

## Ultra High Purity Transducer, Ex nA nL Models WU-20, WU-25 and WU-26

WIKA Datasheet WU-2X



### Applications

- Gas panels for OEM tools
- Semiconductor, flat panel display and photovoltaic production
- Specialty and bulk-gas distribution

### Special Features

- High accuracy pressure measurement 0.15% RSS
- Vacuum referenced pressure readings
- Excellent long term stability
- Signal noise cancellation and shielding
- 2.4711/UNSR 30003 thin film sensor
- Active temperature compensation
- Ingress protection (NEMA4 / IP67)
- ATEX Zone 2
- FM Class I Div. 2 Group A, B, C, D
- RoHS compliant
- Compact design

### Standard Features

#### Reliable

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

Vacuum referenced pressure readings, integrated signal noise cancellation and shielding features ensure high accuracy pressure measurement and excellent long term stability. Active temperature compensation routines reduce the transducers impact to changing temperatures, allowing safer operations involving purge-vent cycling of high Joule-Thomson effect gases.

Flow through (WU-25) and surface mount (WU-26) series transducers are specifically designed and manufactured to sustain torsion applied stresses often incurred during installation. The special design of our thin film sensor eliminates the risk of sensor signal error due to influenced loads at the pressure connection or welded joints.



Fig. left Transducer WU-20, Single End  
Fig. center Transducer WU-25, Flow Through  
Fig. right Transducer WU-26, Modular Surface Mount

#### Versatile

The WU-2X can be readily installed in indoor or outdoor systems as well as in non-flammable or potentially flammable areas. Compliance to the most stringent standards (NEMA4, IP67, RoHS) improves install base flexibility and acceptance worldwide.

The hermetically sealed design of the WU-2X prevents entry of moisture when used outdoors. Non-incendive (ATEX/FM) approvals for potentially flammable environments provide essential safeguards for life and product safety. A T6 temperature class designator complies to the highest measurement requirements for low, spontaneous ignition temperature medias (i.e., phosphine (PH<sub>3</sub>) and silane (SiH<sub>4</sub>)).

#### Compact

The ultra compact design of the WU-2X is the smallest product footprint in the market today. The space saving design easily replaces competitive transducers, making it the perfect fit for new equipment and retrofit projects.

## Specifications

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

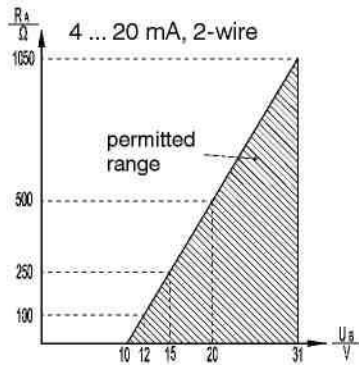
		WU-20 / WU-25													
		WU-26						350	500	1000	1500	2000	3000	5000	
Pressure ranges	psi	15	30	60	100	160	250	350	500	1000	1500	2000	3000	5000	
	bar	1	2	4	7	11	17	25	36	70	100	145	225	360	
Over pressure safety 1)	psi	120	120	120	210	320	500	750	1100	2100	3000	4200	6600	10500	
Burst pressure 1)	psi	1800	1800	1800	2200	2600	4800	6200	7400	8000	10500	10500	10500	10500	
Other pressure ranges and pressure units (e.g. MPa, kg/cm <sup>2</sup> ) on request															
1) 1 psi = 0.069 bar															
Measuring principle	Metal thin film sensor														
Materials															
■Wetted parts															
» Pressure Connection	316L VIM/VAR														
» Pressure sensor	2.4711 / UNSR 30003														
■Case	304 SS														
Particle test	≤ 0.1 µm Particle 0.1 ptc / ft <sup>3</sup> according to Semi E49.8														
Inboard helium leak test	< 1 x 10 <sup>-9</sup> mbar l/sec (atm STD cc/sec) according to Semi F1														
Surface finish	Electropolished, typical Ra ≤ 0.13 µm (RA 5); max. Ra ≤ 0.18 µm (RA 7) Exceeds Semi F19														
Dead volume	cm <sup>3</sup>	WU-20 < 1.5, WU-25 < 1, WU-26 < 1													
Permissible Medium	Special gas / Vapor / Liquid														
Power supply U+	U+ in VDC	10 ... 31 V with output signal 0 ... 5 V / 4 ... 20 mA 14 ... 31 V with output signal 0 ... 10 V													
Signal output and maximum ohmic load RA	RA in Ohm	4 ... 20 mA, 2-wire						RA ≤ (U+ - 10 V) / 0.02 A							
		0 ... 5 V, 3-wire						RA > 5 k							
		0 ... 10 V, 3-wire						RA > 10 k							
Power Pi	W	1													
Adjustability zero	% of span	-3.5 up to +3.5 (via potentiometer) Current output signal													
	% of span	-2 up to +3.5 (via potentiometer) Voltage output signal													
Response time (10 ... 90 %)	ms	≤ 300													
Insulation voltage	VDC	500													
Accuracy	% of span	≤ 0.15 (≤ 0.4 with pressure ranges ≤ 2 bar) RSS (Root Sum Squares)													
	% of span	≤ 0.3 <sup>2)</sup> (≤ 0.6 <sup>2)</sup> with pressure ranges ≤ 2 bar)													
<sup>2)</sup> Including non-linearity, hysteresis, zero point and full-scale error (corresponds to error of measurement per IEC 61298-2)															
Non-linearity	% of span	≤ 0.1 (≤ 0.15 for pressure ranges ≤ 2 bar) (BFSL) according to IEC 61298-2													
Hysteresis	% of span	≤ 0.14													
Non-repeatability	% of span	≤ 0.12													
1-year stability	% of span	≤ 0.25 typ. (at reference conditions)													
Permissible temperature of	without Approval      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							
■Ambience	-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 (active compensated)														
Temperature coefficients within rated temperature range (active compensated):															
■mean TC of zero / 10 K	% of span	≤ 0.1													
■mean TC of range / 10 K	% of span	≤ 0.15													
RoHS-conformity	Yes (not with bayonet connector)														
CE-conformity															
■Pressure equipment directive	97/23/EC														
■EMC directive	2004/108/EC, EN 61 326 Emission (Group 1, Class B) and Immunity (industrial locations)														
■Directive ATEX of equipment intended for use in potentially explosive atmospheres	94/9/EC														
Ex-protection															
Ignition protection type <sup>3)</sup>	ATEX	II 3G Ex nA nL IIC T4/T5/T6 X (for transducer with Ex-marking)													
	FM	Nonincendive for use in Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2, Group IIC, Hazardous (Classified) Locations													
<sup>3)</sup> Read the operating conditions and safety-relevant data in the operating instructions in any case															

## Specifications

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

Assembly and packing area		Clean room class 5 according to ISO 14644
Packaging		Double bagging according to SEMI E49.6
Shock resistance	g	500 (1.5 ms) according to IEC 60068-2-27
Vibration resistance		0.35 mm (10 - 58 Hz) / 5 g (58.1 - 2000 Hz) according to IEC 60068-2-6
Wiring protection		
■ Short-circuit		S+ towards U-
■ Reverse polarity		U+ towards U-
Weight	kg	Approx. 0.1

## Signal output and allowed load



### Current output (2-wire)

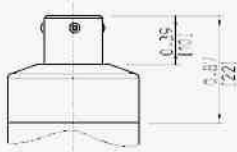
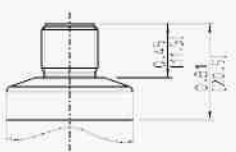




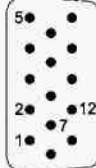
4 ... 20 mA:  
 $RA \leq (U+ - 10 V) / 0.02 A$

### Voltage output (3-wire)

0 ... 5 V: RA > 5 k  
 0 ... 10 V: RA > 10 k

with RA in Ohm and U+ in Volt

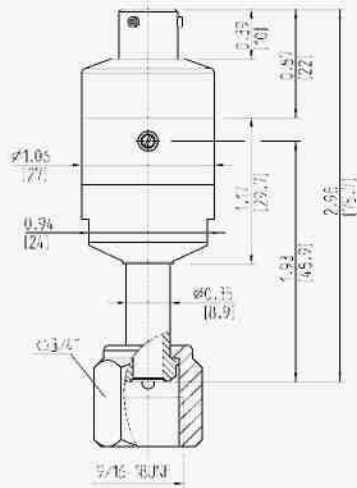
## Electrical connections

	Bayonet connector, 4-pin	Circular connector M12x1, 4-pin	Flying leads, 3 m	Sub-D HD connector, 15-pin
				
				
2-wire	U+ = A   U- = D	U+ = 1   U- = 3	U+ = red   U- = black	U+ = 7   U- = 5
3-wire	U+ = A   U- = D   S+ = B	U+ = 1   U- = 3   S+ = 4	U+ = red   U- = black   S+ = brown	U+ = 7   U- = 5   S+ = 2
Wire gauge	-	-	0.22 mm <sup>2</sup> (AWG 24)	-
Diameter of cable	-	-	4.8 mm	-
Ingress Protection per IEC 60 529	NEMA 4 (IP 67)	NEMA 4 (IP 67)	NEMA 4	(IP 54)

The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.

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

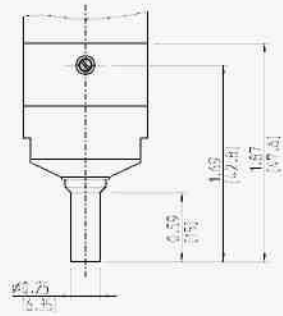
Bayonet connector



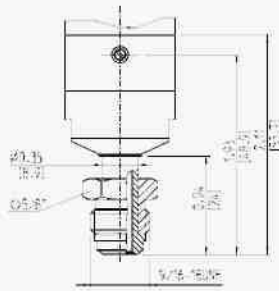
1/4" Swivel Female Face Seal

**Process connection variants**

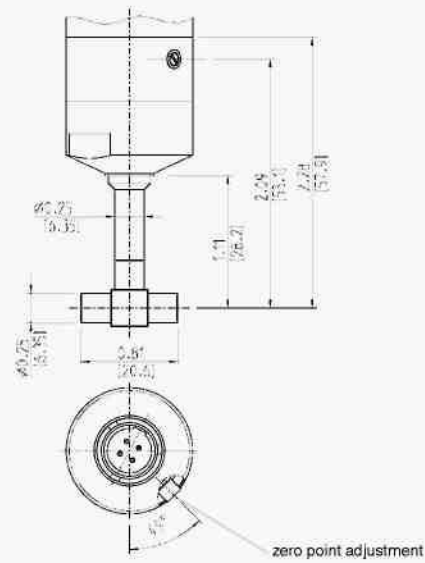
1/4" Weld Stub



1/4" Swivel Male Face Seal



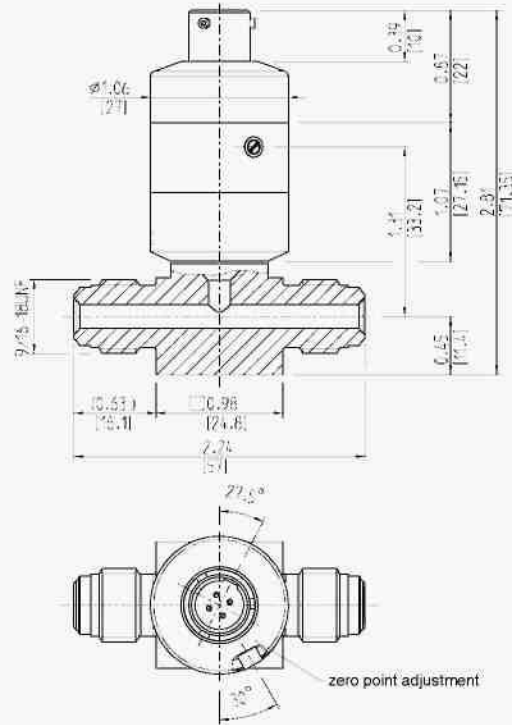
1/4" T-Connector, Weld Stub



**Dimensions in inch [mm] WU-25**

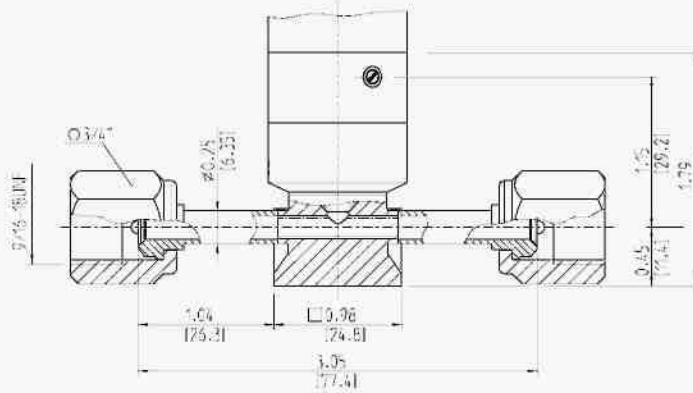
Bayonet connector

1/4" Fixed Male Face Seal  
1/4" Fixed Male Face Seal

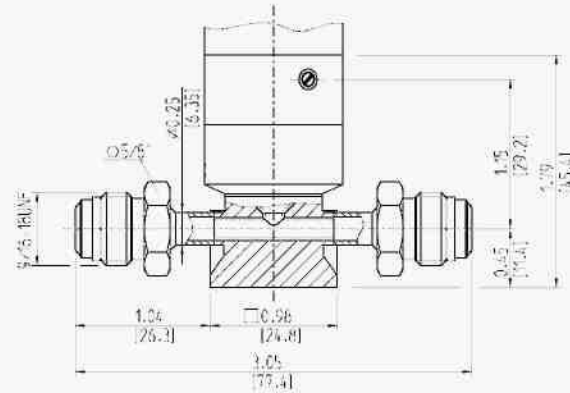


**Process connection variants**

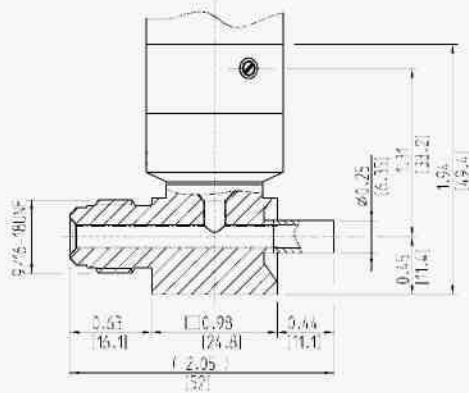
1/4" Swivel Female Face Seal  
1/4" Swivel Female Face Seal



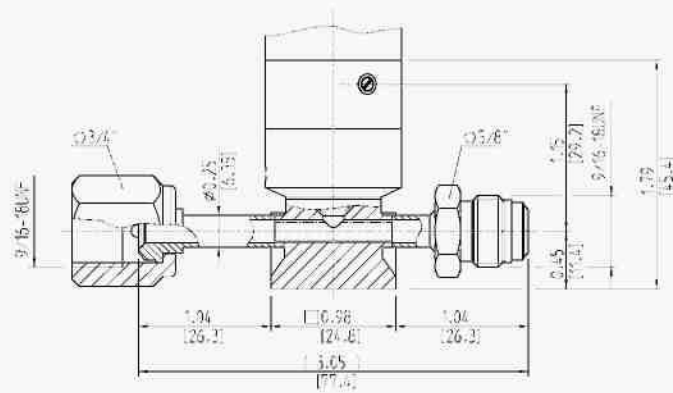
1/4" Swivel Male Face Seal  
1/4" Swivel Male Face Seal



1/4" Fixed Male Face Seal High Flow Through  
1/4" Fixed Male Face Seal High Flow Through  
only available with pressure ranges up to 25 bar / 300 psi

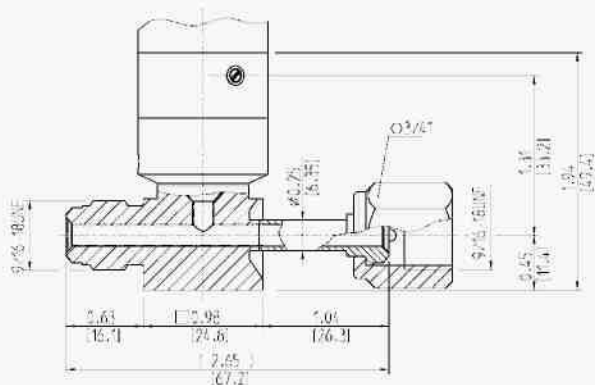


1/4" Swivel Femal Face Seal  
1/4" Swivel Male Face Seal

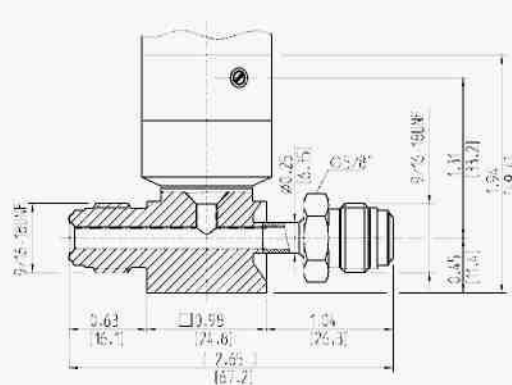


## Process connection variants WU-25

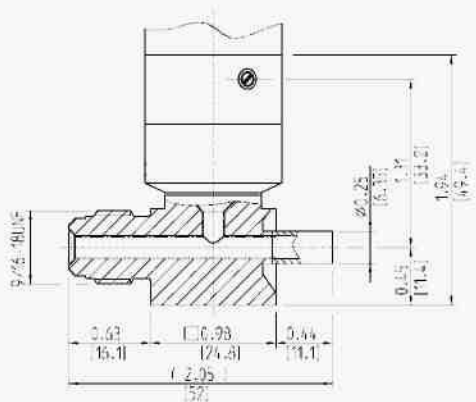
1/4" Fixed Male Face Seal  
1/4" Swivel Female Face Seal



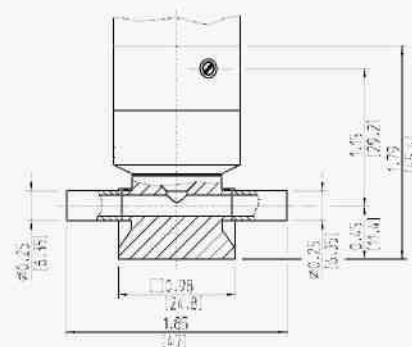
1/4" Fixed Male Face Seal  
1/4" Swivel Male Face Seal



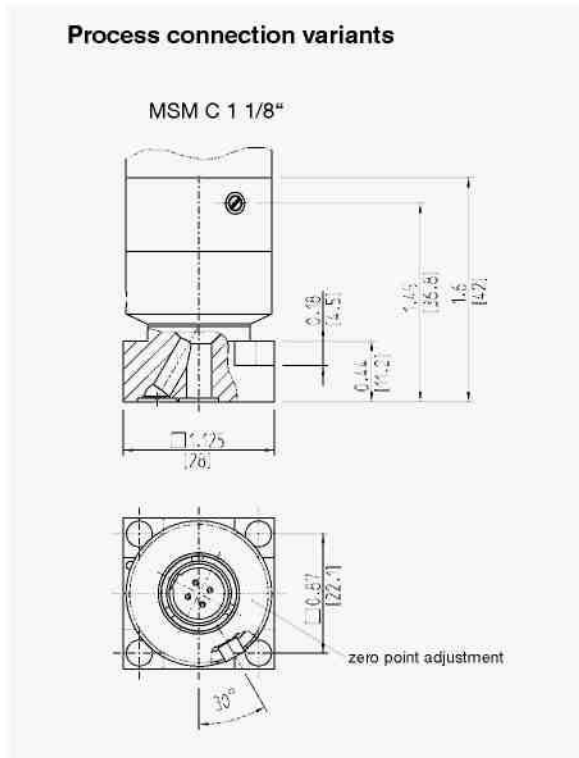
1/4" Fixed Male Face Seal  
1/4" Weld Stub



1/4" Weld Stub  
1/4" Weld Stub



## Dimensions in inch [mm] WU-26



## WU-2X Smart Codes for Custom Order Configurations

Field No.	Code	Feature	
<b>1</b>	<b>Type</b>		
	0	Process connection: single end	
	5	Process connection: flow through	
	6	Process connection: surface mount	
<b>2</b>	<b>Signal Output</b>		
	A	4 ... 20 mA, 2-wire	
	F	0 ... 10 V, 3-wire	
	G	0... 5 V, 3-wire	
<b>3</b>	<b>Dampening</b>		
	Z	Without	
<b>4</b>	<b>Unit</b>		
	B	bar	
	p	psi	
	K	kg/cm <sup>2</sup>	
	?	Other	
<b>5</b>	<b>Absolute or relative pressure</b>		
	G	gauge	
	V	compound	
	K	absolute	
	<b>Pressure Range</b>		
	320	0...2 bar gauge	-1...+1 bar gauge
	340	0...4 bar gauge	-1...+3 bar gauge
	370	0...7 bar gauge	-1...+6 bar gauge
	410	0...10 bar gauge	-1...+9 bar gauge
	416	0...16 bar gauge	-1...+15 bar gauge
425	0...25 bar gauge		
440	0...40 bar gauge		
460	0...60 bar gauge		
510	0...100 bar gauge	-1...+100 bar gauge	0...1500 psia
516	0...160 bar gauge	-1...+160 bar gauge	
525	0...250 bar gauge	-1...+250 bar gauge	
540	0...400 bar gauge		
380	-1...+7 bar gauge		
426	-1...+25 bar gauge		
441	-1 ...+40 bar gauge		
461	-1 ...+60 bar gauge		
471	-1...+70 bar gauge		
339	0...4 kg/cm <sup>2</sup> gauge		
359	0...6 kg/cm <sup>2</sup> gauge		
398	0...10 kg/cm <sup>2</sup> gauge		
439	0...40 kg/cm <sup>2</sup> gauge		
459	0...60 kg/cm <sup>2</sup> gauge		
498	0...100 kg/cm <sup>2</sup> gauge		
520	0...200 kg/cm <sup>2</sup> gauge		





## WU-2X Smart Codes for Custom Order Configurations (continued)

Field No.	Code	Feature
<b>Electrical connection</b>		
<b>9</b>	M4	Circular connector M12x1, 4-pin
	DL	Cable w/free ends
	O4	4-Pin bayonet connector
	TX	15-pin high density Sub-D plug
<b>Cable length</b>		
<b>10</b>	Z	Without
	E	3 m
	?	Other
<b>Approvals</b>		
<b>11</b>	C	ATEX II 3G Ex nA nL IIC T4/T5/T6 X and FM Class I Div. 2 Groups A, B, C, D

Additional order info			
	YES	NO	
<b>12</b>	1	Z	quality certificates
<b>13</b>	Z	T	without

Order Code:    1        2 3        4 5 6        7 8        9 10 11        12 13\*

**WU-2X**  -  -  -  -  -

\*Additional order details \_\_\_\_\_

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

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