

Ultra High Purity Transducer, Nonincendive Models NWU-10, NWU-15 and NWU-16 with and without side access

WIKA Datasheet NWU-1X



Applications

- Semiconductor and flat panel display industry
- Microelectronics engineering
- Gas distribution systems
(Gas sticks, gas panels, bulk-gas supply)
- Ultra high purity water supply

Special Features

- No span adjustment required
- Excellent long-term stability
- Exchangeable electronics
- Ingress protection IP 65 / IP 54 with side access

Description

Universal

As a result of its broad pressure range spectrum from vacuum up to 400 bar (5000 psi), its compact design and its excellent performance, model NWU-10 offers a perfect combination of an appealing design and proven measuring technology.

Flow through transducers of the NWU-15 series have been developed for ultra pure media applications where, apart from the requirement for easy cleaning of the transducer, the application also demands a proven, stable sensor technology. Through the optimised design of the sensor connection, external influences on the sensor signal have been eliminated, even in the case of varying fastening torques of the process connections.

Reliable

Thin-film sensors produced by WIKA have ensured high accuracy, long-term stability and repeatability in industrial pressure measurement instrumentation for decades. We use special thin-film sensors made of 2.4711/UNSR 30003 in order to meet the particular requirements of the ultra pure media industry.



Fig. left Transducer NWU-10, Single End
Fig. center Transducer NWU-15, Flow Through
Fig. right Transducer NWU-16, Modular Surface Mount

Hermetically welding of the thin-film sensor guarantees a total separation of medium, as well as a long-term high impermeability which is required by the user.

Versatile

The modular design makes it possible to configure a high number of variants in order to comply with the manifold requirements of UHP applications. All wetted parts are electropolished using state-of-the art equipment prior to the final assembly.

The integrated potentiometer enables adjustment of the zero point up to 5% of the full scale value. An adjustment of span is not required.

Exchangeable electronics enable replacement of the amplifier without disconnecting the sensors from the process. The high ingress protection (NEMA-4) allows operation even under the most difficult conditions.

Specifications

Models NWU-10, NWU-15, NWU-16

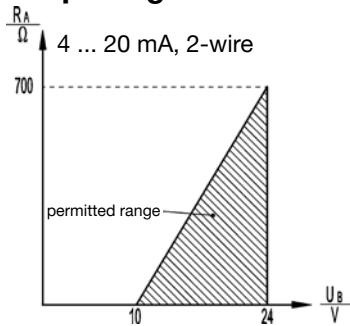
		NWU-10 / NWU-15										
		NWU-16										
Pressure ranges	bar	4	7	10	16	25	40	60	100	160	250	400
	psi	60	100	160	250	300	500	1000	1500	2000	3000	5000
Over pressure safety ¹⁾	bar	8	14	20	32	50	80	120	200	320	500	500
Burst pressure ¹⁾	bar	40	70	100	160	250	400	550	720	720	720	720
Other pressure ranges and pressure units (e.g. MPa, kg/cm ²) on request												
¹⁾ 1 bar = 14.50 psi												
Measuring principle		Metal thin film sensor										
Materials												
■ Wetted parts		2.4711 / UNSR 30003 (Sensor); 316L VIM/VAR (Process connection)										
■ Case		Stainless steel										
Surface finish		Electropolished, typical Ra ≤ 0.18 µm (RA 7); max. Ra ≤ 0.25 µm (RA 10)										
Dead volume	mm ³	NWU-10 < 1500, NWU-15 < 1000, NWU-16 < 1000										
Permissible Medium		Liquid / Gas / Vapour										
Power supply U _B	U _B in VDC	10 < U _B ≤ 24										
Signal output and maximum ohmic load R _A		4 ... 20 mA, 2-wire										
Max. current consumption I _i	mA	30										
Max. permitted input power P _i	W	Ignition protection type nL: 1					Ignition protection type nA: 0.5					
Internal capacity C _i	nF	11 (+0,3 nF/m with version flying leads - order code: DI)										
Internal inductivity L _i	µH	10 (+2 µH/m with version flying leads - order code: DI)										
Adjustability zero		± 5 via potentiometer										
Response time (10 ... 90 %)		≤ 2 {≤ 100}										
Dielectric strength	VDC	500										
Accuracy	% of span	≤ 0.25	for pressure ranges > 4 bar				(BFSL)					
	% of span	≤ 0.5	for pressure ranges ≤ 4 bar				(BFSL)					
	% of span	≤ 0.5 ²⁾	for pressure ranges > 4 bar									
	% of span	≤ 1.0 ²⁾	for pressure ranges ≤ 4 bar									
²⁾ Including non-linearity, hysteresis, zero point and full scale error												
(corresponds to error of measurement per IEC 61298-2).												
Adjusted in vertical mounting position with lower pressure connection.												
Non-linearity	% of span	≤ 0.15	for pressure ranges > 4 bar (BFSL) nach IEC 61298-2									
	% of span	≤ 0.3	for pressure ranges ≤ 4 bar (BFSL) nach IEC 61298-2									
1-year stability	% of span	≤ 0.2	(at reference conditions)									
Permissible temperature of		T4					T5			T6		
■ Medium		-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...+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		
Compensated temp. range		-20 ... 80 °C / -4 ... +176 °F										
Temperature coefficients within compensated temperature range:												
■ mean TC of zero	% of span	≤ 0.1 / 10 K										
■ mean TC of range	% of span	≤ 0.15 / 10 K										
CE-conformity												
■ Pressure equipment directive		97/23/EG										
■ EMC directive		89/336/EEC emission (class B) and immunity according to EN 61 326										
■ Directive ATEX of equipment intended for use in potentially explosive atmospheres		94/9/EG										
Ex-protection	ATEX	Category ³⁾ 3G										
Ignition protection type		II 3G Ex nL IIC T4 oder II 3G Ex nA II T4										
³⁾ Read the operating conditions and safety-relevant data in the type examination certificate in any case (BVS 06 ATEX E 116 X)												
Ex-protection	FM	Class I										
Ignition protection type		Non incensive Class I Division 2 Group A, B, C and D										
Shock resistance	g	500 according to IEC 60068-2-27 (mechanical shock)										
Vibration resistance	g	10 according to IEC 60068-2-6(vibration under resonance)										

Specifications

Models NWU-10, NWU-15, NWU-16

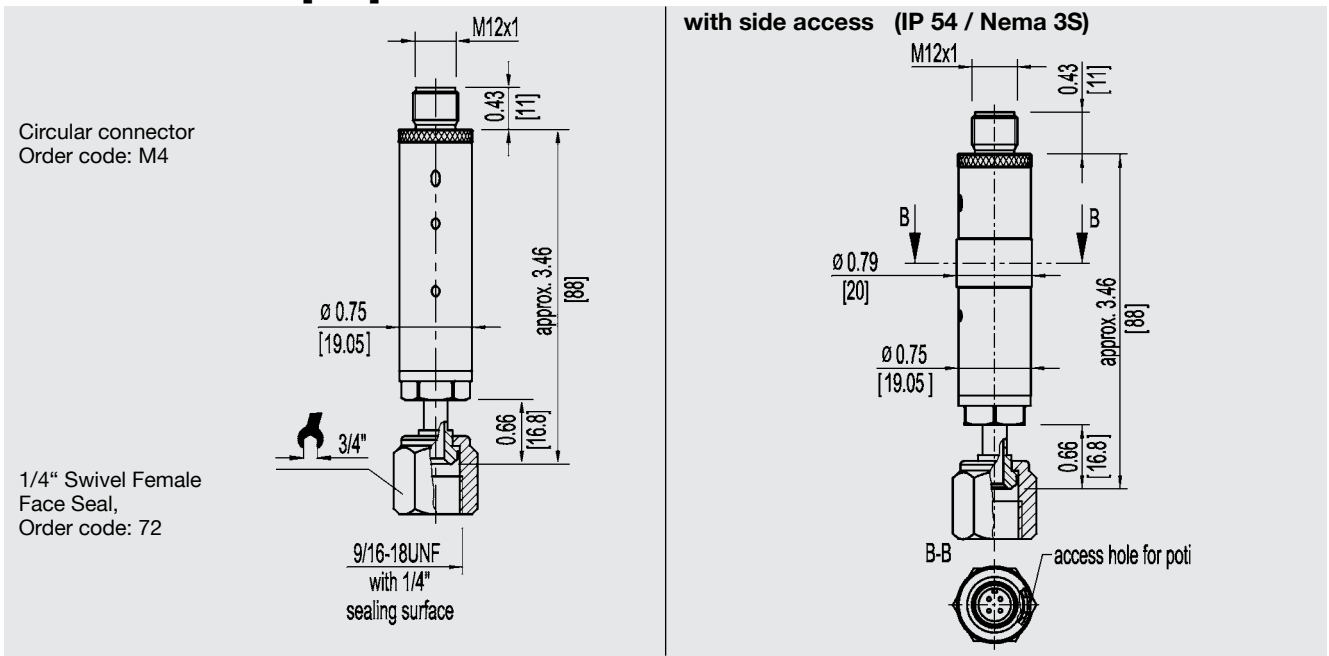
Wiring protection		
■ Short-circuit proofness		Sig+ towards UB-
■ Reverse polarity protection		UB+ towards UB-
Mass	kg	Approx. 0.1

Output signal and allowed load



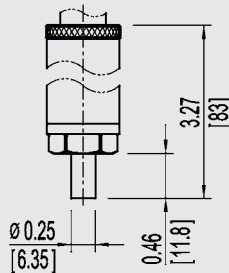
Output current (2-wire)
 4 ... 20 mA:
 $RA \leq (UB - 10 V) / 0.02 A$
 with RA in Ohm and UB in VDC

Dimensions in inch [mm] NWU-10

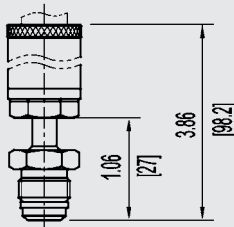


Process connection variants

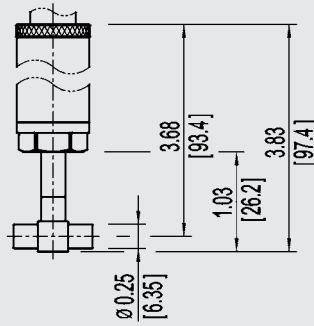
1/4" Weld Stub
 Order code: VN



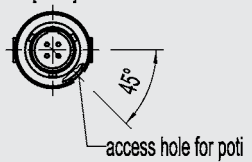
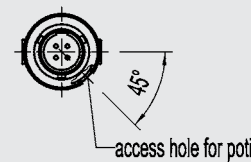
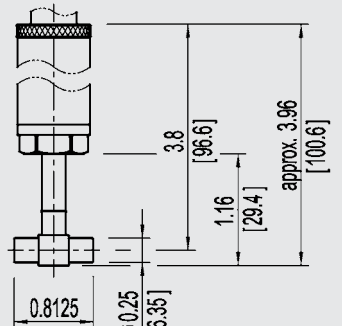
1/4" Swivel Male Face Seal
 Order code: 71



1/4" T-Connector, Weld Stub
 Order code: WT

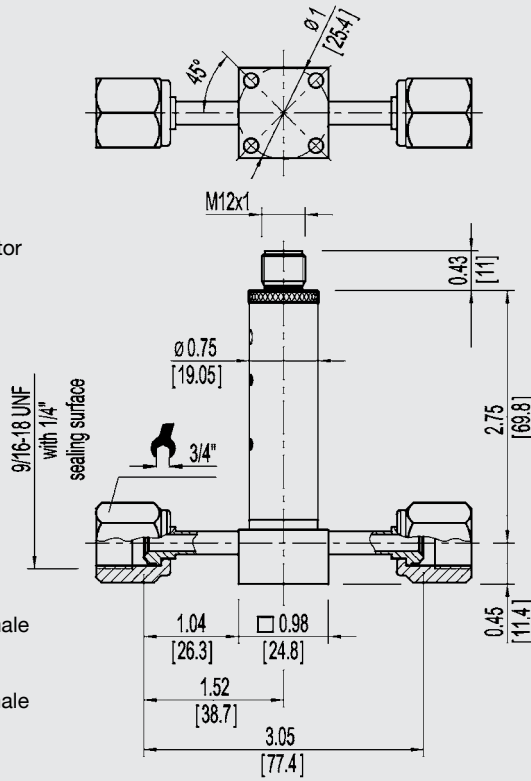


1/4" T-Connector, Weld Stub (1")
 Order code: WR



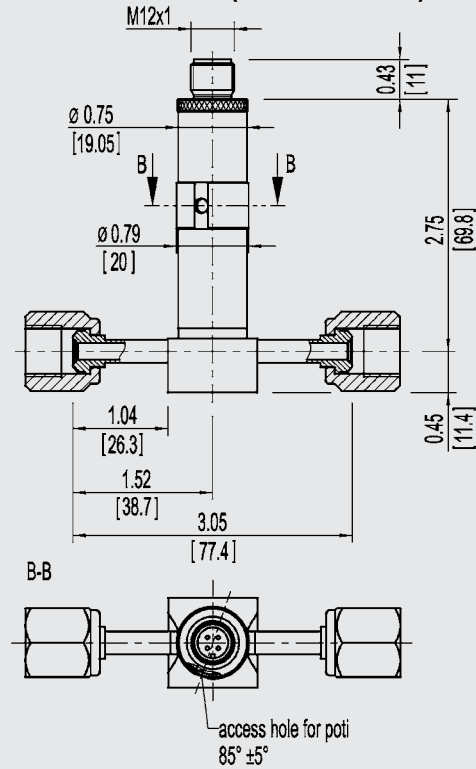
Dimensions in inch [mm] NWU-15

Circular connector
Order code: M4



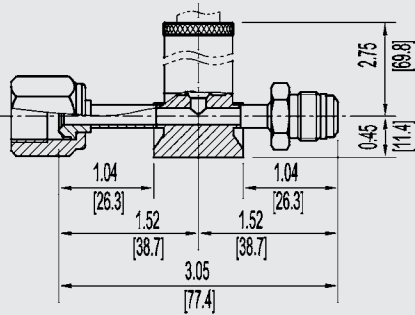
1/4" Swivel Female Face Seal,
Order code: WI
1/4" Swivel Female Face Seal,
Order code: WI

with side access (IP 54 / Nema 3S)

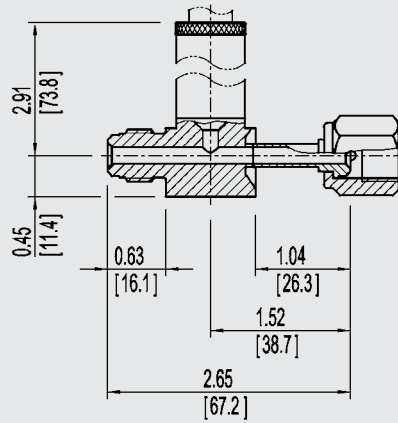


Process connection variants

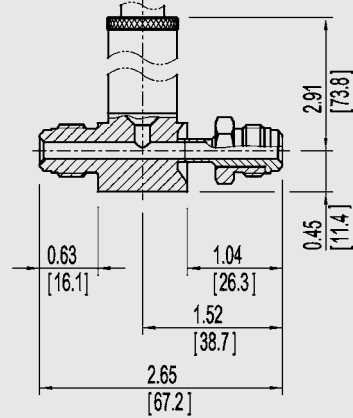
1/4" Swivel Female Face Seal
Order code: 72,
1/4" Swivel Male Face Seal
Order code: 71



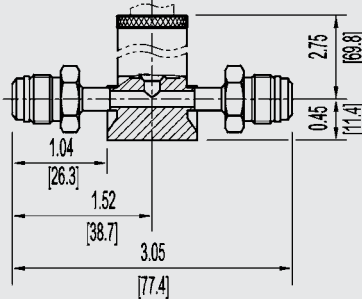
1/4" Fixed Male Face Seal
Order code: WG
1/4" Swivel Female Face Seal
Order code: 72



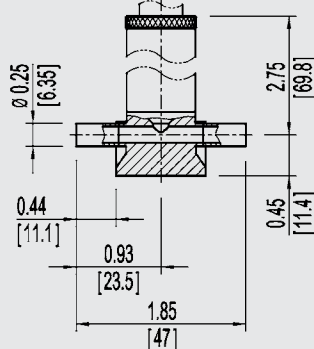
1/4" Fixed Male Face Seal, Order code: WG
1/4" Swivel Male Face Seal, Order code: 71



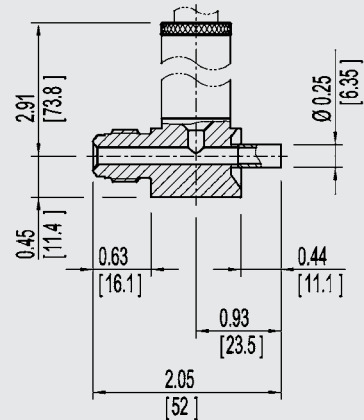
1/4" Swivel Male Face Seal, Order code: 71
1/4" Swivel Male Face Seal, Order code: 71



1/4" Weld Stub, Order code: VN
1/4" Weld Stub, Order code: VN

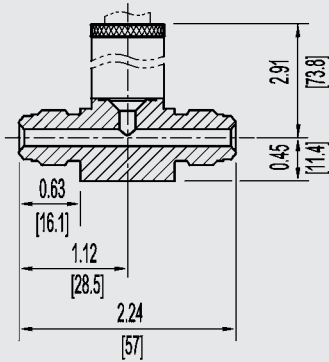


1/4" Fixed Male Face Seal, Order code: WG
1/4" Weld Stub, Order code: VN

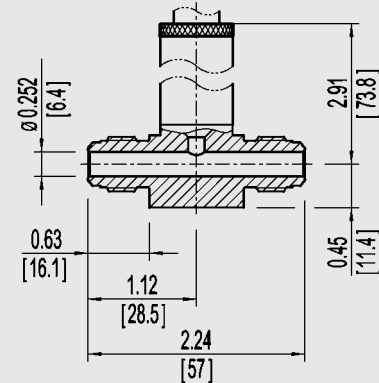


Process connection variants NWU-15

1/4" Fixed Male Face Seal, Order code: WG
 1/4" Fixed Male Face Seal, Order code: WG

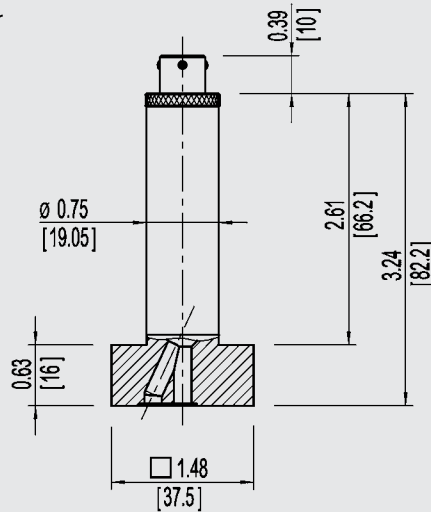


1/4" Fixed Male Face Seal High Flow Through, Order Code: WM
 1/4" Fixed Male Face Seal High Flow Through, Order Code: WM
 only available with pressure ranges up to 25 bar / 300 psi

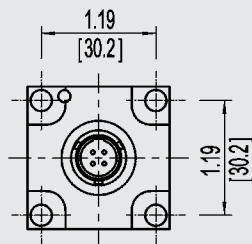


Dimensions in inch [mm] NWU-16

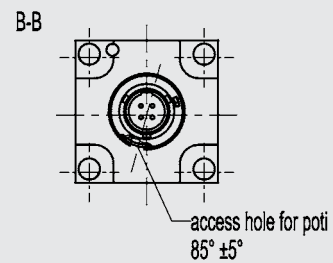
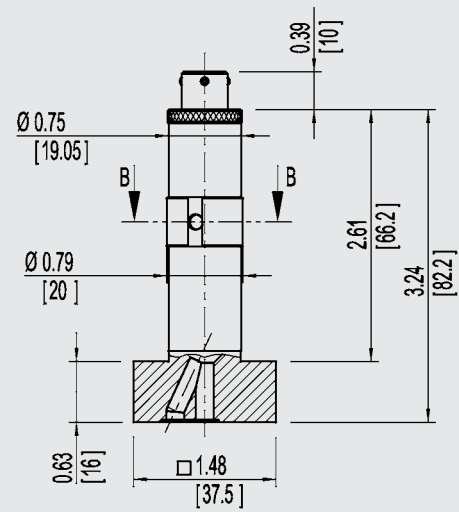
Bayonet connector
 Order code: O4



MSM C
 1 1/2" SQ,
 Order code:
 WC

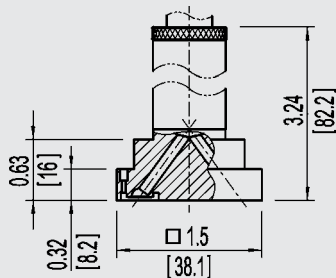


with side access (IP 54 / Nema 3S)

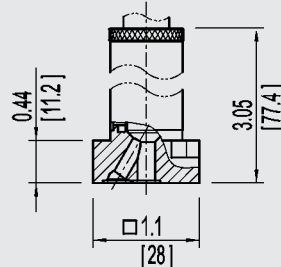


Process connection variants

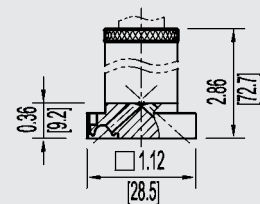
MSM W 1 1/2"
 Order code: WD



MSM C 1 1/8" SQ
 Order code: WE

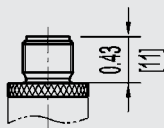
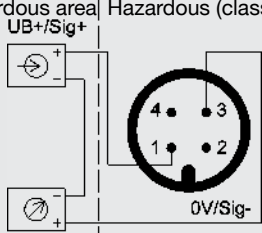
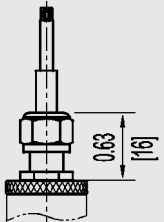
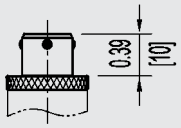
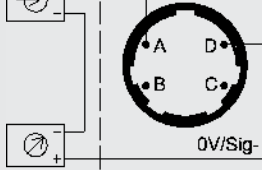
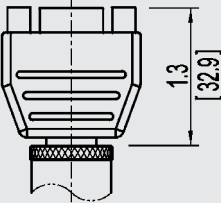
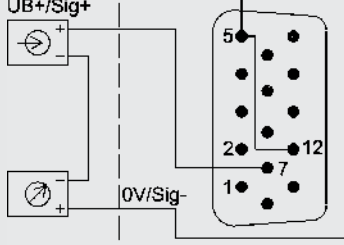
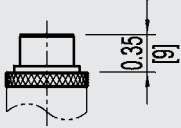
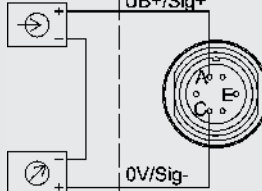


MSM W 1 1/8"
 Order code: WF

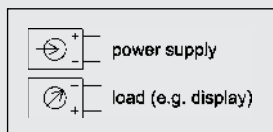


Dimensions and Wiring details NWU-1*

Ingress Protection IP per IEC 60 529

	Dimensions in inch [mm]	2-wire	
Circular connector M 12x1 4-pin, IP 65 (NEMA 4) *) Order code: M4		Non hazardous area UB+/Sig+	Hazardous (classified) area 
Flying leads IP 65 (NEMA 4) *) Order code: DI		Non hazardous area UB+/Sig+	Hazardous (classified) area UB+/Sig+ red (1) 0V/Sig- black (2) screen
Bayonet connector 4-pin, IP 65 (NEMA 4) *) Order code: O4		Non hazardous area UB+/Sig+	Hazardous (classified) area 
SUB-D connector 15-pin, IP 54 (NEMA 3S) Order code: TX		Non hazardous area UB+/Sig+	Hazardous (classified) area 
Circular Connector R03 6-pin, IP 54 (NEMA 3S) Order code: U6		Non hazardous area UB+/Sig+	Hazardous (classified) area UB+/Sig+ 

*) with side access IP 54 (NEMA 3S)



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.

NWU-10 Smart Codes for Custom Order Configurations

Field No.	Code	Feature
1	Unit	
	B	bar
	P	psi
	?	other
	3	psi absolute
	Pressure Range	
	CH	-1 ... +3 bar ¹⁾ -30 inHg ... 100 psi
	CT	-1 ... +6 bar
	CL	-1 ... +9 bar
	CP	-1 ... +15 bar
	CQ	-1 ... +25 bar
	CX	-1 ... +40 bar -30 inHg ... 500 psi
	CY	-1 ... +60 bar
	C1	-1 ... +100 bar
	C2	-1 ... +160 bar
	C3	-1 ... +250 bar
	BG	0 ... 4 bar ¹⁾ 0 ... 160 psi
	EF	0 ... 7 bar
	BI	0 ... 10 bar 0 ... 300 psi
	BK	0 ... 16 bar
	BL	0 ... 25 bar
	BM	0 ... 40 bar
	BN	0 ... 60 bar 0 ... 1000 psi
	BO	0 ... 100 bar 0 ... 1500 psi
	BP	0 ... 160 bar 0 ... 2000 psi
BQ	0 ... 250 bar 0 ... 3000 psi	
BS	0 ... 1000 bar 0 ... 5000 psi	
CE	-30 inHg ... 45 psi ¹⁾	
CF	-30 inHg ... 60 psi ¹⁾	
CK	-30 inHg ... 160 psi	
CI	-30 inHg ... 250 psi	
CM	-30 inHg ... 300 psi	
BE	0 ... 60 psi ¹⁾	
BF	0 ... 100 psi	
DG	0 ... 250 psi	
DI	0 ... 500 psi	
2	??	other

NWU-10 Smart Codes for Custom Order Configurations (continued)

Field No.	Code	Feature	
Process Connection			
3	VN	1/4" Weld Stub	
	WG	1/4" fixed male face seal	
	WT	1/4" T-connector (1" version)	
	71	Original VCR-male nut SS4-VCR-4	
	72	Original VCR-union nut SS4-VCR-1	
	??	other	
Electrical connection			
5	M4	4-pin locking plug M12 x 1	
	O4	4-pin bayonet connector <i>(Bendix)</i>	
	??	other	
Additional order info			
6	YES	NO	
	1	Z	quality certificates
7	T	Z	additional text

1) Accuracy 1.0% of span

Order Code:

NWU-10 - A - ¹ ² - ³ - 7 B G ⁴ Z Z - ⁵ Z ^{6*}

*Additional order details _____

NWU-15 Smart Codes for Custom Order Configurations

Field No.	Code	Feature	
1	Unit		
	B	bar	
	P	psi	
	?	other	
	3	psi absolute	
2	Pressure Range		
	CH	-1 ... +3 bar ¹⁾ -30 inHg ... 100 psi	
	CT	-1 ... +6 bar	
	CL	-1 ... +9 bar	
	CP	-1 ... +15 bar	
	CQ	-1 ... +25 bar	
	CX	-1 ... +40 bar -30 inHg ... 500 psi	
	CY	-1 ... +60 bar	
	C1	-1 ... +100 bar	
	C2	-1 ... +160 bar	
	C3	-1 ... +250 bar	
	BG	0 ... 4 bar ¹⁾ 0 ... 160 psi	
	EF	0 ... 7 bar	
	BI	0 ... 10 bar 0 ... 300 psi	
	BK	0 ... 16 bar	
	BL	0 ... 25 bar	
	BM	0 ... 40 bar	
	BN	0 ... 60 bar 0 ... 1000 psi	
	BO	0 ... 100 bar 0 ... 1500 psi	
	BP	0 ... 160 bar 0 ... 2000 psi	
	BQ	0 ... 250 bar 0 ... 3000 psi	
	BS	0 ... 1000 bar 0 ... 5000 psi	
	CE	-30 inHg ... 45 psi ¹⁾	
	CF	-30 inHg ... 60 psi ¹⁾	
	CK	-30 inHg ... 160 psi	
	CI	-30 inHg ... 250 psi	
	CM	-30 inHg ... 300 psi	
	BE	0 ... 60 psi ¹⁾	
	BF	0 ... 100 psi	
	DG	0 ... 250 psi	
	DI	0 ... 500 psi	
		??	other

NWU-15 Smart Codes for Custom Order Configurations (continued)

Field No.	Code	Feature	
Process Connection			
3	VN	1/4" Weld Stub	
	WG	1/4" fixed male face seal	
	WM	1/4" fixed male face seal, high flow through	
	71	Original VCR-male nut SS4-VCR-4	
	72	Original VCR-union nut SS4-VCR-1	
	??	other	
Outlet Process Connection			
4	VN	1/4" Weld Stub	
	WG	1/4" fixed male face seal	
	WM	1/4" fixed male face seal, high flow through	
	71	Original VCR-male nut SS4-VCR-4	
	72	Original VCR-union nut SS4-VCR-1	
	??	other	
Electrical connection			
5	M4	4-pin locking plug M12 x 1	
	O4	4-pin bayonet connector <i>(Bendix)</i>	
	??	other	
Additional order info			
6	YES	NO	
	1	Z	quality certificates
7	T	Z	additional text

1) Accuracy 1.0% of span

Order Code:

NWU-15 - A - - - 7 B G Z Z - Z

*Additional order details _____

NWU-16 Smart Codes for Custom Order Configurations

Field No.	Code	Feature	
1	Unit		
	B	bar	
	P	psi	
	?	other	
2	3	psi absolute	
	Pressure Range		
	CH	-1 ... +3 bar ¹⁾ -30 inHg ... 100 psi	
	CT	-1 ... +6 bar	
	CL	-1 ... +9 bar	
	CP	-1 ... +15 bar	
	CQ	-1 ... +25 bar	
	CX	-1 ... +40 bar -30 inHg ... 500 psi	
	BG	0 ... 4 bar ¹⁾ 0 ... 160 psi	
	EF	0 ... 7 bar	
	BI	0 ... 10 bar 0 ... 300 psi	
	BK	0 ... 16 bar	
	BL	0 ... 25 bar	
	BM	0 ... 40 bar	
	CE	-30 inHg ... 45 psi ¹⁾	
	CF	-30 inHg ... 60 psi ¹⁾	
	CK	-30 inHg ... 160 psi	
	CI	-30 inHg ... 250 psi	
	CM	-30 inHg ... 300 psi	
	BE	0 ... 60 psi ¹⁾	
	BF	0 ... 100 psi	
	DG	0 ... 250 psi	
	DI	0 ... 500 psi	
	??	other	
	3	Process Connection	
		WC	1/4" fixed male face seal
		WD	1/4" fixed male face seal, high flow through
		??	other
4	Electrical connection		
	M4	4-pin locking plug M12 x 1	
	O4	4-pin bayonet connector <i>(Bendix)</i>	
	??	other	

NWU-16 Smart Codes for Custom Order Configurations (continued)

Field No.	Code	Feature
Additional order info		
	YES	NO
6	1	Z
7	T	Z

1) Accuracy 1.0% of span

Order Code:

NWU-16 - A - ¹ ² ³ **- 7 B G** ⁴ **Z Z -** ⁵ **Z** ^{6*}

*Additional order details _____

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WIKAL Instrument Corporation
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