

Vibro Meter Vibro Meter Series Service Manual

144-280-000-015

1. Description

144-280-000-015

3. Product Information

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144-280-000-015

Vibro Meter CA280 piezoelectric
accelerometer

KEY FEATURES AND BENEFITS

From the vibro-meter ® product line

High sensitivity: 100 pC/g

Frequency response: 0.5 to 6 000 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

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 shearmode 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. The sensor and
protection hose are hermetically welded to produce a
sealed leaktight assembly, which is available with
different cable lengths. The sensor only version
allows different cable assemblies to be used
depending on the environmental/temperature
requirements of the application.

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

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0.01 to 100 g (peak) : $\pm 1\%$

100 to 500 g (peak) : $\pm 2\%$

Transverse sensitivity : $< 3\%$

Resonant frequency : > 20 kHz nominal

Frequency response

0.5 to 6000 Hz : $\pm 5\%$

(lower cutoff frequency is determined by the signal conditioner)

Typical deviation at 10 kHz : $+15\%$

Internal insulation resistance : 109 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 $+260^{\circ}\text{C}$ (-76 to $+500^{\circ}\text{F}$)

Short-term survival

(15 minutes maximum)

: -70 to $+290^{\circ}\text{C}$ (-94 to $+554^{\circ}\text{F}$)

Temperature sensitivity error (with respect to 23°C , 73°F)

-60°C to $+260^{\circ}\text{C}$: $\pm 10\%$

Corrosion, humidity : AISI 316L stainless steel, hermetically welded

Base-strain sensitivity : 0.8×10^{-3} g/ $\mu\epsilon$

Shock acceleration : < 1000 g peak (half sine, 1 ms duration) along sensitive axis

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 6

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 $\times$ 16 Allen screws and three M4 spring lock washers with a

nominal tightening torque of 4 Nm (3 lb-ft). (ARINC® 554 fixation.)

Note: Electrical insulation of the mounting surface is not required.

See Mounting adaptors 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"-27UNS-2A / CG505).

Mates with connectors used by the recommended cable assemblies

(vibro-meter® 7/16"-27UNS-2B or CG505).

Integral cable versions : Terminated with flying leads

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