DATA SHEET

vibro-meter®

CA280 piezoelectric accelerometer

CA280
(sensor only version)

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- High sensitivity: 100 pC/g
- Frequency response: 0.5 to 6000 Hz
- Temperature range: −60 to 260°C
- Ex certified for use in hazardous areas (potentially explosive atmospheres)
- Symmetrical sensor with internal case insulation and differential output
- Hermetically welded AISI 316L stainless-steel case
- Available as a sensor only or with an integral cable (low-noise)

APPLICATIONS

- Vibration monitoring for low amplitude and analytical applications
- Hazardous areas (potentially explosive atmospheres) and/or harsh industrial environments

DESCRIPTION

The CA280 is a piezoelectric accelerometer from Parker Meggitt's vibro-meter® product line.

The CA280 sensor features a symmetrical shear-mode measuring element with internal case insulation in a AISI 316L stainless-steel case (housing).

The CA280 is available as a sensor only or fitted with an integral low-noise cable that is protected by a flexible stainless-steel protection hose (leaktight) and terminated with flying leads. For integral cable versions, the sensor and protection hose are hermetically welded to produce a sealed leaktight assembly, and a range of cable lengths are available. The sensor only version allows different cable assemblies to be used depending on the environmental/temperature requirements where the sensor is installed.

All versions of the CA280 are Ex certified for installation in potentially explosive atmospheres (hazardous areas).

The CA280 piezoelectric accelerometer sensor is designed for vibration monitoring and measurement when high instrument sensitivity and low base-strain sensitivity are required.

For specific applications, contact your local Parker Meggitt representative.

SPECIFICATIONS

General

Input power requirements	: None
Signal transmission	: 2-pin system, insulated from case, charge output
Signal processing	: Charge converter (IPC70x signal conditioner)

Operating

(At 23°C ±5°C, 73°F ±9°F)

Sensitivity (at 120 Hz with 5 g, see Calibration on page 4)	: 100 pC/g ±5%
Dynamic measurement range	: 0.01 to 500 g peak
Linearity	
• 0.01 to 100 g (peak)	: ±1%
• 100 to 500 g (peak)	: ±2%
Transverse sensitivity	: <3%
Resonant frequency	: >20 kHz nominal
Frequency response	
• 0.5 to 6000 Hz	: ±5% (lower cutoff frequency is determined by the signal conditioner)
• Typical deviation at 10 kHz	: +15%
Internal insulation resistance	: 10^9 Ω minimum
Capacitance	
• Sensor only version	: 15 pF nom. between pin (+ or −) and case (ground). 8000 pF max. between pins (+ and −).
• Integral cable versions	: 15 pF nom. between pin (+ or −) and case (ground). 8000 pF max. between pins (+ and −) + 200 pF/m of integral cable.

Environmental

Temperature range	
• Continuous operation	: −60 to +260°C (−76 to +500°F)
• Short-term survival (15 minutes maximum)	: −70 to +290°C (−94 to +554°F)
Temperature sensitivity error (with respect to 23°C, 73°F)	
• −60°C to +260°C	: ±10%
Corrosion, humidity	: AISI 316L stainless steel, hermetically welded
Base-strain sensitivity	: 0.8 x 10^{-3} g/με
Shock acceleration	: <1000 g peak (half sine, 1 ms duration) along sensitive axis

SPECIFICATIONS *(continued)*

Potentially explosive atmospheres

Ex approved for use in hazardous areas

Type of protection Ex i: intrinsic safety		
Europe	EC type examination certificate	Ⓔx II 1 G (Zones 0, 1, 2) Ex ia IIC T6…T2 Ga KEMA 04 ATEX 1055
International	IECEx certificate of conformity	Ex ia IIC T6…T2 Ga IECEx DEK 15.0029 *Note: Not engraved/marked on the product.*
North America	cCSAus certificate	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 cCSAus 1514310
Korea	KGS certificate of conformity	Ex ia IIC T6…T2 KGS 17-GA4BO-0323X *Note: Not engraved/marked on the product.*
Kyrgyzstan (Eurasian Economic Union)	EAЭC KG certificate of conformity	Ex 0Ex ia IIC T6…T2 Ga X EAЭC KG417/039.CH.02.04353 *Note: Not engraved/marked on the product, except for 144-280-000-2xx.*

Type of protection Ex nA: non-sparking		
Europe	Voluntary type examination certificate	Ⓔx II 3 G (Zone 2) Ex nA IIC T6…T2 Gc LCIE 09 ATEX 1047 X
International	IECEx certificate of conformity	Ex nA IIC T6…T2 Gc IECEx LCI 10.0021X *Note: Not engraved/marked on the product.*
North America	cCSAus certificate	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 cCSAus 1514310
Kyrgyzstan (Eurasian Economic Union)	EAЭC KG certificate of conformity	Ex 2Ex nA IIC T6…T2 Gc EAЭC KG417/039.CH.02.04353 Note: *Not engraved/marked on the product, except for* 144-280-000-2xx.

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

⚠ **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 Parker Meggitt.**

SPECIFICATIONS *(continued)*

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking). EAC marking, Eurasian Customs Union (EACU) certificate/declaration of conformity.
Electromagnetic compatibility (EMC)	: EMC compliant (2014/30/EU): EN 61000-6-2:2005. EN 61000-6-4:2007 + A1:2011.
Electrical safety	: EN 61010-1:2010
Environmental management	: RoHS compliant (2011/65/EU)
Hazardous areas	: Ex approved (see Potentially explosive atmospheres on page 3)

Calibration

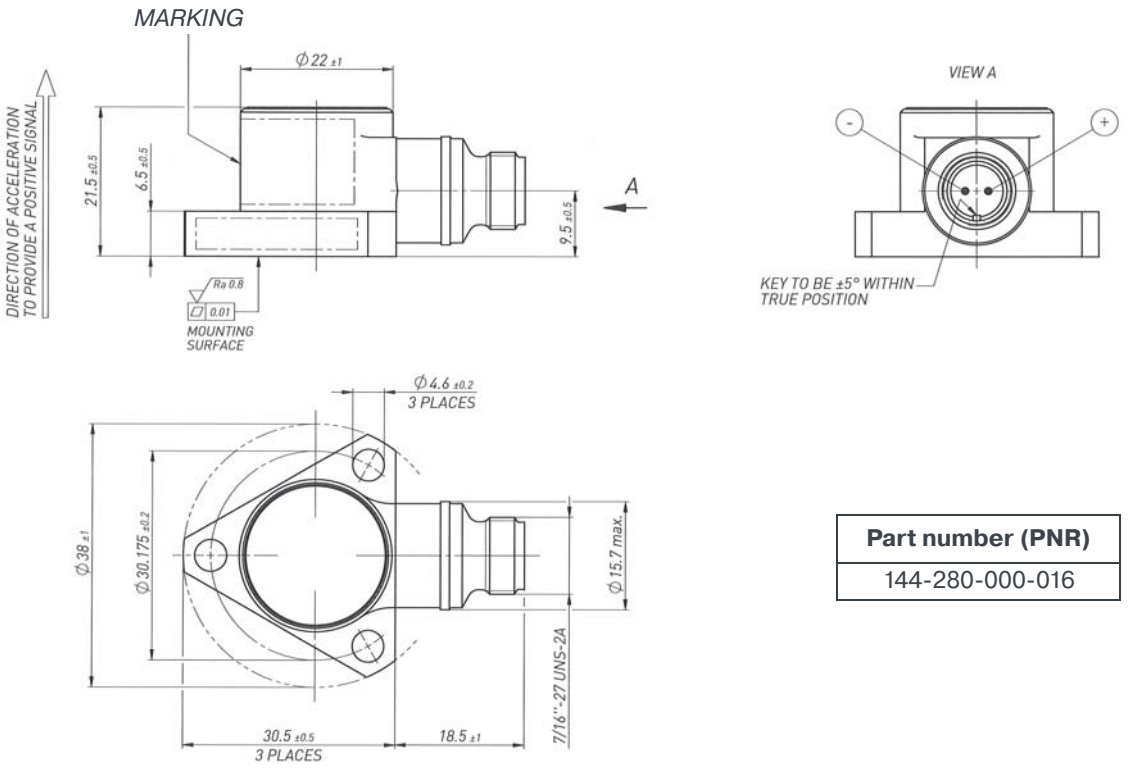
Dynamic calibration at factory at 5 g peak and 120 Hz (23°C, 73°F). No subsequent calibration necessary.

Physical

Case (housing) material	: AISI 316L stainless steel
Dimensions	: See Mechanical drawings starting on page 5
Weight	
• Sensor head	: 75 g (0.17 lb) approx.
• Cable (integral cable versions only)	: 135 g/m (0.30 lb/m) approx.
Mounting	: Three M4 × 16 Allen screws and three M4 spring lock washers with a nominal tightening torque of 4 N • m (3 lb-ft). (ARINC® 554 fixation.) Note: Electrical insulation of the mounting surface is not required. See Mounting adapters in Accessories on page 7. Refer also to the *Vibration measurement chains using CAxxx piezoelectric accelerometers installation manual*.
Connector	
• Sensor only version	: High-temperature, rugged circular, threaded coupling, 2-pin connector with keyway (vibro-meter® 7/16″ - 27 UNS - 2A / CG505. Mates with connectors used by the recommended cable assemblies (vibro-meter® 7/16″ - 27 UNS - 2B or CG505).
• Integral cable versions	: Terminated with flying leads

MECHANICAL DRAWINGS

Sensor only version

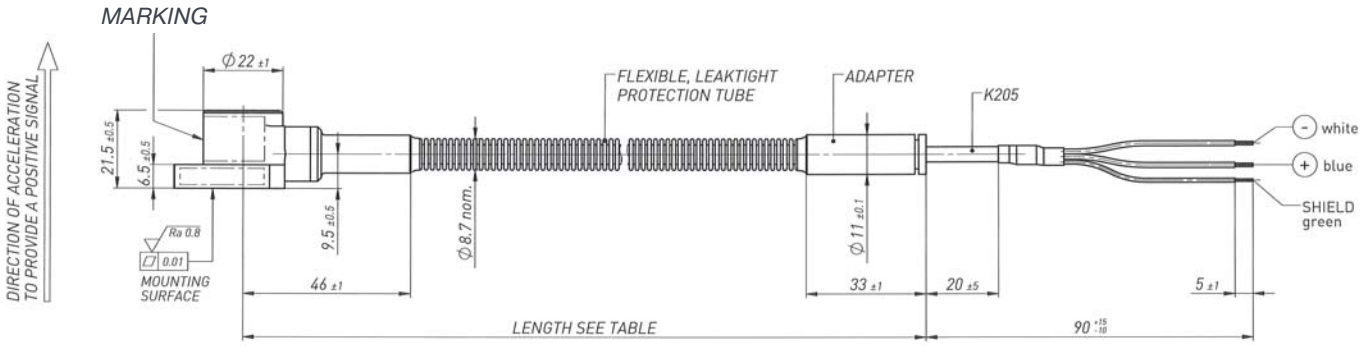


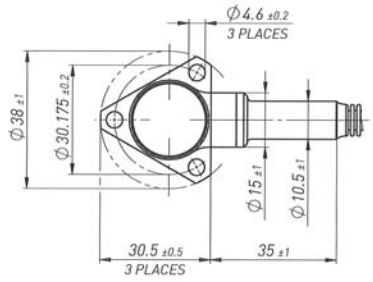
Part number (PNR)
144-280-000-016

Note: All dimensions in mm (in) unless otherwise stated.

MECHANICAL DRAWINGS *(continued)*

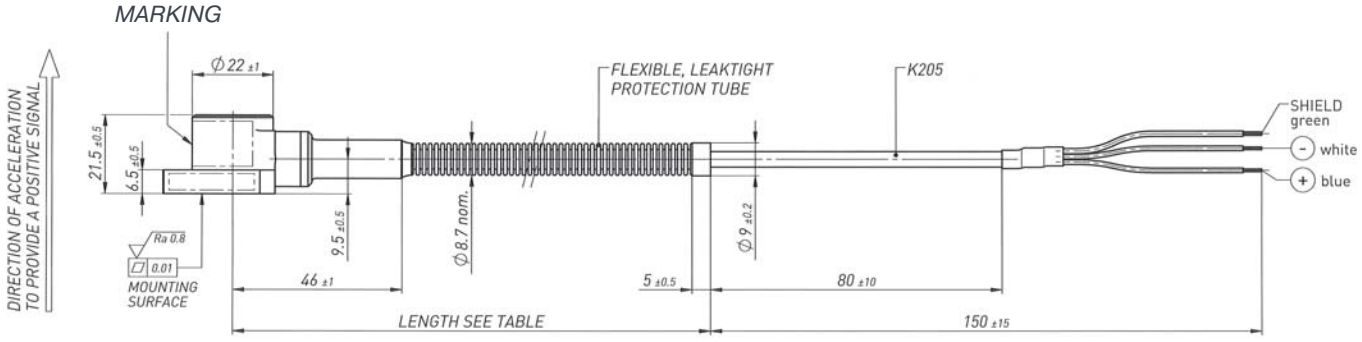
Integral cable versions

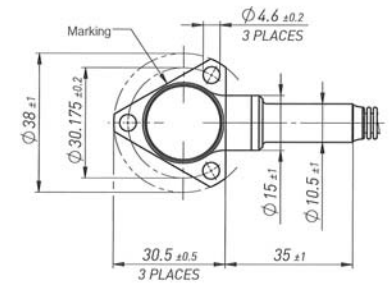




Part number (PNR)	Length L in mm
144-280-000-116	3000 ±100
144-280-000-126	6000 ±200

Notes:
All dimensions in mm (in) unless otherwise stated.
The adapter on the end of the flexible protection hose is suitable for use with JB105 and JB116 junction boxes.





Part number (PNR)	Length L in mm
144-280-000-216	3000 ±100
144-280-000-226	6000 ±100
144-280-000-236	10000 ±200

Notes:
All dimensions in mm (in) unless otherwise stated.

ORDERING INFORMATION

To order, please specify the version(s) of the CA280 piezoelectric accelerometer required …

Type	Designation	Part number (PNR)
CA280	Different versions of the CA280 piezoelectric accelerometer:	
	– Sensor only version	144-280-000-016
	– Integral cable version with 3 m integral cable	144-280-000-116
	– Integral cable version with 6 m integral cable	144-280-000-126
	Note: For CA280 PNRs 144-280-000-1xx, the flexible protection hose is terminated with an adapter (Ø11 mm), suitable is for use with JB105 and JB116 junction boxes. See Mechanical drawings on page 6 (top).	
	– Integral cable version with 3 m integral cable	144-280-000-216
	– Integral cable version with 6 m integral cable	144-280-000-226
	– Integral cable version with 10 m integral cable	144-280-000-236
	Note: For CA280 PNRs 144-280-000-2xx, the flexible protection hose is terminated without any adapter. See Mechanical drawings on page 6 (bottom).	
	Note: For CA280 with an integral cable (PNRs 144-280-000-1xx and 144-280-000-2xx), the integral cable is a low-noise, shielded, twisted pair cable (K205) terminated with flying leads. The integral cable is protected by a sealed flexible protection hose (leaktight) made of stainless steel that is hermetically welded to the sensor. See Mechanical drawings on page 6.	

ACCESSORIES

Item	Type	Part number (PNR)
Mounting adapters	TA104. Mounting adapter for CA/CE13x and CA/CE28x, with stainless-steel hexagonal base with M8 stud. **Note:** Refer to product drawing 144-136-301D101.	144-136-301-101

Parker Hannifin Corporation – usually referred to as just Parker – is a global leader in motion and control technologies, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. For more than a century the company has been enabling engineering breakthroughs that lead to a better tomorrow.

Parker Meggitt joined the Parker Aerospace Group in September 2022 following the successful acquisition of Meggitt PLC, a world leader in aerospace, defense and energy. This includes the Meggitt facility in Fribourg, Switzerland, operating as the legal entity Meggitt SA (formerly Vibro-Meter SA). Accordingly, the vibro-meter® product line is now owned by Parker.

Sales offices and distributors

Parker has sales offices and distributors all around the world. For information on your local contact, please visit our website.

Local representative

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