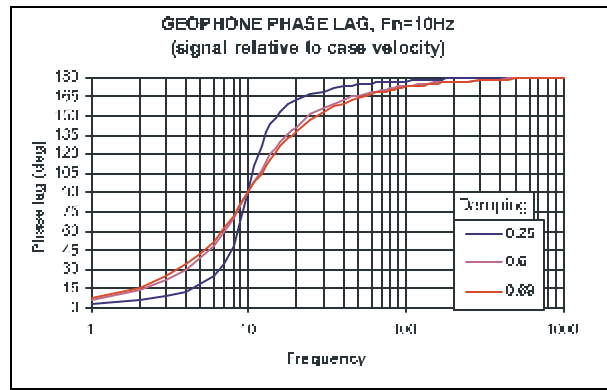
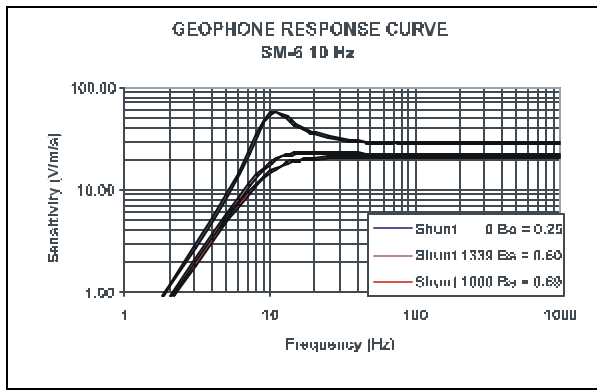
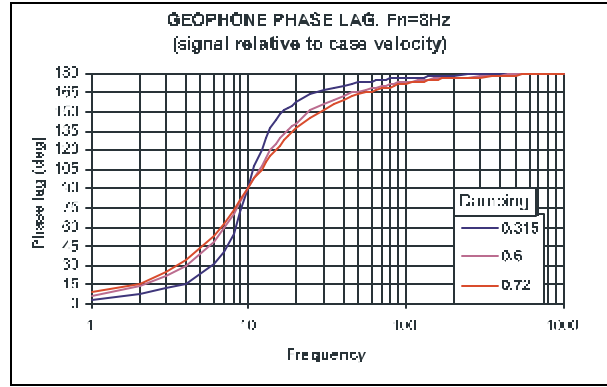
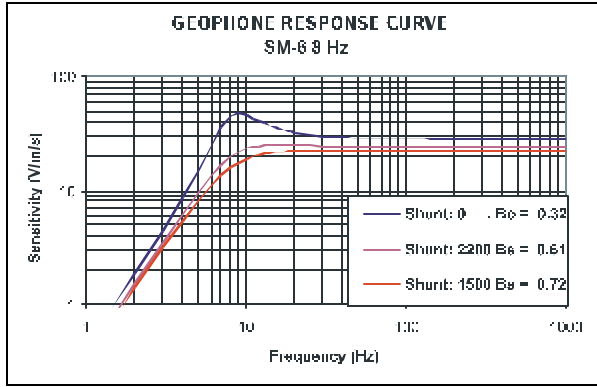
SM-6/U-B 8 Hz 375 Ω (upright) P/N 1006280
SM-6/H-B 8 Hz 375 Ω (horizontal) P/N 1006300

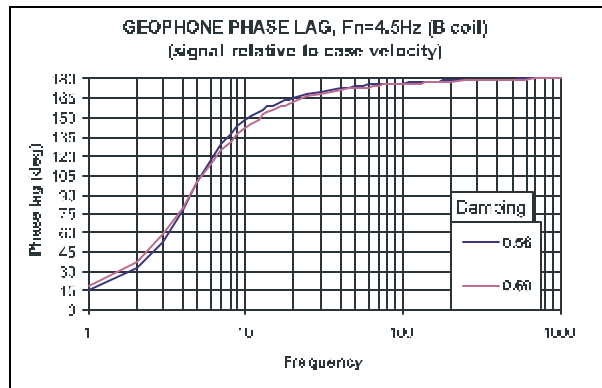
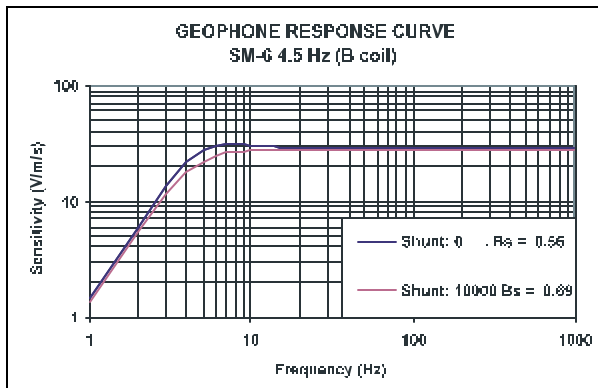
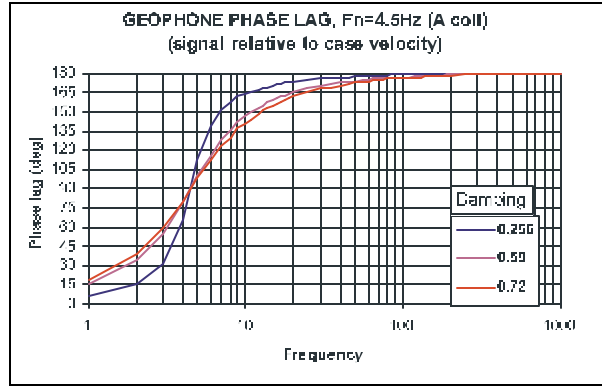
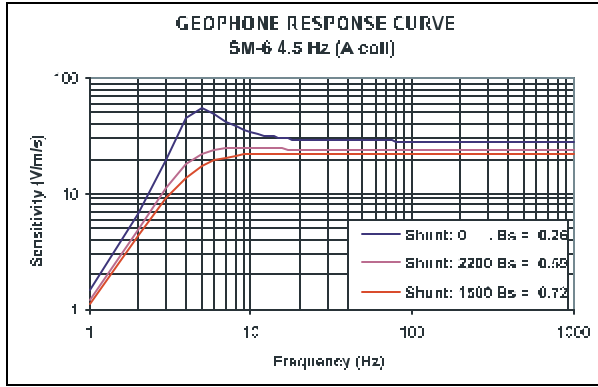
SM-6 10 Hz

SM-6/U-B 10 Hz 375 Ω (upright) P/N 1006330
SM-6/H-B 10 Hz 375 Ω (horizontal) P/N 1006350

SM-6 14 Hz

SM-6/U-B 14 Hz 375 Ω (upright) P/N 1006400
SM-6/H-B 14 Hz 375 Ω (horizontal) P/N 1006420





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