PRODUCT DATA

High-temperature Industrial Charge Accelerometer Type 8347-C

Piezoelectric Accelerometer

Uses

- Vibration measurements in harsh industrial environments
- Aero engines
- Industrial gas turbines
- Turbo pumps
- Nuclear power plants
- High-temperature (482°C / 900°F) applications
- Cryogenic applications
- Gearboxes
- Health Usage Monitoring Systems (HUMS)

Benefits and Features

- Wide temperature applications: −196°C (−321°F) to +482°C (+900°F)
- Ideal for demanding radiation environments: High resistance to radiation
- Accurate measurements during thermal transients: Shear design with superior thermal stability
- Minimal mass-loading: Weight 60 grams
- High-frequency applications: Usable frequency range up to 12.8 kHz
- Fits in confined spaces: Profile 20 mm
- Minimise distortion at high amplitude: Linearity <1% increase per 15000 ms^{-2}
- Low sensitivity to EMI: Balanced differential output
- Avoid excitation by blade passing frequencies: Transverse resonance frequency 17 kHz
- Fully operational in harsh environments: hermetically sealed INCONEL® construction
- Drop-in replacement: Same ARINC footprint, sensitivity and connector as the well-known Brüel & Kjær Type 8324

Description

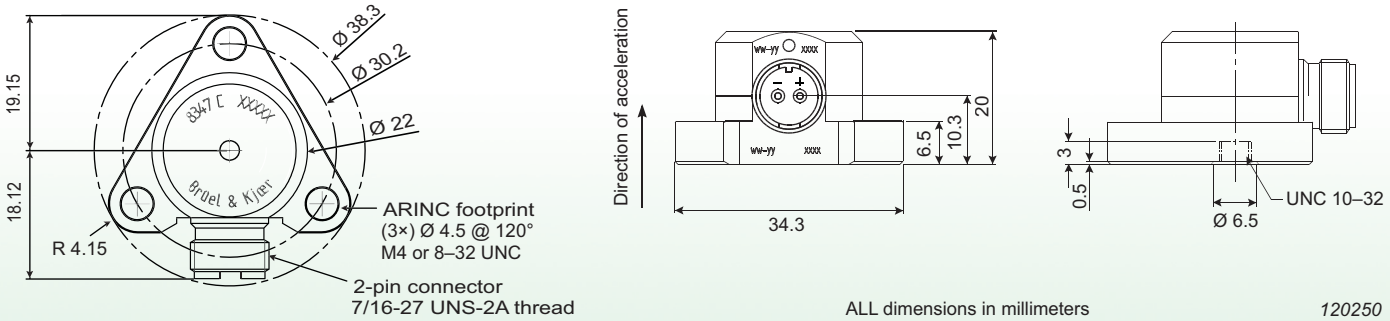
Type 8347-C is a piezoelectric charge accelerometer based on the shear design principle. The transducer features a ruggedized 2-pin TNC connector (7/16-27 UNS) for the balanced differential output connection. The transducer is made of INCONEL and is hermetically sealed. It has an industry standardized ARINC footprint. It can be mounted on the test object by means of 3 × M4 bolts, or a 10−32 UNF mounting stud on the bottom for calibration purposes.

Calibration

The transducers are individually calibrated using random excitation and 1600 lines FFT transformation to provide the frequency response with high resolution (amplitude and phase), ultimately giving a unique characterisation and securing the integrity of the vibration measurement.

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

Fig. 1 *Outline drawing of Type 8347-C*



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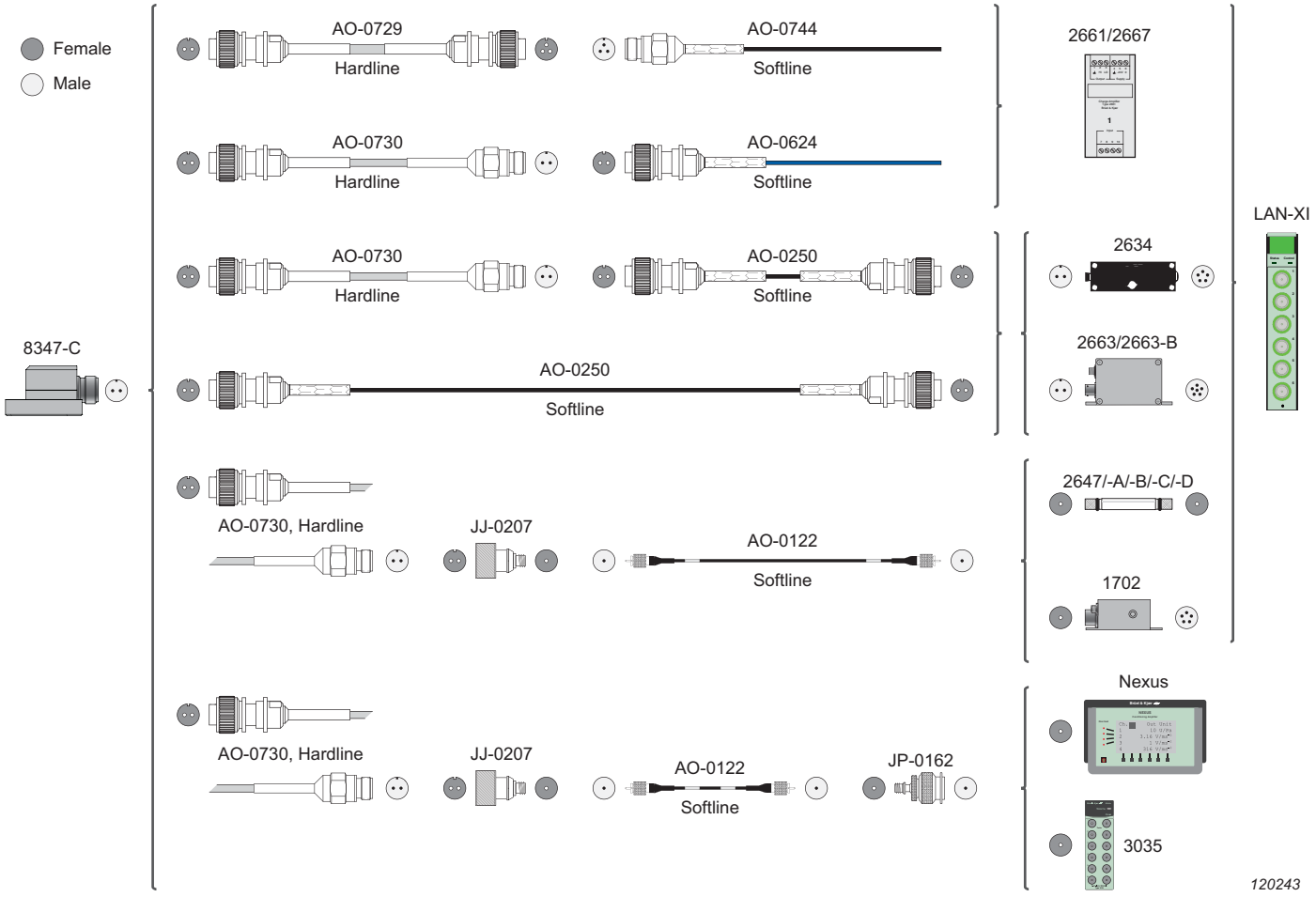
Typical Configuration

Fig. 2 shows typical configurations using Type 8347-C together with Brüel & Kjær measurement and analysis instruments. See the table below for specific cable information.

Fig. 2 *Typical configurations with Type 8347-C*



Item Number	Description	Raw Cable Diameter (mm)	Temperature	Connector
AO-0729	Double-shielded Hardline Cable	4.8	−200°C to +500°C	2-pin TNC (Female) 3-pin KPT (Female)
AO-0730	Single-shielded Hardline Cable	3	−200°C to +500°C	2-pin TNC (Female) 2-pin TNC (Male)
AO-0744	Double-screened Coaxial Softline Cable	6	−50°C to +200°C	3-pin KPT (Male) open end
AO-0624	Double-screened Blue Coaxial Softline Cable (for explosive areas)	6	−55°C to +250°C	2-pin TNC (Female) open end
AO-0250	Double-screened Black Coaxial Softline Cable (also available in blue for explosive areas)	6	−50°C to +250°C	2-pin TNC (Female) 2-pin TNC (Female)
AO-0122	Super Low-noise Coaxial Cable (robust cable with extensive stress relief)	3.2	−75°C to +250°C	10−32 UNF (Male) 10−32 UNF (Male)

Specifications – Charge Accelerometer Type 8347-C

	Unit	Value
General Specifications		
Accelerometer Type		Charge
Charge Sensitivity (at 159.2 Hz)	pC/ms^{-2} (pC/g)	1.0 (10)
Sensitivity Tolerance		±5%
Amplitude/Phase Response		See Fig. 3 on page 4
Upper Frequency Limit (±10%)	kHz	12.8
Lower Frequency Limit (±10%)		Determined by amplifier used
Mounted Resonance Frequency	kHz	39
Transverse Resonance Frequency	kHz	17
Amplitude Linearity		< 1% increase per 15000 ms^{-2}
Transverse Sensitivity		< 3%
Electrical Characteristics		
Resistance Between Pins (+25°C) Between Pins (max. temp.) Each Pin to Case (+25°C) Each Pin to Case (max. temp.)	 MΩ kΩ MΩ kΩ	 >100 >50 >100 >50
Capacitance Between Pins Each Pin to Case	 pF pF	 540 50
Isolation (pin to case)	MΩ	100
Grounding		Balanced signal pins isolated from case
Environmental Characteristics		
Normal Operational Temperature Range	°C (°F)	−196 to +482 (−321 to +900)
Electromagnetic Sensitivity (50 Hz, 0.038 T)	ms^{-2}/T (g/T)	20 (2)
Radiation* Integrated Gamma Dose Integrated Neutron Flux	 Mrad neutrons per cm^2	 up to 100 up to 3 × 10^{18}
Max. Operating Sinusoidal Vibration	ms^{-2}(g)	10000 (1000)
Max. Shock Level (peak)	ms^{-2}(g)	50000 (5000)
Humidity		Hermetically sealed
Temperature Response		3% per 100°C (see Fig. 4 on page 4)
Temperature Transient Sensitivity (3 Hz Lower Limit Freq. (−3 dB, 6 dB/oct.))	ms^{-2}/°C (g/°F)	1.5 (0.085)
Base Strain Sensitivity (typical in base plain at 250 με)	ms^{-2}/με (g/με)	0.02 (0.002)
Physical Characteristics		
Design Configuration		Shear design
Dimensions		See Fig. 1 on page 1
Weight	g (oz)	60 (2.1)
Case Material		INCONEL
Connector		2-pin TNC (7/16 27 UNS)
Polarity		As indicated in Fig. 1 on page 1
Footprint		ARINC
Mounting		3 × M4 (or 8−32)
Mounting Accessories (included)		4 × YS-8406 (M4 × 12 with security holes) + QA-0122 (Hex Key)
Mounting Torque	Nm (lbf-in)	1.6 (14)
Marking		Red dot to mark connector keying

* Based on similarity through literature study

Ordering Information

Type 8347-C
Includes the following accessories:

- Calibration chart
- Carrying box
- 4 × YS-8406 (M4 × 12) mounting bolts
- 1 × QA-0122 (Hex Key)

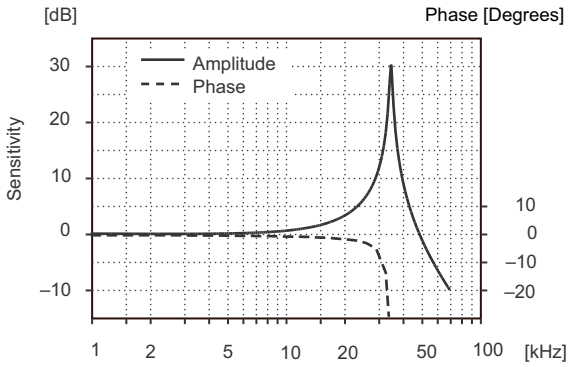
Optional Accessories	
AO-0729-D-xxx*	Double-Shielded Hardline Cable, 500°C (932°F)
AO-0730-D-xxx*	Single-Shielded Hardline Cable, 500°C (932°F)
AO-0744-D-xxxx*	Double-screened Coaxial Softline Cable, 3-pin KPT to open end, +200°C
AO-0624-D-xxx*	Double-screened Coaxial Softline Cable, 2-pin TNC (7/16 27 UNS) to open end, +250°C
AO-0250-D-xxx*	Double-screened Coaxial Softline Cable, 2-pin TNC to 2-pin TNC, +250°C
AO-0122-D-xxx*	Super Low-noise Coaxial Cable, with extensive relief at connectors
JJ-0207	Plug Adaptor, 2-pin TNC (7/16 27 UNS) (female) to 10−32 UNF (female)
JP-0162	Adaptor, TNC (male) to 10−32 UNF (female)
YS-8406	M4 Mounting Bolt, with security holes
QS-0007	Tube of Cyanoacrylate Adhesive
Type 4294	Calibration Exciter
Type 4294-002	Calibration Exciter
QA-0122	Hex Key
Calibration Services	
8347-CFF	Factory Standard Calibration
8347-CAF	Accredited Calibration
8347-CAI	Accredited Initial Calibration
8347-CTF	Traceable Calibration

* Cables are available in different lengths, specified by -D-XXX, where: *D* specifies that the length is in decimetres and *XXX* is the required length

Additional accessories, cables and services are available – see www.bksv.com.

Amplitude/Phase Response

Fig. 3 *Typical high frequency response*



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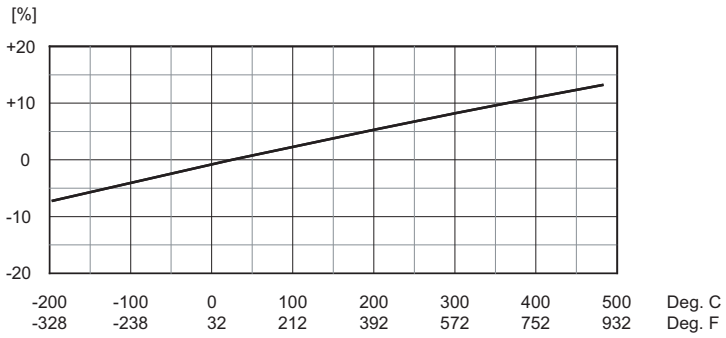
Temperature Response

Fig. 4 *Sensitivity deviation as a function of temperature*



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Compliance with EMC Directive and Low Voltage Directive of the EU
Compliance with the EMC requirements of Australia and New Zealand

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