Ultra high purity transducer
With integrated display and optional switch contacts
Models WUD-20, WUD-25 and WUD-26

Applications

- Semiconductor, flat panel display and photovoltaic industry
- Ultrapure gas supply in semiconductor production systems

Special features

- High-accuracy pressure measurement 0.15 % RSS
- Excellent long-term stability
- Signal noise cancellation and shielding
- Vacuum-referenced pressure measurement
- Active temperature compensation

Ultra high purity transducer
Fig. left: WUD-20, single end
Fig. centre: WUD-25, flow through
Fig. right: WUD-26, modular surface mount

Description

Reliable
The WUD-2x series ultra high purity transducers combine state-of-the-art transducer concepts with analogue output signals. Thus the safest and most accurate pressure measurements necessary for today's market requirements are provided.

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.

WUD-25 (flow through) and WUD-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 WUD-2x can be readily installed in "on-tool" gas distribution systems. The bright LED display is rotatable and easy to read from any position.

Application-specific monitoring and control operations can be realised via two programmable switch outputs.

Compact
With its small footprint the WUD-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.

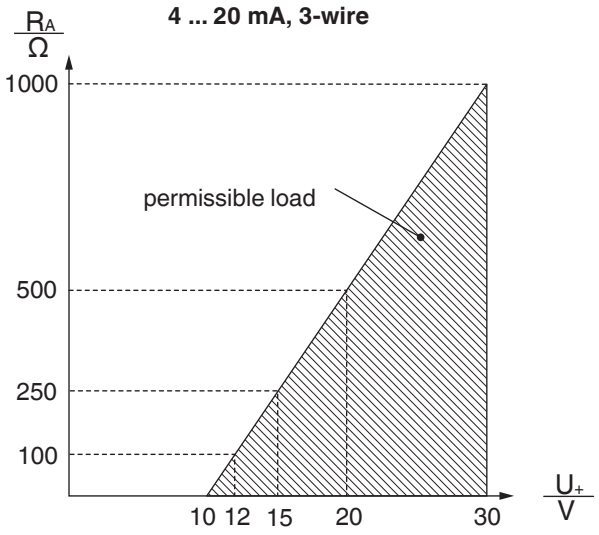
Specifications, model WUD-2x

		WUD-20, WUD-25												
		WUD-26												
Measuring range	psi	15	30	60	100	160	250	350	500	1,000	1,500	2,000	3,000	5,000
	bar	1	2	4	7	11	17	25	36	70	100	145	225	360
Overpressure limit	psi	120	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	1,800	2,200	2,600	4,800	6,200	7,400	8,000	10,500	10,500	10,500	10,500
	Other measuring ranges and units (e. g. MPa, kg/cm²) on request													
	Absolute pressure: 0 ... 2 bar to 0 ... 60 bar Vacuum pressure: -1 ... 1 bar to -1 ... 250 bar													
Measuring principle	Metal thin-film sensor													
Materials														
■ Wetted														
- Process connection	316L VIM/VAR													
- Pressure sensor	2.4711 / UNS R30003													
■ Case														
- Lower body	304 SS													
- Plastic components	PC/ABS													
- Keyboard	TPE													
- Display window	PC													
Particle test	≤ 0.1 µm particles 0.1 ptc / ft³ per SEMI E49.8													
Inboard helium leak test	< 1 x 10^{-9} mbar l/sec (atm STD cc/sec) per SEMI F1													
Surface finishing	Electropolished, typical Ra ≤ 0.13 µm (RA 5); max. Ra ≤ 0.18 µm (RA 7), per SEMI F19													
Dead volume	WUD-20 < 1.5 cm³ WUD-25 < 1 cm³ WUD-26 < 1 cm³													
Permissible medium	Special gas, vapour, liquid													
Power supply U+	DC 10 ... 30 V (with output signal 4 ... 20 mA and DC 0 ... 5 V) DC 14 ... 30 V (with output signal DC 0 ... 10 V)													
Output signal and maximum load	4 ... 20 mA, 3-wire $R_A \leq (U+ - 10\ V) / 0.02\ A$ DC 0 ... 5 V, 3-wire $R_A > 5\ k\Omega$ DC 0 ... 10 V, 3-wire $R_A > 10\ k\Omega$													
Power P_i	1 W													
Current consumption	max. 50 mA													
Total current consumption	max. 250 mA (including switching current)													
Adjustability of zero point	-3.5 ... +3.5 % of span (via potentiometer) current output signal -2.0 ... +3.5 % of span (via potentiometer) current output signal													
Signal response (10 ... 90 %)	≤ 300 ms													
Insulation voltage	DC 500 V													
Switch points	Individually adjustable via external control keys													
■ Type	Transistor switching output NPN													
■ Quantity	1 or 2													
■ Function	Normally open, normally closed, on, off													
■ Switching current	SP1 / SP2: 100 mA													
■ Accuracy	≤ 0.5 % of span													
Display														
■ Design	7-segment LED, red, 4 digits, height 8 mm, 270° rotatable													
■ Accuracy	≤ 1.0 % of span ±1 digit													
■ Update	0.2 s / 0.5 s / 1 s / 5 s / 10 s / 60 s (adjustable)													
Accuracy	≤ 0.15 % of span (≤ 0.4 with measuring ranges ≤ 2 bar) RSS (root sum squares) ≤ 0.3 [1] (≤ 0.6 [1] with measuring ranges ≤ 2 bar)													
Non-linearity	≤ 0.1 % of span (≤ 0.15 with 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 (typical) at reference conditions (≤ 0.4 with measuring ranges ≤ 2 bar)													

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

Specifications, model WUD-2x	
Permissible temperature	
■ Medium	-20 ... +100 °C / -4 ... +212 °F
■ Ambient	-10 ... +60 °C / -14 ... +140 °F
■ Storage	-10 ... +60 °C / -14 ... +140 °F
Rated temperature range (medium)	-20 ... +80 °C / -4 ... +176 °F (actively compensated)
Temperature coefficients in rated temperature range (actively compensated)	
■ Mean TC of zero	≤ 0.10 % of span/10 K
■ Mean TC of span	≤ 0.15 % of span/10 K
RoHS conformity	Yes (not with bayonet connector)
CE conformity	
■ Pressure equipment directive	97/23/EC
■ EMC directive	2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)
Assembly and packaging area	Clean room class 5 per ISO 14644
Packaging	Double bagging per SEMI E49.6
Shock resistance	15 g (11 ms), 30 g (6 ms) per IEC 60068-2-27
Vibration resistance	7.5 mm or 2 g (1 ... 200 Hz) / 5 g (200 ... 500 Hz) per IEC 60068-2-6
Electrical safety	
■ Short-circuit resistance	S+ vs. U-
■ Reverse polarity protection	U+ vs. U-
Weight	approx. 0.2 kg

Output signal and permissible load

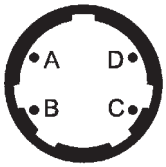
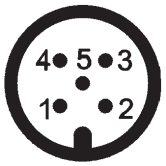


Current output (3-wire)
4 ... 20 mA: $R_A \leq (U+ - 10\ V) / 0.02\ A$

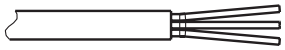
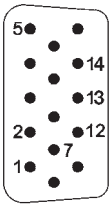
Voltage output (3-wire)
DC 0 ... 5 V: $R_A > 5\ k\Omega$
DC 0 ... 10 V: $R_A > 10\ k\Omega$

with R_A in Ohm and U+ in Volt

Electrical connections

	Bayonet connector 4-pin			Circular connector M12 x 1 4-pin			Circular connector M12 x 1 5-pin		
									
3-wire	U+ = A	U- = D	S+ = B	U+ = 1	U- = 3	S+ = 4	U+ = 1	U- = 3	S+ = 4
Switching outputs				SP1 = 2			SP1 = 2, SP2 = 5		
Wire cross-section	-			-			-		
Cable diameter	-			-			-		
Ingress protection per IEC 60529	IP 67			IP 67			IP 67		
	The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.								

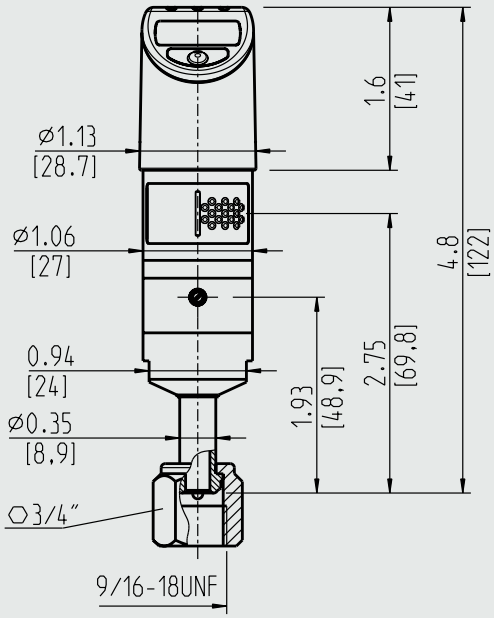
Electrical connections

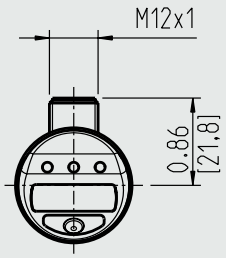
	Flying leads 1.5 m or 3 m			Sub-D HD connector 15-pin			
							
3-wire	U+ = red	U- = black	S+ = brown	U+ = 7	U- = 5 U- = 12	S+ = 2	
Switching outputs	SP1 = blue, SP2 = white			SP1 = 14, SP2 = 13			
Wire cross-section	0.15 mm²			-			
Cable diameter	4.6 mm ± 0.2 mm			-			
Ingress protection per IEC 60529	IP 65			IP 20			
	The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.						

Dimensions in inch [mm] WUD-20

M12 connector

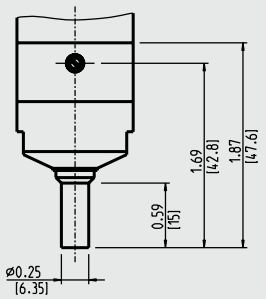
1/4" union nut



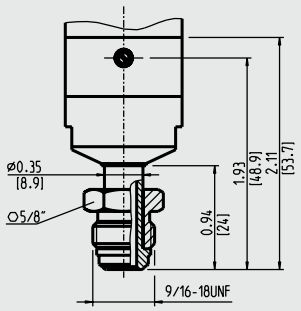


Process connection variants

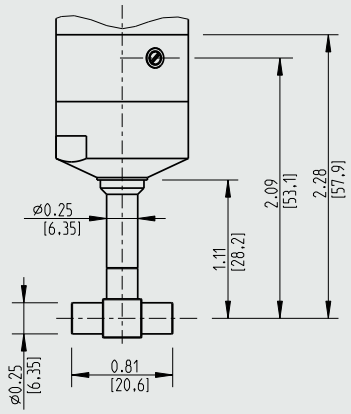
1/4" weld stub [1)]

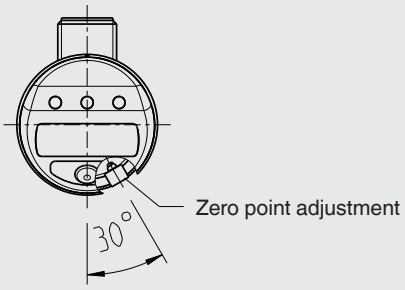


1/4" male nut, rotatable



1/4" T-connector, weld stub



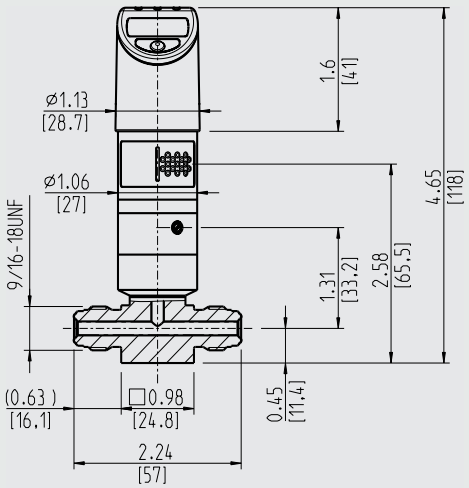


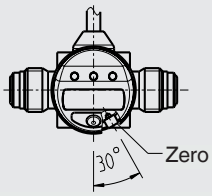
1) Maximum permissible pressure range of 300 psi for single-end units only

Dimensions in inch [mm] WUD-25

Flying leads

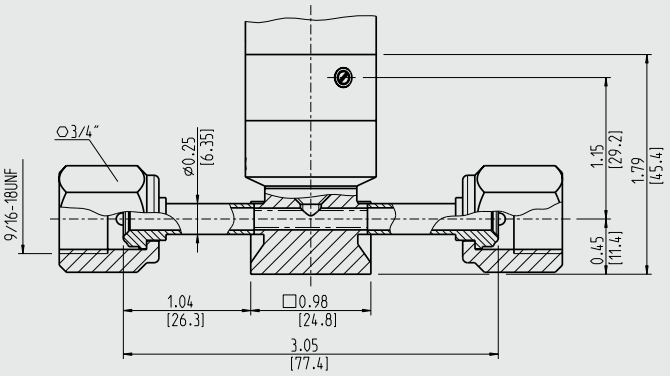
1/4" male nut, fixed
1/4" male nut, fixed



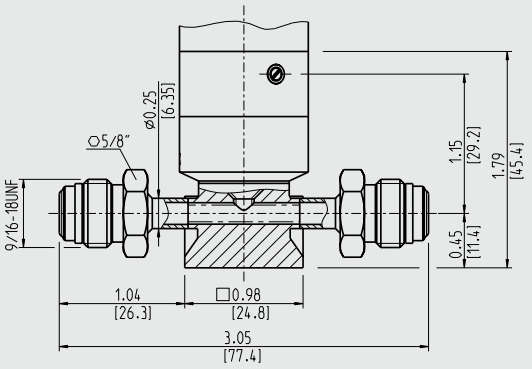


Process connection variants

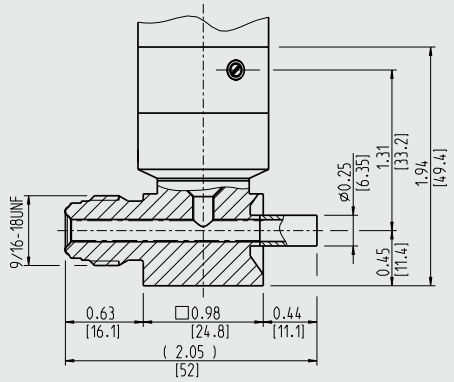
1/4" union nut, rotatable
1/4" union nut, rotatable



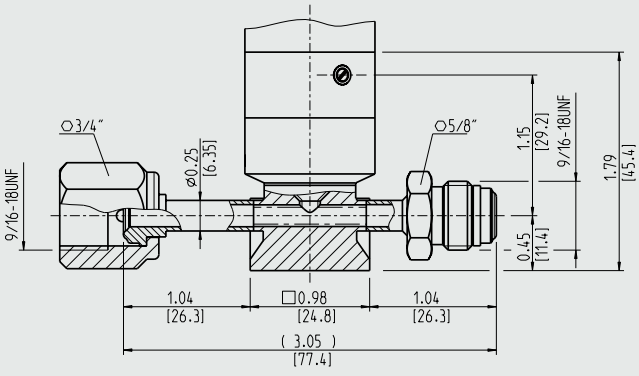
1/4" male nut, rotatable
1/4" male nut, rotatable



1/4" male nut, fixed, high flow through
1/4" weld stub
only available with pressure ranges up to 25 bar / 300 psi

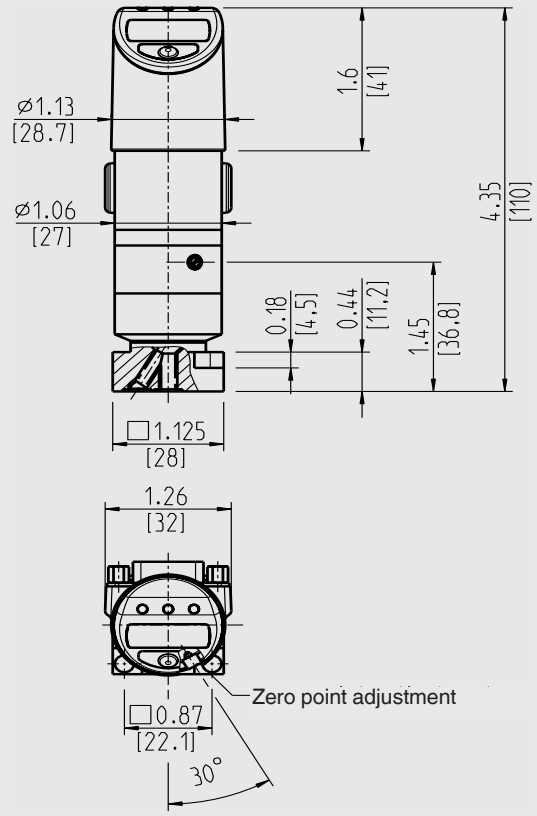


1/4" union nut (female), rotatable
1/4" male nut, rotatable



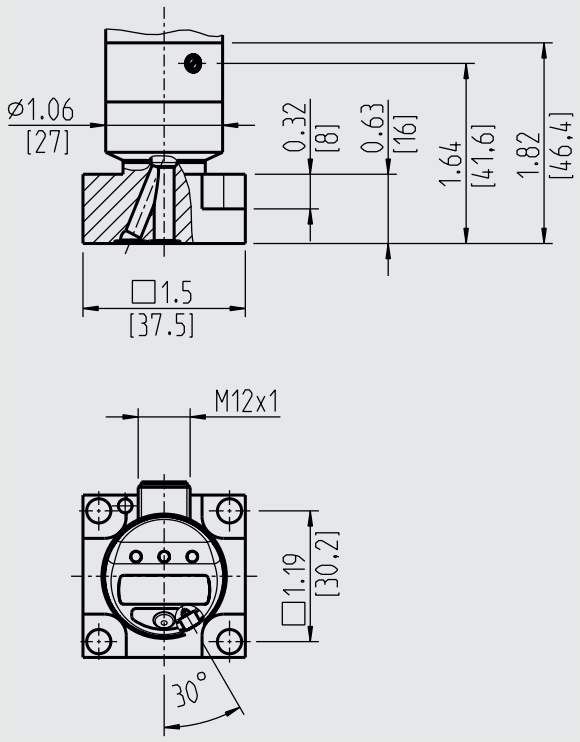
Dimensions in inch [mm] WUD-26

Sub-D connector

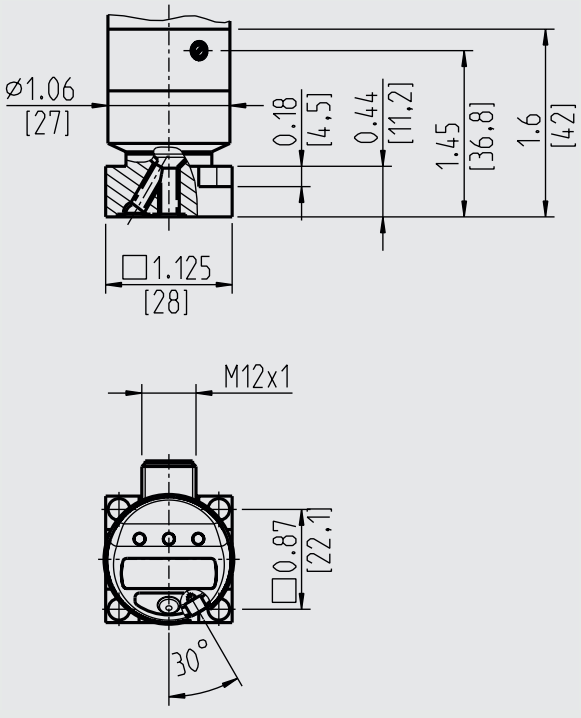


Process connection variants

MSM C 1 1/2"



MSM C 1 1/8"



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