

# Product Data

## Industrial Accelerometer — Type 8325

### USES:

- Permanent and off-line vibration monitoring of a wide variety of machines in industrial environments

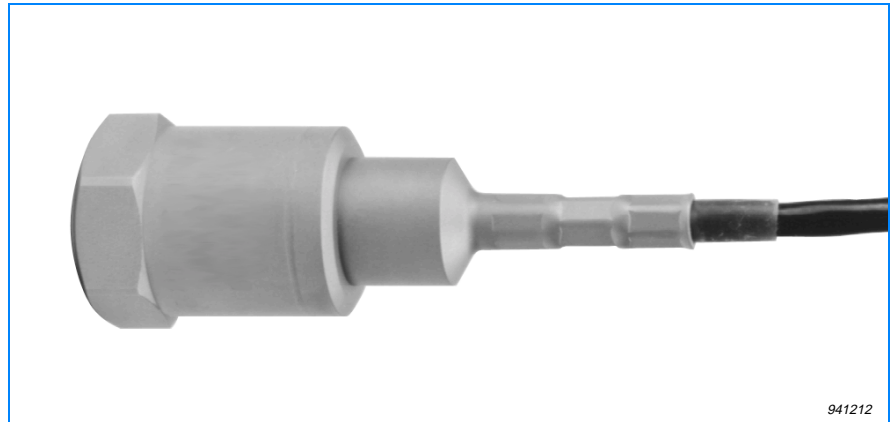
### FEATURES:

- DeltaTron® integral preamplifier used
- Case insulated and internally shielded
- Sealed to IP 67 for use in wet and dusty environments

This piezoelectric absolute-vibration measuring accelerometer is part of a family of robust **industrial transducers** specially designed for use in heavy-duty and severe-service applications for measuring industrial machine vibrations.

It is suitable for use with the Type 3540 COMPASS system, the Type 2526 Data Collector, or other machine condition monitoring systems.

General information on these transducers can be found in the overview product data sheet that covers industrial transducers.



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### General Application

The 8325 is a rugged accelerometer with a high sensitivity, ideally suited for permanent and off-line vibration monitoring of a wide variety of machines.

And because of its integral current-drive amplifier, it provides an excellent price-attractive solution for general-purpose multi-channel systems.

A constant-current power supply is required, such as Brüel & Kjær's Type 3021 Current-Drive Multiplexer Module for COMPASS or a portable monitoring system such as the Type 2526 Data Collector.

### Design Features

The 8325 uses an integral DeltaTron® preamplifier which provides a low impedance output, thus allowing inexpensive cables to be used, and provides excellent resistance to electromagnetic noise pick-up.

This accelerometer employs a mechanically pre-loaded annular-shear piezoelectric element configuration. This gives a high resistance to base bending and temperature transients.

The sturdy stainless steel case is designed specifically for rugged industrial applications and is sealed to IP67 for use in wet and dusty environments. The case is insulated and

internally shielded to minimize signal electromagnetic interference and ground-loops.

An integral-mounted Tefzel insulated cable is supplied as standard in 5, 10 and 15 metre lengths, with an open-ended connector for input into a junction box for permanent systems. For portable monitoring equipment, such as the Type 2526 Data Collector, a 1.5 metre cable with a BNC plug can be supplied. These cables have reduced triboelectric susceptibility since they are effectively bonded. Other cable types, connectors and cable lengths are also possible.

# Specifications 8325

## Dynamic

**SENSITIVITY (axial):** 10 mV/ms<sup>-2</sup>, ±5%  
**MEASURING RANGE (peak):**  
 750 ms<sup>-2</sup> at <100°C (212°F)  
 500 ms<sup>-2</sup> at <125°C (257°F)  
**FREQUENCY RESPONSE (see graph below):**  
 1 to 10000 Hz, ±10%  
**MOUNTED RESONANCE FREQUENCY:**  
 25 kHz  
**TRANSVERSE RESPONSE:**  
**Resonance Frequency:** 7 kHz  
**Maximum Sensitivity:** <4%  
**TEMPERATURE RESPONSE:**  
 See graph below  
**POLARITY:**  
 Positive (acceleration directed from base into body)

## Electrical

**POWER REQUIREMENT:**  
**Constant Current:** +2 to +20 mA  
**Voltage (unloaded):** +22 to +28 VDC  
**MAXIMUM OUTPUT SIGNAL (peak):** >7.5 V  
**BIAS VOLTAGE:**  
 12 V at 4 mA  
 8 to 15 V at full temp. and current range  
**RESIDUAL NOISE:**  
 <3 x 10<sup>-3</sup> ms<sup>-2</sup> (1 Hz to 22 kHz)  
**OUTPUT IMPEDANCE:** <100 Ω  
**GROUNDING (case to shield):** >100 MΩ  
**CAPACITANCE TO GROUND:** 70 pF

## Environmental

**MAX. ACCELERATION LIMITS (peak):**  
**Shock:** 50000 ms<sup>-2</sup>  
**Continuous Vibration:** 5000 ms<sup>-2</sup>  
**BASE STRAIN SENSITIVITY:**  
 0.005 ms<sup>-2</sup>/με (in base plane at 250 με)  
**TEMP. TRANSIENT SENSITIVITY:**  
 0.05 ms<sup>-2</sup>/°C (3 Hz LLF, 20 dB/decade)

**ELECTROMAGNETIC SENSITIVITY:**  
 2 ms<sup>-2</sup>/T (50 Hz, 0.03 T)  
**ACOUSTIC SENSITIVITY**  
 0.005 ms<sup>-2</sup> (at 154 dB SPL)

## Physical

**WEIGHT:** 100 g (3.5 oz), (without cable)  
**CASE:**  
**Material:** Stainless steel AISI 316  
**Insulation:** Case insulated, internally shielded

## PIEZOELECTRIC ELEMENT:

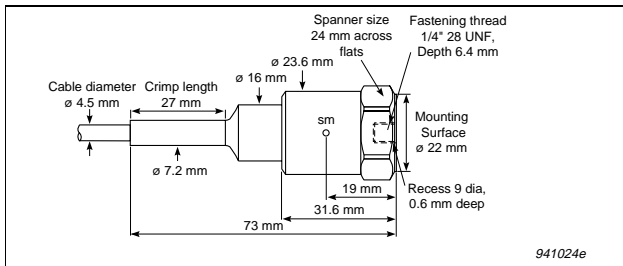
**Design Config.:** Pre-loaded annular shear  
**Material:** PZ23  
**Mounting:** 1/4"-28 UNF tapped centre hole

**Note:** All values are typical at 25°C (77°F), unless measurement uncertainty is specified. All uncertainty values are specified at 2σ (i.e. expanded uncertainty using a coverage factor of 2)

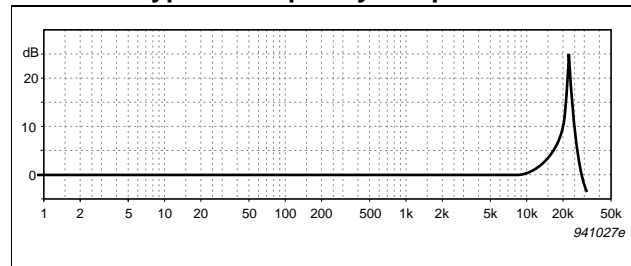
## COMPLIANCE WITH STANDARDS:

<b>CE</b>	CE-mark indicates compliance with: EMC Directive.
<b>Safety</b>	EN 61010-1 and IEC 1010-1: Safety requirements for electrical equipment for measurement, control and laboratory use.
<b>EMC Emission</b>	EN 50081-1: Generic emission standard. Part 1: Residential, commercial and light industry. EN 50081-2: Generic emission standard. Part 2: Industrial environment. CISPR 22: Radio disturbance characteristics of information technology equipment. Class B Limits. FCC Rules, Part 15: Class B limits.
<b>EMC Immunity</b>	EN 50082-1: Generic immunity standard. Part 1: Residential, commercial and light industry. EN 50082-2: Generic immunity standard. Part 2: Industrial environment. <b>Note:</b> The above is guaranteed using accessories listed in this Product Data sheet only.
<b>Temperature</b>	IEC 68-2-1 & IEC 68-2-2: Environmental Testing. Cold and Dry Heat. Operating Temperature: -54 to +125°C (-65.2 to +257°F)
<b>Humidity</b>	IEC 68-2-3: Damp Heat: 95% RH (non-condensing at 40°C (104°F))
<b>Enclosure</b>	IEC 529: Protection Provided by Enclosure: IP 67

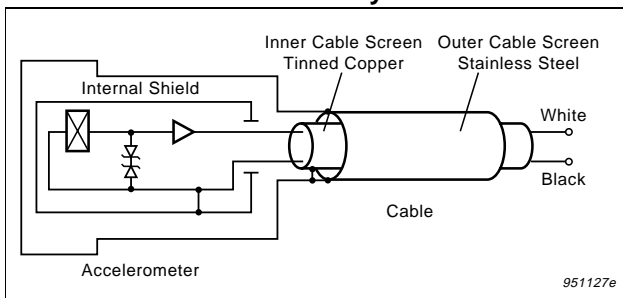
## Mechanical Dimensions



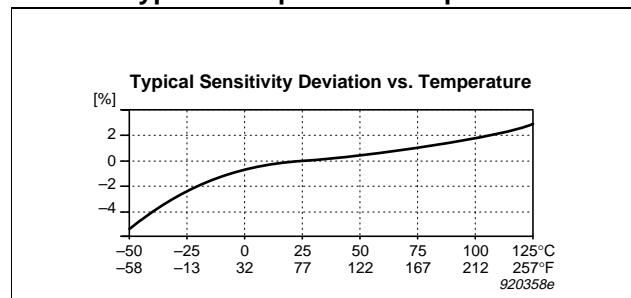
## Typical Frequency Response



## Electrical Layout



## Typical Temperature Response



# Ordering Information

**Type 8325** Industrial Accelerometer  
**Includes the following accessories:**  
 DB 3333: Steel stud 1/4"-28 UNF  
 DB 3116: Cable gland  
 Individual calibration chart

## Optional Accessories

**EA 2000:** Mounting plate  
**WQ 0084:** Stainless steel conduit for cable  
**WQ 0732:** Glue for mounting plates (-50 to +150°C (-58 to +302°C))  
**UA 1281:** Magnet  
**UA 1282:** Magnet kit (discs, glue, etc.)

**Cables:**

When ordering, indicate the order specification number in the table on the right that corresponds

to the desired cable, connector and cable length in metres to be factory mounted

**Example:** "8325-H" corresponds to 10 metre of open-ended cable AC 0141 (125°C (257°F)) attached to the accelerometer

For more information on cables and connectors, refer to the Industrial Transducer Overview Product Data (BP 1509). Call your Brüel & Kjær representative for ordering special cables and/or connectors

Maximum cable length for signal transmission can be calculated from the following:

$$Length(m) = \frac{3.75 \times 10^5}{kHz \times ms^{-2}}$$

Where *kHz* is max. freq. and *ms<sup>-2</sup>* max. peak vibration level, e.g. measuring up to 10kHz on a machine vibrating at 75 *ms<sup>-2</sup>*, allows a max. cable of 500 m (valid for a 10 mA supply and 200 pF/m cable, such as AC 0141)

Cable/Connector		Temp.	Order Spec.
AC 0141	Open ended	125°C	- G (5 m)
		125°C	- H (10 m)
		125°C	- I (15 m)
	BNC	125°C	- F (1.5 m)

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



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