Calibration Chart for DeltaTron® Accelerometer Type 4508 B 002

Brüel & Kjær

Serial No.: 2155732

Reference Sensitivity [1] at 159.2 Hz (ω = 1000 s^{-1}), 5 ms^{-2} RMS, 4 mA supply current and 23 °C: 95.4 mV/ms^{-2} (936 mV/g)

Frequency Range: Amplitude (±10%): 0.4 Hz to 8 kHz; Phase (± 5°): 2 Hz to 5 kHz

Mounted Resonance Frequency: 25 kHz

Transverse Sensitivity: Maximum (at 6.25 Hz, 3 ms^{-2}): < 5% re Reference Sensitivity

Transverse Resonance Frequency: > 18 kHz

Calculated values for TEDS [3]:
Resonance frequency: 24.4 kHz
Quality factor @ f_{res}: 4
Amplitude slope: -1.8 %/decade
High pass cut-off frequency: 0.12 Hz
Low pass cut-off frequency: 1430 kHz

Measuring Range: ± 70 ms^{-2} peak (± 7 g peak)

Polarity of the electrical signal is positive for an acceleration in the direction of the arrow on the drawing.

Electrical:

Bias Voltage: at full temperature and current range: + 13 V ± 2 V

Power Supply requirements: Constant Current: + 2 to + 20 mA; Unloaded Supply Voltage: + 24 V to + 30 V

Output Impedance: < 30 Ω

Start-up time (to final bias ± 10%): 5 s

Inherent Noise (RMS):
Broadband (1 Hz to 8 kHz): < 150 μV corresponding to < 0.0015 ms^{-2} (< 150 μg)

Spectral:			
	10 Hz:	8x10^{-5} ms^{-2}/√Hz	(8 μg/√Hz)
	100 Hz:	2x10^{-5} ms^{-2}/√Hz	(2 μg/√Hz)
	1000 Hz:	1x10^{-5} ms^{-2}/√Hz	(1 μg/√Hz)

Ground Loops can introduce error signals. These can be avoided by insulating the accelerometer from the mounting surface (see Mounting Technique).

Recommended cables: AO 1382, AO 0531, AO 0463 and other cables see Product Data Sheet

Built-in ID-information according to IEEE P1451.4

Environmental:

Temperature Range: - 54 to + 100°C (- 65 to + 212°F)

Temperature Coefficient of Sensitivity: + 0.12%/°C

Temp. Transient Sensitivity (3 Hz Low. Lim. Frq. (-3 dB, 6 dB/oct)): 0.3 ms^{-2}/°C

Magnetic Sensitivity (50 Hz, 0.038 T): 3 ms^{-2}/T

Base Strain Sensitivity (at 250 με in base plane):
Mounted on adhesive tape 0.09 mm thick: 0.005 ms^{-2}/με

Max. Non-destructive Shock: 50 kms^{-2} peak (5000 g peak)

Humidity: 100 % RH non-condensing

Mechanical:

Case Material: Titanium ASTM Grade 2

Sensing Element: Piezoelectric, Type PZ 27

Construction: Theta Shear®

Sealing: Hermetic

Weight: 4.8 gram (0.17 oz)

Electrical Connector: 10 - 32 UNF-2A

Mounting Surface Flatness: < 3 μm

[1] This calibration is obtained on a modified Brüel & Kjær Calibration System Type 9610 System No.: 150117.4 and is traceable to the National Institute of Standards and Technology, USA and Physikalisch-Technische Bundesanstalt, Germany.
The expanded uncertainty is 1.0% determined in accordance with EAL-R2. A coverage factor *k*=2 is used. This corresponds to a coverage probability of 95% for a normal distribution.

[3] Transducer Electronic Data Sheet according to IEEE P1451.4.

[4] Deviation from Reference Sensitivity.

Patents involved: US 08387851, JP 50952694 and DK 169653.

For further information, please see http://www.bk.dk and Product Data Sheet BP 1841.

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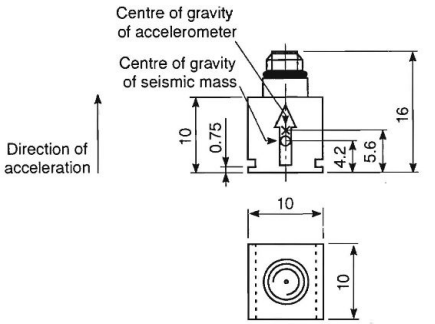
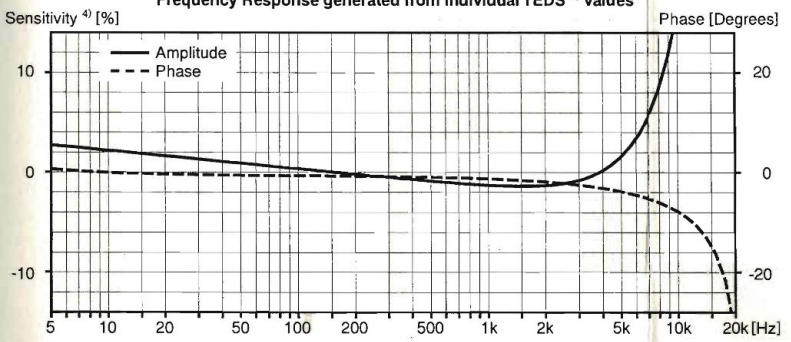
Mounting Technique:
The accelerometer can be fastened directly to the measuring object by glue e.g., hot glue. However, if a reduced frequency range can be accepted, it is recommended to use one of the special mounting clips (see below) which is glued to the measuring object. In any case the mounting surface must be clean and smooth.
Four types of mounting clips are available: UA 1407 (set of 100) is a low profile clip recommended for mounting on plane surfaces. UA 1475 (set of 100) is a clip with a thick base which can be filed to fit a curved mounting surface. UA 1564 (set of 5) is a high temperature clip. UA 1478 (set of 100) is a swivel base clip for use where the accelerometer is to be aligned according to a given co-ordinate system (see Product Data Sheet BP 1841).
Applying a little grease to the mounting surface of the accelerometer as well as the clip will improve the frequency response.
See also ISO 5348.

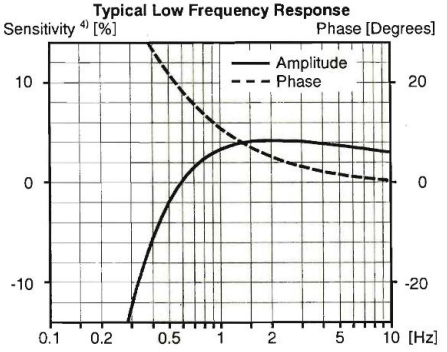


All dimensions in millimetres

Frequency Response generated from individual TEDS [3] values



Typical Low Frequency Response



Date 8 Jan 2003 Operator SN

Specifications obtained in accordance with ANSI S2.11-1969 and parts of ISO 5347.

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

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