

# PRODUCT DATA

## Piezoelectric Accelerometer Miniature DeltaTron<sup>®</sup> Accelerometers — Type 4521

### FEATURES AND USES

- Hermetically sealed
- Insulated case
- Measurements in confined spaces
- Light weight (<3 grams)
- Through-hole mounting (free cable orientation)
- Low noise
- Low profile
- Flight-test applications

### Description

Type 4521 is supplied with a mounting screw kit and is mounted via a through-hole, enabling 360° freedom in orientation of the cable. It is hermetically sealed, enabling measurements to be carried out under difficult environmental conditions. Its low weight makes the transducer an excellent choice for measurements on delicate structures and small objects. Type 4521 features a standard M3 side connector. It has a hard-anodized mounting surface providing electrical isolation from the test object.

### Characteristics

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

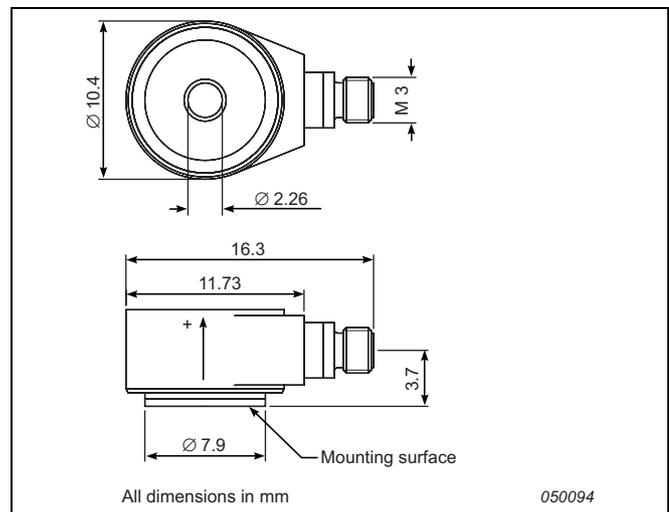
In the Shear design, the piezoelectric element undergoes shear deformation as in the DeltaShear<sup>®</sup> design. Two rectangular slices of piezoelectric material are arranged on each side of a rectangular centre post. This design gives a high degree of linearity, and excellent immunity to base bending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



### Calibration

The transducer is 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.

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



## Specifications – Miniature DeltaTron® Accelerometers Type 4521

	Units	4521	
<b>Dynamic Characteristics</b>			
Voltage Sensitivity (@ 160Hz)	mV/g	10 ±10%	
Measuring Range	g	±500	
Frequency Response		See typical amplitude response	
Mounted Resonance Frequency	kHz	35	
Amplitude Response ±10%	Hz	1 to 9000	
Residual Noise	mg	7	
Transverse Sensitivity	%	<5	
<b>Electrical Characteristics</b>			
Output Impedance	Ω	<100	
DC Output	At room temperature	V	8.5 to 11.5
Bias Voltage	In specified temperature range	V	8 to 16
Power Supply		mA	2 to 20
Start-up Time		s	<1
Grounding			Case insulated
<b>Environmental Characteristics</b>			
Temperature Range	°C (°F)		-51 to +121 (-60 to +250)
Humidity			Hermetically sealed
Max. Operational Shock (peak)	g pk		5000
Base Strain Sensitivity	Equiv. g/μ strain		0.006
Thermal Transient Sensitivity	Equiv. g/°C (g/°F)		0.26 (0.16)
Magnetic Sensitivity	g/T		0.5
Thermal Sensitivity	%/°C (°F)		0.11 (0.06)
<b>Physical Characteristics</b>			
Dimensions			See outline drawing
Weight	gram (oz.)		2.7 (0.1)
Case Material			Titanium
Connector			M3 thread
Mounting			Insulated M2 screw
Mounting Torque (Max.)	Nm		0.3

## Ordering Information

Type 4521 includes the following accessories:

- Carrying Box
- Calibration Chart
- Insulated M2 mounting screw, length 10 mm (0.4")

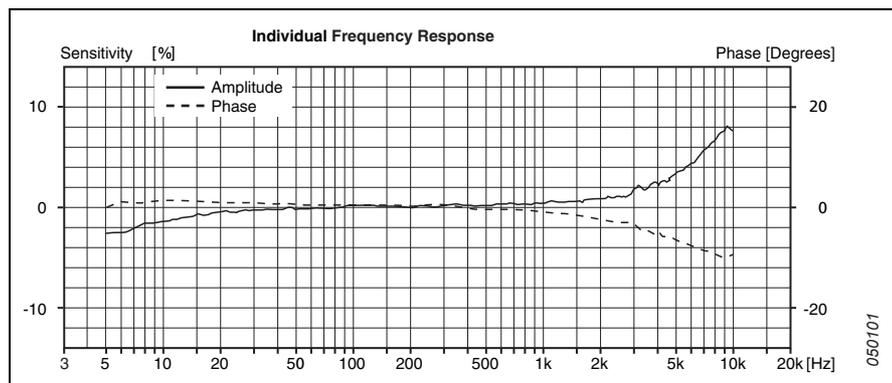
### OPTIONAL ACCESSORIES\*

- 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, length 1.2 m (4 ft)
- UA 0186: Extension connector for 10–32 UNF cable, set of 25
- JP 0145: 10–32 UNF to BNC connector adaptor
- UA 2055 : Isolated 2–56 UNF mounting screw, length 9.5 mm (0.37"), set of 10
- UA 2069: Insulated M2 mounting screw, length 10 mm (0.4"), set of 10

### SERVICE

- 4521-CAF: Miniature IEPE Accelerometer, Accredited Calibration
- 4521-CAI: Miniature IEPE Accelerometer, Accredited Calibration Performed as initial
- 4521-CTF: Miniature IEPE Accelerometer, Traceable Calibration
- 4521-CTI: Miniature IEPE Accelerometer, Traceable Calibration Performed as initial
- 4521-EW1: Miniature IEPE Accelerometer, Extended Warranty, one year extension

\* Additional accessories and cables are available (see [www.bksv.com](http://www.bksv.com))



### COMPLIANCE WITH STANDARDS

**CE** Compliance with EMC Directive and Low Voltage Directive of the EU

**✓** Compliance with the EMC requirements of Australia and New Zealand

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

HEADQUARTERS: DK-2850 Nærum · Denmark · Telephone: +45 4580 0500  
Fax: +45 4580 1405 · [www.bksv.com](http://www.bksv.com) · [info@bksv.com](mailto:info@bksv.com)

Australia (+61) 2 9889-8888 · Austria (+43) 1 865 74 00 · Brazil (+55) 11 5188-8166  
Canada (+1) 514 695-8225 · China (+86) 10 680 29906 · Czech Republic (+420) 2 6702 1100  
Finland (+358) 9-521 300 · France (+33) 1 69 90 71 00 · Germany (+49) 421 17 87 0  
Hong Kong (+852) 2548 7486 · Hungary (+36) 1 215 83 05 · Ireland (+353) 1 807 4083  
Italy (+39) 0257 68061 · Japan (+81) 3 5715 1612 · Korea (+82) 2 3473 0605  
Netherlands (+31) 318 55 9290 · Norway (+47) 66 77 11 55 · Poland (+48) 22 816 75 56  
Portugal (+351) 21 47 11 4 53 · Singapore (+65) 377 4512 · Slovak Republic (+421) 25 443 0701  
Spain (+34) 91 659 0820 · Sweden (+46) 8 449 8600 · Switzerland (+41) 44 880 7035  
Taiwan (+886) 2 2502 7255 · United Kingdom (+44) 14 38 739 000 · USA (+1) 800 332 2040

Local representatives and service organisations worldwide

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