

## Piezoelectric Pressure Transducer

### FEATURES

- ▶ Extreme temperature capability:  
-196°C to +777°C
- ▶ High-pressure capability:  
350 bar
- ▶ Good reliability
- ▶ Operational in primary circuit of PWR, BWR, FBR and HTGR
- ▶ Meets NRC guide 1.20, IEEE 323-1974
- ▶ Certified for use in potentially explosive atmospheres
- ▶ Internal case insulation
- ▶ VC2 type crystal element
- ▶ Sensitivity  
25 pC/bar (typical)
- ▶ Weight:  
Transducer: 12 g  
Integral cable: 20 g/m



### DESCRIPTION

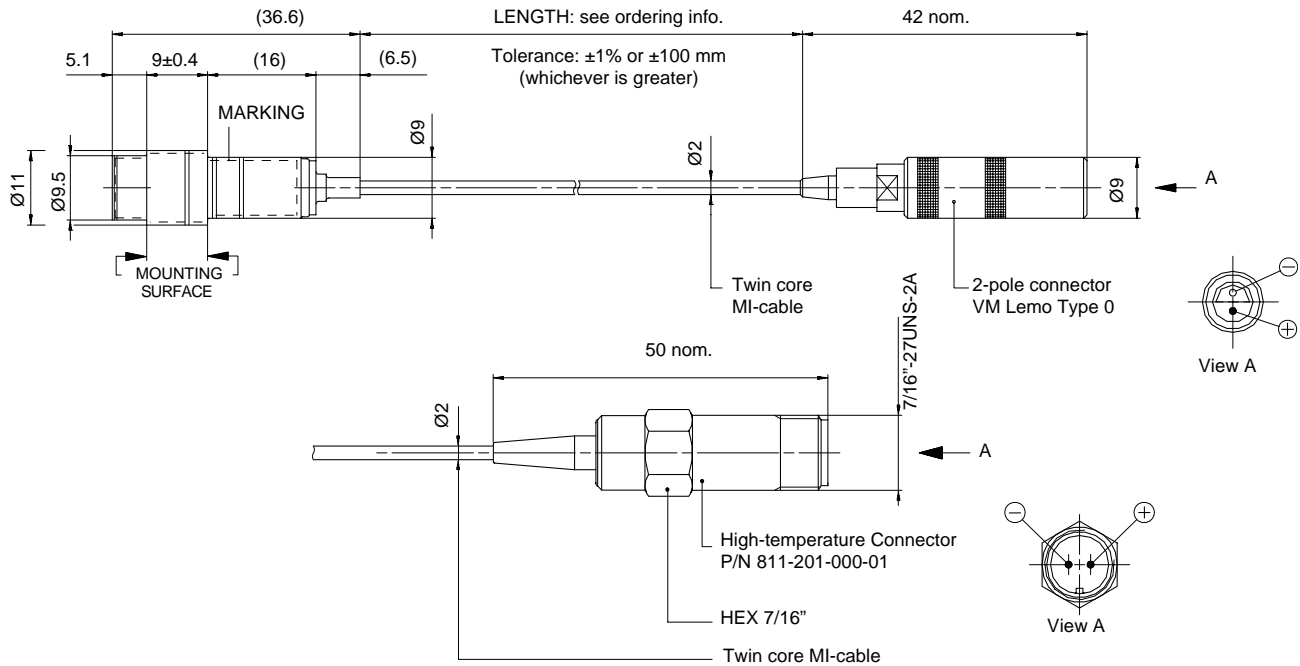
The use of VC2 type single crystal material in the CP 211 compression mode dynamic pressure transducer makes it an extremely stable and reliable device at extreme temperatures.

The transducer is designed for long-term monitoring or development testing. It is fitted with an integral mineral insulated cable (twin conductors) which is terminated by either a Lemo connector or a high-temperature connector developed by Vibro-Meter.



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**MECHANICAL DRAWING**



**SPECIFICATIONS**

**ELECTRICAL**

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

**OPERATING**

(at +23°C ±5°C)

Sensitivity (at 2 Hz)	: 25 pC/bar (typical)
Sensitivity deviation	: See sensitivity vs temperature graphs overleaf
Dynamic measuring range (random)	: 0.0005 bar to 250 bar nominal
Overload capacity (spikes)	: Up to 350 bar (sum of static and dynamic components)
Linearity	: < ±1% over dynamic measuring range
Acceleration sensitivity	: ≤ 0.0625 pC/g (≤ 0.0025 bar/g)
Resonant frequency	: > 80 kHz
Frequency response	: 2 to 15 000 Hz ± 5% (lower cut-off frequency is determined by the electronics used)
Internal insulation resistance	: >10 <sup>9</sup> Ω (>10 <sup>7</sup> Ω at +300°C)
Capacitance (nominal)	
• Pole to pole	: 17.5 pF for transducer + 200 pF/m of cable
• Pole to casing	: 10 pF for transducer + 300 pF/m of cable

### ENVIRONMENTAL

Temperature range

- *Continuous* : -54°C to +650°C
- *Extreme applications* : -196°C to +777°C  
(see sensitivity vs temperature graph below)

Shock acceleration

: Max. 2000 g peak (half sine 1 ms) along sensitive axis

Explosive atmosphere

EC type examination certificate

: LCIE 02 ATEX 6106 X II 2 G (Zones 1, 2)  
Ex ib IIC T6 to T790



For specific parameters of the mode of protection concerned and special conditions for safe use, please refer to the "EC type examination certificate" that is available from Vibro-Meter SA on demand.

Corrosion, humidity

: Nimonic 90, hermetically welded (Inconel 600 for cable)

Radiation

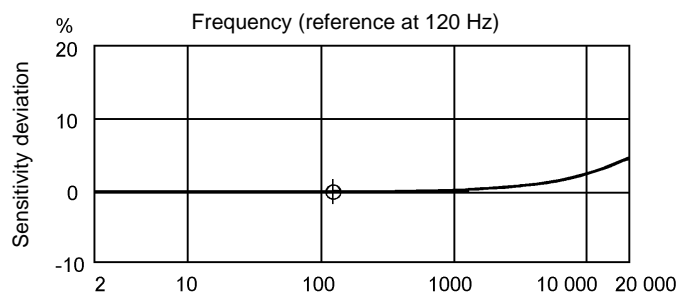
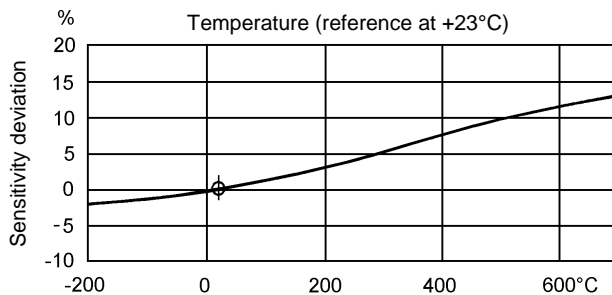
- *Gamma flux* :  $10^{11}$  erg/g no effect
- *Neutron flux* :  $10^{18}$  n/cm<sup>2</sup> no effect

### CALIBRATION

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

On request: Linearity 20, 40, 60, 80, 100 bar (60 Hz)

### TYPICAL RESPONSE CURVES



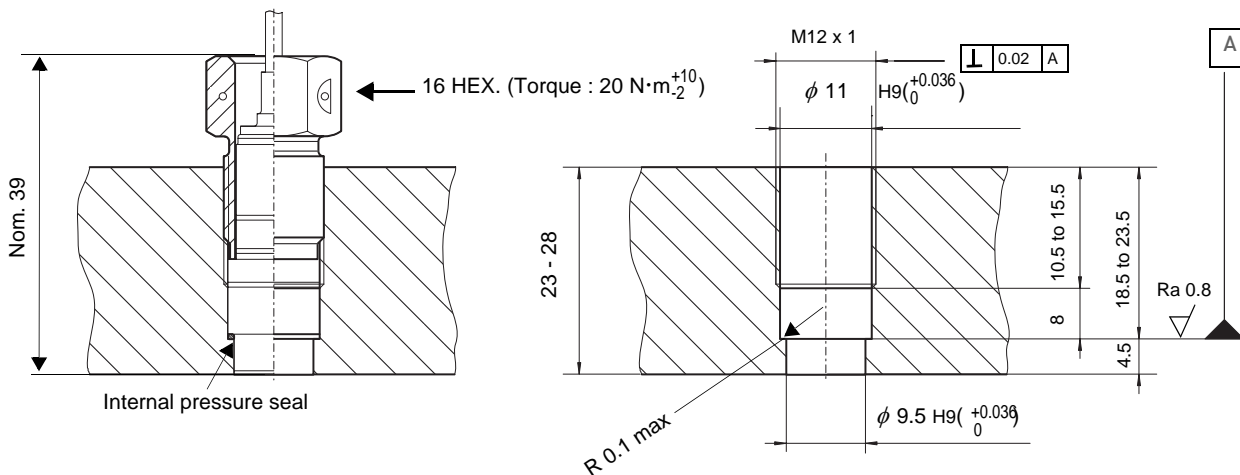
**ORDERING INFORMATION**

To order please specify :

Type	Designation	Ordering Number	
CP 211	Piezoelectric Pressure Transducer with VM Lemo connector	143-211-000-0	<div style="border: 1px solid black; padding: 2px; display: inline-block;">XX</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">2X</div> : cable length 0.5 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">3X</div> : cable length 1 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">4X</div> : cable length 2 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">5X</div> : cable length 3 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">6X</div> : cable length 5 m
CP 211	Piezoelectric Pressure Transducer with VM high-temperature connector	143-211-000-1	<div style="border: 1px solid black; padding: 2px; display: inline-block;">XX</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">2X</div> : cable length 0.5 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">3X</div> : cable length 1 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">4X</div> : cable length 2 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">5X</div> : cable length 3 m <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;">6X</div> : cable length 5 m

**MOUNTING ACCESSORIES**

**MA 104 Mounting Adapter for CP 211 Version 0XX (for VM Lemo Connector)**

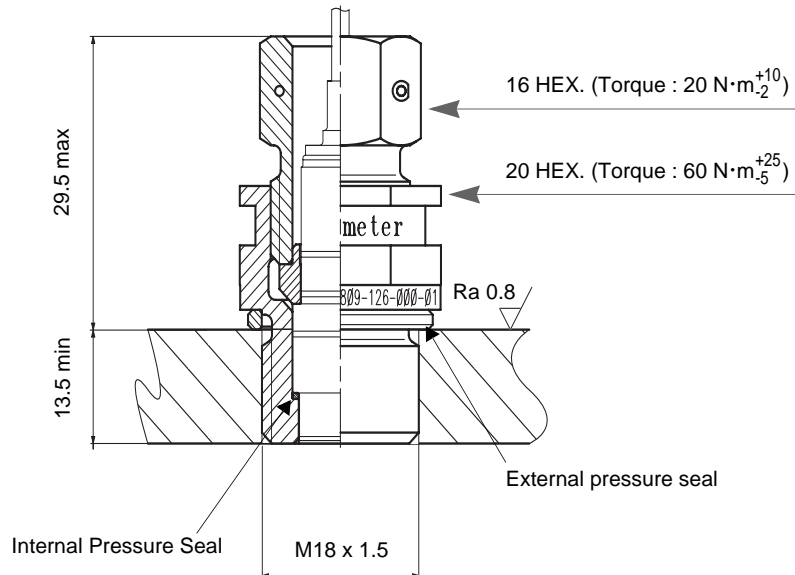


Note: All dimensions in mm

Designation	Ordering Number
MA 104 Mounting adapter	: 809-104-000-011
MA Internal pressure seal	: 143-215-902-011

## MOUNTING ACCESSORIES (Continued)

### MA 126 Mounting Adapter for CP 211 Version 1XX (for VM High-temperature Connector)



Note: All dimensions in mm

Designation	Ordering Number
MA 126 Mounting adapter	: 809-126-000-011
MA Internal pressure seal	: 143-215-902-011
MA External pressure seal	: 143-215-903-011



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In this publication, a dot (.) is used as the decimal separator and thousands are separated by spaces. Example : 12 345.678 90.

#### Sales offices

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

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