



CE311

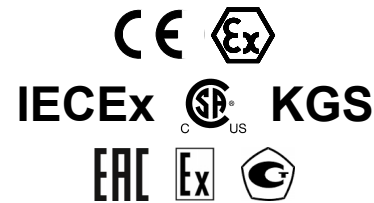
Piezoelectric accelerometer

FEATURES

- » From the Vibro-Meter® product line
- » Integrated electronics
- » Long-distance signal transmission
- » Standard and Ex approved versions
- » Certified for use in potentially explosive atmospheres
- » Integral case insulation
- » Sensitivity:
50 µA/g
- » Frequency response:
2 to 8000 Hz
- » Temperature range:
-40 to 125°C



CE311



APPLICATIONS

- » Industrial vibration monitoring

DESCRIPTION

The CE311 piezoelectric accelerometer has a symmetrical shear-mode measuring element using polycrystalline material. The sensor uses integrated electronics to provide the required signal processing, eliminating the need for an external signal conditioner (charge amplifier).

The integrated 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 is fitted with an integral cable (twisted pair, shielded) in a hermetically sealed link, protected by a flexible, leak-tight protection tube (stainless-steel hose).

More specifically, the sensor and protection tube 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 CE311 an extremely



Information contained in this document may be subject to Export Control Regulations of the European Union, USA or other countries. Each recipient of this document is responsible for ensuring that transfer or use of any information contained in this document complies with all relevant Export Control Regulations. ECN N/A.

DESCRIPTION *(continued)*

reliable device suitable for the long-term monitoring of vibration in many industrial applications.

The CE311 sensor and electronics are insulated from their housings (integral case insulation). The CE311 is available in standard and Ex versions with various

cable lengths (see **Ordering information on page 6**).

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>	: Integrated 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	: 50 µA/g ±5%
Dynamic measurement range	: 0.004 to 40 g PEAK
Overload capacity (spikes)	: Up to 100 g PEAK
Linearity	: ±1% over dynamic measurement range
Transverse sensitivity	: <3% (measured at 15 Hz with 5 g)
Resonant frequency (mounted)	: 20 kHz typ.
Frequency response	: -3 dB at 2 Hz. <±5% between 6 and 5000 Hz. <±10% between 5000 and 8000 Hz.
Capacitance (nominal)	
• <i>Pole to pole</i>	: 10.5 nF for sensor + 200 pF/m of cable
• <i>Pole to casing</i>	: 20.0 pF for sensor + 400 pF/m of cable

Environmental

Temperature range	
• <i>Continuous operation</i>	: -40 to 125°C (-40 to 257°F)
• <i>Short-term survival (15 minutes max.)</i>	: -55 to 150°C (-67 to 302°F)
Temperature sensitivity error with respect to 23°C (73°F)	: ±5% between -40 and 125°C (-40 to 257°F)
Shock acceleration	: 500 g PEAK (half-sine wave, 1 ms duration)
Corrosion, humidity	
• <i>Sensor</i>	: Stainless steel (1.4441), hermetically welded
• <i>Protection tube</i>	: Stainless steel (1.4541), hermetically welded

Note: The sensor and protection tube 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	: 0.0015 g/µε typ.
-------------------------	--------------------

SPECIFICATIONS (continued)


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...T3 Ga
International	IECEX certificate of conformity	IECEX DEK 15.0029 Ex ia IIC T6...T3 Ga
North America	cCSAus certificate of compliance	cCSAus 1514310 Class I, Division 1, Groups A, B, C, D Ex ia IIC T6...T3 Ga Class I, Zone 0 AEx ia IIC T6...T3 Ga
Korea	KGS certificate of conformity	KGS 17-GA4BO-0324X Ex ia IIC T6...T3
Russian Federation	TR CU certificate of conformity	TC RU C-CH.MШ06.B.00134 0Ex ia IIC T6...T4 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...T3 Gc
International	IECEX certificate of conformity	IECEX LCI 10.0021X Ex nA IIC T6...T3 Gc
North America	cCSAus certificate of compliance	cCSAus 1514310 Class I, Division 2, Groups A, B, C, D Ex nA IIC T6...T3 Gc Class I, Zone 2 AEx nA IIC T6...T3 Gc
Russian Federation	TR CU certificate of conformity	TC RU C-CH.MШ06.B.00134 2Ex nA IIC T6...T4 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

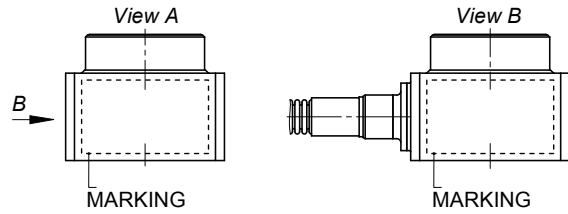
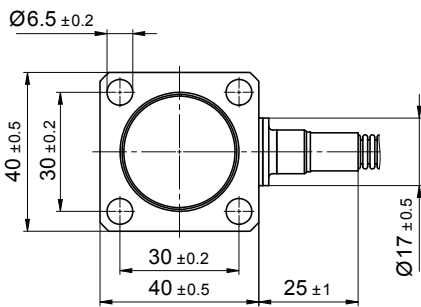
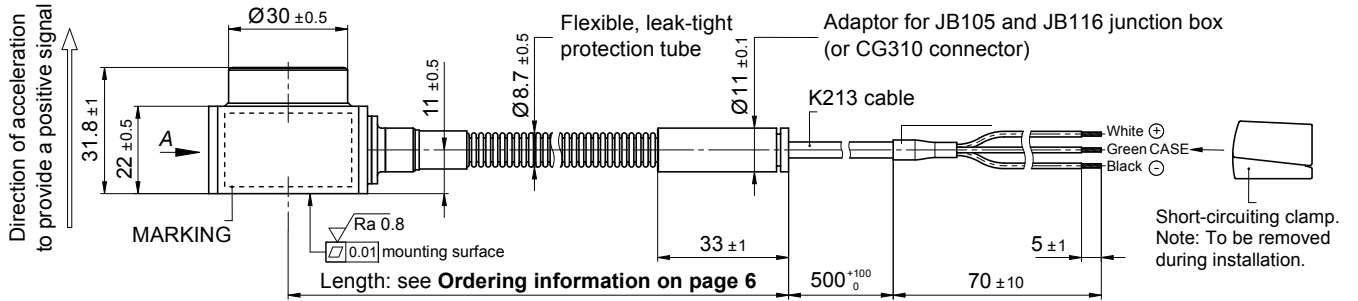
Dynamic calibration at factory at 120 Hz and 5 g PEAK (23°C, 73°F). No subsequent calibration necessary.

Mechanical

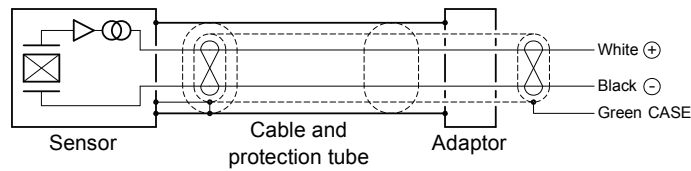
Connection	: Flying lead
Dimensions	: See Mechanical drawing on page 5
Weight	
• <i>Sensor</i>	: 245 g (8.6 oz) approx.
• <i>Flexible stainless-steel hose (protection tube)</i>	: 135 g/m (1.5 oz/ft) approx.
Mounting	: Four M6 x 35 Allen bolts (hexagonal socket head), 12.9 steel, according to DIN 912 (ISO 4762) with four M6 spring-steel washers, according to DIN 7980. Mounting torque of 15 N•m (11.1 lb-ft). Note: See the mounting adaptors in Accessories on page 6 . Refer also to the <i>CExxx and PVxxx vibration sensors</i> installation manual.

MECHANICAL DRAWING

CE311 sensor



CE311 wiring diagram



ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number (PNR)
CE311	Piezoelectric accelerometer:	
	– Standard version with 3 m integral cable	444-311-000-012
	– Standard version with 6 m integral cable	444-311-000-022
	– Standard version with 12 m integral cable	444-311-000-032
	– Standard version with 20 m integral cable	444-311-000-042
	– Ex version with 3 m integral cable	444-311-000-112
	– Ex version with 6 m integral cable	444-311-000-122

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

Connectors

CG310	3-pin connector	Refer to the 812-310-000F101 product drawing for the male connector (MS3106E14S-7P). Refer to the 812-310-000F201 product drawing for the female connector (MS3106E14S-7S).
-------	-----------------	--

Junction boxes

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

Transmission cables

K2xx	Refer to the data sheets
------	--------------------------

Galvanic separation units

GSI127	Refer to the data sheet
--------	-------------------------

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, Endevco, 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.



All statements, technical information, drawings, performance rates and descriptions in this document, whilst stated in good faith, are issued for the sole purpose of giving an approximate indication of the products described in them, and are not binding on Meggitt SA (Meggitt Sensing Systems) unless expressly agreed in writing. Before acquiring this product, you must evaluate it and determine if it is suitable for your intended application. You should also check our website at www.meggittsensing.com/energy for any updates to data sheets, Ex certificates, product drawings, user manuals, service bulletins and/or other instructions affecting the product. Unless otherwise expressly agreed in writing with Meggitt SA, you assume all risks and liability associated with use of the product. Any recommendations and advice given without charge, whilst given in good faith, are not binding on Meggitt SA.

Meggitt SA (Meggitt Sensing Systems) takes no responsibility for any statements related to the product which are not contained in a current Meggitt Sensing Systems publication, nor for any statements contained in extracts, summaries, translations or any other documents not authored and produced by Meggitt SA. Meggitt SA reserves the right to alter any part of this publication without prior notice.

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

Sales offices

Meggitt has offices in more than 30 countries. For a complete list, please visit our website.



Local representative

Head office

Meggitt SA
Route de Moncor 4
PO Box 1616
CH-1701 Fribourg
Switzerland

Tel: +41 26 407 11 11
Fax: +41 26 407 13 01

energy@ch.meggitt.com
www.meggittsensing.com/energy