

PRODUCT DATA

Piezoelectric Accelerometer Miniature DeltaTron[®] Accelerometers — Types 4519, 4519-001, 4519-002 and 4519-003

FEATURES AND USES

- Hermetically sealed
- Low weight
- Low-impedance output
- Measurements in confined spaces
- Measurements on delicate structures
- 360° orientation (Types 4519-002 and 4519-003)
- High frequency range (> 20 kHz)

Description

Types 4519, 4519-001, 4519-002 and 4519-003 are piezoelectric Shear accelerometers with integral electronics. The transducers feature an M3 side connector and are hermetically sealed for high resistance to harsh environments. The transducers have a high resolution, giving an excellent signal-to-noise ratio.

Two types have been designed for mounting on the object by means of an integrated M3 threaded stud and two types for adhesive mounting with 360° freedom of orientation.

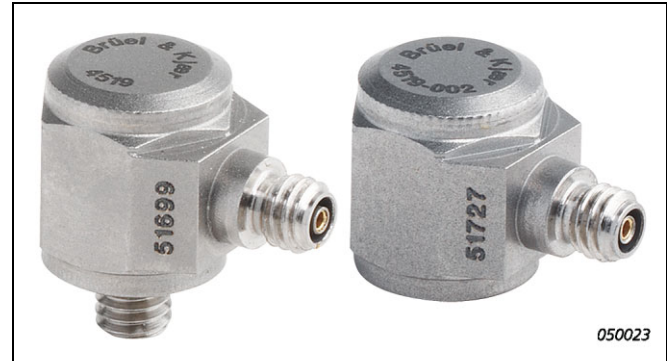
Characteristics

The piezoelectric accelerometers feature built-in preamplifiers. The sensitivity is expressed in terms of voltage per unit acceleration (mV/g).

In the Shear design, the piezoelectric element undergoes shear deformation as in the DeltaShear[®] design. Two rectangular slices of piezoelectric material are arranged on each side of a rectangular centre post. This design gives a high degree of linearity, and excellent immunity to base bending and temperature fluctuations. The signal is collected and amplified in the built-in amplifier. The housing material is titanium.

Calibration

The transducers are individually calibrated using state-of-the-art random FFT technology, providing an 800-point high-resolution calibration (magnitude and phase), ultimately giving a unique characterisation and securing the integrity of the vibration measurement.

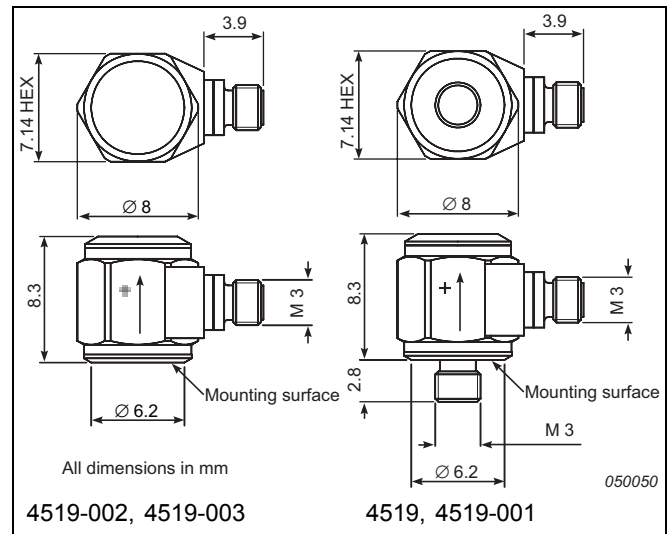


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The sensitivity given on the calibration chart has been measured at 159.2 Hz with a 95% confidence level, using a coverage factor $k = 2$.

Recommended Mounting

Due to the small size, careful mounting is required to ensure correct operation over the full frequency range of the accelerometer.

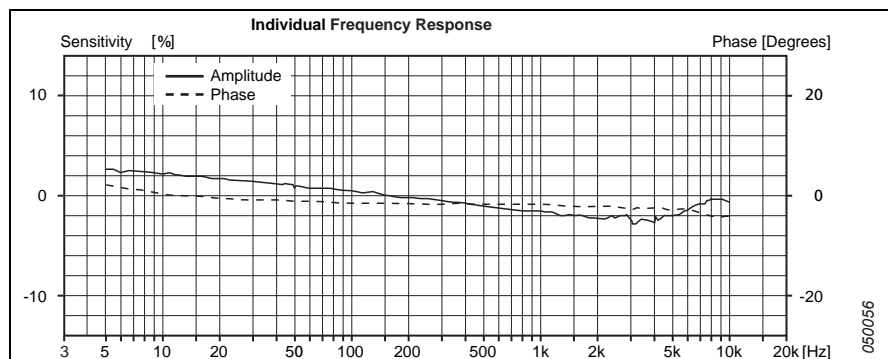


Specifications – Miniature DeltaTron Accelerometers Types 4519, 4519-001, 4519-002 and 4519-003

	Units	4519	4519-001	4519-002	4519-003
Dynamic Characteristics					
Voltage Sensitivity (@ 160Hz)	mV/g	10 ±10%	100 ±10%	10 ±10%	100 ±10%
Measuring Range	g	± 500	± 50	± 500	± 50
Frequency Response		See typical amplitude response			
Mounted Resonance Frequency	kHz	45			
Amplitude Response ±10% (typical) ^a	Hz	0.5 to 20000			
Residual Noise	mg	2.0	0.9	2.0	0.9
Transverse Sensitivity	%	<5			
Electrical Characteristics					
Output Impedance	Ω	<100			
DC Output At room temperature	V	12 ±1			
Bias Voltage In specified temp. range	V	8 to 16			
Power Supply	mA	2 to 20			
Start-up Time	s	< 1			
Grounding		Case grounded			
Environmental Characteristics					
Temperature Range	°C	-51 to +121	-51 to +100	-51 to +121	-51 to +100
	°F	-60 to +250	-60 to +212	-60 to +250	-60 to +212
Humidity		Hermetically sealed			
Max. Operational Shock (peak)	g pk	5000			
Base Strain Sensitivity	Equiv. g/μ strain	0.007			
Thermal Sensitivity	Equiv. %/°C (%/°F)	0.2 (0.1)			
Physical Characteristics					
Dimensions		See outline drawing			
Weight	gram (oz.)	1.6 (0.06)		1.5 (0.05)	
Case Material		Titanium			
Connector		M3			
Mounting		M3 Stud		Adhesive	
Max. Mounting Torque	Nm (lb. in.)	1.7 (15)		—	

a. Individual frequency response calibration up to 10 kHz

All values are typical at 25°C (77°F) unless measurement uncertainty is specified



COMPLIANCE WITH STANDARDS



Compliance with EMC Directive and Low Voltage Directive of the EU



Compliance with the EMC requirements of Australia and New Zealand

TRADEMARKS

Teflon is a registered trademark of E.I. du Pont de Nemours and Company.

Brüel & Kjær reserves the right to change specifications and accessories without notice

Ordering Information

All versions of Type 4519 include the following accessories:

- Carrying box
- Calibration chart

OPTIONAL ACCESSORIES*

- AO-0641: PVC insulated flexible cable, M3 to BNC, 5 m (16.4 ft), -5 to +70°C (+23 to +158°F)
- AO-0283: 260°C Teflon® low-noise cable, 10–32 UNF/M3, length 1.2 m (4 ft)
- AO-0339: Flexible low-noise cable, 10–32 UNF/M3, 1.2 m (4 ft)
- UA-0186: Extension connector for 10–32 UNF cables, set of 25
- JP-0145: 10–32 UNF to BNC connector adaptor
- QA-0041: Tap for M3 thread
- QS-0007: Tube of cyanoacrylate adhesive
- YJ-0216: Beeswax for mounting
- DB-1425: Adaptor 10–32 UNF to M3 hole
- YO-0073: 25 × adhesive mounting disc; length 5 mm

SERVICE

- 4519-CAF: Miniature IEPE Accelerometer, Accredited Calibration
- 4519-CAI: Miniature IEPE Accelerometer, Accredited Calibration Performed as initial
- 4519-CTF: Miniature IEPE Accelerometer, Traceable Calibration
- 4519-CTI: Miniature IEPE Accelerometer, Traceable Calibration Performed as initial
- 4519-EW1: Miniature IEPE Accelerometer, Extended Warranty, one year extension

* Additional accessories and cables are available (see www.bksv.com)