PRODUCT DATA

Piezoelectric Charge Accelerometer Type 4385-C

Piezoelectric Charge Accelerometer Type 4385-C is a robust transducer designed for high-level shock and vibration measurements.

150393

Uses and Features

Uses

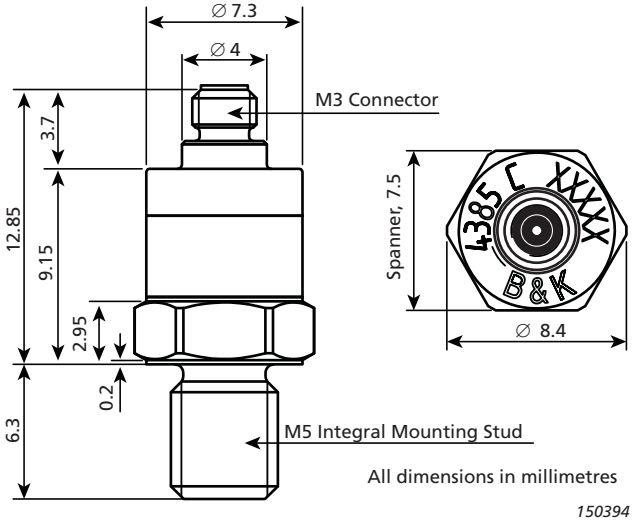
- Measurement of high-level mechanical shock and vibration

Features

- Sturdy construction
- Integral mounting stud

Description

Fig. 1
Dimensions of Type 4385-C



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Type 4385-C is a piezoelectric accelerometer with a centre-mounted compression design. It features an M3 output connector (top) and an integral M5 mounting stud.

This accelerometer has a sturdy construction designed to withstand continuous, high-level vibration and mechanical shock up to 120 kms^{-2} (12000 *g*).

The housing material of Type 4385-C is titanium and the piezoelectric element used is PZ46, a ferroelectric ceramic. The element is prepared and treated to withstand high dynamic stress with negligible problem of "zero shift".

Brüel & Kjær

Calibration

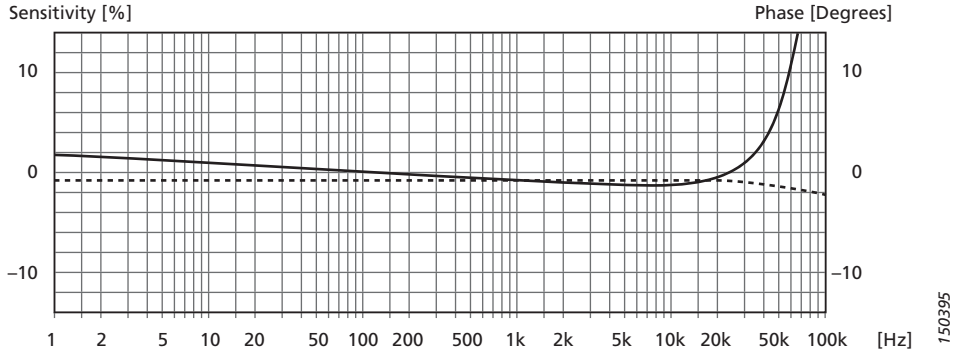
Each accelerometer is calibrated using random excitation and 1600-line FFT transformation to provide a high-resolution (amplitude and phase) frequency response. This yields a unique characterization and secures the integrity of your vibration measurements.

The sensitivity given on the calibration chart is measured at 159.2 Hz with 95% confidence level using coverage factor k = 2.

The upper frequency limits given on the calibration chart are frequencies where the deviation from the reference sensitivity at 159.2 Hz is within ±10%. The upper frequency limit is approximately 30% of the mounted resonance frequency. This assumes that the accelerometer is correctly mounted on the test structure – poor mounting can have a marked effect on the mounted resonance frequency.

The lower frequency limits and phase response are determined by the built-in preamplifiers. The lower frequency limits are given in the specifications for deviations from reference sensitivity within ±10%.

Fig. 2
Typical frequency response curve for Type 4385-C



Brüel & Kjær's Accelerometer Family for High-level Shock and Vibration Measurements

Type 4385-C is part of a family of accelerometers that are designed for high-level shock and vibration measurements. To find the accelerometer that fits your needs, visit www.bksv.com.

Table 1
Comparison of Brüel & Kjær accelerometers for high-level shock and vibration measurements

		8339	8309	4393	4385-C
Measuring range	*g*	20000	15000	5000	12000
Temperature	°C (°F)	–51 to +121 (–60 to +250)	–74 to +180 (–101 to +356)	–74 to +250 (–101 to +482)	–74 to +180 (–101 to +356)
Sensitivity		0.025 pV/ms^{-2}	0.004 pC/ms^{-2}	0.316 pC/ms^{-2}	0.005 pC/ms^{-2}
Weight	g	5.8	3	2.4	1.9
Isolated		Yes	No	No	Yes
Capacitance	pF	–	100	590	1000
Frequency range*	Hz	1 to 20000	≤54000	≤16500	≤50000
Connector		Top, 10–32 UNF	Integral cable, 10–32 UNF	Side, M3	Top, M3
Mounting		Integral 10–32 UNF stud	Integral M5 stud	M3 stud	Integral M5 stud
Product Data		BP 2082	BP 2053	BP 2043	BP 2541

* Lower limiting frequency is determined by the amplifier used

Type No.			**4385-C**
General			
Weight (excluding cable, wherever applicable)		gram	1.9
		oz	0.067
Charge Sensitivity (at 159.2 Hz)		pC/ms^{-2}	0.005 ±30%
		pC/g	0.05 ±30%
Frequency Range (±10% limit)		Hz	50000
Mounted Resonance Frequency		kHz	150000
Max. Transverse Sensitivity (at 30 Hz, 100 ms^{-2})		%	<5
Transverse Resonance Frequency		kHz	25000
Measuring Range (peak)		kms^{-2}	120
		g	12000
Electrical			
Capacitance (excluding cable)		pF	1000
Min. Leakage Resistance (at 20 °C)		GΩ	>20
Environmental			
Operating Temperature Range		°C	−74 to +180
		°F	−101 to +356
Temperature Transient Sensitivity (3 Hz Low. Lim. Freq. (−3 dB, 6 dB/octave))		ms^{-2}/°C	400
		g/°F	22.9
Base Strain Sensitivity (at 250 με in the base plane)		ms^{-2}/με	2
		g/με	0.2
Magnetic Sensitivity (50 Hz, 0.038 T)		ms^{-2}/T	20
		g/kG	2
Max. Non-destructive Shock (± peak)		kms^{-2}	120
		g	12000
Mechanical			
Housing Material			Titanium ASTM Grade 2
Piezoelectric Sensing Element			PZ 46
Construction			Compression
Sealing			Welded
Electrical Connector			M3
Mounting			M5 stud
Mounting Torque	Max.	Nm (lbf·in)	1.0 (8.8)
	Min.		0.3 (2.7)

All values are typical at 25 °C unless measurement uncertainty is specified

Ordering Information

Type 4385-C Piezoelectric Charge Accelerometer
Includes the following:
- Carrying case
- Calibration chart

Optional Accessories

CABLING

AO-0283-x-yyy*	Super low-noise coaxial cable, M3 (M) to 10–32 UNF (M), 250 °C (482 °F)
AO-0339-x-yyy*	Flexible low-noise coaxial cable, M3 (M) to 10–32 UNF (M), 250 °C (482 °F)
AO-1381-x-yyy*	Flexible double-screened, low-noise cable, M3 (M) to 10–32 UNF (M), 250 °C (482 °F)
JJ-0032	Adaptor, 10 – 32 UNF (F) connectors
JP-0162	Plug adaptor, 10–32 UNF (F) to TNC (M)

MOUNTING

QS-0007	Tube of cyanoacrylate adhesive

* x = D (decimetres) or M (metres)
yyy = length in decimetres or metres
Please specify cable length when ordering

SIGNAL CONDITIONING AND FRONT ENDS

Type 2647-A	Charge to CCLD converter (1 mV/pC)
Type 2647-B	Charge to CCLD converter (10 mV/pC)
Type 3053-B-120	12-ch. Input Module LAN-XI 25.6 kHz (CCLD, V)
UA-2116-120	LAN-XI Front Panel, 12-channel Charge, 12 × 10–32 UNF (F) connectors (Gain: –1 mV/pC)
Type 3050-A-060	6-channel Input Module LAN-XI 51.2 kHz (Mic, CCLD, V)
UA-2105-060	LAN-XI Front Panel, Charge Accelerometer, 6 slots for the family of Charge to CCLD Converter Type 2647
UA-2120-060	LAN-XI Front Panel, 6-ch. Charge, 6 × TNC (F) connectors (Gain: –1 mV/pC)
Type 2692	NEXUS Charge Conditioning Amplifier

CALIBRATION

Type 4294	Calibration Exciter

Calibration Services

4385-C-CAF	Accredited calibration
4385-C-CAI	Accredited initial calibration
4385-C-CFF	Factory standard calibration
4385-C-CTF	Traceable calibration

BP 2541 – 11 2015-10

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