MEGGiTT
smart engineering for
extreme environments

CP 103

Piezoelectric pressure transducer

FEATURES

- From the Vibro-Meter® product line
- Extreme temperature capability −196 to +700 °C
- High-pressure capability up to 250 bar
- For use in gas turbines
- Operational in primary circuit of PWR, APWR, BWR, ABWR, FBR and HTGR
- Proven reliability
- Meets NRC guide 1.20, IEEE 323-1974
- Certified for use in potentially explosive atmospheres
- Internal case insulation
- VC2 type crystal element
- Frequency response: 2 to 10000 Hz
- Sensitivity: 232 pC/bar

CP 103

CE Ex
IECEx
TIIS KGS

DESCRIPTION

The CP 103 dynamic pressure transducer uses a VC2 type single crystal material in compression mode and has been specially designed to minimise sensitivity to acceleration.

This produces an extremely stable measuring instrument that is suitable for long-term monitoring or development testing.

It is fitted with an integral mineral insulated cable (twin conductors) which is terminated with either a LEMO or a high-temperature connector from Vibro-Meter.

SPECIFICATIONS

General

Input power requirements	: None
Signal transmission	: 2-pole system insulated from casing, charge output
Signal processing	: Charge converter

Operating

At +23°C ±5°C (+73°F ±41°F)

Sensitivity (at 2 Hz)	: 232 pC/bar (16 pC/psi) ±5% typical
Dynamic measuring range (random)	: 0.00004 to 20 bar nominal
Overload capacity (spikes)	: Up to 250 bar
Linearity	: ±1% over dynamic measuring range
Acceleration sensitivity	: ≤0.05 pC/g (≤0.000 21 bar/g)
Resonant frequency	: >50 kHz
Frequency response	: 2 to 10000 Hz ±5% (the lower cut-off frequency is determined by the electronics used)
Internal insulation resistance	: Min. 10^9 Ω. 10^7 Ω at 300°C (+572°F)
Capacitance (nominal)	
• *Pole to pole*	: 135 pF for transducer + 200 pF/m of cable
• *Pole to casing*	: 18 pF for transducer + 300 pF/m of cable

Environmental

Temperature range	
• *Continuous operation*	: −54 to +650°C (−65 to +1202°F)
• *Extreme operation*	: −196 to +700°C (−321 to +1292°F)
Shock acceleration	: <2000 g peak (half sine 1 ms) along sensitive axis
Corrosion, humidity	: INCONEL® alloy 600, hermetically welded
Radiation	
• *Gamma flux*	: 10^{11} erg/g no effect
• *Neutron flux*	: 10^{18} n/cm^2 no effect

SPECIFICATIONS *(continued)*

Explosive atmospheres

Available in Ex approved versions for use in hazardous locations

Type of protection Ex i: intrinsic safety		
Europe	EC type examination certificate	LCIE 02 ATEX 6107 X II 2 G (Zones 1, 2) Ex ib IIC T6 …710°C Gb
International*	IECEx certificate of conformity	IECEx LCI 12.0009X Ex ib IIC T6 …710°C Gb
Japan*	TIIS certificate of conformity	TC 20980 – PNR 143-103-000-612 only ib IIC T1 TC 20981 – PNR 143-103-000-931 only ib IIC T1
Korea*	KGS certificate of conformity	12-GA4BO-0473X Ex ib IIC T6 to T710°C

Type of protection Ex nA: non-sparking apparatus		
Europe	Voluntary type examination certificate	LCIE 09 ATEX 1041 X II 3G (Zone 2) Ex nA IIC T6 …710°C Gc
International*	IECEx certificate of conformity	IECEx LCI 10.0015X Ex nA IIC T6 …710°C Gc

*Not engraved on the product marking.

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

Mechanical

Weight

- *Pressure transducer (nominal)* : 120 g
- *MI cable* : 50 g/m
- *MI cable with overbraid* : 140 g/m

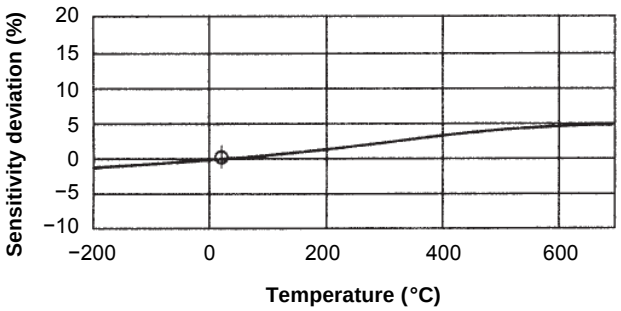
Mounting

- *Flange* : Ø27.5/21 mm x 3 mm

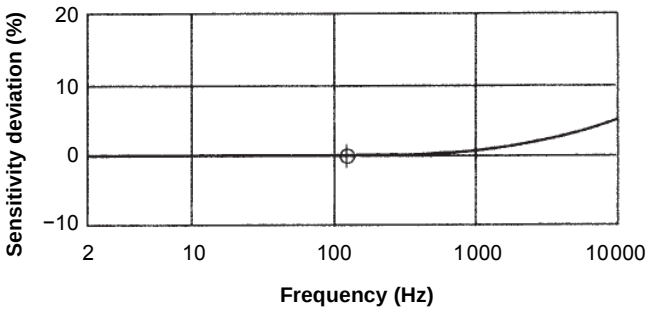
Calibration

Dynamic calibration at factory at 1 bar peak and 2 Hz (+23°C (+73°F)). No subsequent calibration necessary.

TYPICAL RESPONSE CURVES

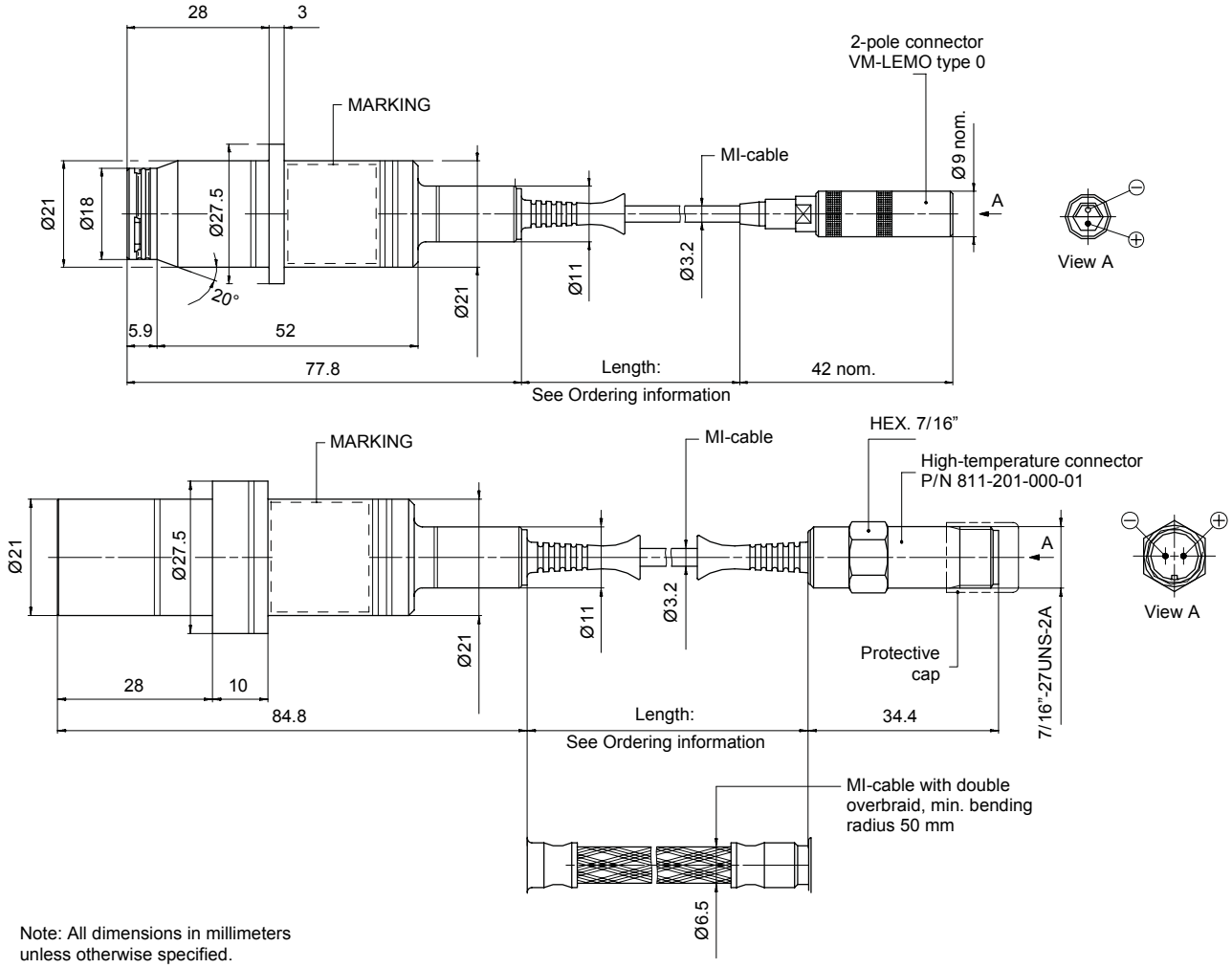


Note: Reference is at +23 °C.



Note: Reference is at 120 Hz.

MECHANICAL DRAWING



Note: All dimensions in millimeters
unless otherwise specified.

ORDERING INFORMATION

To order please specify

Type	Designation
CP 103	Piezoelectric pressure transducer

Mineral insulated cable		Protection grid	Connector		Corresponding drawing
No protection	Double braid		LEMO	High-temperature	
X			X		143-103-000D502
X				X	143-103-000D602
X		X		X	143-103-000D702
	X			X	143-103-000D901

Note: Please refer to the corresponding drawing to find the part number that matches the required cable length.

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, Vibro-Meter and Wilcoxon Research. 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.

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

Sales offices

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

ISO 9001
FS 584089

ISO 14001
BUREAU VERITAS
Certification

Your local agent

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

www.meggittsensingsystems.com
www.vibro-meter.com