

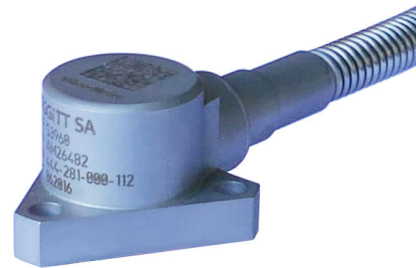


CE281

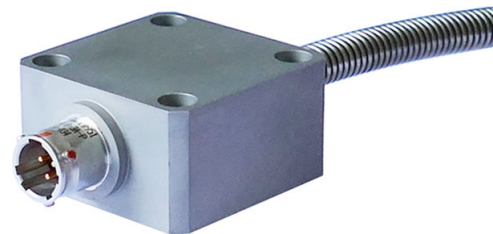
Piezoelectric accelerometer

FEATURES

- » From the Vibro-Meter® product line
- » Integrally attached electronics
- » Long-distance signal transmission
- » Standard and Ex approved versions
- » Certified for use in potentially explosive atmospheres
- » Integral case insulation
- » Sensitivity:
10 µA/g
- » Frequency response:
3 to 7000 Hz
- » Temperature range:
-55 to 260 °C (sensor)
-40 to 125 °C (electronics)



CE281 sensor



CE281 integrally attached electronics

APPLICATIONS

- » Industrial vibration monitoring



DESCRIPTION

The CE281 piezoelectric accelerometer has a centre-mounted symmetrical shear-mode measuring element using polycrystalline material. The sensor uses integrally attached electronics to provide the required signal processing, eliminating the need for an external signal conditioner (charge amplifier).

The integrally attached electronics also performs charge-to-current conversion in order to provide a

current-modulated output signal that is suitable for transmission over long distances.

The sensor head and the casing housing the integrally attached electronics are connected by an integral cable (low noise, shielded) in a hermetically sealed link, protected by a flexible, leak-tight protection tube (stainless-steel hose).



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DESCRIPTION *(continued)*

More specifically, the sensor head, protection tube and electronics casing are hermetically welded to one another, resulting in a system that is fully protected against cooling fluids, lubricants, water, steam and other potential contaminants. This makes the CE281 an extremely reliable device suitable for the long-term monitoring of vibration in many industrial applications.

The CE281 sensor and electronics are insulated from their housings (integral case insulation). The CE281

is available in a standard version with a bayonet connector and in Ex versions with bayonet or threaded connectors (see **Ordering information on page 7**).

For specific applications, contact your nearest Meggitt representative.

SPECIFICATIONS

General

Input power supply requirements	: 15 to 28 V _{DC} , with a bias (standby) current of 5 to 8 mA
Signal transmission	: Current-modulated output (2-wire system)
Signal processing	
• <i>Internal</i>	: Integrally attached electronics (charge-to-current conversion)
• <i>External</i>	: Galvanic separation unit and/or monitoring system electronics

Operating

(At 23°C ±5°C, 73°F ±9°F)

Sensitivity	: 10 µA/g ±5%
Dynamic measurement range (sensor head only)	: 0.0001 to 200 g PEAK
Overload capacity (spikes) (sensor head only)	: Up to 2000 g PEAK
Linearity	: ±1% over dynamic measurement range
Transverse sensitivity	: <3% (measured at 15 Hz with 5 g)
Resonant frequency (mounted)	: 25 kHz typ.
Frequency response	: <±5% between 3 and 7000 Hz

Environmental

Temperature range	
• <i>Sensor head</i>	: -55 to 260°C (-67 to 500°F) continuous operation. -70 to 290°C (-94 to 554°F) short-term survival (15 minutes max.).
• <i>Integrally attached electronics</i>	: -40 to 125°C (-40 to 257°F) continuous operation. -55 to 150°C (-67 to 302°F) short-term survival (15 minutes max.).
Temperature sensitivity error with respect to 23°C (73°F) (sensor head only)	: ±5% between -20 and 260°C (-4 to 500°F). -14% to +5% between -55 and 260°C (-67 to 500°F).
Shock acceleration	
• <i>Sensor head</i>	: 2000 g PEAK (half-sine wave, 1 ms duration)
• <i>Integrally attached electronics</i>	: 500 g PEAK (half-sine wave, 1 ms duration)

SPECIFICATIONS (continued)

Corrosion, humidity

- *Sensor head* : INCONEL[®] alloy 600, hermetically welded
- *Protection tube* : Stainless steel (1.4541), hermetically welded
- *Integrally attached electronics casing* : Stainless steel (1.4441), hermetically welded

Note: The sensor, protection tube and electronics housing are hermetically welded to one another to create a leak-tight assembly that is impervious to 100% relative humidity, water, steam or oil, sea-salt atmospheres and other potential contaminants such as dust, fungus and sand.

Base strain sensitivity : 0.0025 g/ $\mu\epsilon$ typ.

Potentially explosive atmospheres

Available in Ex approved versions for use in hazardous areas

Type of protection Ex ia: intrinsic safety		
Europe	EC type examination certificate	KEMA 04 ATEX 1055 II 1 G (Zones 0, 1, 2) Ex ia IIC T6...T2 Ga
International	IECEx certificate of conformity	IECEx DEK 15.0029 Ex ia IIC T6...T2 Ga
North America	cCSAus certificate of compliance	cCSAus 1514310 Class I, Division 1, Groups A, B, C, D Ex ia IIC T6...T2 Ga Class I, Zone 0 AEx ia IIC T6...T2 Ga
Korea	KGS certificate of conformity	KGS 17-GA4BO-0322X Ex ia IIC T6...T2
Russian Federation	TR CU certificate of conformity	TC RU C-CH.MШ06.B.00134 0Ex ia IIC T6...T2 Ga

Type of protection Ex nA: non-sparking		
Europe	Voluntary type examination certificate	LCIE 09 ATEX 1047 X II 3 G (Zone 2) Ex nA IIC T6...T2 Gc
International	IECEx certificate of conformity	IECEx LCI 10.0021X Ex nA IIC T6...T2 Gc
North America	cCSAus certificate of compliance	cCSAus 1514310 Class I, Division 2, Groups A, B, C, D Ex nA IIC T6...T2 Gc Class I, Zone 2 AEx nA IIC T6...T2 Gc
Russian Federation	TR CU certificate of conformity	TC RU C-CH.MШ06.B.00134 2Ex nA IIC T6...T2 Gc



For specific parameters of the mode of protection concerned and special conditions for safe use, refer to the Ex certificates that are available from Meggitt SA.



For the most recent information on the Ex certifications that are applicable to this product, refer to the Ex product register (PL-1511) document that is available from Meggitt SA.

SPECIFICATIONS *(continued)*

Approvals

Conformity	: CE marking, European Union (EU) declaration of conformity. EAC marking, Eurasian Customs Union (EACU) certificate/declaration of conformity.
Electromagnetic compatibility	: EN 61000-6-2:2005. EN 61000-6-4:2007 + A1:2011. TR CU 020/2011.
Electrical safety	: EN 61010-1:2010
Environmental management	: RoHS compliant (2011/65/EU)
Hazardous areas	: Ex approved versions (see Potentially explosive atmospheres on page 3)
Russian federal agency for technical regulation and metrology (Rosstandart)	: Pattern approval certificate CH.C.28.004.A N° 59463, dated 21.08.2015

Calibration

Dynamic calibration at factory at 120 Hz and 5 g PEAK (23°C, 73°F). No subsequent calibration necessary.

Mechanical

Connection

- *Bayonet connector* : MS3112E8-3P (stainless steel).
Mates with a CG134 bayonet connector (MS3112E08-3S).
- *Threaded connector* : EN2997Y10803MN (stainless steel).
Mates with a CG134 threaded connector (MIL-C-83723).

Dimensions

: See **Mechanical drawings on page 5**

Weight

- *Sensor head* : 70 g (2.5 oz) approx.
- *Protection tube* : 135 g/m (1.5 oz/ft) approx.
- *Integrally attached electronics* : 200 g (7.1 oz) approx.

Mounting

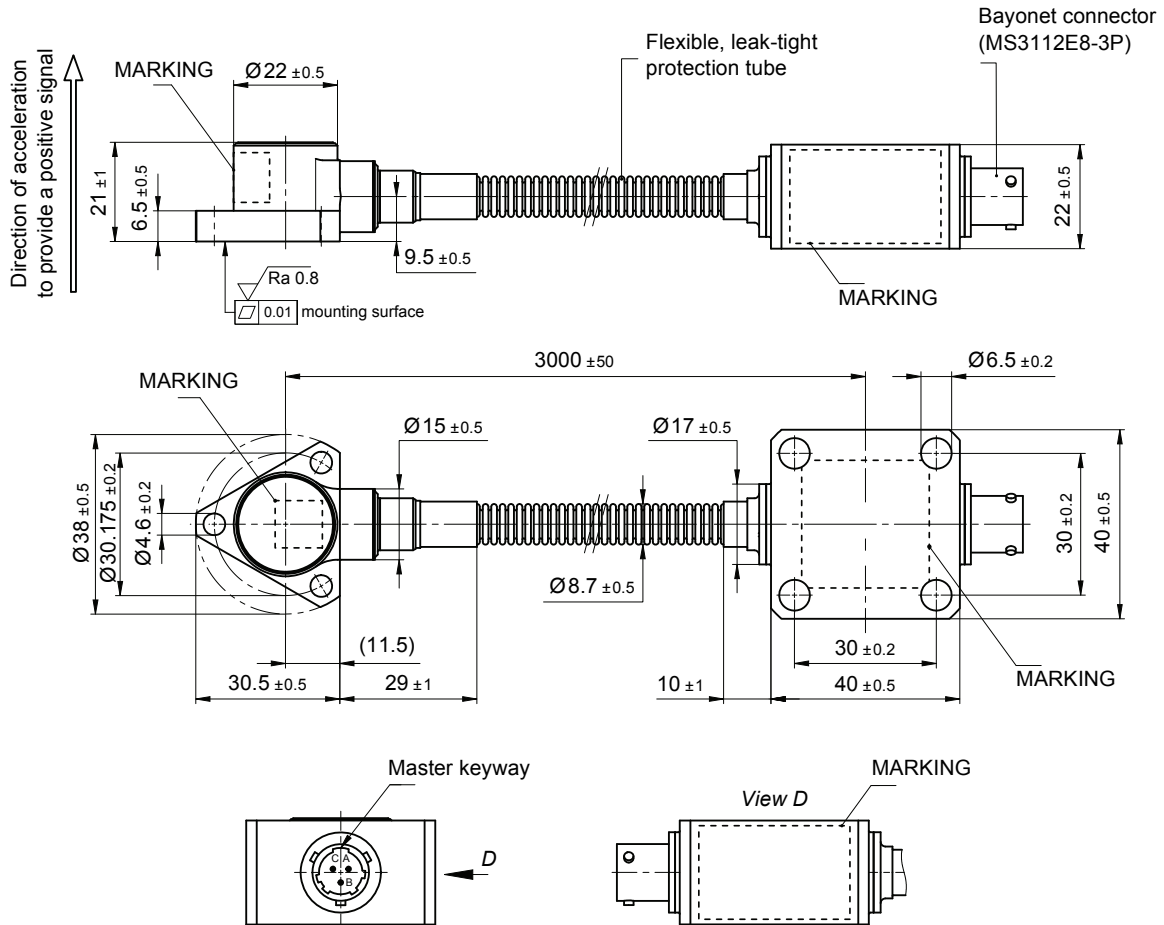
- *Sensor head* : Three M4 x 16 Allen bolts (hexagonal socket head) with three M4 spring-lock washers.
Mounting torque of 4.5 N•m (3.3 lb-ft).
- *Integrally attached electronics casing* : Four M6 x 35 Allen bolts (hexagonal socket head) with four M6 spring-lock washers.
Mounting torque of 15 N•m (11.1 lb-ft).

Note: See the mounting adaptors in **Accessories on page 7**.
Refer also to the *CExxx and PVxxx vibration sensors* installation manual.

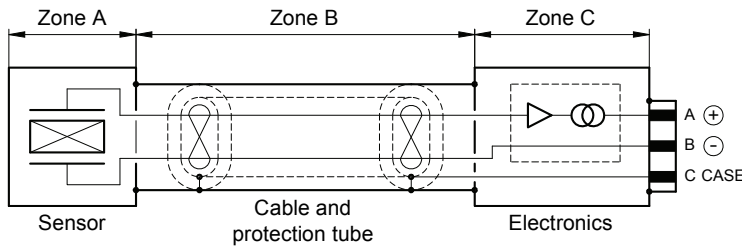
MECHANICAL DRAWINGS

CE281 accelerometer with bayonet connector

CE281 accelerometer



CE281 wiring diagram

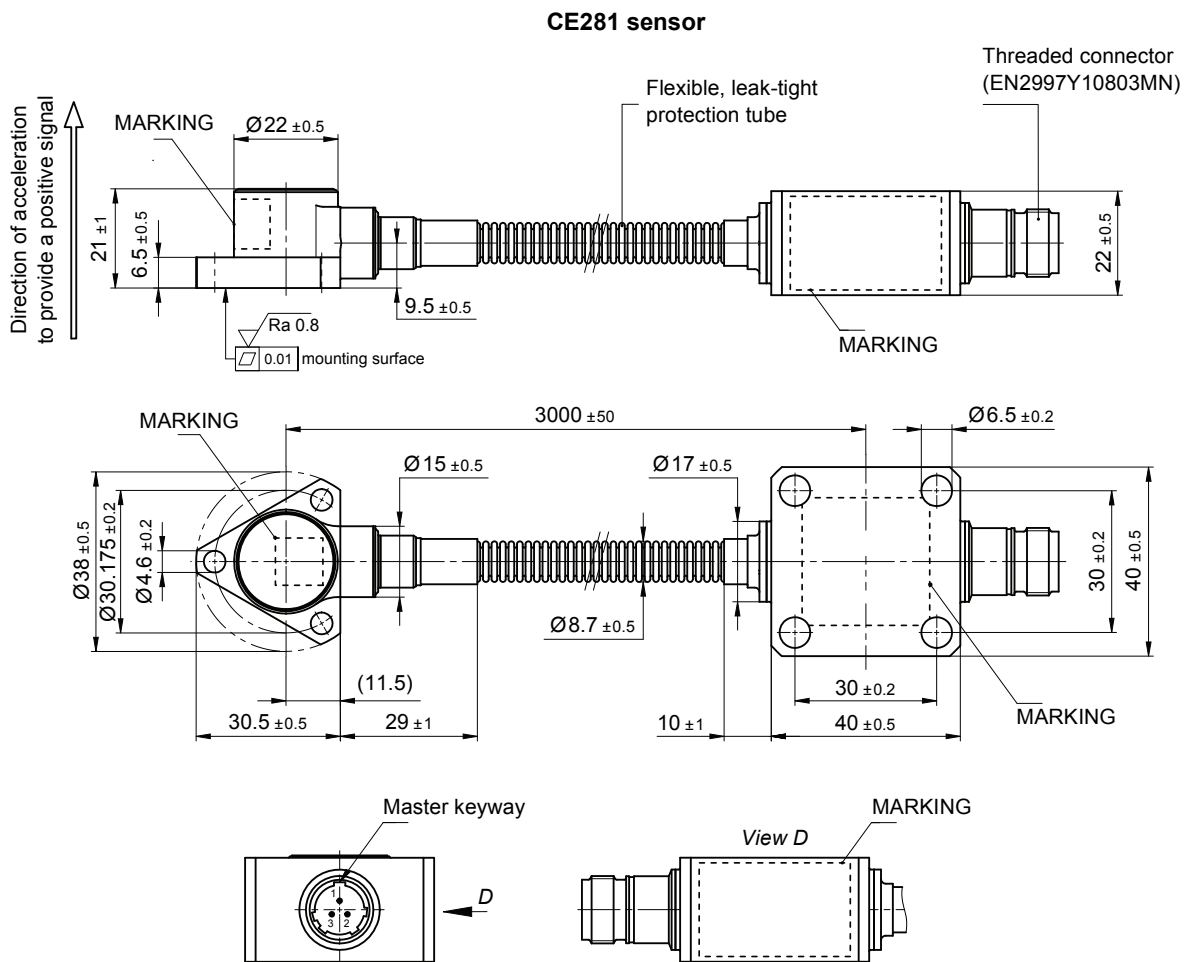


Temperature:
 Zone A: -55 to 260°C (-67 to 500°F).
 Zone B: -55 to 260°C (-67 to 500°F).
 Zone C: -40 to 125°C (-40 to 257°F).

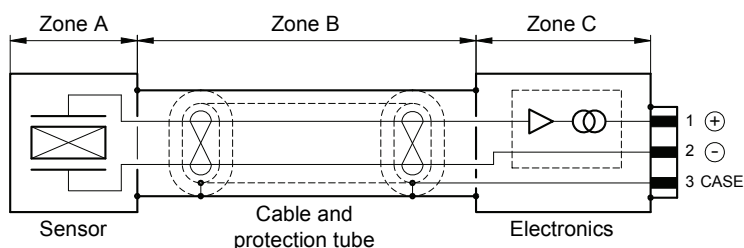
Note: Pins B and C must be connected together externally.

MECHANICAL DRAWINGS (continued)

CE281 accelerometer with threaded connector



CE281 wiring diagram



Temperature:
 Zone A: -55 to 260°C (-67 to 500°F).
 Zone B: -55 to 260°C (-67 to 500°F).
 Zone C: -40 to 125°C (-40 to 257°F).

Note: Pins 2 and 3 must be connected together externally.

ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number (PNR)
CE281	Piezoelectric accelerometer:	
	– Standard version with bayonet connector	444-281-000-012
	– Ex version with bayonet connector	444-281-000-112
	– Ex version with threaded connector	444-281-000-212

ACCESSORIES

Mounting adaptors

MA133	Thermal insulation kit	Refer to the 809-133-000V011 product drawing
TA102	Mounting adaptor	Refer to the 444-310-401D101 product drawing
TA104	Mounting adaptor	Refer to the 144-136-301D101 product drawing

Cable assemblies

EC175	Cable assembly	Refer to the 922-175-000V103 and 922-175-000V153 product drawings
EE139	Cable assembly	Refer to the 924-139-000V002 product drawing
EE143	Cable assembly	Refer to the 924-143-000V002 product drawing

Connectors

CG134	3-pin connector	Refer to the 812-134-000D031 product drawing for the threaded connector (MIL-C-83723, stainless steel) to be used with K209 cable – suitable for use in non-hazardous areas (potentially explosive atmospheres). Refer to the 812-134-000D041 product drawing for the threaded connector (MIL-C-83723, stainless steel) to be used with K210 cable – suitable for use in hazardous areas (potentially explosive atmospheres). Refer to the 812-134-000D051 product drawing for the bayonet connector (MS3112E08-3S, aluminium) to be used with K209 or K210 cable.
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Junction boxes

JB105	Refer to the data sheet
JB116	Refer to the data sheet

Transmission cables

K2xx	Refer to the data sheets
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Galvanic separation units

GSI127	Refer to the data sheet
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ACCESSORIES

Headquartered in the UK, Meggitt PLC is a global engineering group specializing in extreme environment components and smart sub-systems for aerospace, defence and energy markets.

Meggitt Sensing Systems is the operating division of Meggitt specializing in sensing and monitoring systems, which has operated through its antecedents since 1927 under the names of ECET, Endevo, Ferroperm Piezoceramics, Lodge Ignition, Sensorex and Vibro-Meter. Today, these operations are integrated under one strategic business unit called Meggitt Sensing Systems, headquartered in Switzerland and providing complete systems, using these renowned brands, from a single supply base.

The Meggitt Sensing Systems facility in Fribourg, Switzerland was formerly known as Vibro-Meter SA, but is now Meggitt SA. This site produces a wide range of vibration and dynamic pressure sensors capable of operation in extreme environments, leading-edge microwave sensors, electronics monitoring systems and innovative software for aerospace and land-based turbo-machinery.



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In this publication, a dot (.) is used as the decimal separator and thousands are separated by thin spaces. Example: 12345.67890.

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