

# Ultra high purity transducer

## For explosion-protected areas, Ex nA ic

### Models WU-20, WU-25 and WU-26

WIKA data sheet PE 87.07



#### Applications

- Gas panels for OEM tools
- Semiconductor, flat panel display and photovoltaic industry
- Special and bulk-gas supply

#### Special features

- High-accuracy pressure measurement 0.15 % RSS
- Excellent long-term stability
- Signal noise shielding and cancellation
- Active temperature compensation
- ATEX and IECEx zone 2 approval  
FM class I div. 2 groups A, B, C & D



**Abb. left:** WU-20, single end

**Abb. centre:** WU-25, flow through

**Abb. right:** WU-26, modular surface mount

#### Description

##### Reliable

The WU-2x series combines state-of-the-art digital transducer concepts with analogue-like output signals, in order to provide the safest and most accurate pressure measurements necessary for today's market requirements.

Pressure measurement, based on a true vacuum reference, and electronic measures for interference shielding and signal noise cancellation ensure high-accuracy pressure measurement and excellent long-term stability.

Active temperature compensation reduces the impact of changing temperatures on the transducer, allowing safe operations even in applications with high fluctuations in temperature, e.g. Joule-Thomson effect in the case of gas expansion.

WU-25 (flow through) and WU-26 (surface mount) transducers are specifically designed to sustain torsion-applied stresses often incurred during installation. The special design of the thin-film sensor eliminates the risk of

sensor failure due to loads at the process connection or welded joints.

##### Versatile

The WU-2x transducer can be readily installed in indoor or outdoor systems as well as in non-flammable or potentially flammable areas. The hermetically sealed design of the WU-2x prevents the ingress of humidity.

Approvals for non-flammable and potentially flammable environments ensure a high level of product safety. Instruments for temperature class T6 meet the high requirements for low, spontaneous ignition temperature media (phosphine (PH<sub>3</sub>) and silane (SiH<sub>4</sub>)).

##### Compact

With its small footprint the WU-2x is the most compact UHP transducer in the market. Thus it is optimally suited for installation in applications with limited mounting space, and even in existing plants it can be easily retrofitted.

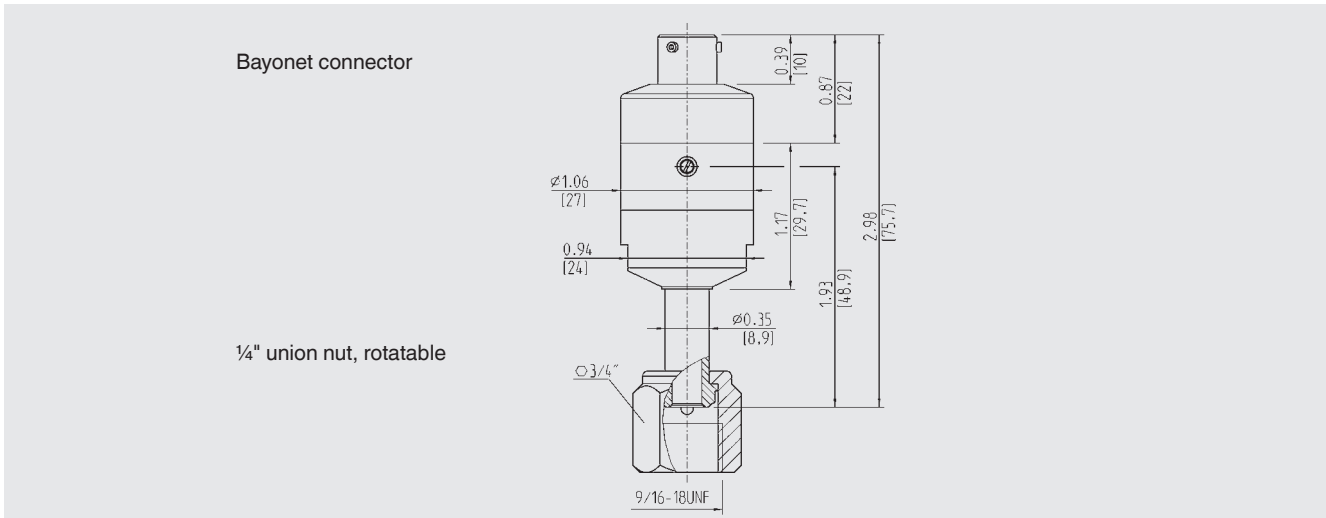
Specifications												
	Model WU-20, WU-25											
	Model WU-26											
Measuring range (psi)	30	60	100	160	250	350	500	1,000	1,500	2,000	3,000	5,000
Measuring range (bar)	2	4	7	11	17	25	36	70	100	145	225	360
Overload safety (psi)	120	120	210	320	500	750	1,100	2,100	3,000	4,200	6,600	10,000
Burst pressure (psi)	1,800	1,800	2,200	2,600	4,800	6,200	7,400	8,000	10,500	10,500	10,500	10,500
	Further measuring ranges on request											
Measuring principle	Thin-film sensor											
Materials												
■ Wetted parts	Process connection: 316L stainless steel, according to SEMI F20 (option: 316L VIM/VAR) Thin-film sensor: 2.4711 / UNS R30003											
■ Case	304 SS											
Helium leak test	< 1 x 10 <sup>-9</sup> mbar l/sec (atm STD cc/sec) per SEMI F1											
Surface treatment	Electropolished, typical Ra ≤ 0.13 µm (RA 5); max. Ra ≤ 0.18 µm (RA 7) per SEMI F19											
Dead volume	WU-20 < 1.5 cm <sup>3</sup> , WU-25 < 1 cm <sup>3</sup> , WU-26 < 1 cm <sup>3</sup>											
Permissible media	Speciality gases, vapours, liquids											
Power supply U+	DC 10 ... 30 V with output signal DC 0 ... 5 V / 4 ... 20 mA DC 14 ... 30 V with output signal DC 0 ... 10 V											
Output signal and permissible max. load R <sub>A</sub> in Ω	4 ... 20 mA, 2-wire, R <sub>A</sub> ≤ (U <sub>+</sub> - 10 V) / 0.02 A DC 0 ... 5 V, 3-wire, R <sub>A</sub> > 5 kΩ DC 0 ... 10 V, 3-wire, R <sub>A</sub> > 10 kΩ											
Power P <sub>max</sub>	1 W											
Adjustability of zero point	-3.5 ... +3.5 % of span (via potentiometer), current output -2 ... +3.5 % of span (via potentiometer), voltage output											
Response time (10 ... 90 %)	≤ 300 ms											
Insulation voltage	DC 500 V											
Accuracy	≤ 0.15 % of span (≤ 0.4 % of span with measuring ranges ≤ 2 bar) RSS (root sum squares) ≤ 0.3 % of span <sup>1)</sup> (≤ 0.6 % of span <sup>1)</sup> with measuring ranges ≤ 2 bar) per IEC 61298-2											
Non-linearity	≤ 0.1 % of span (≤ 0.15 % of span for measuring ranges ≤ 2 bar) (BFSL) per IEC 61298-2											
Hysteresis	≤ 0.14 % of span											
Non-repeatability	≤ 0.12 % of span											
Stability per year	≤ 0.25 % of span (typ.), at reference conditions (≤ 0.4 % of span with measuring ranges ≤ 2 bar)											
Permissible temperature ranges	non-Ex	T4			T5			T6				
■ Medium	-20 ... +100 °C -4 ... +212 °F	-20 ... +85 °C -4 ... +185 °F			-20 ... +60 °C -4 ... +140 °F			-20 ... +40 °C -4 ... +104 °F				
■ Ambient	-20 ... +85 °C -4 ... +185 °F	-20 ... +85 °C -4 ... +185 °F			-20 ... +60 °C -4 ... +140 °F			-20 ... +40 °C -4 ... +104 °F				
■ Storage	-40 ... +100 °C -40 ... +212 °F	-40 ... +100 °C -40 ... +212 °F			-40 ... +100 °C -40 ... +212 °F			-40 ... +100 °C -40 ... +212 °F				
Rated temperature range	-20 ... +80 °C, -4 ... +176 °F (actively compensated)											
Temperature coefficients within the rated temperature range (actively compensated)												
■ Mean TC of zero	≤ 0.1 % of span/10 K											
■ Mean TC of span	≤ 0.15 % of span/10 K											
Assembly and packaging area	Clean room class 5 per ISO 14644											
Packaging	Double packaging per SEMI E49.6											
Shock resistance	500 g (1.5 ms) per IEC 60068-2-27											
Vibration resistance	0.35 mm (10 ... 58 Hz) / 5 g (58.1 ... 2,000 Hz) per IEC 60068-2-6											
Short circuit	S+ vs. U- (short time)											
Reverse polarity	U+ vs. U-											
Weight	Approx. 0.1 kg											

1) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2)

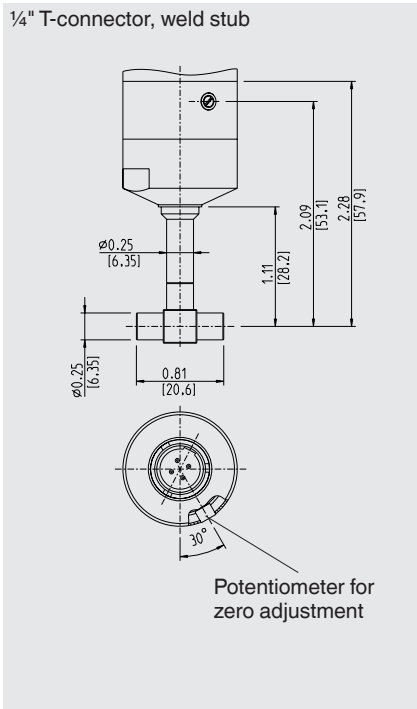
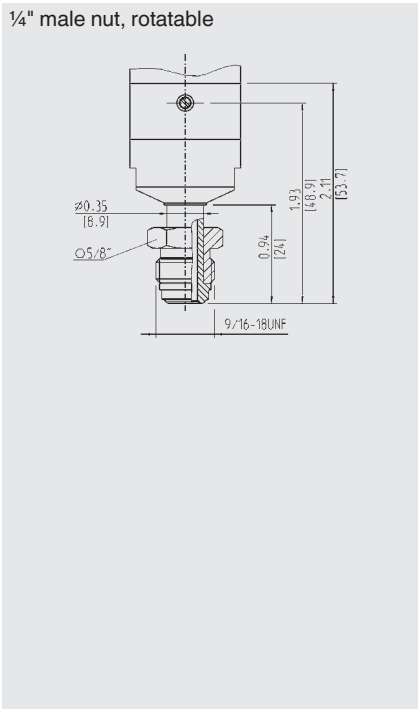
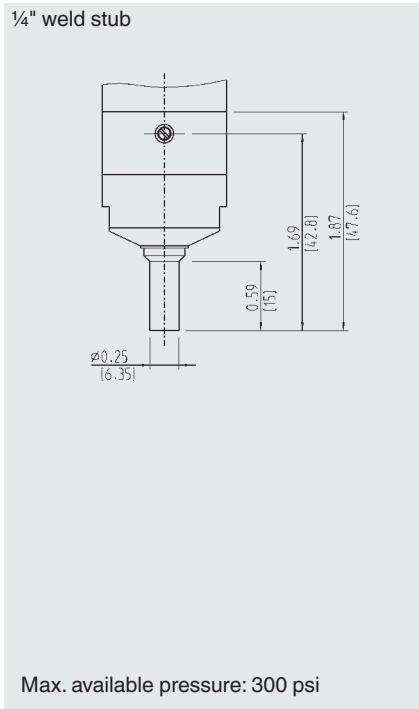
Electrical connections									
	Bayonet connector (4-pin)		Circular connector M12 x 1 (4-pin)			Cable outlet 1.5 m and 3 m			
2-wire	U+ = A	U- = D	U+ = 1	U- = 3	U+ = red	U- = black			
3-wire	U+ = A	U- = D	S+ = B	U+ = 1	U- = 3	S+ = 4	U+ = red	U- = black	S+ = brown
Conductor cross-section	-		-			0.22 mm <sup>2</sup> (AWG 24)			
Cable diameter	-		-			4.8 mm			
Ingress protection per IEC 60529	IP67 (NEMA 4)		IP67 (NEMA 4)			IP67 (NEMA 4)			
Ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.									

Electrical connections						
	Sub-D connector, 9-pin			Sub-D HD connector (15-pin)		
2-wire	U+ = 4	U- = 8		U+ = 7	U- = 5	
		U- = 9			U- = 12	
3-wire	U+ = 4	U- = 8	S+ = 1	U+ = 7	U- = 5	S+ = 2
		U- = 9			U- = 12	
Conductor cross-section	-			-		
Cable diameter	-			-		
Ingress protection per IEC 60529	IP54			IP54		
Ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.						

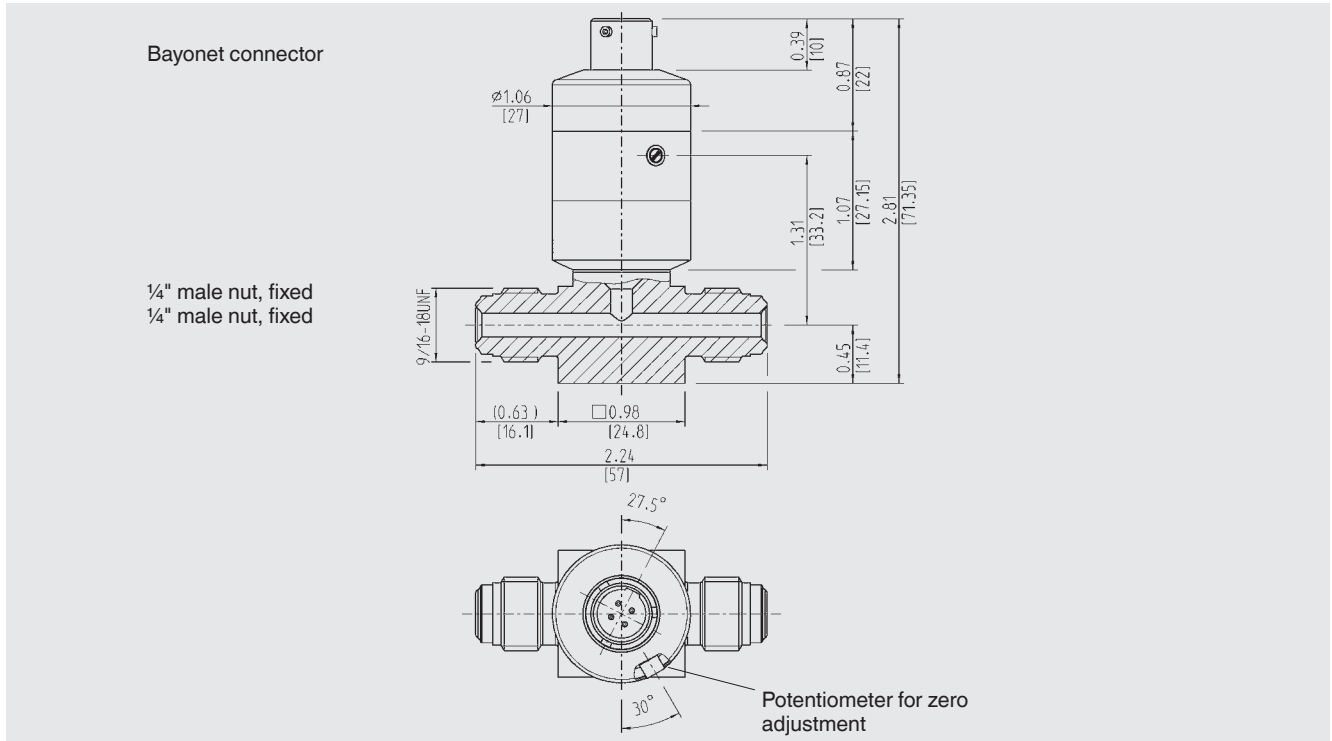
**Dimensions in inch [mm], model WU-20**



**Process connections**

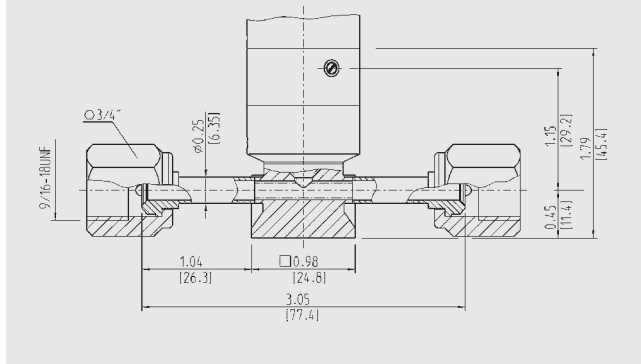


# Dimensions in inch [mm], model WU-25

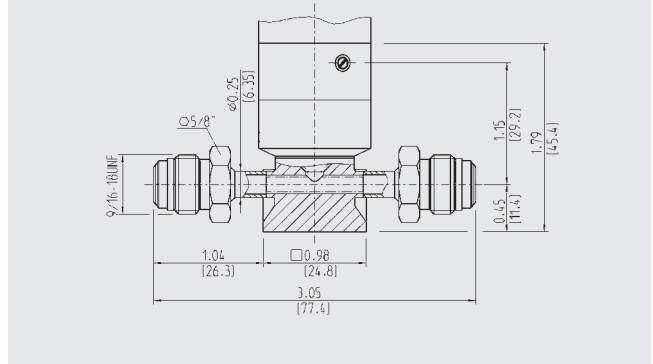


## Process connections

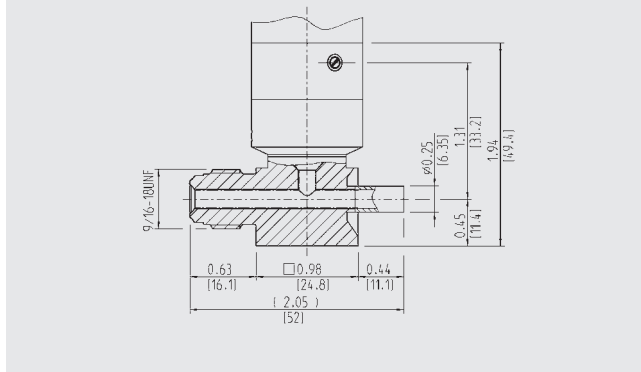
**1/4" union nut, rotatable**  
**1/4" union nut, rotatable**



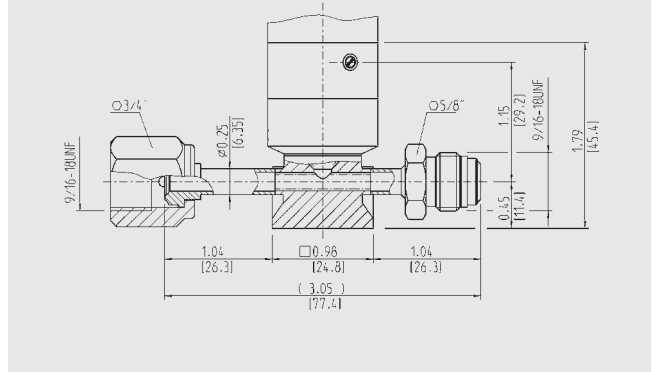
**1/4" male nut, rotatable**  
**1/4" male nut, rotatable**



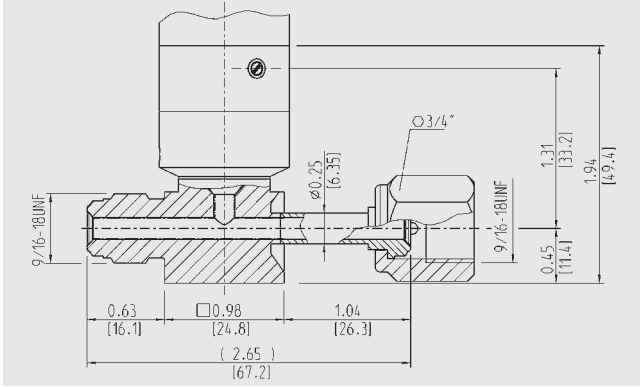
**1/4" male nut, fixed**  
**1/4" weld stub**



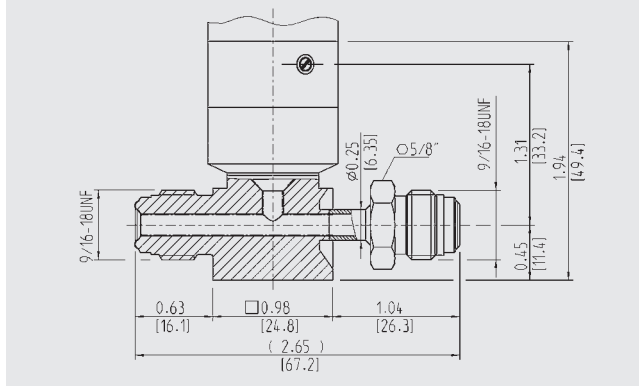
**1/4" union nut, rotatable**  
**1/4" male nut, rotatable**



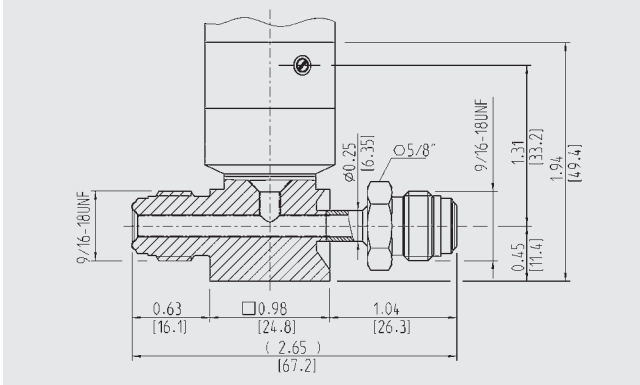
1/4" male nut, fixed  
1/4" union nut, rotatable



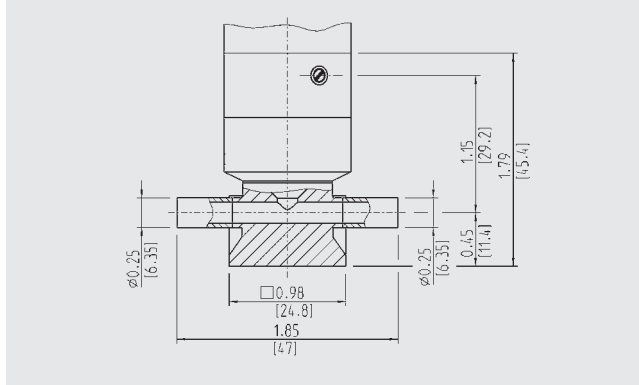
1/4" male nut, fixed  
1/4" male nut, rotatable



1/4" male nut, fixed  
1/4" male nut, rotatable



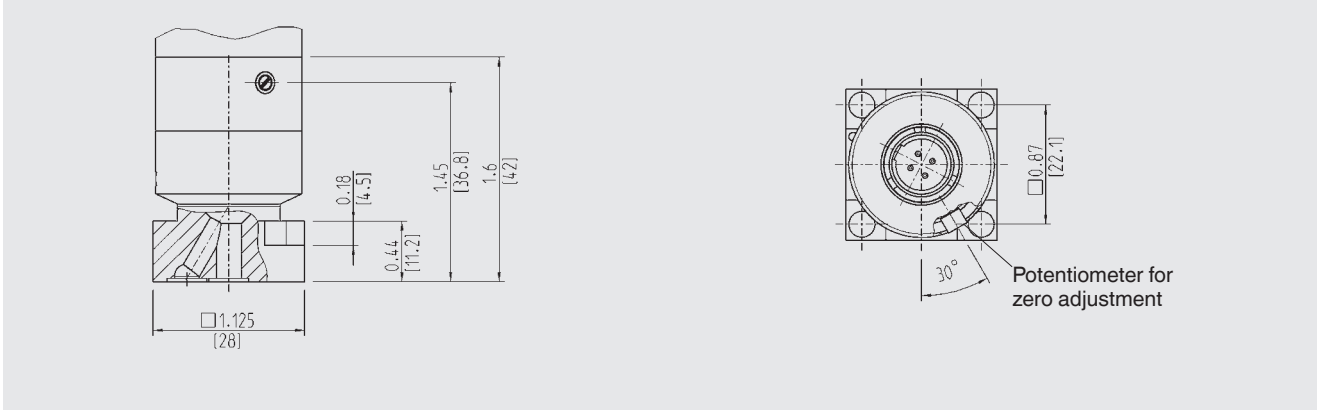
1/4" weld stub  
1/4" weld stub







## Dimensions in inch [mm], model WU-26

### Process connections

MSM C 1 1/8"



## Approvals

Logo	Description	Country
 	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive EN 61326 emission (group 1, class B) and interference immunity (industrial application)</li> <li>■ Pressure equipment directive</li> <li>■ RoHS directive</li> <li>■ ATEX directive (option) Hazardous areas - Ex n Zone 2 gas [II 3G Ex nA ic IIC T6/T5/T4 Gc X]</li> </ul>	European Union
	<b>IECEx (option)</b> Hazardous areas - Ex n Zone 2 gas [Ex nA ic IIC T6/T5/T4 Gc]	International
	<b>FM (option)</b> Hazardous areas - Nonincendive Apparatus for use in Class I, Division 2, Groups A, B, C, D - Nonincendive for use in Class I, Zone 2, Group IIC (classified) locations	USA

## Ordering information

Model / Measuring range / Process connection / Output signal / Power supply / Electrical connection / Cable length / Approval

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