

OxyProof M Series

Pressure transmitters for oxygen applications

ENGINEERING PROPOSAL

FEATURES

- BAM safety approval for oxygen applications⁸
- 0...4 to 0...600 bar gage or sealed gage
- All welded sensor cell
- 0.5...4.5 V or 4...20 mA output

MEDIA COMPATIBILITY

Material in contact with media:
Stainless steel and Haynes 214 alloy
(all equivalent or better than 300 series SS)

Housing material:
Black plastic Valox; HR426 - PTB polyester



SPECIFICATIONS

Maximum ratings

Supply voltage (reverse polarity protection)
for 0.5...4.5 V ratiometric output 4.75...5.25 V,
max. 6 V
for 0.5...4.5 V regulated output 7...30 V
for 4...20 mA output 9.5...30 V

Maximum load current (0.5...4.5 V output)
Source 1.0 mA
Sink 1.0 mA

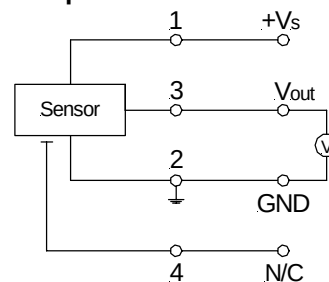
Temperature limits
Compensated and operating -40 to 60 °C
Storage -40 to 125 °C

Vibration 20.7 g_{RMS}

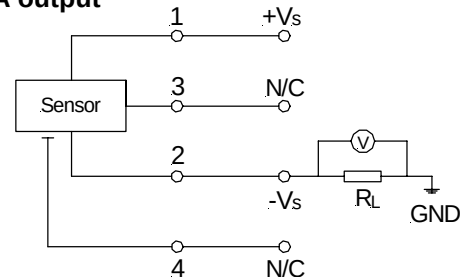
Mechanical shock 50 g (5 ms)
100 g (11 ms)

ELECTRICAL CONNECTION

0.5...4.5 V output



4...20 mA output



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PRESSURE SENSOR CHARACTERISTICS

Pressure range	Proof pressure ¹	Burst pressure ²
0...4 bar (gage)	12 bar	40 bar
0...6 bar (gage)	18 bar	60 bar
0...10 bar (gage)	30 bar	100 bar
0...16 bar (gage)	48 bar	160 bar
0...25 bar (sealed gage)	75 bar	250 bar
0...40 bar (sealed gage)	80 bar	400 bar
0...60 bar (sealed gage)	120 bar	600 bar
0...100 bar (sealed gage)	200 bar	1000 bar
0...160 bar (sealed gage)	320 bar	1600 bar
0...250 bar (sealed gage)	500 bar	2068 bar
0...350 bar (sealed gage)	700 bar	2068 bar
0...500 bar (sealed gage)	1000 bar	2068 bar
0...600 bar (sealed gage)	1100 bar	2068 bar

ELECTROMAGNETIC CAPABILITY^{6,7}

	Test conditions	Criterion
Radiated, radio frequency electromagnetic field immunity (RFI)	EN61000-4-3: 0.01 to 800 MHz, 200 V/m 800 to 1000 MHz, 150 V/m 80 % AMC (1 kHz)	A
Electrical fast transient / burst immunity (EFT)	EN61000-4-4: Grade 3, ± 2 kV	A
Electrostatic discharge immunity test (ESD)	EN61000-4-2: Grade 2, ± 4 kV	A
Immunity to conducted disturbances induced by radio-frequency fields	EN61000-4-6: Grade 3, 0.15 to 80 MHz 10 V, 80 % AMC (1 kHz)	A

Notes:

¹ Proof pressure is the maximum pressure which may be applied without causing durable shifts of the electrical parameters of the sensing element.

² Burst pressure is the maximum pressure which may be applied without causing damage to the sensing element or leaks from the housing.

⁶ Tests are in accordance with EN 61000-6-2, April 1999.

⁷ CE-labelling is in accordance with 89/336/EEC.

⁸ BAM certification-No: BAM/ZBA/001/07. The BAM certificate refers only to the burn-out safety of the materials in oxygen service.

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PERFORMANCE CHARACTERISTICS

0.5...4.5 V ratiometric output version ($V_s = 4.75...5.25$ V, $T_A = 25^\circ\text{C}$)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset			0.5		V
Full scale span ³			4.0		
Non-linearity, hysteresis and repeatability ⁴	4 bar and 6 bar devices		±0.5		%FSO
	all others		±0.25		
Total accuracy ⁵	all devices < 25 bar			±3.0	
	all others			±2.0	
Response time				2.0	ms
Supply current			4	8	mA
Power supply rejection			90		dB
Output impedance				25	Ω

0.5...4.5 V regulated output version ($V_s = 7...30$ V, $T_A = 25^\circ\text{C}$)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset			0.5		V
Full scale span ³			4.0		
Non-linearity, hysteresis and repeatability ⁴	4 bar and 6 bar devices		±0.5		%FSO
	all others		±0.25		
Total accuracy ⁵	all devices < 25 bar			±3.0	
	all others			±2.0	
Response time				2.0	ms
Supply current			5	17	mA
Power supply rejection			90		dB
Output impedance				25	Ω

Notes:

³ Full scale span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure.

⁴ Non-linearity refers to the **Best Straight Line** fit measured for offset pressure, full-scale pressure and ½ full-scale pressure.

⁵ Total accuracy includes non-linearity, hysteresis, repeatability, zero offset and span error, thermal effect on zero offset and span.

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PERFORMANCE CHARACTERISTICS (cont.)

4...20 mA output version ($V_S = 9.5 \dots 30 \text{ V}$, $T_A = 25^\circ\text{C}$)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset			4		mA
Full scale span ³			16		
Non-linearity, hysteresis and repeatability ⁴	4 bar and 6 bar devices		±0.5		%FSO
	all others		±0.25		
Total accuracy ⁵	all devices < 25 bar			±3.0	
	all others			±2.0	
Response time				2.0	ms
Power supply rejection			90		dB

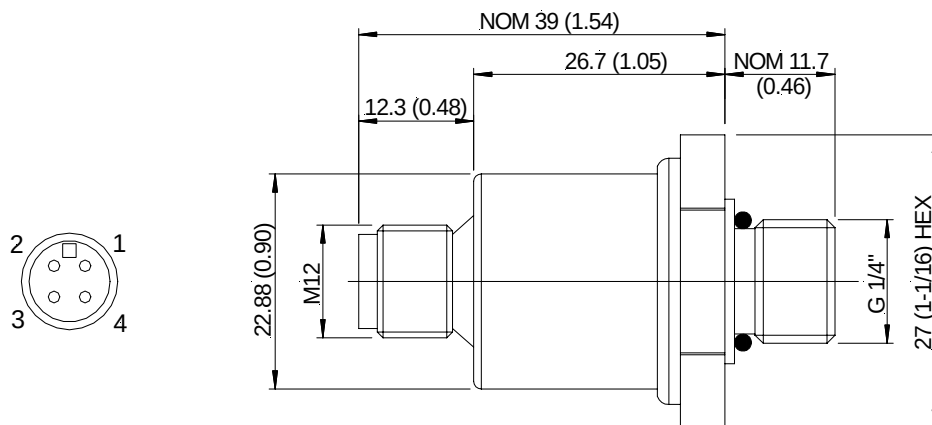
Load limitation for current output version:

$$R_{\max} = \frac{V_S - 9.5 \text{ V}}{0.02 \text{ A}}$$

OUTLINE DRAWING

Electrical termination: **M12 x 1 (Brad Harrison micro) (IP67)**

Pressure connection: **G 1/4"-19 (DIN 3852-2)**



mass: approx. 60 g

dimensions in mm (inches)

Front sealing O-ring (FKM 80) included in delivery.

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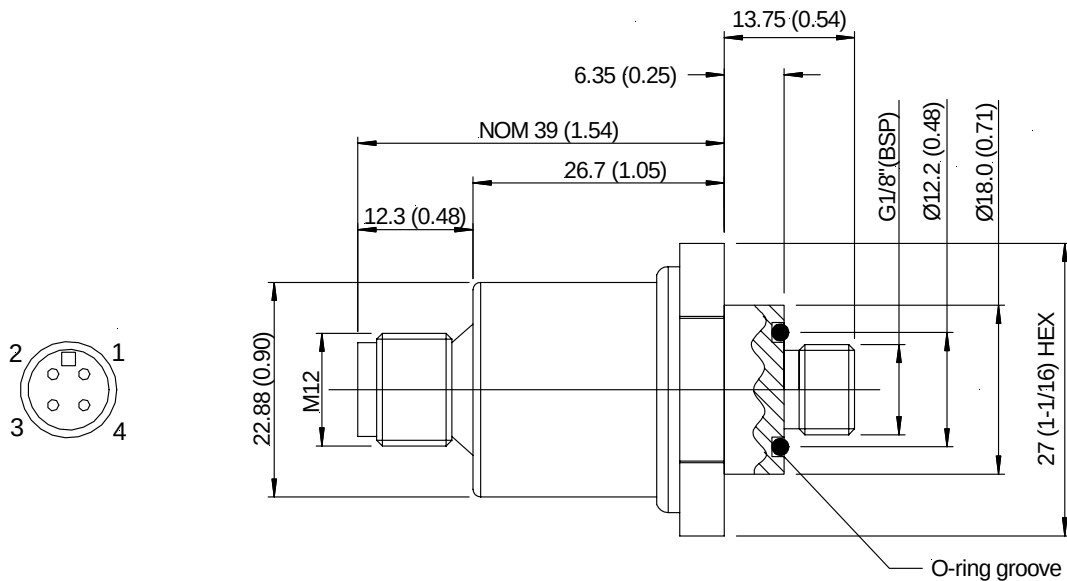
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OUTLINE DRAWING (cont.)

Electrical termination: **M12 x 1 (Brad Harrison micro) (IP67)**

Pressure connection: **G 1/8" (BSP) (O-ring groove)**



mass: approx. 60 g

dimensions in mm (inches)

Front sealing O-ring (FKM 80) included in delivery.

Note:

Other pressure ranges, output signals, electrical terminations and pressure connections are available on request. Minimum order quantity may apply.

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