

Ultra high purity transducer

For hazardous areas, Ex ia IIC

Models iWU-20, iWU-25 and iWU-26

WIKA data sheet PE 87.09



Applications

- Semiconductor, flat panel display and photovoltaic industry
- Ultrapure media and special gas systems (gas sticks, gas panels, bulk-gas supply, tank farm installations)

Special features

- Compact design
- ATEX and IECEX zone 0 approval
- Ingress protection IP67 with “side access” zero potentiometer
- Excellent EMC stability
- Active temperature compensation



Fig. left: iWU-20, single end

Fig. centre: iWU-25, flow through

Fig. right: iWU-26, modular surface mount

Description

Compact

With its small footprint the iWU-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.

Reliable

The iWU-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 measurement necessary for today's market requirements.

Pressure measurement, based on a vacuum reference, and electronic measures for interference shielding and for 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) or in non-air-conditioned areas.

iWU-25 (flow through) and iWU-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


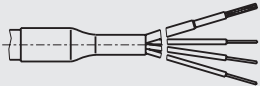
The iWU-2x transducer can be readily installed in indoor or outdoor systems as well as in non-flammable or potentially flammable areas. The hermetically IP67 sealed “side access” zero point setting ensures ingress protection at all times of operation.

The iWU-2x series was developed for pressure measurement in Ex zone 0 applications. The temperature class T4 allows usage with most speciality gases under explosion protection considerations.

Specifications												
	Models iWU-20, iWU-25											
	Model iWU-26											
Pressure range (psi)	30	60	100	160	250	350	500	1,000	1,500	2,000	3,000	5,000
Pressure 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	Metal thin-film sensor											
Materials												
Wetted parts	Process connection		316L per SEMI F20									
	Thin-film sensor		2.4711 / UNS R30003									
Case	304 SS											
Helium leak test	< 1 x 10 ⁻⁹ 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												
iWU-20	< 1.5 cm ³											
iWU-25	< 1 cm ³											
iWU-26	< 1 cm ³											
Permissible media	<ul style="list-style-type: none"> ■ Speciality gases ■ Vapours ■ Liquids 											
Supply voltage U₊	DC 15 ... 30 V											
Output signal and permissible max. load R_A in Ω	4 ... 20 mA, 2-wire, R _A ≤ (U ₊ - 15 V) / 0.022 A											
Ratings for the supply circuit U₊ and U.												
Maximum input voltage (DC)	U _i = 30 V											
Maximum input current	I _i = 130 mA											
Maximum input power	P _i = 835 mW											
Effective internal capacitance	<ul style="list-style-type: none"> ■ C_i = 19.5 nF (version circular connector M12 x 1, 4-pin) ■ C_i = 21.9 nF (version flying leads) 											
Effective internal inductance	<ul style="list-style-type: none"> ■ Negligible (version circular connector M12 x 1, 4-pin) ■ L_i = 12 µH (version flying leads) 											
Adjustability of zero point	-3.5 % ... +3.5 % of span (via potentiometer)											
Response time (10 ... 90 %)	≤ 300 ms											
Insulation voltage	DC 850 V											
Accuracy	<ul style="list-style-type: none"> ■ ≤ 0.15 % of span (≤ 0.4 % of span for measuring ranges ≤ 2 bar) RSS (root sum squares) ■ ≤ 0.3 % of span (≤ 0.6 % of span for measuring ranges ≤ 2 bar) per IEC 61298-2 											
Non-linearity per IEC 61298-2	<ul style="list-style-type: none"> ■ ≤ 0.1 % of span (BFSL) ■ ≤ 0.15 % of span (BFSL) for measuring ranges ≤ 2 bar 											
Hysteresis	≤ 0.14 % of span											
Non-repeatability	≤ 0.12 % of span											
Stability per year	<ul style="list-style-type: none"> ■ ≤ 0.25 % of span (typ.) at reference conditions ■ ≤ 0.4 % of span for measuring ranges ≤ 2 bar 											
Permissible temperature ranges												
Medium	T4, version circular connector M12 x 1, 4-pin						-20 ... +85 °C [-4 ... +185 °F]					
	T4, version flying leads						-20 ... +65 °C [-4 ... +149 °F]					
Ambient	T4, version circular connector M12 x 1, 4-pin						-20 ... +85 °C [-4 ... +185 °F]					
	T4, version flying leads						-20 ... +65 °C [-4 ... +149 °F]					
Storage	T4, version circular connector M12x1, 4-pin						-40 ... +100 °C [-40 ... +212 °F]					
	T4, version flying leads						-40 ... +100 °C [-40 ... +212 °F]					

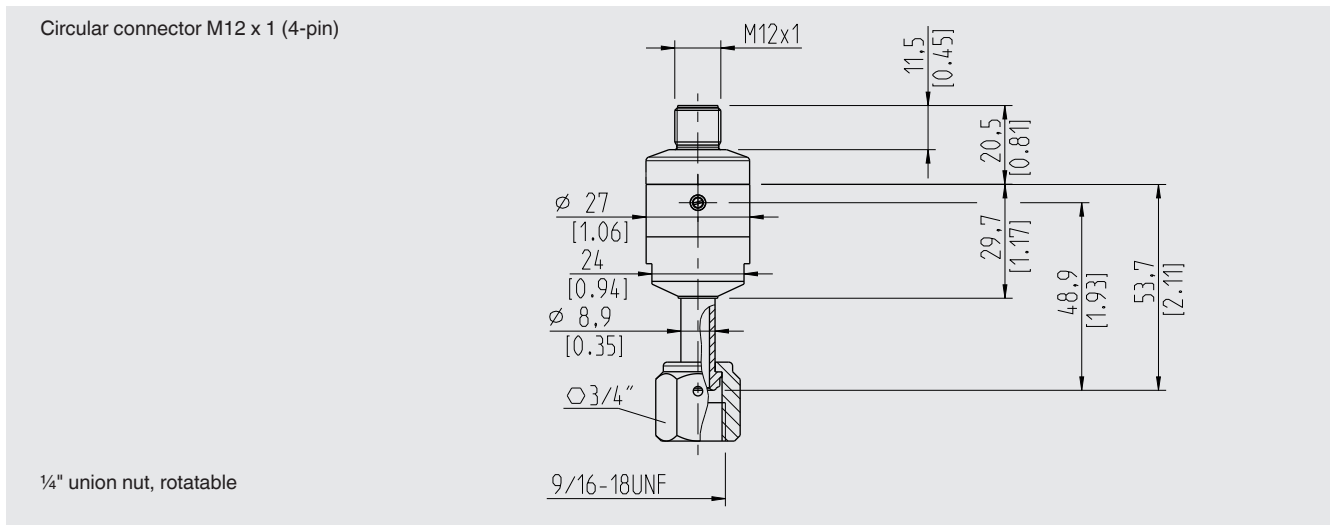
Specifications	
Rated temperature range	-20 ... +80 °C [-4 ... +176 °F] (actively compensated)
Temperature coefficients within the rated temperature range (actively compensated)	
Mean TC of zero point	≤ 0.1 / 10 K
Mean TC of span	≤ 0.15 / 10 K
Production environment	Clean room class 5 per ISO 14644
Packaging	Double bagging per SEMI E49.6
Shock resistance	500 (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
Reverse polarity protection	U ₊ vs. U ₋
Weight	Approx. 0.1 kg

Electrical connections

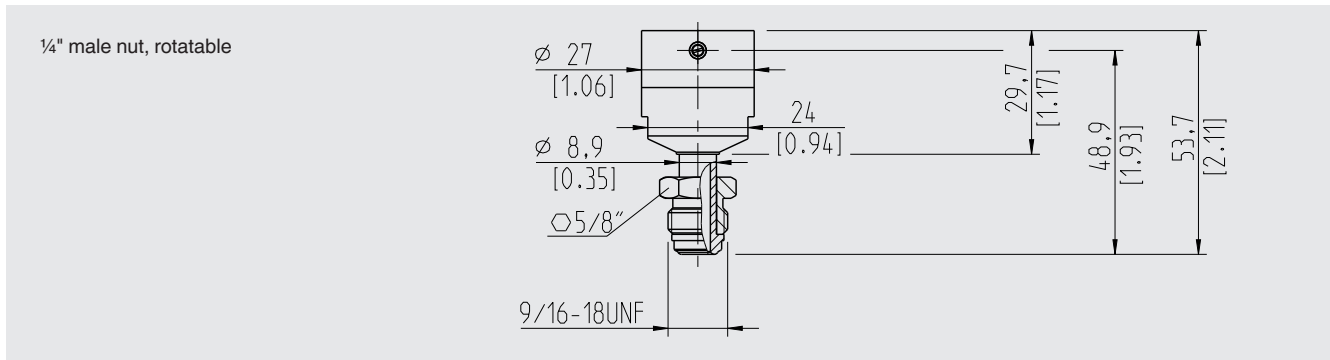
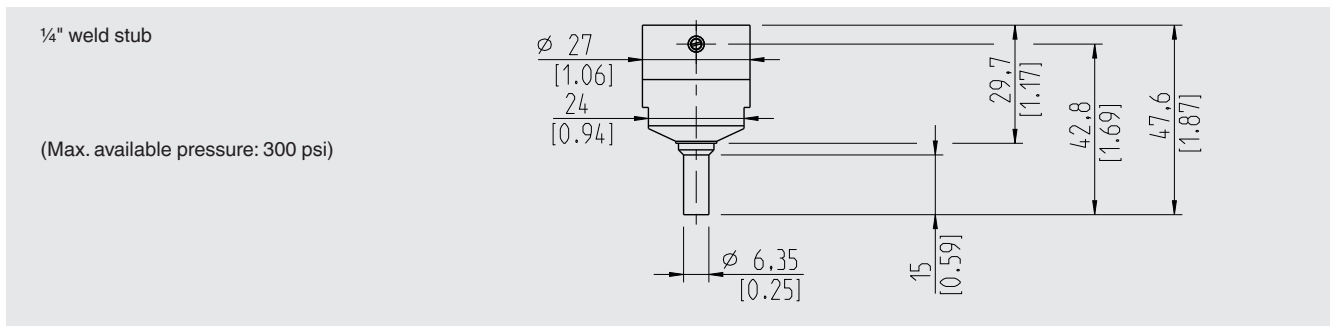
Electrical connections				
	Circular connector M12 x 1 (4-pin)		Cable outlet 1.5 m and 3 m	
	 (Dimensions in inch [mm])		 (Dimensions in inch [mm])	
2-wire	U ₊ = 1	U ₋ = 3	U ₊ = red	U ₋ = black
Conductor cross-section	-		0.22 mm ² (AWG 24)	
Cable diameter	-		4.8 mm	
Ingress protection per IEC 60529	IP67		IP67	
	Ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.			

Dimensions in mm [in] iWU-20

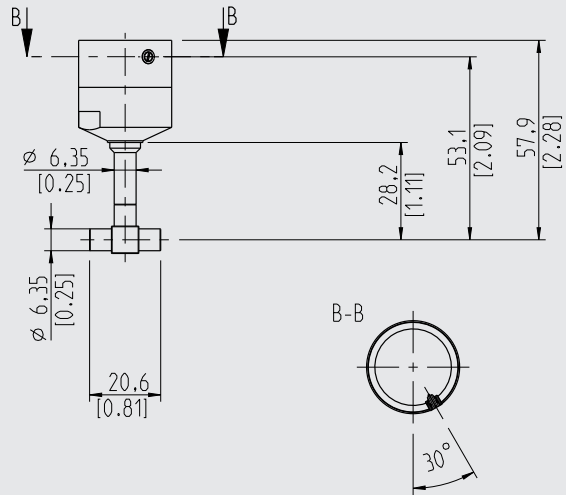
Electrical connections



Process connections



¼" T-connector, weld stub

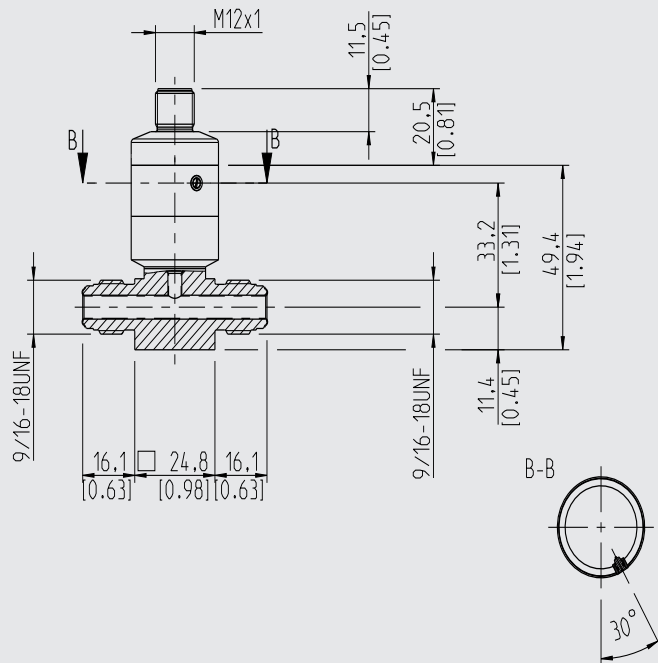


Dimensions in mm [in] iWU-25

Electrical connections

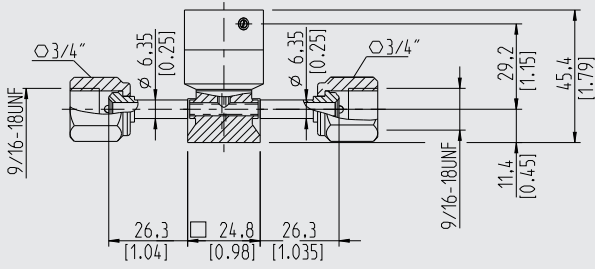
Circular connector M12 x 1 (4-pin)

¼" union nut, fixed

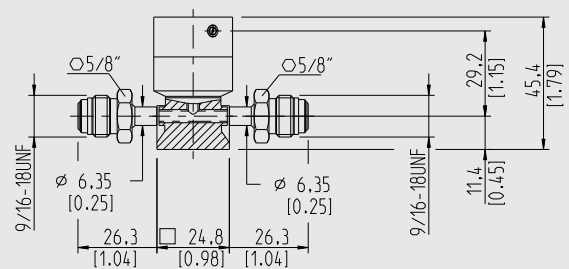


Process connections

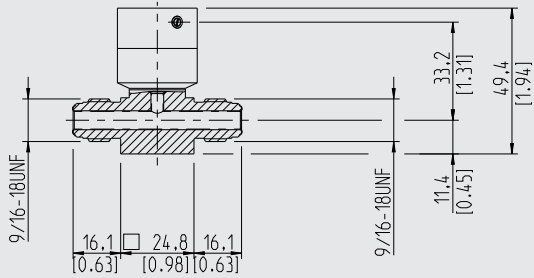
¼" union nut (female), rotatable
¼" union nut (female), rotatable



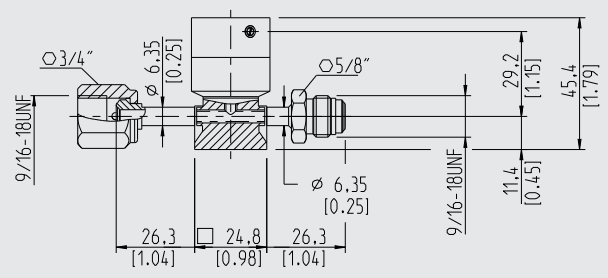
¼" male nut, rotatable
¼" male nut, rotatable



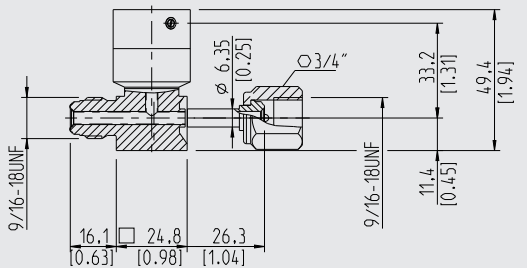
¼" male nut, fixed, high flow through
¼" male nut, fixed, high flow through



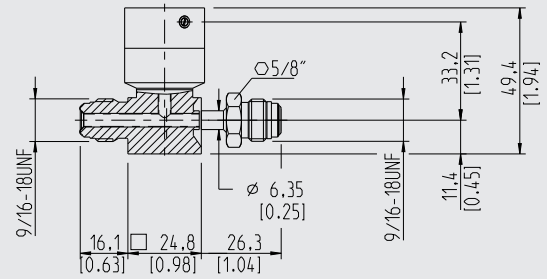
¼" union nut (female), rotatable
¼" male nut, rotatable



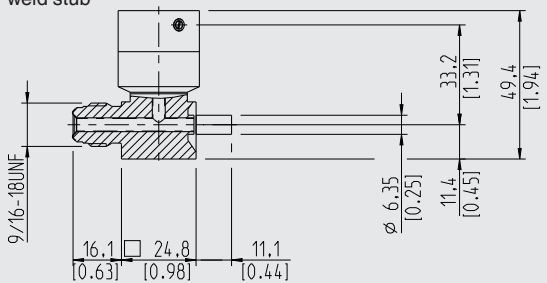
¼" male nut, fixed
¼" union nut (female), rotatable



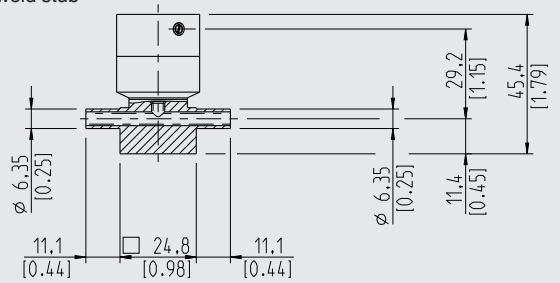
¼" male nut, fixed
¼" male nut, rotatable



¼" male nut, fixed
¼" weld stub

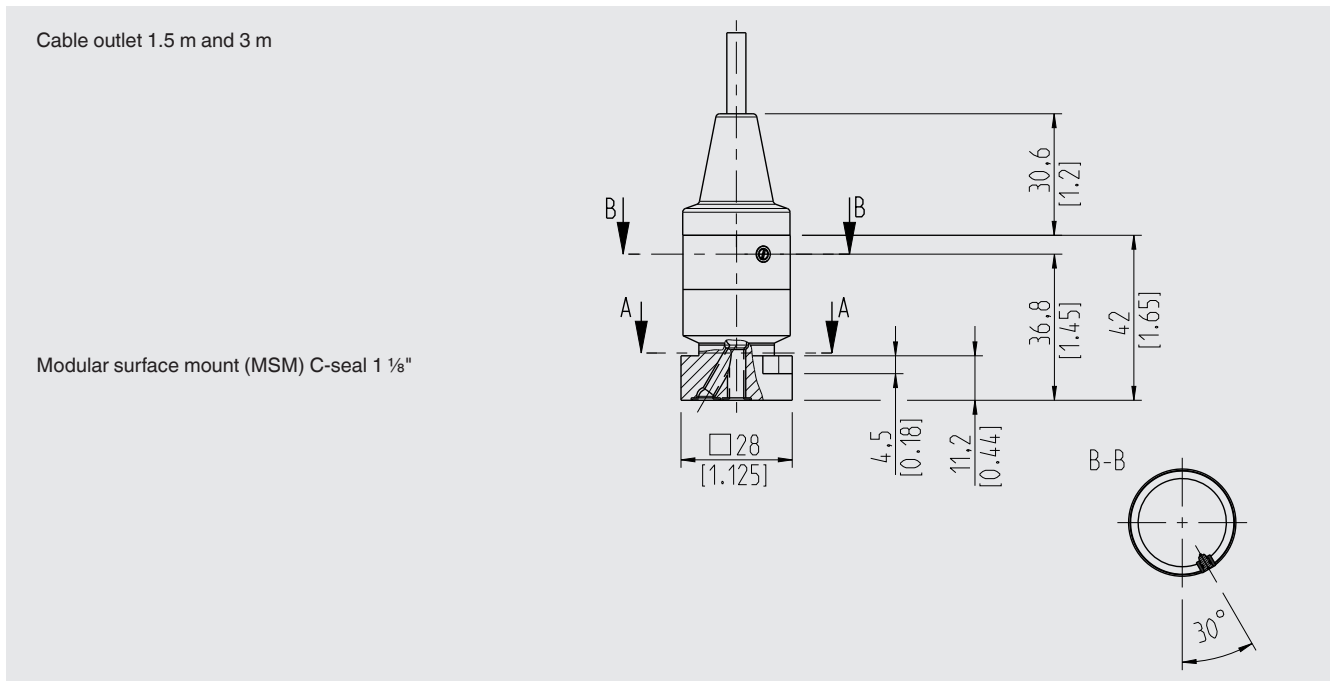


¼" weld stub
¼" weld stub

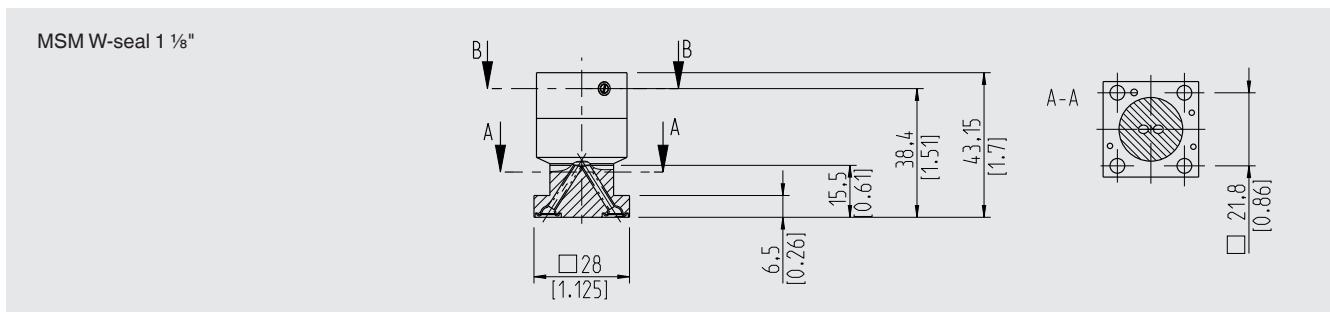
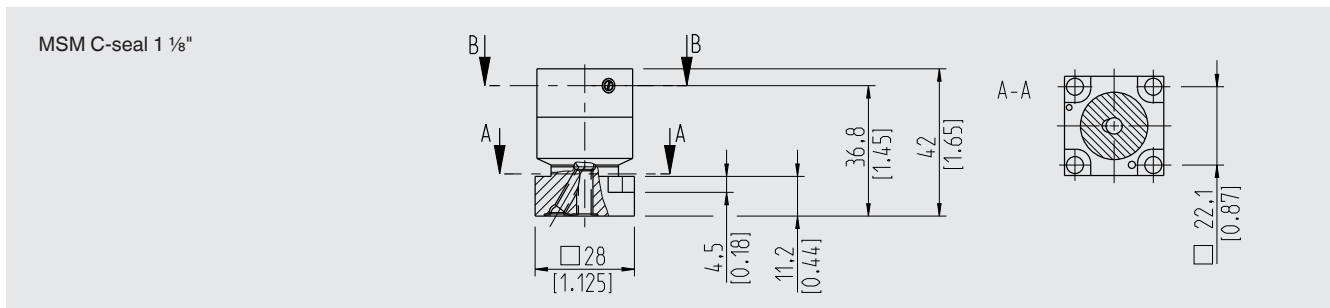


Dimensions in mm [in] iWU-26




Electrical connections



Process connections



Approvals

Logo	Description	Country
	EU declaration of conformity EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application)	European Union
	Pressure equipment directive	
	RoHS directive	
	 ATEX directive - Ex i Zone 0 gas II 1G Ex ia IIC T4 Ga	
	IECEx Hazardous areas - Ex i Zone 0 gas Ex ia IIC T4 Ga	International

Approvals and certificates, see website.