Electronic
Product Catalog

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Pressure Transmitters and Transducers

- General Purpose Pressure Transmitters
- Hazardous Area Pressure Transmitters
- Submersible Liquid Level Transmitters
- Special Purpose Pressure Transmitters
- Meters and Displays
- 3A Sanitary Transmitters

WIKA®

Electronic Product Catalog

Electronic Pressure Measurement

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Hazardous Area Pressure Transmitters
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Electronic Pressure Measurement

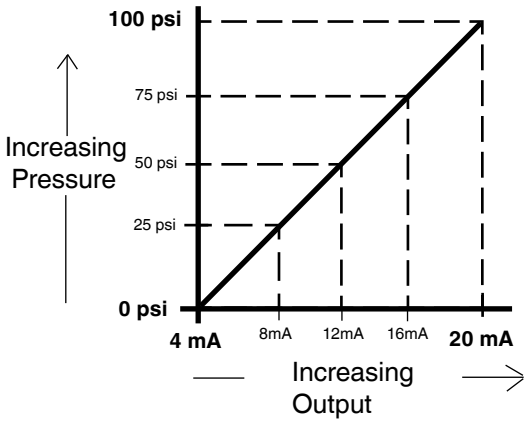
All WIKA electronic pressure transmitters and transducers convert an applied pressure into an electrical signal. This signal is sent to computers, PLC's (programmable logic controllers), chart recorders, digital panel meters or other devices that interpret this electrical signal and use it to display, record and/or change the pressure in the system being monitored.

The most popular signal used in industrial applications is a 4-20 milliamp (mA) 2-wire current loop. Other signals used include 1-5 volts, 0-5 volts, 0.5-4.5 volts, 0-10 volts (3 wire systems) and 0-100 millivolts (4 wire systems). In many cases the display device that the transmitter is connected to can accept more than one type of output - for example, 4-20 mA or 0-5 volts. Because of its popularity, WIKA stocks a large inventory of 4-20 mA output transmitters in many different models.

A pressure transmitter converts an unamplified signal such as 2mV/V into an amplified signal like 4-20mA or 0-10V. A pressure transducer converts applied pressure to an unamplified signal such as 2mV/V. Many users refer to transmitters and transducers interchangeably. This can create some confusion, but it may be helpful to note that general purpose pressure sensors are most commonly referred to as pressure transducers.

Linearity

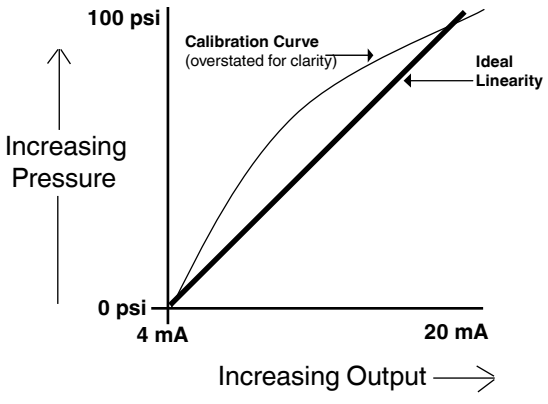
What makes these devices useful is that the output is directly proportional to the applied pressure. WIKA transmitters are described in part by pressure range and output type. For example, a transmitter with a 0-100 psi range and 4-20 mA output would produce a 4 mA output at 0 pressure and 20 mA at 100 psi.



Because the transmitter output is linear, it will directly relate to the applied pressure. At 25 psi the output will be 8 mA, at 50 psi, 12 mA and at 75 psi, 16 mA. If the device reading this mA signal is a programmable panel meter, it can convert the 4-20 mA signal to 0-100 psi and display the pressure on the digital readout. Since the 4-20 mA is consistent, the meter can be programmed to display any engineering units desired. If a bar reading is required, the meter is programmed to display 0 bar at 4 mA and 6.89 bar at 20 mA. The meter circuitry completes all other calculations automatically.

Accuracy

The straight line shown above represents an ideal, perfectly linear output. In reality, errors are introduced into the output signal by the various transmitter components. The amount of error introduced refers to the deviation from the ideal straight line.



Electronic Pressure Measurement

"Accuracy" most commonly refers to the percent deviation from the ideal. It can also be calculated using linearity, hysteresis and repeatability values. Most WIKA transmitters have less than a 0.25% linearity deviation over the span. See the specifications section for each model number for detailed information. In industrial applications, repeatability is usually more important than "full scale accuracy" matching a traceable standard. WIKA transmitters feature excellent repeatability - less than 0.05% span for most models.

When comparing accuracy, note there are many different ways manufacturers calculate accuracy. Be sure to consider temperature compensation, as industrial environments rarely match the laboratory conditions sometimes used by other transmitter manufacturers when determining accuracy.

Performance

WIKA transmitters and transducers are designed for long term, reliable performance in difficult industrial environments. Most models feature stainless steel construction, moisture and vibration protected circuitry, and all are calibrated and tested prior to shipment. A variety of options are available on most models to meet specific needs.

Applications

WIKA transmitters are available in many different models that have features to meet the needs of specific applications. Model types are described below:

Standard industrial grade transmitters - general purpose 0.25% accuracy transmitters for many industrial applications such as hydraulics and pneumatics.

Flush diaphragm transmitters - feature a non-clogging, flat diaphragm for use when the media is of high viscosity or contains particulates that might plug the 1/8" orifice found on the standard industrial (NPT) series.

Intrinsically safe transmitters - used in environments containing explosive or flammable gases or liquids. These instruments are designed so they cannot generate enough heat or spark to ignite flammable media or flammable gases in the environment. They require the use of intrinsically safe barriers and provide protection similar to explosion-proof devices without requiring containment in an explosion-proof housing. Approved for Class I Division 1 hazardous locations.

NEMA 4X transmitters with field case- designed for extremely dirty or corrosive environments, they feature washdown and corrosion resistance.

OEM transmitters - 0.5% accuracy class instruments without adjustable zero and span for general purpose pressure measurement applications. They feature excellent repeatability and vibration resistance.

A-10 - Low cost, high level output for general purpose pressure measurement applications.

OEM sensors - provide a "low level" millivolt-per-volt output for OEM design engineers who want to build their own power supply and signal conditioning circuitry.

Submersible liquid level transmitters - measure the static pressure of liquid above the diaphragm and are used in many liquid level monitoring and control applications.

3A Sanitary transmitters - feature a Tri-Clamp® quick release connection with flush diaphragm for use in food and pharmaceutical pressure measurement applications. The connection is designed to prevent product buildup and reduce the possibility of bacterial contamination of the product.

High precision digital transmitters - for laboratory or industrial applications where 0.1% or 0.05% accuracy is required along with durable, industrial grade construction.

UniTrans® universal pressure transmitter - features user programmability and LCD display.

Local indicating transmitters - feature a 4" gauge and a transmitter for local and remote pressure indication.

Low/differential pressure transmitters - measure clean, dry, inert gaseous media from 0.2 inches water column to 15 psi.

E-10 explosion-proof transmitters - approved for Class I Division 1 hazardous locations.

N-10 non-incendive transmitters - approved for Class I Division 2 hazardous locations.

Digital panel meters & controllers -user programmable to display pressure in any desired engineering units. They are available with a variety of options including dual programmable relays for alarm or control applications.

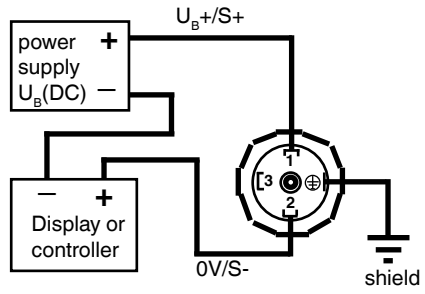
Contact WIKA for additional information and product support for specific applications.

Electronic Pressure Wiring Schematics

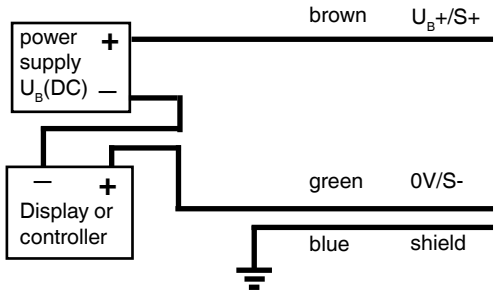
4-20 mA 2-wire system

The 2-wire system connects the power supply, transmitter and indicating/recording instrument in a series circuit. This creates a "current loop" with the transmitter functioning as a current regulating device.

DIN connector



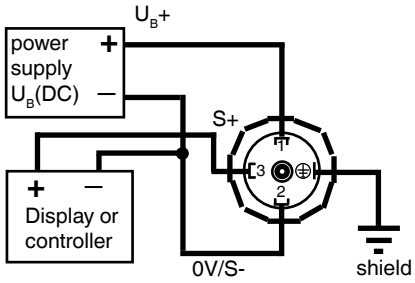
Cable with free ends



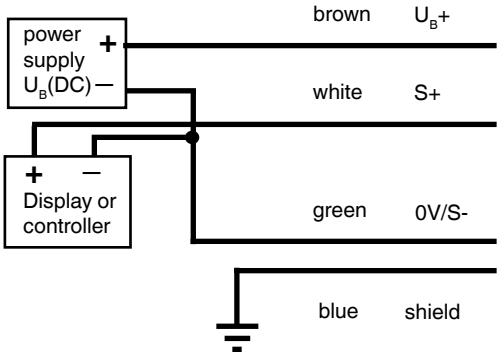
0-5V, 1-5V, 0.5-4.5V or 0-10V 3-wire system

The 3-wire system features separate leads for the signal and power supply. The third lead is common minus for both devices. The signal source and indicating/recording instrument are connected in series, the power supply in parallel.

DIN connector



Cable with free ends



Notes:

Terminal coding:

U_B +	Plus power supply
0V	Minus power supply (common, ground)
S +	Plus output signal
S -	Minus output signal (common, ground)
Shield	Cable shield / transmitter body

The supply voltage must be higher than the minimum required voltage as determined by the load equation for the specific transmitter. Refer to the specifications section of the data sheets for additional information.

Type S-10, S-11 General Purpose Pressure Transmitters

Applications

- Hydraulics and pneumatics
- Test equipment
- Pump and compressor control
- Liquid level measurement

Special Features

- Standard ranges available from stock
- 4-20 mA 2-wire output signal, others available
- Highly resistant to pressure spikes and vibration
- Stainless steel case and wetted parts
- Can be assembled to diaphragm seals for special applications

Left: S-10 with NPT process connection
Center: S-11 with flush diaphragm process connection
Right: S-11 with flush diaphragm process connection and integral cooling element

Description

WIKA S-10 and S-11 pressure transmitters are precision engineered to fit most industrial pressure measurement applications. The compact, rugged design makes these instruments suitable for applications including hydraulics and pneumatics, vacuum, test equipment, liquid level measurement, press control, compressor control, pump protection and numerous other processing and control operations. A wide range of electrical connection and process connection options are available to meet almost any requirement.

Rugged construction
The S-10 features an all-welded stainless steel measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The compact case is also made of stainless steel and is available with environmental protection ratings up to NEMA 6P / IP 68.

The S-11 transmitter features a flush diaphragm process connection. The S-11 is specifically designed for the measurement of viscous fluids or media containing solids that may clog a NPT process connection. Flush diaphragm pressure transmitters are available in pressure ranges from 50 InWC to 8,000 psi. For high temperature media, an integral cooling element is available on the S-11. This option increases the maximum media temperature to 302 °F.

Each instrument undergoes extensive quality control testing and calibration to achieve an accuracy of ≤ 0.25% full scale. The printed circuit boards use state-of-the-art surface mount technology and are potted in silicone gel for protection against mechanical shock, vibration and moisture. Each is individually temperature compensated to assure accuracy and long-term stability even when exposed to severe ambient temperature variations.

Specifications	Type S-10, S-11								
Pressure range	50 InWC	5 psi	10 psi	25 psi	30 psi	60 psi	100 psi	160 psi	200 psi
Maximum pressure*	14 psi	29 psi	58 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi	1,160 psi
Burst pressure**	29 psi	35 psi	69 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi	1,390 psi
Pressure range	300 psi	500 psi	1,000 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi	10,000 psi[1]	15,000 psi[1]
Maximum pressure*	1,160 psi	1,160 psi	1,740 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	1,390 psi	5,800 psi	7,970 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	34,800 psi	43,500 psi

{vacuum, gauge pressure, compound ranges, and absolute pressure references are available}

[1)] Ranges only available with Model S-10

[2)] For Model S-11 the burst pressure is limited to 21,000psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.

*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

Materials		
■ Wetted parts		(other materials see WIKA diaphragm seal program)
➢ Type S-10		Stainless steel
➢ Type S-11		Stainless steel
		O-ring: NBR [3)] {Viton® or EPDM}
■ Case		Stainless steel
Internal transmission fluid [4)]		Synthetic oil {Halocarbon® oil for oxygen applications} [5)]
		{Listed by FDA for food applications}}

[3)] O-ring made of Viton® or EPDM for type S-11 with integral cooling element.

[4)] Not available with type S-10 in pressure ranges >300 psi.

[5)] Media temperature for oxygen version: -4 ... +140 °F (-20....+60°C). Oxygen version is not available in vacuum and absolute pressure ranges or with S-11 > 500 psi

Power supply U_B [6)]	U_B in DC V	$10 < U_B \leq 30$ (14 ... 30 with signal output 0 ... 10 V)
Signal output and	R_A in Ohm	4 ... 20 mA, 2-wire $R_A \leq (U_B - 10\ V) / 0.02\ A$
maximum load R_A		0 ... 20 mA, 3-wire $R_A \leq (U_B - 3\ V) / 0.02\ A$
		{0 ... 5 V, 3-wire} $R_A > 5000$
		{0 ... 10 V, 3-wire} $R_A > 10{,}000$ {other signal outputs available}
Adjustability zero/span	%	± 5 using potentiometers inside the instrument
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at media temperatures below –22°F (-30°C) for ranges < 300 psi
		or with flush diaphragm process connection)
Isolation voltage	DC V	500

[6)] NEC Class 02 power supply (low voltage and low current max. 100 VA even under fault conditions)

Accuracy [7)]	% of span	≤ 0.25 {0.125} [8)] (BFSL)
	% of span	≤ 0.5 {0.25} [8)] (limit point calibration)

[7)] Including linearity, hysteresis and repeatability.
Limit point calibration performed in vertical mounting position with pressure connection facing down.

[8)] Improved accuracy is available for pressure ranges ≥ 100 InWC

Non-repeatability	% of span	≤ 0.1	
1-year stability	% of span	≤ 0.2 (at reference conditions)	
Permissible temperature of			
■ Medium [9)]		-22 ... +212 °F {-40 ... +257 °F}	-30 ... +100 °C {-40 ... +125 °C}
		S-11 with cooling element: -4 ... +302 °F	S-11 with cooling element: -20 ... +150 °C
■ Ambient [9)]		-4 ... +176 °F	-20 ... +80 °C
		S-11 with cooling element: -4 ... +176 °F	S-11 with cooling element: -20 ... +80 °C
■ Storage [9)]		-40 ... +212 °F	-40 ... +100 °C
		S-11 with cooling element: -4 ... +212°F	S-11 with cooling element: -20 ... +100 °C

[9)] Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport

Compensated temperature range		32 ... +176 °F	0 ... +80 °C
Temperature coefficients (TC) within			
compensated temp range:			
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure range ≤ 100 InWC)	
■ Mean TC of range	% of span	≤ 0.2 / 10 K	

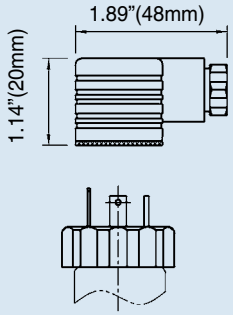
CE - conformity		
■ Pressure equipment directive		97/23/EC
■ EMC directive		2004/108/EEC, EN 61 326 Emission Group (Group 1, Class B) and
		Immunity)industrial locations
Shock resistance	g	1000 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance	g	20 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		Protected against reverse polarity, overvoltage and short circuit
Weight	lb	Approx. 0.4

{ } Items in curved brackets { } are optional extras for additional price.

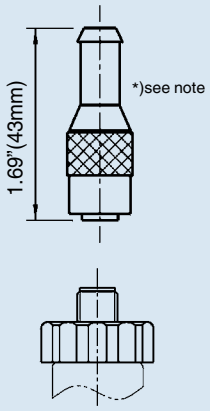
Dimensions in inches(mm)

Electrical connections

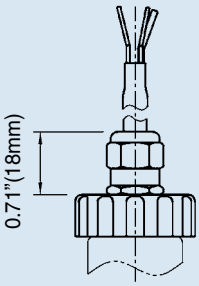
L-connector, DIN EN 175301-803, Form A (DIN 43 650) for conductor cross section up to max. 1.5 mm², conductor outer diameter 0.3“ (6-8 mm), NEMA 5 / IP 65
Order code: A4



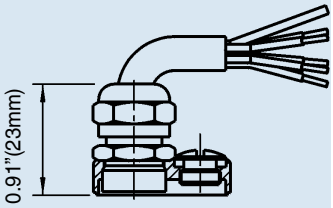
Circular connector M 12x1, 5 pin, NEMA 4 / IP 67
Order code: M5



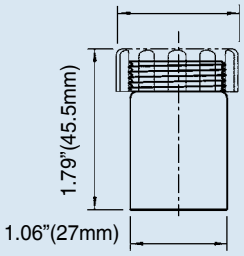
Cable with free ends conductor cross section up to max. 0.5 mm² / AWG 20 with end splices, conductor outer diameter 6.8 mm, NEMA 4 / IP 67
Order code: DL

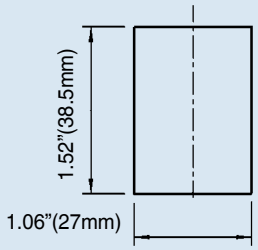


Cable with free ends, adjustable zero and span conductor cross section up to max. 0.5 mm² / AWG 20 with end splices, conductor outer diameter 6.8 mm, NEMA 6 P / IP 68
Order code: XM



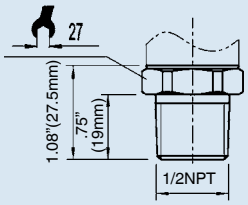
Case



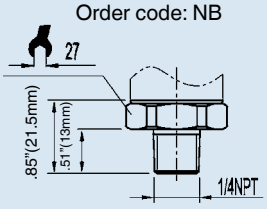


S-10 pressure connections (others available)

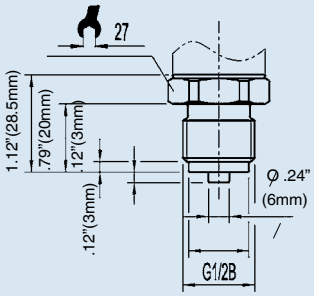
1/2 NPT male
Order code: ND



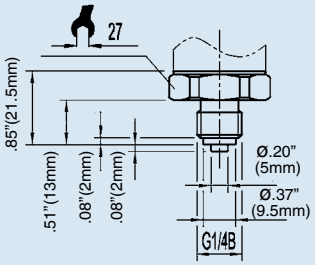
1/4 NPT male
Order code: NB



G1/2B male
Order code: GD

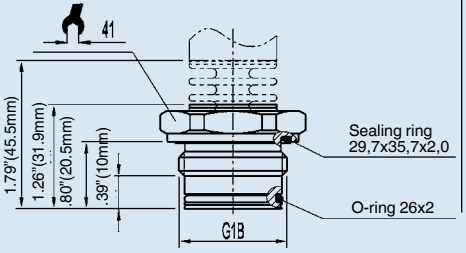


G1/4B male
Order code: GB

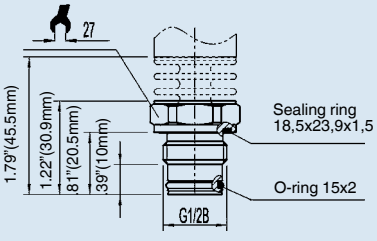


S-11 flush diaphragm pressure connections

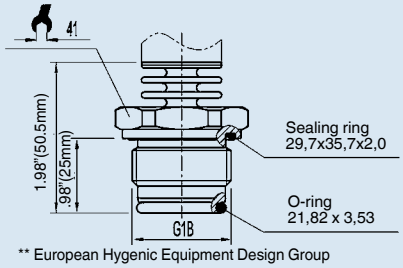
G 1 B
with or without cooling element
50 InWC to 25 psi
Order code: 85



G 1/2 B
with or without cooling element
30 psi to 8000 psi
Order code: 86



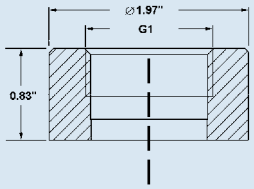
G1B according to EHEDG **)
with cooling element , up to 302°F (150°C)
100 InWC to 250 psi
Order code: 84



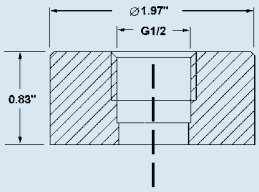
** European Hygenic Equipment Design Group

*) Mating connector not included

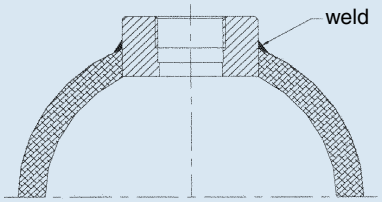
Matching P-1 weld insert adapters for S-11 pressure transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 30 psi

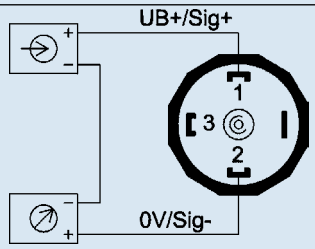
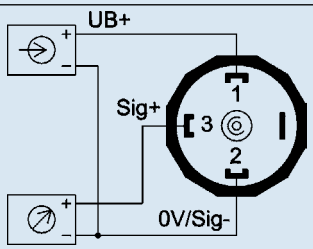
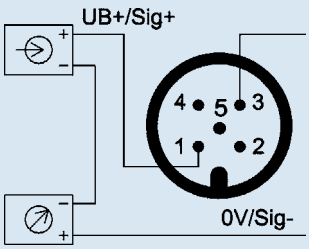
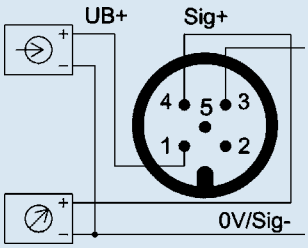
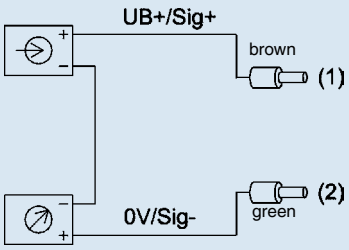
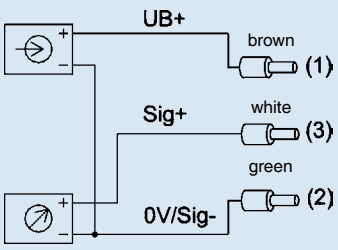


P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 50 psi



Cross section view of P-1
adapter installed in pipe.

Wiring

	2-wire system	3-wire system
L-Connector, DIN EN 175301-803, Form A (DIN 43 650)		
M12x1 Circular connector 5 pin		
Vented cable with free ends		

Legend:

Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

Type S-10 General Purpose Pressure Transmitters

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Process connection:** 1/2 NPT male
- **Electrical connection:** DIN EN 175301-803 (DIN 43 650) with plug connector

Gauge Ranges	
Description	
Range	Part #
0-50 InWC	8367656
0-100 InWC	8341481
0-5 psi	8415072
0-10 psi	8642885
0-15 psi	8643628
0-25 psi	8341995
0-30 psi	8643636
0-50 psi	8348868
0-60 psi	8643644
0-100 psi	8643652
0-160 psi	8341155
0-200 psi	8644918
0-250 psi	8341163
0-300 psi	8341732
0-400 psi	8341953
0-500 psi	8341740
0-600 psi	8347128
0-750 psi	4294930
0-1,000 psi	8610007
0-1,500 psi	8341219
0-2,000 psi	8353098
0-3,000 psi	8342275
0-5,000 psi	8340638
0-8,000 psi	8341864
0-10,000 psi	8347242
0-15,000 psi	8359143

Vacuum & Compound Ranges	
Description	
Range	Part #
30"-0 HgVac	8642850
30"-0-30 psi	8415080
30"-0-60 psi	8415099
30"-0-100 psi	8648646
30"-0-160 psi	9796881
30"-0-200 psi	8985538

Absolute Pressure Ranges	
Description	
Range	Part #
0-15 psia	8587582
0-25 psia	8358503
0-50 psia	8347854
0-100 psia	9734538
0-250 psia	9734589
0-500 psia	9767164

S-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4... 20 mA, 2-wire
	B	0... 20 mA, 3-wire
	F	0... 10 V, 3-wire (supply 14-30 V)
	G	0... 5 V, 3-wire
	W	0.5 ... 4.5 V 3-wire ratiometric
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
	3	psi absolute (from 15 psi to 250 psi absolute)
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
3	??	Other - up to maximum specified pressure range

S-10 Smart Codes for Custom Order Configurations (cont')

Field no.	Code	Feature
		Process connection
	NB	1/4" NPT
	ND	1/2" NPT
	NH	1/8" NPT
	GB	G 1/4 B
	GD	G 1/2 B
	NP	1/4" NPT female
	NQ	1/2" NPT female
	NR	1/8" NPT female
	UA	7/16-20 UNF SAE #4 J514 male
	UB	7/16-20 UNF SAE #4 J514 female
	UE	9/16-18 UNF SAE #6 J514 male
	UF	9/16-18 UNF SAE #6 J514 female
	UC	3/4-16 UNF SAE #8 J514 male
	UD	3/4-16 UNF SAE #8 J514 female
	CS	Diaphragm seal
4	??	Other - please specify
		Special design features
	Z	Without
	A	Oxygen, oil and grease free [1)]
5	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
6	K	+/- 0.125% B.F.S.L. (≥ 100 InWC)
		Electrical connection
	A4	4 Pin L-plug DIN 43 650 with pg 9 (NEMA 5 / IP 65)
	AX	4 Pin L-plug DIN 43 650 w / 1/2" NPT female conduit (NEMA 5/IP 65)
	M5	M12 x 1, 5 pin circular connector
	DL	Cable with free ends (NEMA 4 / IP 67)
	2X	1/2" NPT male conduit with cable
	XM	Submersible cable (NEMA 6 / IP 68)
	O4	4 Pin MIL plug PT02E-8-4P (NEMA 5 / IP 65)
	C6	6 Pin MIL plug PT02E-10-6P (NEMA 5 / IP 65)
7	??	Other - please specify
		Cable length
	Z	Without (always with plug connection)
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
8	?	Other - please specify

S-10 Smart Codes for Custom Order Configurations (cont')

Field no.	Code	Feature
		Temperature range of medium
	A	-30 ... +100 °C (-22 ... +212 °F)
	B	-40 ... +125 °C (-40 ... +257 °F)
9	X	Changed because of diaphragm seal attachment (only with process connection CS)
		Approvals
	Z	Without
	G	GL, BV, ABS, RINA, DNV, Class NK
10	?	Other - please specify
		Quality certificates
	Z	Without
11	I	NIST Certificate of Calibration (always with 0.125% accuracy)
		Digital display
	Z	Without
12	1	Digital display (order separately)
		Additional order details
	Z	Without
13	T	Additional order details

1) Maximum media temperature is -24 ... +140° F (-20 ... +60° C) for pressure ranges 100 InWC to 300 psi. (Field 5, Code A)

Order Code:

	1		2	3		4		5	6	7	8	9	10		11	12	13*
S-10		-			-		-							-			

*Additional order details _____

Type S-11 Flush Diaphragm Pressure Transmitter

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Electrical connection:** DIN EN 175301-803 (DIN 43 650) with plug connector
- **Process connection:** G1B or G1/2B depending upon pressure range

Gauge Ranges	
Description	
Range	Part #
0-50 InWC[1]	9739640
0-100 InWC[1]	8341473
0-5 psi[1]	4204051
0-10 psi[1]	8341074
0-15 psi[1]	8345726
0-25 psi[1]	8395736
0-30 psi[1]	7113644
0-50 psi	8395766
0-60 psi	8351312
0-100 psi	8341724
0-160 psi	8643407
0-200 psi	8641064
0-250 psi	8341961
0-300 psi	8341171
0-400 psi	8342003
0-500 psi	8341197
0-600 psi	8345745
0-750 psi	8352865
0-1,000 psi	9777517
0-1,500 psi	8366706
0-2,000 psi	8640823
0-3,000 psi	8341758
0-5,000 psi	8340646
0-8,000 psi	9749581

Vacuum & Compound Ranges	
Description	
Range	Part #
30"-0 HgVac[1]	8395706
30"-0-30 psi	9796058
30"-0-60 psi	8345622
30"-0-100 psi	8340242
30"-0-200 psi	8342118

NOTES:
[1]Pressure ranges from 50 InWC to 25 psi are supplied with G1B flush process connections; see datasheet for details

S-11 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire (Supply 14-30 V)
	G	0 ... 5 V, 3-wire
	W	0.5 ... 4.5 V 3-wire ratiometric
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
	3	psi absolute (from 15 psi to 250 psi absolute)
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
3	BP	0 psi ... 2,000 psi

S-11 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Pressure range continued
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify
		Process connection
	85	G 1 B, flush diaphragm with O-ring (up to 25 psi)
	86	G 1/2 B, flush diaphragm with O-ring (≥ 30 psi)
4	??	Other - please specify
		Material of wetted parts
	1	Stainless steel, NBR O-Ring [1)]
	L	Stainless steel, Viton® O-Ring
	A	PFA Teflon® coated diaphragm, Viton® O-ring
5	?	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
	A	Oxygen, oil and grease free [2)]
6	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
7	K	+/- 0.125% B.F.S.L. (≥ 100 InWC)
		Electrical connection
	A4	4 Pin L-plug DIN 43 650 with pg 9 (NEMA 5 / IP 65)
	AX	4 Pin L-plug DIN 43 650 with 1/2" NPT female conduit (NEMA 5 / IP 65)
	DL	Cable with free ends (NEMA 4 / IP 67)
	2X	1/2" male conduit with cable
	XM	Submersible cable (NEMA 6 / IP 68)
	O4	4 Pin MIL Plug PT02E-8-4P (NEMA 5 / IP 65)
	C6	6 Pin MIL Plug PT02E-10-6P (NEMA 5 / IP 65)
8	??	Other - please specify
		Cable length
	Z	Without (always with plug connection)
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
9	?	Other - please specify

S-11 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Temperature range of medium
	A	-30 ... +100 °C (-22 ... +212 °F)
	B	-40 ... +125 °C (-40 ... +257 °F)
10	C	-20 ... +150 °C (-4 ... +302 °F) with cooling element
		Approvals
	Z	Without
11	?	Other - please specify
		Quality certificates
	Z	Without
	I	NIST Certificate of Calibration (always with 0.125% accuracy)
12	?	Other - please specify
		Digital display
	Z	Without
13	1	Digital display (order separately)
		Additional order details
	Z	Without
14	T	Additional order details

1) Not available with cooling element option (Field 10, Code C)
2) Maximum media temperature is -4 ... +140° F (-20 ... +60° C) for pressure ranges 100 InWC to 500 psi. (Field 6, Code A)

Order Code:

	1	2	3		4		5	6	7	8	9	10	11		12	13	14*
S-11	-			-		-								-			

*Additional order details _____

Type F-20, F-21 General Purpose Pressure Transmitters with NEMA 4X Integral Junction Box

Applications

- Chemical industry
- Food industry
- Pharmaceutical industry
- Corrosive environments
- Mechanical engineering

Special Features

- Pressure ranges from 50 InWC to 15,000 psi
- 4-20mA and voltage signal outputs available
- Compact size and rugged construction
- All stainless steel design
- Integral electrical connection

Left: F-20 with standard NPT connection
Right: F-21 with flush diaphragm

Description

Compact, rugged design
The F-2X series of pressure transmitters are designed for installation in difficult, corrosive environments. The smooth exterior surfaces reduce areas where contaminants may collect and make it ideal for use in the food and pharmaceutical industries where wash-down procedures for cleanliness are required.

The all stainless steel case meets NEMA 4X requirements for wash-down and corrosion resistance and ingress protection is available up to IP 67.

Easily accessible electrical connection
The sophisticated design of this transmitter provides for fast, easy installation. The junction box cover unscrews for access to the internal spring clip terminal block.

Additional features
Transmitters with the 4-20mA output signal include an internal test circuit connection that permits the transmitter to be tested without disconnecting the primary 4-20 mA circuit. The model F-20 features an all-welded stainless steel measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time.

The model F-21 features a flush diaphragm process connection. This flat sensing surface is specifically designed for the measurement of viscous fluids or media containing solids that may clog the NPT process connection.

Specifications	Model F-20, F-21								
Pressure range	50 InWC	5 psi	10 psi	25 psi	30 psi	60 psi	100 psi	160 psi	200 psi
Maximum pressure*	15 psi	29 psi	58 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi	1,160 psi
Burst pressure**	29 psi	35 psi	69 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi	1,390 psi
Pressure range	300 psi	500 psi	1,000 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi	10,000 psi[1]	15,000 psi[1]
Maximum pressure*	1,160 psi	1,160 psi	1,740 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	1,390 psi	5,800 psi	7,970 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	34,800 psi	43,500 psi

{vacuum, gauge pressure, compound ranges, and absolute pressure references are available}

[1] Ranges only available with type F-20

[2] For type F-21 the burst pressure is limited to 21,000psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.

*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

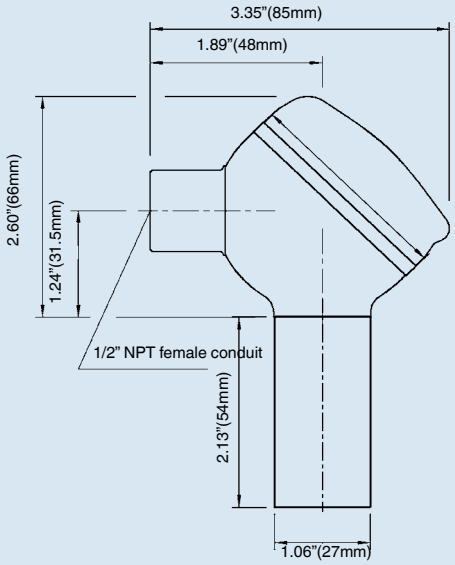
**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

Materials		
■ Wetted parts		(for other materials see WIKA diaphragm seal program)
➢ type F-20		Stainless steel
➢ type F-21		Stainless steel; O-ring: NBR {Viton® or EPDM}
■ Case		Stainless steel
Internal transmission fluid [3]		Synthetic oil {Halocarbon® oil for oxygen applications} [4]
		{Listed by FDA for food applications}
	[3] Not available with F-20 on pressure ranges >300 psi	
	[4] Media temperature for oxygen version: -4 ... +140 °F / -20 ... +60 °C	
	Not available in vacuum and absolute pressure ranges or with type F-21 flush diaphragm version > 500 psi	
Power supply U_B	DC V	$10 < U_B \leq 30$ (11 ... 30 with signal output 4 ... 20 mA,
		14 ... 30 with signal output 0 ... 10 V)
Signal output and		4 ... 20 mA, 2-wire $R_A \leq (U_B - 11\ V) / 0.02\ A$ with R_A in Ohm and U_B in Volt
maximum load R_A		0 ... 20 mA, 3-wire $R_A \leq (U_B - 3\ V) / 0.02\ A$ with R_A in Ohm and U_B in Volt
		{0 ... 5 V, 3-wire} $R_A > 5$ kOhm, {0 ... 10 V, 3-wire} $R_A > 10$ kOhm
Test circuit signal / max. load R_A		Only for instruments with 4 ... 20 mA signal output. $R_A < 15$ Ohm
Adjustability zero/span	%	± 5 using potentiometers inside the instrument
Response time (10 ... 90 %) [7]	ms	≤ 1
Isolation voltage	DC V	500
Accuracy [5]	% of span	≤ 0.25 {0.125} [6] (BFSL)
	% of span	≤ 0.5 {0.25} [6] (limit point calibration)
	[5] Including linearity, hysteresis and repeatability. Limit point calibration performed in vertical mounting position with pressure connection facing down.	
	[6] For pressure ranges above 100 InWC	
Non-linearity	% of span	≤ 0.2 (BFSL) according to IEC 61-298-2
Non-repeatability	% of span	≤ 0.1
1-year stability	% of span	≤ 0.2 (at reference conditions)
Permissible temperature of		
■ Medium		-22 ... +212 °F {-40 ... +257 °F} [7] -30 ... +100 °C {-40 ... +125 °C} [7]
■ Ambient		-4 ... +176 °F {-22 ... +221 °F} -20 ... +80 °C {-30 ... +105 °C}
■ Storage		-40 ... +212 °F -40 ... +100 °C
Compensated temperature range		32 ... +176 °F 0 ... +80 °C
	Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport	
	[7] Response time F-20: ≤ 10 ms at medium temperatures below -30 °C (-22 °F) for pressure ranges up to 300 psi	
	Response time F-21: ≤ 10 ms at medium temperatures below -30 °C (-22 °F)	
Temperature coefficients (TC) within		
compensated temperature range:		
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (<0.4 for pressure range ≤ 100 InWC)
■ Mean TC of range	% of span	≤ 0.2 / 10 K
CE- conformity		
■ Pressure equipment directive		97/23/EC
■ EMC directive		89/336/EEC emission (class B) and immunity according to EN 61 326
Shock resistance	g	600 according to IEC 60028-2-27 (mechanical shock)
Vibration resistance	g	10 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		Protected against reverse polarity, overvoltage and short circuiting
Electrical connection		Internal spring clip terminals; wire cross section 2.5 mm² max, internal ground
		Terminal for brass nickel-plated or {stainless steel} threaded connection
		{additional external ground terminal for stainless steel threaded conduit connection}
Weight	lb	Approx. 0.75

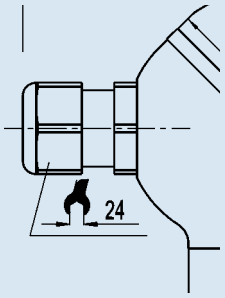
{ } Items in curved brackets are optional extras at additional cost.

Dimensions in inches (mm)

1/2 NPT female conduit:
Ingress protection
NEMA 4X / IP 67

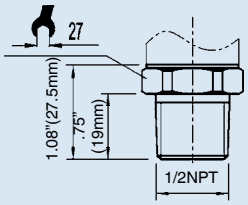


Optional cable gland:
Ingress protection
IP 67 NEMA 4

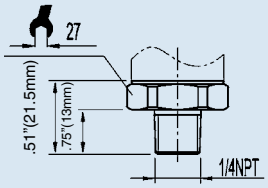


F-20 pressure connections

1/2 NPT male
Order code: ND

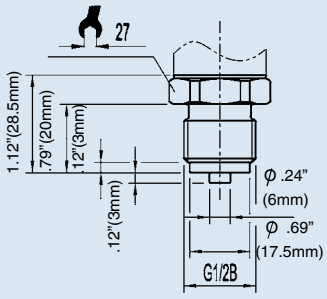


1/4 NPT male
Order code: NB

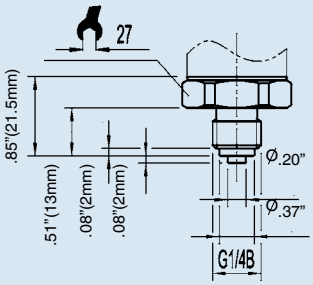


Other connections available

G 1/2 male
EN 837
Order code: GD

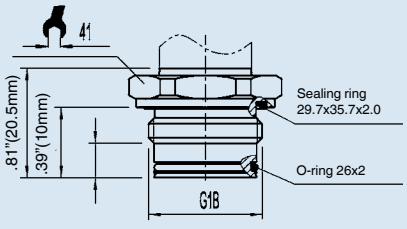


G1/4B male
Order code: GB

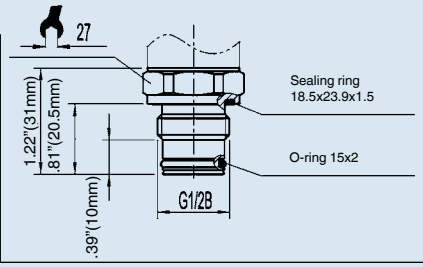


F-21 flush diaphragm pressure connections

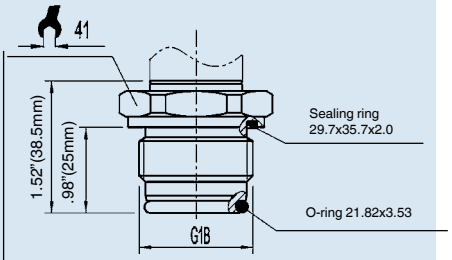
G 1B
50 InWC to 25 psi
Order code: 85



G 1/2B
30 psi to 8,000 psi
Order code: 86

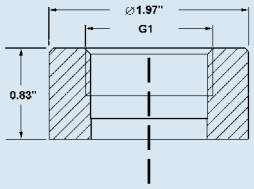


G 1
according to EHEDG *)
100 InWC to 250 psi
Order code: 84

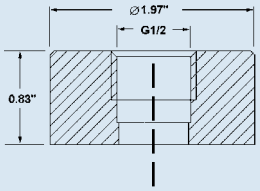


*) European Hygienic Equipment Design Group

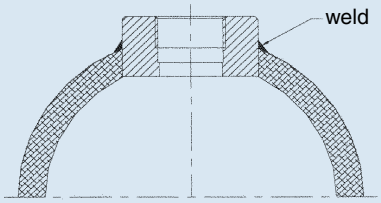
Matching P-1 weld insert adapters for F-21 flush diaphragm transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 25 psi



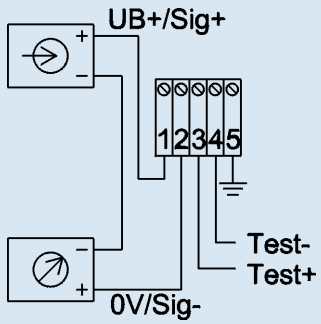
P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 30 psi



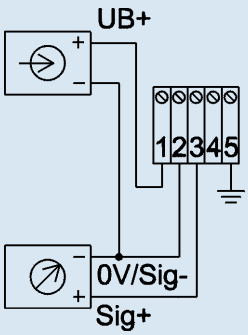
Cross section view of P-1
adapter installed in pipe.

Wiring

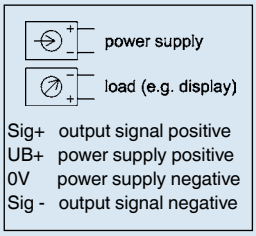
2-wire system



3-wire system



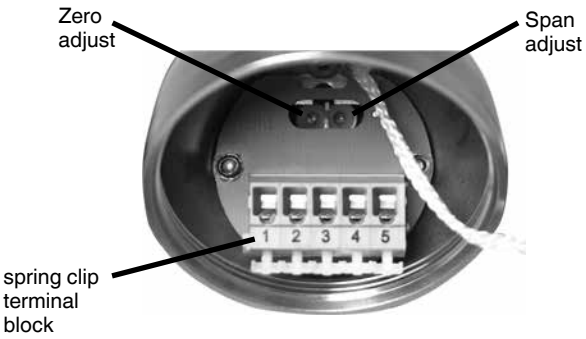
Legend:



Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

Calibration

Remove the junction box cover. Attach a meter and power supply to the electrical connector. For gauge ranges the zero potentiometer can be adjusted to produce a null output when no pressure is applied. Span adjustment requires the use of a reference pressure source. Compound and absolute ranges require a vacuum and pressure source. When calibration is complete, reinstall the junction box cover hand tight.



Related products:

IS-20-F integral junction box version for installation in hazardous environments

Types IS-20-F, IS-21-F
see datasheet IS-20

Type F-20 General Purpose Pressure Transmitters with NEMA 4X Integral Junction Box

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 DC
- **Process connection:** 1/2 NPT male
- **Electrical connection:** Field case with 1/2" NPT female conduit

Gauge Ranges	
Description	
Range	Part #
0-50InWC	12127469
0-100InWC	12127477
0-5 psi	12127493
0-10 psi	12127507
0-15 psi	12127523
0-25 psi	12127531
0-30 psi	12127540
0-50 psi	12127558
0-60 psi	12127566
0-100 psi	12128873
0-160 psi	12127574
0-200 psi	12127582
0-300 psi	12127591
0-500 psi	12127639
0-1,000 psi	12127671
0-2,000 psi	12127681
0-3,000 psi	12127699
0-5,000 psi	12127701

Vacuum & Compound Ranges	
Description	
Range	Part #
30INHG VAC	12127400
30INHG/30 psi	12127418
30INHG/60 psi	12127426
30INHG/100 psi	12127434
30INHG/200 psi	12127451

F-20 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire (Supply 14-30 V)
	G	0 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
3	DS	0 psi ... 8,000 psi

F-20 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Pressure range continued
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
3	??	Other - please specify
		Process connection
	ND	1/2" NPT
	NB	1/4" NPT
	GD	G 1/2 B
	GB	G 1/4 B
	CS	Diaphragm seal
4	??	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
	A	Oxygen, oil and grease free [1]
5	??	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
6	K	+/- 0.125% B.F.S.L.
		Electrical connection
	FE	1/2" NPT female conduit (IP67)
	FH	Nickel plated brass cable gland (IP68)
	FC	Stainless steel cable gland (IP68)
7	??	Other - please specify
		Temperature range of medium
	A	-30 ... +100 °C (-22 ... +212 °F)
	B	-40 ... +125 °C (-40 ... +257 °F)
8	X	Changed because of diaphragm seal attachment
		Quality certificates
	Z	Without
9	I	NIST Certificate of Calibration (always with 0.125% accuracy)
		Digital display
	Z	Without
10	1	Digital display (order separately)
		Additional order details
	Z	Without
11	T	Additional order details

1) Maximum media temperature is -4 ... +140° F (-20 ... +60° C) for pressure ranges 100 InWC to 300 psi.

Order Code:

	1		2	3		4		5	6	7	8		9	10	11*
F-20		-			-		-					-			

*Additional order details _____

Type F-21 Flush Diaphragm Pressure Transmitters with NEMA 4X Integral Junction Box

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 DC
- **Process connection:** G1/2B or G1B flush diaphragm depending upon pressure range
- **Electrical connection:** Field case with 1/2" NPT female conduit

Gauge Ranges	
Description	
Range	Part #
0-50 InWC[1]	12126331
0-5 psi[1]	12127728
0-10 psi[1]	12127736
0-100 psi	12127744

F-21 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire (Supply 14-30 V)
	G	0 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify

F-21 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	85	G 1 B, flush diaphragm with O-ring (up to 25 psi)
	86	G 1/2 B, flush diaphragm with O-ring (≥ 30 psi)
4	??	Other - please specify
		Material of wetted parts
	1	Stainless steel, NBR O-Ring [1]
	L	Stainless steel, Viton® O-Ring
5	?	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
	A	Oxygen, oil and grease free (max. 140° F, ≥ 100 InWC) [2]
6	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
7	K	+/- 0.125% B.F.S.L.
		Electrical connection
	FE	1/2" NPT female conduit (IP67)
	FH	Nickel plated brass cable gland (IP68)
	FC	Stainless steel cable gland (IP68)
8	??	Other - please specify
		Temperature range of medium
	A	-30 ... +100° C (-22 ... +212° F)
	B	-40 ... +125° C (-40 ... +257° F)
	C	-20 ... +150° C (-4 ... +302° F) with cooling element
9	X	Changed because of diaphragm seal attachment
		Quality certificates
	Z	Without
10	I	NIST Certificate of Calibration (always with 0.125% accuracy)
		Digital display
	Z	Without
11	1	Digital display (order separately)
		Additional order details
	Z	Without
12	T	Additional order details

1) Not available with cooling element option (Field 9, Code C)
2) Maximum media temperature is -4 ... +140° F (-20 ... +60° C) for pressure ranges 100 InWC to 500 psi (Field 6, Code A)

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

F-21 - [ ] - [ ][ ] - [ ] - [ ][ ][ ][ ][ ] - [ ][ ][ ]

*Additional order details _____

Type C-10 General Purpose Pressure Transmitters

Applications

- Hydraulics and pneumatics
- Mechanical engineering
- General industrial applications

Special Features

- Standard ranges from 0…100 InWC to 0…15,000 psi
- Excellent shock and vibration resistance
- Environmental protection to NEMA 4 / IP 67
- Stainless steel case and wetted parts

Left: C-10 with MiniDIN connector
Right: C-10 with optional cable

Description

The WIKA C-10 provides performance and economy for a wide range of OEM applications. They are especially suited to applications subject to severe mechanical shock, vibration and electromagnetic interference. Typical applications include hydraulics and pneumatics, compressor controls, pump protection, refrigeration and air conditioning systems.

Dependable performance

The C-10 features an all-welded stainless steel measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The case is also made of stainless steel and is available with environmental protection ratings up to NEMA 4 / IP 67.

Pressure ranges up to 300 psi use a piezoresistive measuring cell. The higher pressure ranges use thin film sensor technology. Both are time proven highly reliable sensor technologies.

A standard signal output of 4-20 mA allows the C-10 to be integrated into many existing applications. Many custom signal outputs, process connections and electrical connections are available.

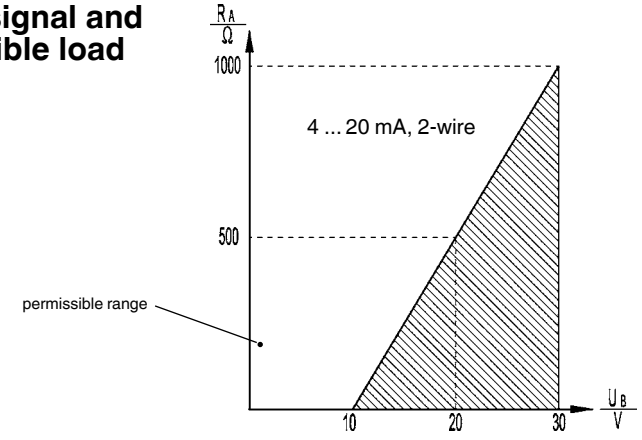
Each C-10 undergoes extensive quality control testing and calibration to achieve an accuracy of ≤ 0.50% full scale. The printed circuit boards use state-of-the-art surface mount technology. Each is individually temperature compensated to assure accuracy and long-term stability even when exposed to severe ambient temperature variations.

Specifications	Type C-10								
Pressure range	100 InWC	5 psi	10 psi	15 psi	25 psi	30 psi	50 psi	100 psi	200 psi
Maximum pressure*	29 psi	29 psi	58 psi	72 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi
Burst pressure**	34 psi	34 psi	69 psi	87 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi
Pressure range	300 psi	500 psi	1,000 psi	2,000 psi	3,000 psi	5,000 psi	7,500 psi	10,000 psi	15,000 psi
Maximum pressure*	1,160 psi	1,160 psi	1,740 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	1,390 psi	5,800 psi	7,970 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	34,800 psi	43,500 psi
{absolute pressure references are available}									
*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts									
**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media									

Materials			
■ Wetted parts		Stainless steel	
■ Case		Stainless steel	
Internal transmission fluid		Synthetic oil, only for pressure ranges up to 0 ... 300 psi	
		{Halocarbon® oil for oxygen applications} [1)]	
Supply Voltage U_B	DC V	$10 < U_B \leq 30$ (14 ... 30 with signal output 0 ... 10 V)	
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at medium temperatures below -22°F (-30°C) for pressure ranges up to 300 psi	
Accuracy [2)]	% of span	≤ 0.5 (BFSL)	
	% of span	≤ 01.0 [2)]	
	Adjusted in vertical mounting position with lower pressure connection		
Non-linearity	% of span	≤ 0.4 (BFSL) according to IEC 61-298-2)	
1-year stability	% of span	≤ 0.2 (at reference conditions)	
Permissible temperature of			
■ Medium		-22 ... +212 °F	-30 ... +100 °C
■ Ambient		-22 ... +185 °F	-30 ... +85 °C
■ Storage		-40 ... +212 °F	-40 ... +100 °C
Compensated temperature range		0 ... +176 °F	0 ... +80 °C
Temperature coefficients in compensated temp range			
■ Mean TC of zero	% of span	≤ 0.3 / 10 K	
■ Mean TC of range	% of span	≤ 0.2 / 10 K	
CE-conformity		89/336/EWG interference emission and immunity see EN 61326	
		97/23/EG Pressure equipment directive	
Shock resistance	g	1,000 according to IEC 60068-2-27 (mechanical shock)	
Vibration resistance	g	20 according to IEC 60068-2-6 (vibration under resonance)	
Wiring protection		Protected against reverse polarity, overvoltage and short circuiting	
Ingress protection		Per IEC 60529 / EN 60529, see page 3	
Weight	lb	Approx. .22	

1) Media temperature for oxygen version: -4 ... +140 °F (-20 ... 60 °C).
Cannot be manufactured for absolute pressure ranges < 1 bar abs.
2) Including linearity, hysteresis and repeatability.
Limit point calibration in vertical mounting position with down pressure connection.
{ } Items in curved brackets are optional extras for additional price.

Output signal and permissible load



Output current (2-wire)
4 ... 20 mA: $R_A \leq (U_B - 10\ V) / 0.02\ A$

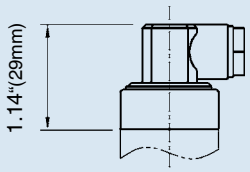
Output current (3-wire)
0 ... 20 mA: $R_A \leq (U_B - 3\ V) / 0.02\ A$

Output voltage (3-wire)
0 ... 5 V: R_A >5 kOhm
0 ... 10 V: R_A >10 kOhm

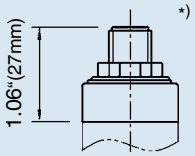
Dimensions in inches (mm)

Electrical connections

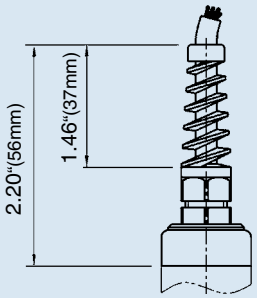
Mini L-connector
G-series
IP 65
Order code: II



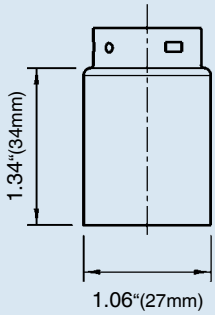
Circular connector,
5-pin, M 12x1,
IP 65
Order code: M5



Cable with Free Ends
IP 65
Order code: CR

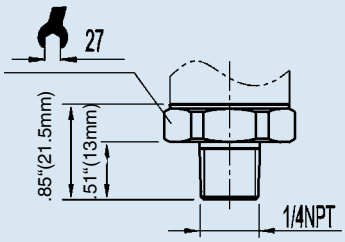


Case

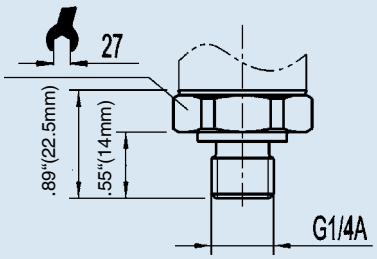


Pressure connections

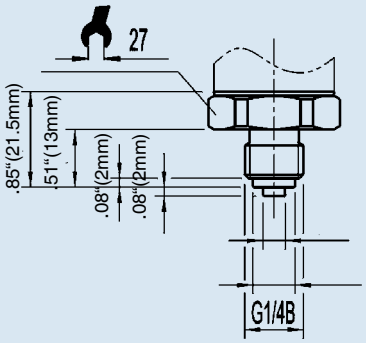
1/4” NPT male
Order code: NB



G 1/4 male
DIN 3852-E
Order code: HD



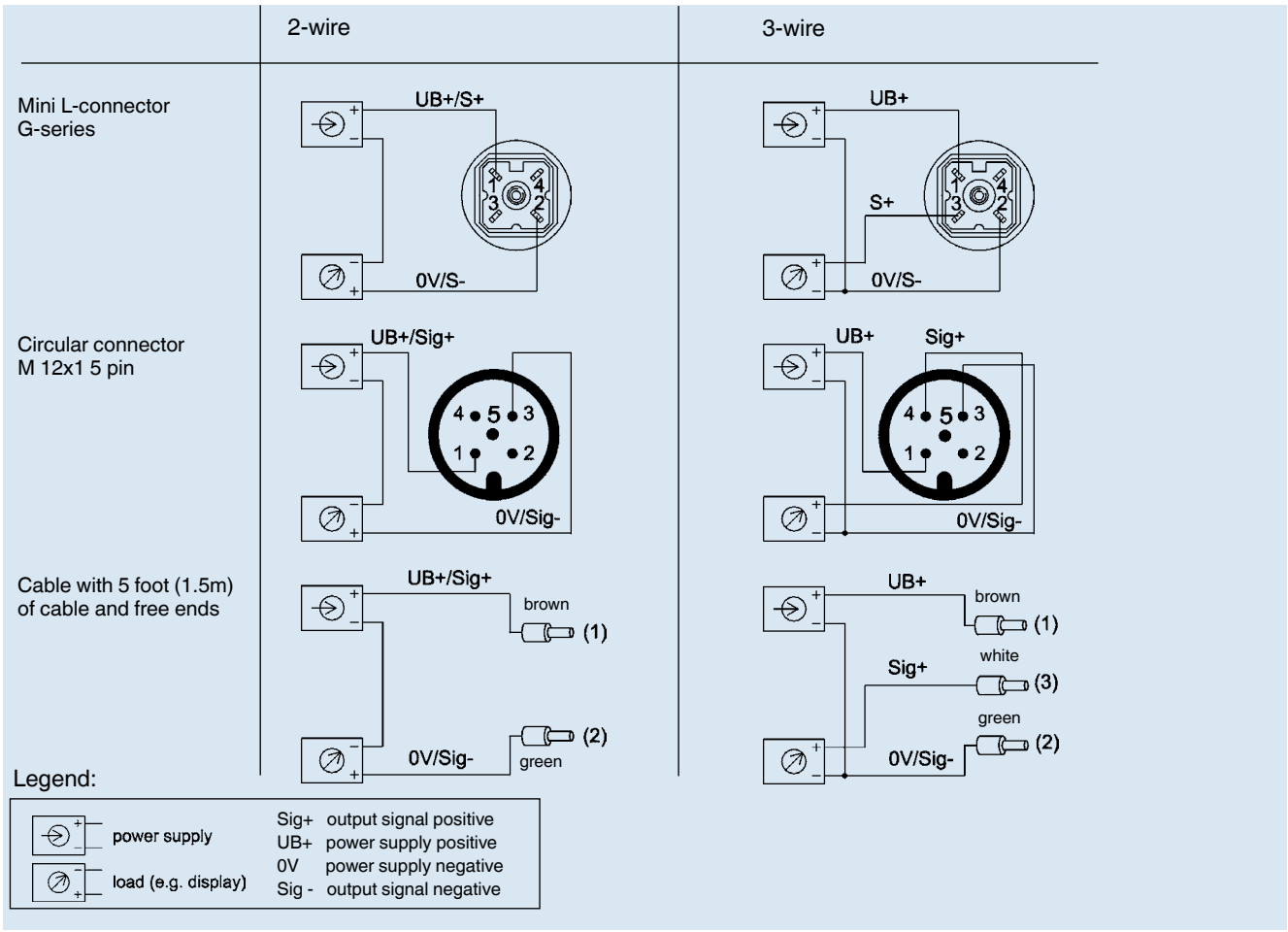
G 1/4 male
EN 837
Order code: GB



*) Mating connectors are not included

Other process connections available

Wiring details



Type C-10 General Purpose Pressure Transmitters

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Process connection:** 1/4 NPT Male
- **Electrical connection:** DIN 43 650 with mini L-plug connector

Gauge Ranges	
Description	
Range	Part #
0-100 InWC	4204883
0-5 psi	8363434
0-10 psi	4302940
0-15 psi	8363442
0-25 psi	8363450
0-30 psi	4256671
0-50 psi	8363468
0-60 psi	8363476
0-100 psi	8363515
0-150 psi	8363485
0-200 psi	8363493
0-250 psi	4256698
0-300 psi	8363506
0-400 psi	4323697
0-500 psi	9697688
0-600 psi	8357247
0-1,000 psi	8357255
0-1,500 psi	8357264
0-2,000 psi	8357272
0-3,000 psi	8354753
0-5,000 psi	8347390
0-7,500 psi	8357280
0-10,000 psi	8357298
0-15,000 psi	8359576

Absolute Pressure Ranges	
Description	
Range	Part #
0-15 psia	4228146
0-25 psia	4258615
0-50 psia	4346127

C-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4... 20 mA, 2-wire
	G	0... 5 V, 3-wire
	F	0... 10 V, 3-wire (supply 14-30 V)
	W	0.5... 4.5V ratiometric
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
	3	psi absolute (from 15 psi to 250 psi absolute)
2	?	Other - please specify
		Pressure range
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	DC	0 psi ... 150 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
3	??	Other - up to maximum specified pressure range

C-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	NB	1/4" NPT
	ND	1/2" NPT
	NH	1/8" NPT
	GB	G 1/4 B
	GD	G 1/2 B
	NP	1/4" NPT female
	NQ	1/2" NPT female
	NR	1/8" NPT female
	UA	7/16-20 UNF SAE #4 J514 male
	UB	7/16-20 UNF SAE #4 J514 female
	UE	9/16-18 UNF SAE #6 J514 male
	UF	9/16-18 UNF SAE #6 J514 female
	UC	3/4-16 UNF SAE #8 J514 male
	UD	3/4-16 UNF SAE #8 J514 female
4	??	Other - please specify
		Special design features
	Z	Without
	A	Oxygen, oil and grease free [1)]
5	?	Other - please specify
		Electrical connection
	II	DIN 43 650 with miniature L plug connector
	H2	4 Pin miniature L-Plug DIN 43 650 w/molded cable (NEMA 5 / IP 65)
	DL	Cable with free ends (NEMA 4 / IP67)
	CR	Cable with free ends (NEMA 5 / IP65)
	2X	1/2" NPT male conduit with cable (NEMA 4 / IP67)
	M5	5 Pin locking plug M12 x 1 (NEMA 5 / IP 65)
	B5	5 Pin plug
6	??	Other - please specify
		Cable length
	Z	Without
	Y	5 feet (only with H2, DL or CR)
	1	10 feet (only with DL or CR)
	2	20 feet (only with DL or CR)
	3	30 feet (only with DL or CR)
	4	40 feet (only with DL or CR)
	5	50 feet (only with DL or CR)
7	?	Other - please specify

C-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Quality certificates
	Z	Without
8	I	NIST Certificate of Calibration
		Digital display
9	Z	Without
		Additional order details
	Z	Without
10	T	Additional order details

1) Maximum media temperature is -4 ... +140° F (-20 ... +60° C) for pressure ranges 100 InWC to 300 psi.

Order Code:

	1		2	3		4		5	6	7		8	9	10 *
C-10 -		**-**			**-**		**-**				**A -**			

*Additional order details _____

Type A-10 General Purpose Pressure Transmitters

Applications

- Mechanical engineering
- Machine tools
- Process control and automation
- Hydraulics and pneumatics
- Pumps and compressors

Special Features

- Pressure ranges: from 0 … 15 psi up to 0 … 10,000 psi, vacuum and compound available
- Non-linearity: ≤ ± 0.5% BFSL (≤ ± 0.25% available)
- Signal output: 4-20 mA, 0-10 V, 0-5 V, others available
- Electrical connection: DIN 175301-803 A and C, M12x1, 6 ft. cable, others available
- Pressure connection: 1/4 NPT , 1/2 NPT , SAE #4, others available

Left: A-10 with DIN
Center: A-10 with cable
Right: A-10 with mini DIN

Description

The WIKA A-10 pressure transmitter is precision engineered and manufactured to fit many industrial and OEM pressure measurement applications. The rugged design provides resistance to vibration, shock, wide temperature variations, RFI and other extreme environmental conditions that are typical of industrial and OEM applications.

Performance and reliability is enhanced by the all stainless steel welded measuring cell that eliminates the need for soft sealing materials that may deteriorate over time. The state-of-the-art manufacturing and assembly process increases the long term reliability of the A-10.

Primary applications include process control and automation, hydraulics, pneumatics and machine controls.

Specifications	Type A-10							
Pressure ranges	15 psi	25 psi	30 psi	50 psi	100 psi	160 psi	200 psi	300 psi
Over-pressure safety	30 psi	60 psi	60 psi	100 psi	200 psi	290 psi	400 psi	600 psi
Burst pressure	75 psi	150 psi	150 psi	250 psi	500 psi	500 psi	1,500 psi	1,500 psi
Pressure ranges	500 psi	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	10,000 psi	
Over-pressure safety	1,000 psi	1,740 psi	2,900 psi	4,000 psi	6,000 psi	10,000 psi	17,400 psi	
Burst pressure	2,500 psi	7,975 psi	11,600 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	
	{Absolute pressure: 0 ... 15 psi up to 0 ... 300 psi}. Vacuum and compound available							
Vacuum resistance		Ranges greater than 150 psi						
Fatigue life		10 million load cycles maximum						
Materials								
■ Wetted parts								
» Pressure connection		316 L						
» Pressure sensor		316 L (as of ≥0 ... 150 psig are PH 13-8 ss)						
■ Internal transmission fluid		Silicone oil (only with pressure ranges < 0 ... 100 psig and ≤ 0 ... 300 psi absolute)						
■ Case		316 L						
Power supply UB	UB in VDC	8 ... 30 (14 ... 30 with signal output 0 ... 10 V)						
Maximum resistive load RA		4 ... 20mA, 2-wire $R_A \leq (U_B\text{-}8V) / 0.02$ A						
		0 ... 10 V, 3-wire	$R_A > 10$ k					
		0 ... 5 V, 3-wire	$R_A > 5$ k					
		1 ... 5 V, 3-wire	$R_A > 5$ k					
		0.5 ... 4.5 V, 3-wire	$R_A > 4.5$ k	{Other signal output on request}				
Response time	ms	< 4						
Current consumption	mA	Signal current (max. 25) for current output (max. 8 for voltage output signal)						
Isolation voltage	VDC	500 [1]						
	[1] For power supply, use a circuit with energy limitation (EN/UL/IEC 61010-1, section 9.3)							
	with the following maximum values for the current: where UB = 30 V (DC): 5 A.							
	Provide a separate switch for the external power supply.							
	Alternative for North America: The connection may also be made to “Class 2 Circuits” or “Class 2							
	Power Units” according to CEC (Canadian Electrical Code) or NEC (National Electrical Code).							
Non-linearity	% of span	≤ ± 0.5% BFSL	according to IEC 61298-2					
		{≤ ± 0.25 BFSL}	according to IEC 61298-2					
Accuracy [2]	% of span	≤ ± 1.0 (with 0.5% non-linearity)						
		{≤ ± 0.5 } (with 0.25% non-linearity)						
		{ ≤ ± 0.6 } (with 0.25% non-linearity and with signal output 0 ... 5 V)						
	[2] Includes non-linearity, hysteresis, zero point and full scale error accordingly to IEC 61298-2							
	Calibrated in vertical mounting position with pressure connection facing down							
Zero offset	% of span	≤ 0.15 typ., ≤ 0.4 max.	(with non-linearity 0.25%)					
		≤ 0.5 typ., ≤ 0.8 max.	(with non-linearity 0.5%)					
Hysteresis	% of span	≤ 0.16						
Non-repeatability	% of span	≤ 0.1						
Long-term drift	% of span	≤ 0.1	according to IEC 61298-2					
Signal noise	% of span	≤ 0.3						
Permissible temperature of								
■ Medium		32 ... +176 °F {-22 ... +212 °F}	0 ... +80 °C {-30 ... +100 °C}					
■ Ambient		32 ... +176 °F {-22 ... +212 °F}	0 ... +80 °C {-30 ... +100 °C}					
■ Storage		-4 ... +176 °F {-22 ... +212 °F}	-20 ... +80 °C {-30 ... +100 °C}					
Operating temperature range		32 ... +176 °F	0 ... +80 °C					
Temperature error within operating temperature range	% of span	≤ 1.0 typ., ≤ 2.5 max.						

*For full specifications, visit **www.wika.com** to download datasheet A-10 or call **1-800-381-6549***

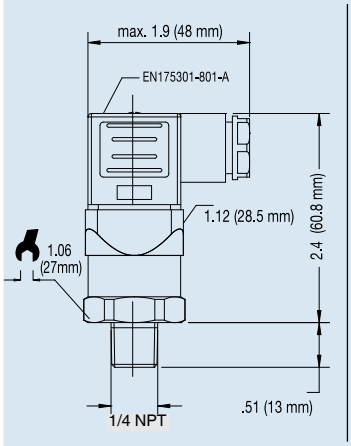
Specifications		Type A-10
Approvals		CULUS, GOST
RoHS-conformity		Yes
CE-conformity		
■ Pressure equipment directive		97/23/EC
■ EMC directive		2004/108/EEC (Group 1, Class B) and immunity according to EN 61 326
Shock resistance	g	500 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance	g	10 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		
■ Overvoltage protection	VDC	32; 36 with 4 ... 20 mA
■ Short-circuit protection		Sig+ to UB-
■ Reverse polarity protection		UB+ to UB-
Test reference conditions		According to IEC 61298-1
■ Relative humidity	%	45 ... 75
■ Temperature	%	59 ... 77 °F (15 ... 25 °C)
■ Atmospheric pressure	KPa	86 … 106 (25.4…31.3 inhg)
Weight	oz.	Approx. 2.8 oz. (80 g)

{ } Items in curved brackets are optional extras for additional price.

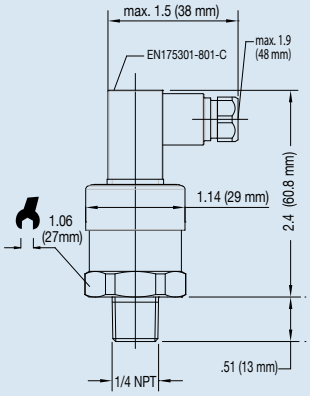
Dimensions in inches (mm)

Ingress protection IP per IEC 60529. The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the equivalent ingress protection.

DIN 175301-803 A
L-connector
conductor outer diameter
.24" to .32"
IP 65
Order Code: AG

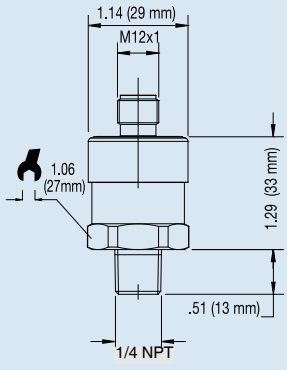


DIN 175301-803 C
L-connector
conductor outer diameter
.18" to .24"
IP 65
Order Code: CG

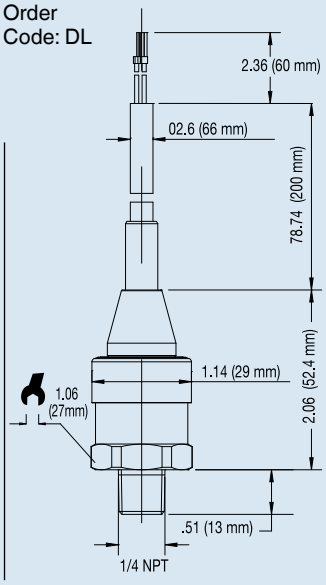


M 12x1, 4 pin
IP 67
AG

Order Code: M4

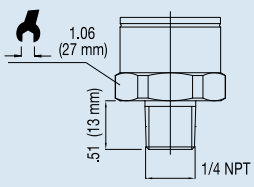


Cable with free ends,
conductor cross section .013 in ², conductor outer diameter.26",
PUR cable - unshielded, IP 67
Order
Code: DL

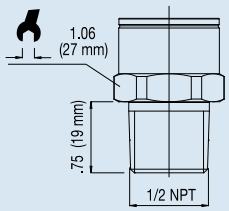


For tapped holes and welding sockets please see Technical Information IN 00.14 for download at www.wika.de

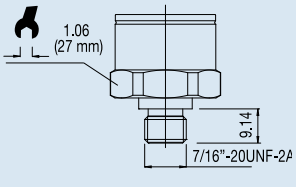
Pressure connections
1/4 NPT Male
Order Code: NB



1/2 NPT Male
Order Code: ND

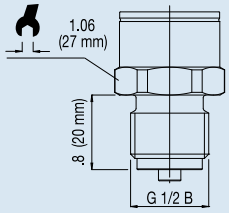


7/16 - 20 UNF
O-ring boss
Order Code: MV

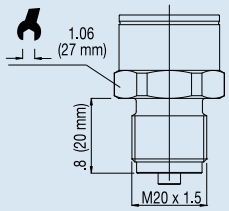


Pressure connections

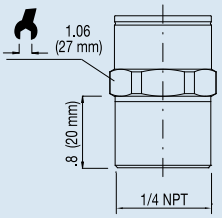
G 1/2 B
Order Code: GD

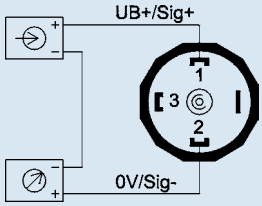
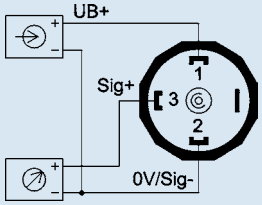
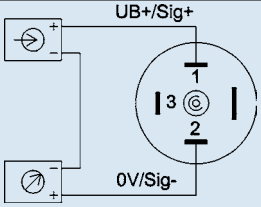
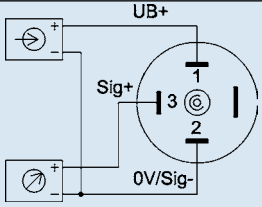
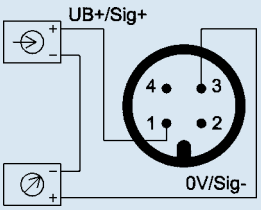
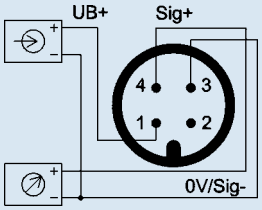
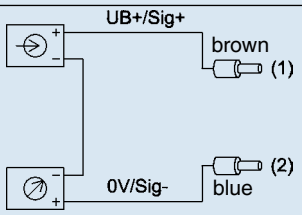
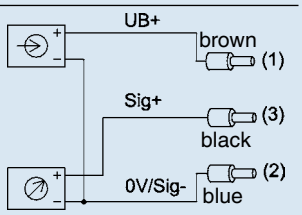


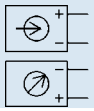
M20 x 1.5
with sealing ring
Order Code: MI



1/4" NPT female
Order Code: NP



Electrical connections	2-wire	3-wire
DIN 175301-803 A L-connector IP 65		
DIN 175301-803 C L-connector IP 65		
M 12x1, 4-pin without angle socket or female cable connectors IP 67		
Cable with free ends IP 67		



Specifications and dimensions given in this datasheet 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.

Type A-10 General Purpose Pressure Transmitters

Standard Features

- **Signal output:** 4-20 mA 2-wire or 0-10 V 3-wire
- **Supply voltage:** 8-30 DC (14-30 VDC)
- **Process connection:** 1/4 NPT Male
- **Electrical connection:** DIN EN 175301-803 (DIN 43 650) with plug connector
- **Non-linearity:** ≤ +/- 0.5% B.F.S.L.

Description		
Range	Part #	
	4-20 mA 2-wire	0-10 V 3-wire
0 ... 15 psia	50426354	50426737
0 ... 100 psia	50426389	50426761
0 ... 15 psi	50426397	50426770
0 ... 25 psi	50426401	83928788
0 ... 50 psi	50426427	50426800
0 ... 100 psi	50372475	50426818
0 ... 200 psi	50398083	50426834
0 ... 300 psi	50426460	50426842
0 ... 500 psi	50426478	50426851
0 ... 1,000 psi	50426486	50426869
0 ... 1,500 psi	50426494	50426877
0 ... 2,000 psi	50426508	50426885
0 ... 3,000 psi	50426516	50426893
0 ... 5,000 psi	50372483	50426907
0 ... 10,000 psi	50426532	50426915

A-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature	
		Non-linearity	
	6	≤ ± 0.5% BFSL	
1	3	≤ ± 0.25% BFSL	
		Unit	
	P	psi	
2	?	Other	
		Absolute or relative pressure	
	G	Gauge	
	A	Absolute	
3	V	Compound	
		Pressure range	
	310	0 ... 15 psig 0 ... 15 psia -30 inHg vacuum	
	317	0 ... 25 psig 0 ... 25 psia	
	321	0 ... 30 psig 0 ... 30 psia	
	331	-30 inHg ... 30 psi	
	335	0 ... 50 psig 0 ... 50 psia	
	351	-30 inHg ... 60 psi	
	369	0 ... 100 psig 0 ... 100 psia	
	379	-30 inHg ... 100 psi	
	411	0 ... 160 psig	
	412	-30 inHg ... 160 psi	
	414	0 ... 200 psig	
	415	-30 inHg ... 200 psi	
	421	0 ... 300 psig 0 ... 300 psia	
	422	-30 inHg ... 300 psi	
	434	0 ... 500 psig	
	469	0 ... 1,000 psig	
	510	0 ... 1,500 psig	
	514	0 ... 2,000 psig	
	521	0 ... 3,000 psig	
	534	0 ... 5,000 psig	
	569	0 ... 10,000 psig	
4	???	Other	
		Process connection	
	NB	1/4 NPT	*(Sealing Code T2)*
	NP	1/4 NPT female	*(Sealing Code T2)*
	ND	1/2 NPT	*(Sealing Code T2)*
	MV	7/16"-20 UNF SAE O-ring Boss	*(Sealing Code T1)*
	MI	M20 x 1.5	*(Sealing Code T3)*
	GB	G 1/4 B	*(Sealing Code T3)*
	GD	G 1/2 B	*(Sealing Code T3)*
5	??	other	

A-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature	
		Sealing	
	L	FPM/FKM	*(Use with Code T1)*
	C	Copper	*(Use with Code T3)*
	S	Stainless steel	*(Use with Code T3)*
6	Z	Without	*(Use with Code T2)*
		Temperature range of medium	
	Z	0...+80 °C (-32°F ... 176 °F)	
7	A	-30...+100 °C (-22°F ... 212 °F)	
		Signal output	
	A	4 ... 20 mA, 2-wire	
	F	0 ... 10 V, 3-wire	
	G	0 ... 5 V, 3-wire	
	K	1 ... 5 V, 3-wire	
	W	0.5 ... 4.5 V, 3-wire ratiometric	
8	?	Other	
		Power supply	
	A	8...30 V DC (only with signal outputs A, G, or K)	
	C	14...30 V DC (only with signal output F)	
	E	5 V DC +/- 10% (only with signal output W)	
9	?	Other	
		Electrical connection	
	AG	Valve connector, size A	
	AK	Valve connector, size A with cable	
	CG	Valve connector, size C	
	CK	Valve connector, size C with cable	
	M4	Circular connector M12x1, 4 pin	
	MG	Angled connector M12x1, 4 pin with cable	
	MI	Straight connector M12x1, 4 pin with cable	
10	DL	Cable with free ends (IP 67)	
		Cable length	
	Z	Without	
	6	6 feet (only with: AK,CK, MG, MI, or DL)	
	7	15 feet (only with: AK,CK, MG, MI, or DL)	
11	?	Other	
		Certificates	
12	Z	Without	
		Approvals	
	S	CULUS / GOST	
13	?	Other	

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

A-10 [ ] - [ ][ ][ ] - [ ][ ][ ] - [ ][ ] - [ ][ ] - [ ][ ]

*Additional order details _____

Type OT-1 General Purpose OEM Pressure Transmitters

Applications

- General purpose high-volume OEM applications

Special Features

- Pressure ranges from 100 psi to 8,000 psi
- Compound ranges available
- Durable thin film sensor technology
- Environmental protection to IP67 / NEMA 4X
- MTTF values over 100 years

Type OT-1 Pressure Transmitter

Description

OT-1 pressure transmitters are precision engineered for applications where performance and durability are critical. Many different process and electrical connections are available allowing the OT-1 to be easily integrated with a wide variety of applications.

The all-welded thin film measuring cell eliminates the need for additional soft sealing materials that may deteriorate over time. The thin film sensor uses sputtered technology that provides excellent long-term stability in applications producing frequent pressure cycles. The glass reinforced PBT plastic case has been used in under hood automotive applications for many years. A metal sleeve inside the case provides excellent EMI protection to 100v/m. The electrical connections meet NEMA 4X / IP 67 environmental protection ratings.

The OT-1 is manufactured on a fully automated production line providing consistent quality and highly competitive pricing in large quantities. Custom modifications are available for large quantity requirements.

Specifications	Type OT-1						
Pressure range	-30 InHG/100 psi	-30 InHG/200 psi	100 psi	150 psi	250 psi	300 psi	500 psi
Maximum pressure*	290 psi	464 psi	290 psi	464 psi	725 psi	725 psi	1,160 psi
Burst pressure**	1,450 psi	2,320 psi	1,450 psi	2,320 psi	3,625 psi	3,625 psi	5,800 psi
Pressure range	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	7,500 psi	8,000 psi
Maximum pressure*	1,740 psi	2,900 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi
Burst pressure**	7,970 psi	11,600 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	34,800 psi

*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

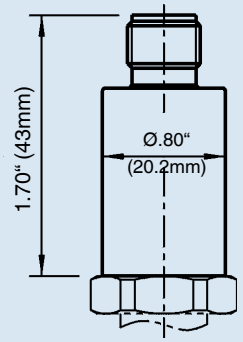
Materials:				
■ Wetted parts		Stainless steel		
■ Case		Fiberglass-reinforced polybutylene terephthalate (PBT)		
Signal output	U_R in DC V	Signal output	Power supply U_B	Maximum load R_A
Power supply U_B	R_A in Ohm	4 ... 20 mA, 2-wire	8 ... 36 DC V	$R_A \leq (U_B - 8\ V) / 0.02\ A$
Signal output and		1 ... 6 V, 3-wire	9 ... 36 DC V	$R_A > 2{,}500$
Maximum load R_A		1 ... 5 V, 3-wire	8 ... 36 DC V	$R_A > 2{,}500$
		0 ... 10 V, 3-wire	14 ... 36 DC V	$R_A > 5{,}000$
		0.5 ... 4.5 V, ratiometric	5 ± 0.5 DC V	$R_A > 4{,}500$
Response time (10 ... 90 %)	ms	≤ 2		
Isolation voltage	DC V	500		
Accuracy	% of span	≤ 0.5 (B.F.S.L)		
	% of span	≤ 1.0 (limit point calibration)		
		(Includes non-linearity, hysteresis, zero point and full scale error per IEC 61298-2)		
Non-repeatability	% of span	≤ 0.2		
Non-linearity	% of span	≤ 0.4 (B.F.S.L.) according to SEC 61298-2		
1-year stability	% of span	≤ 0.3 (at reference conditions)		
Permissible temperature of:				
■ Media *)		-40 ... +257 °F	-40 ... +125 °C	
■ Ambient *)		-40 ... +212 °F	-40 ... +100 °C	
		With cable version limited temperature range from (-40 ... +194 °F) -40 ... +90 °C		
■ Storage *)		-40 ... +248 °F	-40 ... +120 °C	
		With cable version limited temperature range from (-40 ... +194 °F) -40 ... +90 °C		
	*)	Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3		
Compensated temperature range		+32 ... +176 °F	0 ... + 80 °C	
Temperature coefficients (TC) within				
compensated temperature range:				
■ Mean TC of zero	% of span	≤ 0.15 / 10K (special pressure ranges may have increased zero TC)		
■ Mean TC of range	% of span	≤ 0.15 / 10K		
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)		
Wiring protection				
■ Short-circuit protection		Sig+ towards U_B-		
■ Reverse polarity protection		U_B+ towards U_B- (not with ratiometric signal output)		
Weight	oz	Approximately 2.1		

Dimensions in inches (mm)

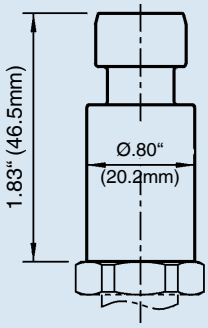
Electrical connections

Ingress Protection IP per IEC 60 529

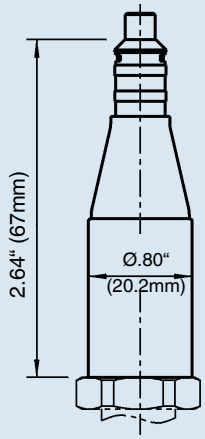
Circular connector
M 12x1, 4 pin
IP 67
Order code: M4



Connector
Metri Pack Series 150
IP 67
Order code: R3

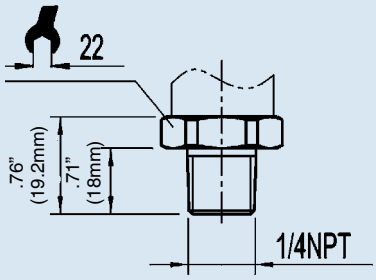


Cable with free ends
IP 67
Order code: DL

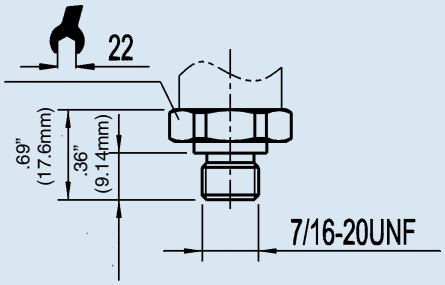


Pressure connections

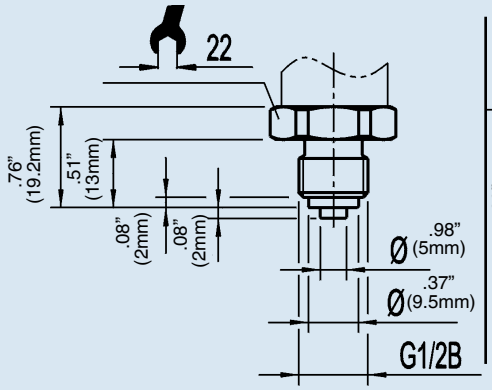
1/4 NPT male
Order code: NB



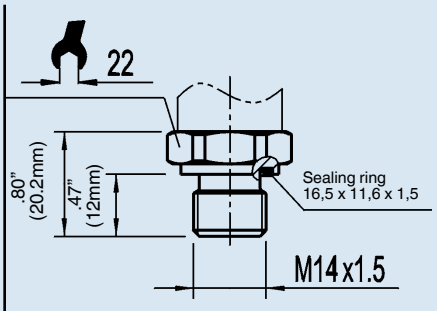
SAE #4 7/16-20 UNF-2A
male o-ring boss
Order code: MV



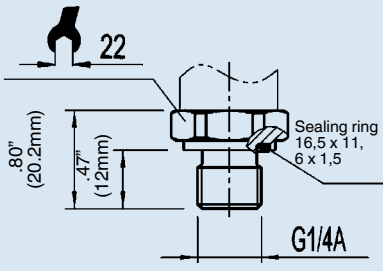
G 1/4
EN 837
Order code: GB



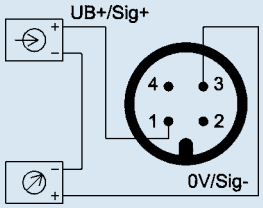
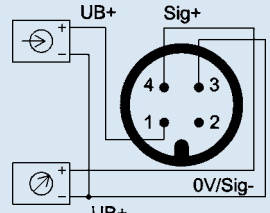
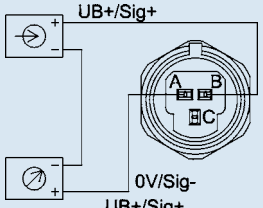
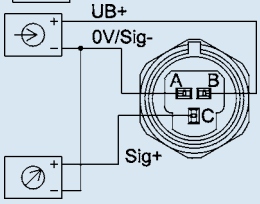
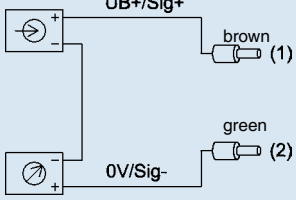
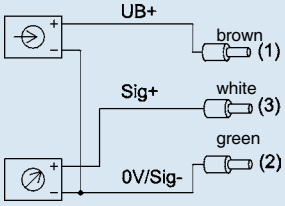
M 14x1,5
per DIN 3852-E
Order code: HN



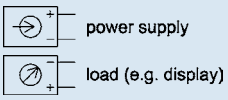
G 1/4
DIN 3852-E
Order code: HD



Wiring details

	2-wire	3-wire
Circular connector M 12x1		
Connector Metri Pack Serie 150		
Cable with free ends		

Legend:



Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

Type OT-1 General Purpose OEM Pressure Transmitters

Note: 50 piece minimum order quantity applies.

OT-1 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
	F	0 ... 10, 3-wire
	W	0.5-4.5V ratiometric
1	?	Other - please specify
		Unit
	P	psi
2	?	Other - please specify
		Pressure range
	CH	30 inHg ... 100 psi
	CL	30 inHg ... 200 psi
	BF	0 psi ... 100 psi
	DC	0 psi ... 150 psi
	DG	0 psi ... 250 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify

OT-1 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	NB	1/4" NPT
	MV	7/16-20 UNF SAE #4 Male w/O-ring boss
	GB	G 1/4 B
	HD	G 1/4 B DIN 3852-E
	HN	M 14x1.5 DIN 3852-E
4	??	Other - please specify
		Electrical connection
	M4	4 Pin locking plug M12 x 1 (NEMA 4 / IP 67)
	R3	Connector metri pack series 150, 3-pin
	DL	Cable with free ends (NEMA 4 / IP 67)
	G3	Deutsch 3 pin DT04-3P
	S3	AMP superseal 1.5 3-pin (NEMA 4 / IP 67)
5	??	Other - please specify
		Cable length
	Z	Without (always with plug version)
	A	0.5 meter (1.6 feet)
	B	2 meter (6.5 feet)
	G	5 meter (16.4 feet)
6	?	Other
		Quality certificates
	Z	Without
7	1	Other - please specify
		Digital display
	Z	Without
8	1	Digital display (order separately)
		Additional order details
	Z	Without
9	T	Additional order details

Note: 50 piece minimum order quantity applies.

Order Code:

	1		2	3		4		5	6		7	8	9*
OT - 1 -		-			-		-			-			

*Additional order details _____

Type DG-10 Digital Pressure Gauge

Applications

- Mechanical engineering
- Hydraulics and pneumatics
- Pumps and compressors
- Service

Special Features

- Pressure ranges: from 0 … 30 psi up to 0 … 10,000 psi
- Display accuracy: ≤ ± 0.25% B.F.S.L.
- Pressure connections: G1/4 DIN 3852-E, 1/4 NPT male, 1/2 NPT male, G1/4B, G1/2B and others
- Case: stainless steel, 3.15“ (80 mm) diameter
- Power supply: 2x 1.5 V Type AA cell

DG-10-S
Standard Version

DG-10-E
Enhanced Version

Description

Durable, precise local display
A digital display is ideal for precise and fast pressure readings. The DG-10 features a durable stainless steel housing and integral battery power supply making it suitable for a wide range of applications and industries.

The multi-function display features a bar graph with a drag pointer function and a MIN/MAX memory. The MIN/MAX memory feature permits later recall of the minimum and maximum pressure readings.

Standard and enhanced versions
The DG-10 is available in two versions: standard (DG-10-S) and enhanced (DG-10-E). Both versions allow the user to easily switch between the most widely-accepted international measurement units including bar, psi and MPa.

Additional features of the enhanced version include a back-lit display for use in low light conditions and a housing that can be rotated for optimal viewing. Additional user-programmable functions of the DG-10-E include auto power-off, tare function, and password protection.

Proven pressure measurement technology
Sensors manufactured by WIKA provide high accuracy, long-term stability and excellent repeatability. For optimal performance, pressure ranges up to 600 psi (50 bar) use the WIKA ceramic sensor. Pressure ranges of 1450 psi (100 bar) and higher utilize WIKA thin film sensor technology.

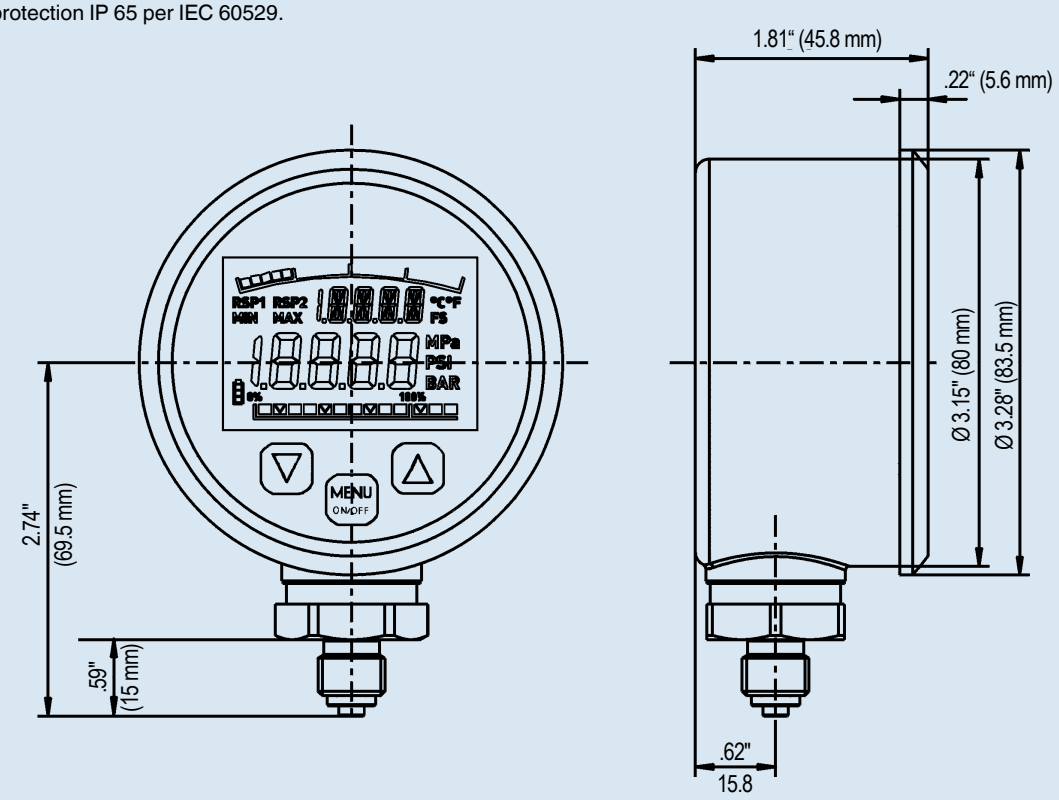
Specifications	Type DG-10					
Pressure ranges	-30 InHg ... 29 psi		-30 InHg ... 72 psi		-30 InHg ... 145 psi	
Over-pressure safety	70 psi		145		290	
Burst pressure	85 psi		170		360	
Pressure ranges	30 psi	60 psi	145 psi	300 psi	600 psi	1,450psi
Over-pressure safety	70 psi	145 psi	290 psi	580 psi	1,450 psi	2,900 psi
Burst pressure	85 psi	170 psi	360 psi	725 psi	1,740 psi	11,600 psi
Pressure ranges	2,000 psi	3,000 psi	5,000 psi	7,500 psi	10,000 psi	
Over-pressure safety	4,640 psi	7,250 psi	11,600 psi	17,400 psi	21,750 psi	
Burst pressure	14,500 psi	17,400 psi	24,650 psi	34,800 psi	43,500 psi	
Materials						
■ Wetted parts						
» Pressure connection		1.4571, 316TI SS				
» Pressure sensor		Ceramic Al_2O_3 96%, NBR {EPDM } (up to 0 ... 600 psi)				
		XM-13 (1.4534) (≥ 1,450 psi)				
■ Case		1.4301, 304 SS				
Power supply		2x 1.5 V Type AA batteries				
Operating time	h	4,000 (AA 2,000 mAh)				
Internal sampling rate	ms	200				
Insulation voltage	VDC	500				
Display accuracy	% of span	≤ ± 0.25% B.F.S.L.				
Zero offset	% of span	≤ 0.1 (Power-up reset)				
Zero adjustability	% of span	≤ 20 (via Tare-Function with model DG-10-E)				
Hysteresis	% of span	≤ 0.1				
Non-repeatability	% of span	≤ 0.1				
Long-term stability per year	% of span	≤ 0.2				
Long-term drift	% of span	≤ 0.1				
Permissible temperature of						
■ Medium		-4°F ... +185°F (-20°C ... +85°C) (up to 0 ... 600 psi)				
		-22°F ... +212°F (-30°C ... +100°C) (≥ 1450 psi)				
■ Ambient		+14°F ... +140°F (-10°C ... +60°C)				
■ Storage		-4°F ... +158°F (-20°C ... +70°C)				
Operating temperature range		+32°F ... +140°F (0°C ... +60°C)				
Temperature coefficients within						
compensated temp range						
■ Mean TC of zero	% of span	≤ 0.15 / 10k				
■ Mean TC of span	% of span	≤ 0.15 / 10k				
CE-conformity						
■ Pressure equipment directive		97/23/EC				
■ EMC directive		89/336/EEC emission (class B) and immunity according to EN 61 326				
Case rotation	°	300 ° (only with model DG-10-E)				
		DG-10-S	**DG-10-E**			
Principle		7 segment LCD 4 digit	7 segment LCD 4½ digit			
			14 segment LCD 4½ digit (2nd display)			
Digit size		.43“ (11 mm)	.43 (11 mm) and .28“ (7 mm)			
Display		-1999 ... 9999	-1999 ... 19999			
Background illumination		No	Included			
Bar graph with trailing pointer		Included	Included			
function						
Min/Max memory		Included	Included			
Auto On/Off		Optional (ex works)	15/30/60/120 min			
Tare adjustment		No	Included			
Units bar, psi, MPa		Included	Included			
Password protection		No	Included			
Reset factory setting		No	Included			
Weight		Approx. 14oz. (400 g)				

{ } Items in curved brackets are optional extras for additional price.

*For full specifications, visit **www.wika.com** to download datasheet DG-10 or call **1-800-381-6549***

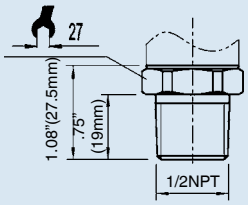
Dimensions in inches (mm)

Ingress protection IP 65 per IEC 60529.

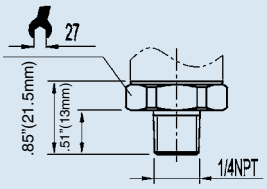


Pressure connections

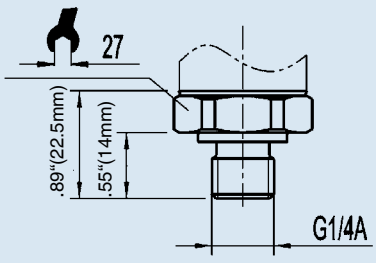
1/2 NPT male
Order code: ND



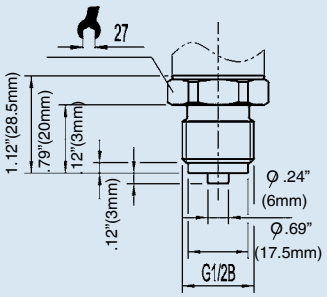
1/4 NPT male
Order code: NB



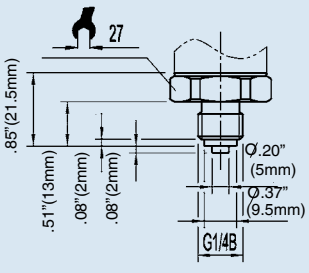
G 1/4 male
DIN 3852-E
Order code: HD



G1/2B
Order code: GD

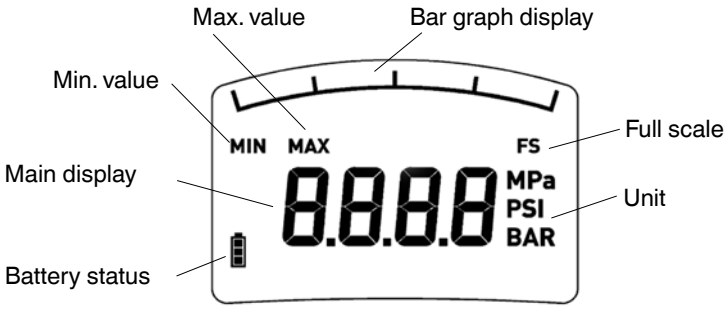


G1/4B
Order code: GB

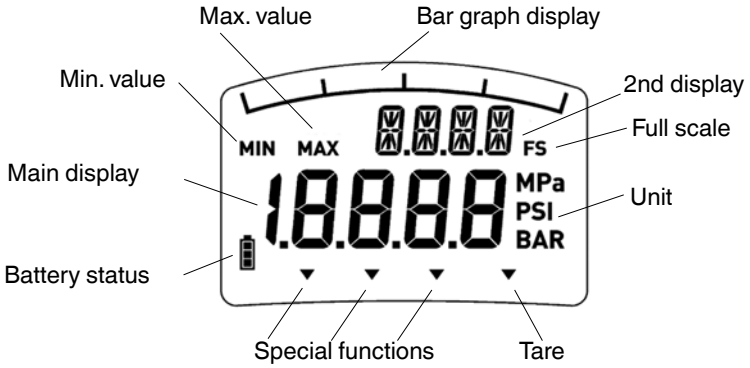


Description of the Display

DG-10-S



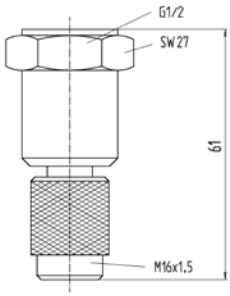
DG-10-E



Accessories

Protective boot
(black, vulcanized rubber)

Minimess gauge adapter system



Specifications and dimensions given in this data sheet 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.

Type DG-10 Digital Pressure Gauge

Standard Features

- **Case:** 3.15” diameter stainless steel
- **Process connection:** 1/4” NPT male
- **Power requirements:** 2 AA batteries
- **Enhanced version includes protective rubber boot**

Type DG-10-S

Type DG-10-E

Description		
Range	DG-10-S Standard Part #	DG-10-E Enhanced Part #
-30 inHg…29 psi	50365444	50365657
-30 inHg…72 psi	50365452	50365673
-30 inHg…145 psi	50365461	50365690
0 psi ... 30 psi	50365479	50365720
0 psi ...60 psi	50365487	50365771
0 psi ...145 psi	50365495	50365789
0 psi ...300 psi	50365509	50365797
0 psi ...600 psi	50365517	50365819
0 psi ...1,450 psi	50365525	50365827
0 psi ...2,000 psi	50365584	50365835
0 psi ...3,000 psi	50365592	50365843
0 psi ...5,000 psi	50365614	50365851
0 psi ...7,500 psi	50365622	50365860
0 psi ...10,000 psi	50365631	50365878

DG-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature	
		Type	
	S	Standard	
1	E	Enhanced	*among others: Tare-function, backlit display*
		Display	
	8	LCD, 4-digit from -1,999 ... 9,999	*Type S*
2	C	LCD, 4½-digit from -1,999 ... 9,999 + 2nd Display	*Type E*
		Unit	
3	P	psi	
		Absolute or relative pressure	
	G	Gauge	
4	V	Compound	
		Pressure range	
	330	-30 InHg ... 29 psi	
	360	-30 InHg ... 72 psi	
	411	-30 InHg ... 145 psi	
	321	0 ... 30 psi	
	341	0 ... 60 psi	
	399	0 ... 145 psi	
	421	0 ... 300 psi	
	441	0 ... 600 psi	
	499	0 ... 1,450 psi	
	514	0 ... 2,000 psi	
	521	0 ... 3,000 psi	
	534	0 ... 5,000 psi	
	552	0 ... 7,500 psi	
5	569	0 ... 10,000 psi	
		Process connection	
	ND	½ NPT	
	NB	¼ NPT	
	GD	G ½ B	
	GB	G ¼ B	
6	HD	G ¼ B DIN 3852-E	
		Material of wetted parts	
	K	Stainless steel, ceramic and sealing	*< 600 psi*
7	Q	Stainless steel	*≥ 1,450 psi*
		Temperature range of medium	
	D	-20 ... +85 °C (-4 ... +185 °F)	*< 600 psi*
8	A	-30 ... +100 °C (-22 ... +212 °F)	*≥ 1,450 psi*

DG-10 Smart Codes for Custom Order Configurations (cont')

Field no.	Code	Feature
		Sealing
	Z	Without
	1	NBR
9	B	EPDM
		Certificates
	Z	Without
10	1	NIST certificate
		Protective rubber boot
	Z	Without
11	S	Vulcanized rubber protective boot
		Additional Order Details
	Z	Without
12	T	Additional text

Order Code:

1	2	3	4	5	6	7	8	9	10	11	12*
DG-10 - [ ] - D	1 [ ] -	[ ]	[ ]	[ ]	- [ ]	[ ]	[ ]	[ ]	- Z Z [ ] -	[ ]	[ ]

*Additional order details _____

Type PSD-30 Pressure Transmitter with Integral LED Display and Programmable Solid State Switches

Applications

- Pumps and compressors
- Hydraulics and pneumatics
- Machine tools
- Machine building

Special Features

- Available with single or dual NPN or PNP solid state switches
- High visibility, rugged 14-segment red LED display electronically rotates 180° for top-down installation
- Independent rotation between the M12x1 electrical connection and the display
- User-friendly, intuitive 3-key operation
- Versions with 4-20 mA or 0-10V analog output available
- Programming menu meets VDMA Standards for user friendly navigation

c UL us LISTED

Type PSD-30 Pressure Transmitter with Integral LED Display

Description

Award-winning functionality and design

The design and outstanding functionality of the PSD-30 received the ***IF Product Design Award*** in 2009. The display, with its .35“ (9 mm) high digits, was designed to be as large as possible and positioned at an angle, so the pressure reading is visible from a distance of at least 10 feet (3 meters). Time-proven and rugged LED technology with 14-segment display is used so alphanumeric messages are much easier to understand compared to typical 7-segment displays.

The large, ergonomically designed programming push buttons provide the user with tactile feedback for immediate confirmation that the touch event was registered by the transmitter. The user-friendly menu navigation layout meets the new VDMA Standard form for fluid sensors (24574-1, Part 1, pressure switch). The goal of the VDMA is to simplify the use of pressure switches by standardizing menu navigation and display parameters.

Flexible and adaptable

The PSD-30 can be adjusted three different ways to fit specific installation requirements. The display and electrical connection can be rotated independently to maximize visibility while still orienting the electrical connection in the best position for the cable connector. If the transmitter is installed overhead or upside down the display can be electronically rotated 180°.

Quality and reliability

Time tested, proven WIKA thin film and piezoresitive pressure sensor technology is an integral part of the PSD-30 providing the high quality and long term reliability users demand.

Specifications	Type PSD-30							
Pressure ranges	15 psi	25 psi	30 psi	50 psi	100 psi	160 psi	200 psi	300 psi
Over-pressure safety	30 psi	60 psi	60 psi	100 psi	200 psi	290 psi	400 psi	600 psi
Burst pressure	75 psi	150 psi	150 psi	250 psi	500 psi	500 psi	1,500 psi	1,500 psi
Pressure ranges	500 psi	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi	
Over-pressure safety	1,000 psi	1,740 psi	2,900 psi	4,000 psi	6,000 psi	10,000 psi	17,400 psi	
Burst pressure	2,500 psi	7,975 psi	11,600 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	
	{Absolute pressure: 0 ... 15 psi up to 0 ... 300 psi}							
	{Vacuum and compound: -14.5 ... 0 psi up to -14.5 ... 300 psi}							
Pressure ranges	1 bar	1.6 bar	2.5 bar	4 bar	6 bar	10 bar	16 bar	25 bar
Over-pressure safety	2 bar	3.2 bar	5 bar	8 bar	12 bar	20 bar	32 bar	50 bar
Burst pressure	5 bar	10 bar	10 bar	17 bar	34 bar	34 bar	100 bar	100 bar
Pressure ranges	40 bar	60 bar	100 bar	160 bar	250 bar	400 bar	600 bar	
Over-pressure safety	80 bar	120 bar	200 bar	320 bar	500 bar	800 bar	1,200 bar	
Burst pressure	400 bar	550 bar	800 bar	1,000 bar	1,200 bar	1,700 bar	2,400 bar	
	MPa and kg/cm2 are available							
	{Absolute pressure: 0 ... 1 bar up to 0 ... 25 bar}							
	{Vacuum pressure: -1 … 0 bar up to -1 … 24 bar}							
Fatigue life		Rated to 10 million cycles						
Materials								
■ Wetted parts								
Pressure connection		316 L						
Pressure sensor		316 L (13-8 PH for ranges above 150 psi)						
■ Case								
Lower body		316 L						
Plastic head		Heat and chemical resistant fiberglass reinforced plastic (PBT)						
Keyboard		TPE-E						
Display window		PC						
■ Internal transmission fluid		Synthetic Oil (only with pressure ranges < 0 ... 160 psi and ≤ 0 ... 300 psia)						
Power supply U+	U+ in VDC	15 ... 35						
Signal output and	RA in Ohm	4 ... 20 mA, 3-wire	RA ≤ 0,5 k					
maximum ohmic load RA		0 …10 V, 3-wire	RA > 10 k					
		Adjustment zero point offset, max. 3 % of span						
Setting time (Analog signal)	ms	3						
Current consumption	mA	≤ 100						
Total current supply	mA	Max. 350 /600 (incl. switching current)						
Switch points		Individually adjustable using external control keys						
■ Type		PNP or NPN transistor switching output						
■ Number		1 or 2						
■ Function		User-adjustable, normally open / normally closed; windows- and hysteresis functions						
■ Contact rating	VDC	Supply voltage (U+) – 1 V						
■ Switching current	mA	250						
■ Response time	ms	≤ 10						
■ Accuracy	% of span	≤ 0.5 (switch setting)						
Isolation voltage	VDC	500						
Display								
■ Design		Red 4-digit, 14 segment LED .35" (9 mm) high						
■ Range		-1999 to 9999						
■ Accuracy		≤ 1.0 ± 1 Digit						
■ Update	ms	1000, 500, 200, 100 (adjustable)						
Accuracy	% of span	≤ 1.0 *)						
	*) Including non-linearity, hysteresis, zero point and full scale error (corresponds to error measurement per IEC 61298-2)							
Non-linearity	% of span	≤ ± 0.5	(BFSL) according to IEC 61298-2					
Long-term drift	% of span	≤ 0.2	according to IEC 61298-2					
Permissible temperature of								
■ Medium **)		-4 ... +185 °F	-20 ... +85 °C					
■ Ambient **)		-4 ... +176 °F	-20 ... +80 °C					
■ Storage **)		-4 ... +176 °F	-20 ... +80 °C					

**) Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3

*For full specifications, visit **www.wika.com** to download datasheet PSD-30 or call **1-800-381-6549***

Specifications		Type PSD-30	
Rated temperature range		+32 ... +176 °F	0 ... +80 °C
Temperature error within rated temperature range		≤ 1.0 typ., ≤ 2.5 max.	
Temperature coefficients within rated temperature range			
■ Mean TC of zero	% of span	≤ 0.2 / 10 K	
■ Mean TC of span	% of span	≤ 0.2 / 10 K	
Relative humidity	%	< 90	
Approval		cULus	
RoHS-conformity		Yes	
CE-conformity			
■ Pressure equipment directive		This instrument is a pressure accessory as defined by the directive 97/23/EC	
■ EMC directive		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and Immunity (industrial locations)	
Shock resistance	g	50 according to IEC 60068-2-27	(mechanical shock)
Vibration resistance	g	10 according to IEC 60068-2-6	(vibration under resonance)
Wiring protection			
■ Overvoltage protection	VDC	40	
■ Short-circuit protection		S+/SP1/SP2 to U-	
■ Reverse polarity protection		U+ to U-	
Weight	oz	Approx. 7	

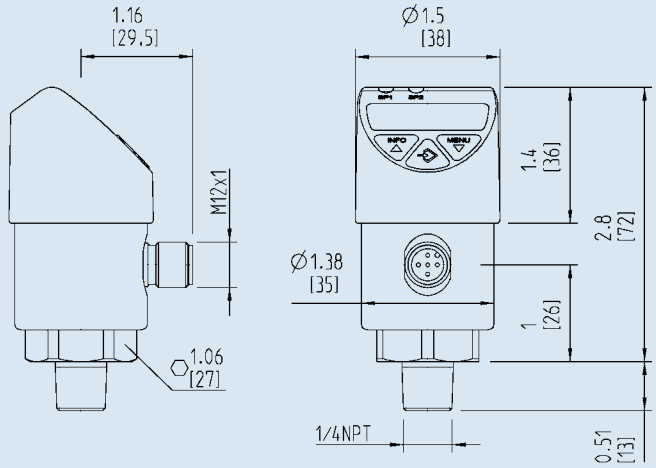
Dimensions in inches (mm)

Electrical connection

Circular connector *
M 12x1 5-pin
Order Code: M5

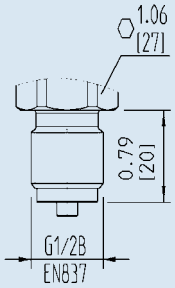
Pressure connections

1/4" NPT Male
(others available)
Order Code: NB



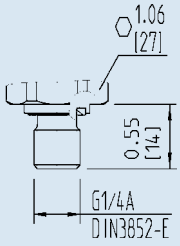
Optional pressure connections (others available)

G 1/2 B
Order Code: GD

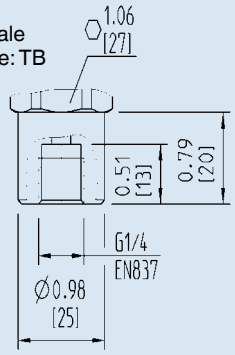


G 1/4 A to DIN 3852-E

Order Code: HD



G 1/4 Female
Order Code: TB



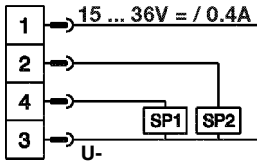
* Mating connectors are not included

Wiring Details

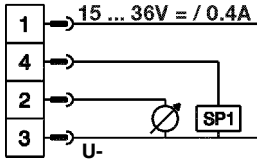
	Circular connector M12x1, 4 pin				Circular connector M12x1, 5 pin				
									
	2 switching outputs or 1 switching output + 1 analog output				2 switching outputs + 1 analog output				
	U+ = 1	U- = 3	SP1 = 4	SP2 = 2 / S+ = 2	U+ = 1	U- = 3	SP1 = 4	SP2 = 2	S+ = 5
Ingress Protection per IEC 60 529	IP 65 and IP 67				IP 65 and IP 67				
	The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.								

PNP

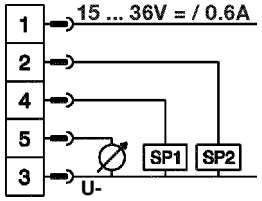
2x PNP



1x PNP + analog output

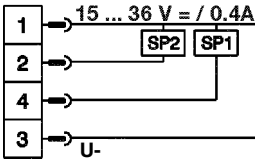


2x PNP + analog output

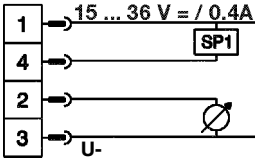


NPN

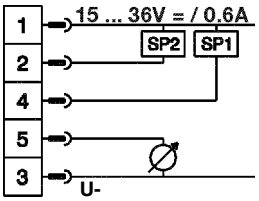
2x NPN



1x NPN + analog output



2x NPN + analog output



Legend:

U+	Positive supply connection
U-	Negative supply connection
SP1	Switching point 1
SP2	Switching point 2
S+	Analog output

PSD-30 Smart Codes for Custom Order Configurations

Field no.	Code	Feature	
		Signal output	
	Q	Dual PNP switch output + 4…20mA	
	R	Dual PNP switch output + 0…10V	
	V	Dual NPN switch output + 4…20mA	
1	?	Other	
		Unit	
	P	PSI (Selectable BAR/PSI/MPA/KPA/KG/cm2)	
2	?	Other	
		Pressure reference	
	G	Gauge	
	A	Absolute	
3	V	Compound	
		Pressure range	
	310	-14.5 psi…0	
	320	-14.5 psi…15 psi	
	351	-14.5 psi…60 psi	
	379	-14.5 psi…100 psi	
	415	-14.5 psi…200 psi	
	422	-14.5 psi…300 psi	
	310	0…15 psi	0…15 psia
	317	0...25 psi	0...25 psia
	321	0…30 psi	0…30 psia
	335	0…50 psi	0…50 psia
	369	0…100 psi	0…100 psia
	411	0…160 psi	0…160 psia
	414	0...200 psi	0...200 psia
	421	0…300 psi	0…300 psia
	434	0…500 psi	
	469	0…1,000 psi	
	514	0…2,000 psi	
	521	0…3,000 psi	
	534	0…5,000 psi	
	555	0…8,000 psi	
4	???	Other	
		Process connection	
	NB	1/4" NPT	
	HD	G 1/4 A DIN 3852-E	
	TB	G 1/4 female	
5	??	Other	
		Process seal ring **(not required for NPT)**	
	C	Copper	
	S	Stainless steel	
	Z	Without	
6	?	Other	

PSD-30 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Featured
		Special design features
	Z	Without
7	E	Oil and grease free
		Electrical connection
	M5	5 pin locking plug M12x1
8	??	Other
		Instrument configuration
	W	Factory standard switch settings
9	K	Customer specific switch settings
		Approvals
	W	CULUS
10	Z	Without

	Special design features		
	YES	NO	
11	1	Z	Quality certificates
12	T	Z	Additional text

Order Code:

	1		2	3	4		5	6	7		8		9	10		11	12
PSD-30		-				-				-		-			-		

*Additional order details _____

Type TSD-30 Temperature Switch with Integral LED Display

Applications

- Machine tools
- Hydraulics
- Coolant and lubrication systems
- Machine building

Special Features

- Available with single or dual NPN or PNP solid state user-programmable switches
- High visibility, rugged 14-segment red LED display electronically rotates 180° for top-down or horizontal installation
- Independent rotation between the M12x1 electrical connection and the display to optimize installation position
- User-friendly, intuitive 3-key operation
- Versions with 4-20 mA or 0-10V analog output available
- Programming menu meets VDMA Standards for user friendly navigation

TSD-30 Temperature Switch

Description

Award-winning in design and functionality
The design and outstanding functionality of the PSD-30 pressure switch received the IF Product Design Award in 2009. The TSD-30 temperature switch uses a similar design and functionality. The display, with its .35" (9 mm) high digits, was designed to be as large as possible and positioned at an angle, so the temperature reading is visible from a distance of at least 10 feet (3 meters). Rugged LED technology with a 14-segment display is used so alphanumeric messages are much easier to understand when compared to typical 7-segment displays.

The large, ergonomically designed programming push buttons provide the user with tactile feedback for immediate confirmation that the touch event was registered by the switch. The user-friendly menu navigation layout meets the VDMA standard for fluid sensors (24574-2, part 2, temperature switches). The goal of the VDMA is to simplify the use of switches by standardizing menu navigation and display parameters.

Flexible and adaptable
The TSD-30 can be adjusted three different ways to fit specific installation requirements. The display and electrical connection can be rotated independently to maximize visibility while still orienting the electrical connection in the best position for the cable connector. The display can be electronically rotated 180° if needed for specific installation requirements.

Quality and reliability
Time tested, proven WIKA technology is an integral part of the TSD-30 providing the high quality and long-term reliability users demand.

Measuring ranges

Temperature	Standard	Option [1]
°F	-4 ... +176	-4 ... +248
°C	-20 ... +80	-20 ... +120

1) see "Operating conditions"

Display

14-segment LED, red, 4-digit, character size .35" (9 mm).
Display can be rotated 180° using the programming menu.

Display update
200 ms

Output signal

Switching output 1	Switching output 2	Analog signal
PNP	-	4 ... 20 mA
PNP	-	DC 0 ... 10 V
PNP	PNP	-
PNP	PNP	4 ... 20 mA
PNP	PNP	DC 0 ... 10 V

Also available with NPN switch output.

Temperature offset adjustment
± 3 % of span

Scale setting
Zero point: max. +25 % of span
Span value: max. -25 % of span

Analog signal
Load
- Current: ≤ 500 Ω
- Voltage: > 10 kΩ

Switching output
Switch point 1 and 2 are independently user adjustable

Function
- Normally open / closed: user adjustable
- Window and hysteresis: user adjustable

Switching voltage: Power supply – 1 V
Switching current: max. 250 mA per switch output
Adjustment accuracy: ≤ 0.5 % of span

Voltage supply

Power supply
DC 15 ... 35 V

Current consumption
max. 100 mA

Total current consumption
max. 600 mA (incl. switching current)

Measuring element

Pt1000, 2-wire, DIN EN 60751 / class A

Insertion length (F)

Inches (mm)					
.98" (25)	1.97" (50)	3.94" (100)	5.91" (150)	9.84" (250)	13.78" (350)

Response time
T05 < 5 s (per DIN EN 60751)
T09 < 10 s (per DIN EN 60751)

Maximum working pressure
2250 psi (150 bar)

Accuracy

Analog signal
≤ ± 0.5 % of span

Switching output
≤ ± 0.8 % of span

Display
≤ ± 0.8 % of span ± 1 digit

Temperature sensor
± (0.15 K + 0.002 | t |)

| t | is the value of the temperature in °C independent from the sign.

The actual achievable accuracy is determined by the specific installation (immersion depth, sensor length, and operating conditions). This applies more for large temperature gradients between the environment and the medium.

Reference conditions

Temperature: 59-77 °F (15 ... 25 °C)
Atmospheric pressure: 950 ... 1,050 mbar
Humidity: 45 ... 75 % relative
Nominal position: Process connection lower mount (LM)
Power supply: DC 24 V
Load: see "output signal"

Operating conditions

Temperatures and humidity

Medium temperature: -4 ... +176 °F (-20 ... +80 °C)
Ambient temperature: -4 ... +176 °F (-20 ... +80 °C)
Storage temperature: -4 ... +176 °F (-20 ... +80 °C)
Permissible humidity: 45 ... 75 % relative

Installation instructions

Mounting position: as required

At high medium or ambient temperatures, take steps to make sure that the instrument case temperature does not exceed 176 °F (80 °C) in continuous operation (the temperature is measured at the hex of the process connection).

The thread must not be immersed into medium at temperatures above 176 °F (80 °C)

Process connections

Connections

Standard	Thread	
ANSI / ASME B1.20.1	1/4 NPT	1/2 NPT
DIN 3852-E	G 1/4 A	G 1/2 A

Other connections available – contact factory
Details on the sensor dimensions see “Dimensions in mm”.

Sealing

for connections per DIN 3852-E	
Standard	without
Option	NBR, FPM / FKM

Materials

Wetted parts

Temperature sensor: 316Ti SS

Non-wetted parts

Case: 304 SS
Keyboard: TPE-E
Display window: PC
Display head: PC+ABS-Blend

Approvals, directives and certificates

CE conformity

EMC directive 2004/108/EC, EN 61326-2-3 emission (group 1, class B) and interference immunity (industrial applications)

RoHS conformity

Yes

Electrical connections

Connections

Circular connector M12 x 1, 4-pin
Circular connector M12 x 1, 5-pin [1)]

1) Only for version with SP1, SP2 and S_+

Ingress protection

IP 65 and IP 67

The stated ingress protection (per IEC 60529) only applies when installed using mating connectors that have the appropriate ingress protection.

Electrical safety

Short-circuit resistance: S_+ / SP1 / SP2 vs. U
Reverse polarity protection: U_+ vs. U
Insulation voltage: DC 500 V
Overvoltage protection: DC 40 V

Connection diagram

Circular connector M12 x 1, 4-pin

Assignment

U_+	U-	S_+	SP1	SP2
1	3	2	4	2

Circular connector M12 x 1, 5-pin

Assignment

U_+	U-	S_+	SP1	SP2
1	3	5	4	2

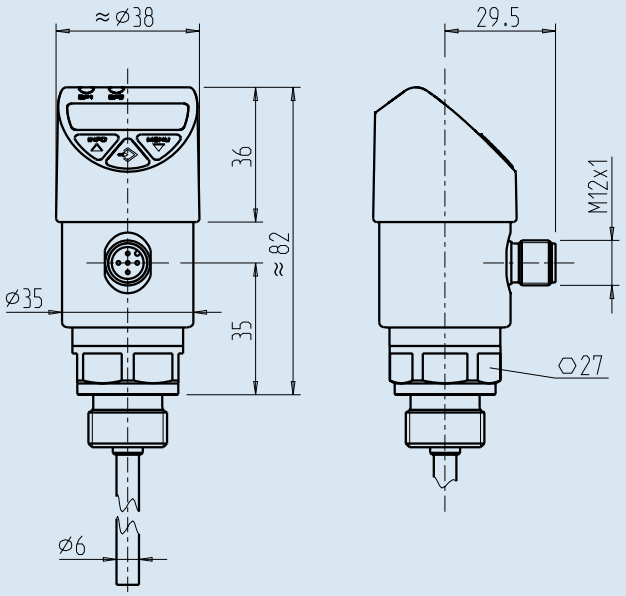
Legend:

U_+	Positive supply voltage
U-	Reference potential
SP1	Switching output 1
SP2	Switching output 2
S_+	Analog output

Dimensions in mm (1 inch = 25.4 mm)

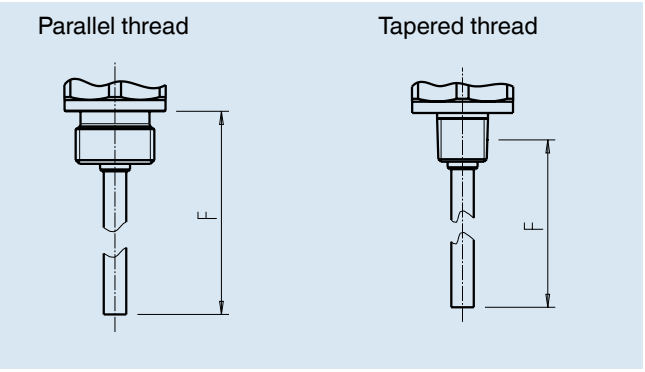
Temperature switch

with M12 x 1 circular connector
4-pin / 5-pin



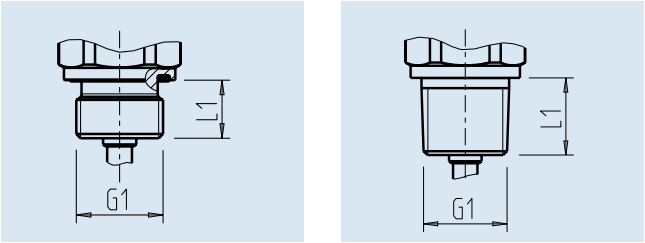
Weight: approx. 10.6 oz (0.3 kg)

Insertion length



F					
25	50	100	150	250	350

Process connections



G1	L1
G 1/4 A DIN 3852-E	12
G 1/2 A DIN 3852-E	14

G1	L1
1/4 NPT	13
1/2 NPT	19

Accessories and spare parts

Compression fittings	Order no.
G 1/4 A, ferrule from stainless steel	3199101
G 1/2 A, ferrule from stainless steel	3221555
1/4 NPT, ferrule from stainless steel	3232905
1/2 NPT, ferrule from stainless steel	3320710

When using a compression fitting, a limited pressure strength applies.

Seals	Order no.
NBR profile sealing G 1/4 A DIN 3852-E	1537857
FPM/FKM profile sealing G 1/4 A DIN 3852-E	1576534
NBR profile sealing G 1/2 A DIN 3852-E	1039067
FPM/FKM profile sealing G 1/2 A DIN 3852-E	1039075

TSD-30 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	Q	Dual PNP switch output + 4…20mA
	R	Dual PNP switch output + 0…10V
	V	Dual NPN switch output + 4…20mA
1	?	Other
		Unit
	F	Degrees °F (user selectable for °C)
2	?	Other
		Temperature range
	A	-4 ... +176 °F (user selectable for °C)
3	?	Other
		Probe length
	0025	0.98" / 25 mm
	0050	1.97" / 50 mm
	0100	3.94" / 100 mm
	0150	5.91" / 150 mm
	0250	9.84" / 250 mm
	0300	13.78" / 350 mm
4	????	Other
		Process connection
	ND	1/2" NPT
	NB	1/4" NPT
	GT	G 1/2 A DIN 3852-E
5	??	Other
		Process seal ring (not required for NPT)
	Z	Without
	1	NBR
	L	FPM / FKM
6	?	Other
		Electrical connection
	M5	5 pin locking plug M12x1 (NEMA 5 / IP65)
7	??	Other

TSD-30 Smart Codes for Custom Order Configurations (continued)

Field no.	Code	Feature	
		Instrument configuration	
	W	Factory default settings (see datasheet)	
8	K	Customer specifications	
		Approvals	
	Z	Without	
9	?	Other	

			Special design features
	YES	NO	
11	1	Z	Quality certificates
12	T	Z	Additional text

Order Code:

	1		2	3		4		5	6		7		8	9		10	11
TSD-30	-		-			-		-			-		-			-	

*Additional order details _____

Type LSD-30 Level Switch with Integral LED Display

Applications

- Machine tools
- Hydraulics
- Coolant and lubrication systems
- Machine building

Special Features

- Available with single or dual NPN or PNP solid state user-programmable switches
- High visibility, rugged 14-segment red LED display
- Independent rotation between the M12x1 electrical connection and the display to optimize installation position
- User-friendly, intuitive 3-key operation
- Versions with 4-20 mA or 0-10V analog output available
- Programming menu meets VDMA Standards for user friendly navigation

LSD-30 Level Switch

Description

Award-winning in design and functionality
The successful design and functionality of the WIKA switch family were confirmed when the PSD-30 pressure switch won the “iF product design award 2009”. The LSD-30 level switch uses a similar design and functionality. The display, with its .35” (9 mm) high digits, was designed to be as large as possible and positioned at an angle, so the level reading is visible from a distance of at least 10 feet (3 meters).
Rugged LED technology with a 14-segment display is used so alphanumeric messages are much easier to understand when compared to typical 7-segment displays.

The large, ergonomically designed programming push buttons provide the user with tactile feedback for immediate confirmation that the touch event was registered by the switch. The user-friendly menu navigation layout meets the VDMA standard for fluid sensors (24574-2, part 4, level switches). The goal of the VDMA is to simplify the use of switches by standardizing menu navigation and display parameters.

Flexible and adaptable
The LSD-30 can be adjusted two different ways to fit specific installation requirements. The display and electrical connection can rotate independently to maximize visibility, while still allowing orientation of the electrical connection for the optimal position of the cable connector.

Quality and reliability
Time-tested and proven WIKA technology is an integral part of the LSD-30 to provide the high quality and long term reliability users demand.

Measuring ranges

for parallel process connections					
Sensor length F	250	370	410	520	730
mm	189	309	349	459	669
inch	7.44	12.17	13.74	18.07	26.34

for tapered process connections					
Sensor length F	250	370	410	520	730
mm	205	325	365	475	684
inch	8.07	12.80	14.37	18.70	26.93

For insertion lengths, see "Dimensions in mm" on page 4

Specific gravity range of the medium
≥ 0,7 g/cm^3

Display

14-segment LED, red, 4-digit, .35” (9 mm) character height
Display can be turned 180° electronically via program steps.

Update
200 ms

Output signal

Switching output 1	Switching output 2	Analog signal
PNP	-	4 ... 20 mA
PNP	-	DC 0 ... 10 V
PNP	PNP	-
PNP	PNP	4 ... 20 mA
PNP	PNP	DC 0 ... 10 V

Alternatively also available with NPN rather than PNP switching output

Offset adjustment (display)
max. + 59” / 1.5 meters

Scaling (display and analog signal)
Zero point: max. +25 % of span
Final value: max. -25 % of span

Analog signal
Load
- Current output: ≤ 500 Ω
- Voltage output: > 10 kΩ

Switching output
Switch point 1 and 2 are individually adjustable

Function
- Normally open and normally closed: user adjustable
- Window and hysteresis: user adjustable

Switching voltage: Power supply − 1 V
Switching current: max. 250 mA per switching output
Response time: < 200 ms
Adjustment accuracy: 0.1” (2.5 mm) to step change

Voltage supply

Power supply
DC 15 ... 35 V

Current consumption
max. 100 mA

Total current consumption
max. 600 mA (incl. switching current)

Measuring element

Resistance measuring chain with reed switches and float

Resolution
< .24” (6 mm)

Response time
< 700 ms

Maximum working pressure
43.5 psi (3 bar)

Media compatibility
Test following ISO 7620, section 6, table 1

Medium		Standard
Mineral oil	HLP	per DIN 51524
Aqueous solution	HFC	per VDMA 24317
Organic ester	HFD-U	per VDMA 24317
Triglyceride (rape oil)	HETG	per VDMA 24568
Synthetic ester	HEES	per VDMA 24568
Polyglycols	HEPG	per VDMA 24568

Accuracy (electronics)

Switching and indication accuracy at room temperature
1 % of span (display ±1 digit)

Analog signal
≤ ± 0.5 % of span

Reference conditions

Temperature:	50 ... 77 °F (15 ... 25 °C)
Atmospheric pressure:	950 ... 1,050 mbar
Humidity:	45 ... 75 % relative
Installed position:	Process connection lower mount (LM)
Power supply:	DC 24 V
Load:	see "Output signal"

Operating conditions

Temperatures and humidity ratings

Media:	-4 … 176 °F (-20 ... +80 °C)
Ambient:	-4 … 176 °F (-20 ... +80 °C)
Storage:	-4 … 176 °F (-20 ... +80 °C)
Permissible humidity:	45 ... 75 % relative

Installation

Mounting position: vertical

Process connections

Connections

Standard	Thread
DIN 3852-E	G ¾ A
ANSI / ASME B1.20.1	¾ NPT

Other connections on request.
Details on the sensor dimensions see "Dimensions in mm".

Sealing

for connections per DIN 3852-E	
Standard	without
Option	NBR, FPM / FKM

Materials

Wetted parts

Level sensor:	316Ti SS
Float:	see “Media compatibility”

Non-wetted parts

Case:	304 SS
Keyboard	TPE-E
Display window:	PC
Display head:	PC+ABS-Blend

Approvals, directives and certificates

CE conformity

EMC directive 2004/108/EC, EN 61326-2-3 emission (group 1, class B) and interference immunity (industrial application)

RoHS conformity

Yes

Electrical connections

Connections

Circular connector M12 x 1, 4-pin
Circular connector M12 x 1, 5-pin [1)]

1) Only for version with SP1, SP2 and S_+

Ingress protection

IP 65 and IP 67

The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

Electrical safety

Short-circuit resistance:	S_+ / SP1 / SP2 vs. U-
Reverse polarity protection:	U_+ vs. U-
Insulation voltage:	DC 500 V
Overvoltage protection:	DC 40 V

Connection diagram

Circular connector M12 x 1, 4-pin

Assignment

U_+	U-	S_+	SP1	SP2
1	3	2	4	2

Circular connector M12 x 1, 5-pin

Assignment

U_+	U-	S_+	SP1	SP2
1	3	5	4	2

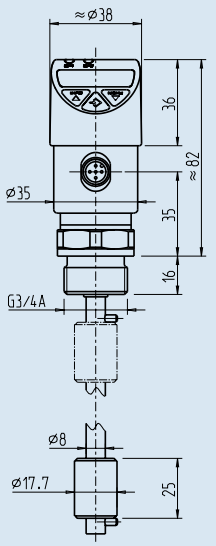
Legend:

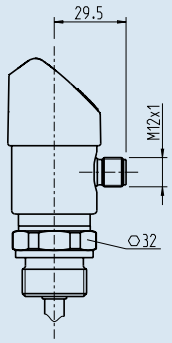
U+	Positive supply voltage
U-	Reference potential
SP1	Switching output 1
SP2	Switching output 2
S+	Analogue output

Dimensions in mm (1 mm = 0.039”)

Level switch

with M12 x 1 circular connector
4-pin / 5-pin

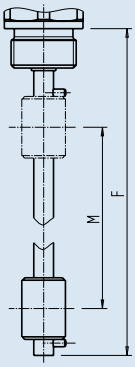




Weight: approx. 0.3 kg

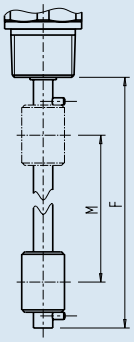
Insertion lengths

Parallel thread



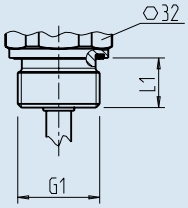
F	M
250	189
370	309
410	349
520	459
730	669

Tapered thread

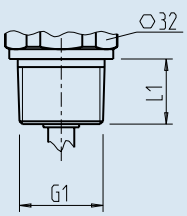


F	M
250	205
370	325
410	365
520	475
730	684

Process connections



G1	L1
G ¾ A DIN 3852-E	16



G1	L1
¾ NPT	20

Accessories and spare parts

Sealings	Order no.
NBR profile sealing G 3/4 DIN 3852-E	1100378
FPM / FKM profile sealing G 3/4 DIN 3852-E	1158309

Ordering information

Model / Sensor length F / Output signal / Process connection / Sealing

LSD-30 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	Q	Dual PNP switch output + 4…20mA
	R	Dual PNP switch output + 0…10V
	V	Dual NPN switch output + 4…20mA
1	?	Other
		Display unit
	I	Inch (user selectable for mm, cm, %)
2	?	Other
		Probe length
	0250	250 mm / 9.84"
	0370	370 mm / 14.57"
	0410	410 mm / 16.14"
	0520	520 mm / 20.47"
	0730	730 mm / 27.74"
3	????	Other
		Process connection
	NE	3/4" NPT
	NH	G 3/4 A DIN 3852-E
4	??	Other
		Process seal ring (not required for NPT)
	Z	Without (always with NPT)
	1	NBR
	L	FPM / FKM
5	?	Other
		Electrical connection
	M5	5 pin locking plug M12x1 (NEMA 4 / IP67)
6	??	Other
		Instrument configuration
	W	Factory default settings (see datasheet)
7	K	Customer specifications
		Approvals
	Z	Without
8	?	Other

			Quality certificates
	YES	NO	
9	1	Z	Quality certificates
10	T	Z	Additional text

Order Code:

	1	2	3	4 5	6	7 8	9 10
LSD-30	- ☐	- ☐	- ☐	- ☐☐	- ☐	- ☐☐	- ☐☐

*Additional order details _____

Type E-10, E-11 Hazardous Area Explosion-proof Transmitters

FM APPROVED

Meets ANSI / ISA 12.27.01-2003 single seal requirements - no dual seal required

Left: E-10 NPT pressure transmitter with cable
Right: E-11 flush diaphragm pressure transmitter with optional flying leads

Applications

- Wellhead monitoring
- Refining, chemical, petrochemical
- Offshore platforms, pipelines
- Natural gas compressors

Special Features

- FM-approved explosion-proof for Class I Division 1 hazardous locations
- Available with 4 ... 20 mA, 2-wire or 1 ... 5 V, 3-wire low power output signals
- Engineered to withstand harsh environments
- NACE MR0175 compliant wetted parts
- Retrofits many existing oil and gas applications

Description

The E-10 and E-11 explosion-proof pressure transmitters are specifically designed to meet the durability and performance requirements of oil and gas pressure monitoring applications.

These pressure transmitters feature an industry standard 4-20 mA 2-wire or 1-5V 3-wire low power signal output and NEMA 4X (IP67) ingress protection. They are extremely resistant to pressure spikes, vibration and moisture intrusion. NACE MR-01-75 compliant wetted parts provides extra resistance against sulfide stress cracking when exposed to media containing sulphur. Both are available with a factory sealed epoxy flying lead assembly for easier installation.

The E-10 features an NPT process connection with an all-welded stainless steel measuring cell for media compatibility.

There are no internal soft sealing materials that may react with the media or deteriorate over time.

The E-11 features a flush diaphragm process connection. This flat sensing surface is specifically designed for the measurement of viscous fluids or media containing solids that may clog the NPT process connection.

The transmitters are engineered to meet Class I, Division 1 explosion-proof protection for installation in hazardous environments. Each transmitter undergoes extensive quality control testing and calibration to achieve a linearity of ≤ 0.25% full scale. In addition, each pressure transmitter is temperature compensated to assure accuracy and long-term stability even when exposed to severe ambient temperature variations.

Specifications — Type E-10, E-11

Pressure range	5 psi	10 psi	15 psi	25 psi	30 psi	60 psi	100 psi	200 psi	300 psi
Maximum pressure*	29 psi	58 psi	72 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi	1,160 psi
Burst pressure**	35 psi	69 psi	87 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi	1,390 psi
Pressure range	500 psi	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi[1]	10,000 psi[1]	15,000 psi[1]
Maximum pressure*	1,160 psi	1,740 psi	2,900 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	5,800 psi	7,970 psi	11,600 psi	14,500 psi	17,400psi	24,650 psi[2]	34,800 psi	34,800 psi	43,500 psi

{Vacuum, gauge pressure, compound ranges and absolute pressure ranges are available}

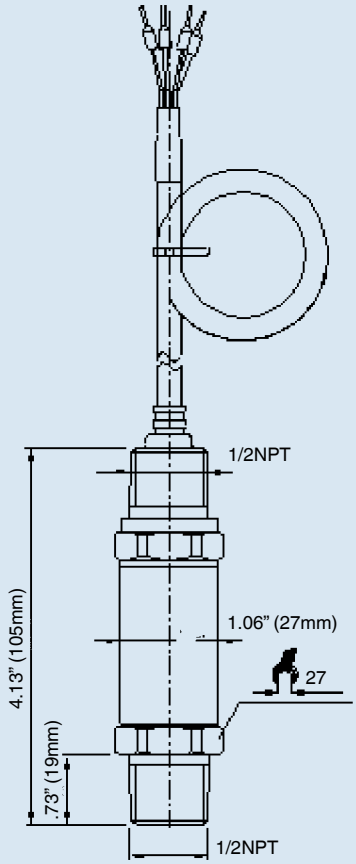
Materials					
■ Wetted parts		Nace compliant [4]			
➢ type E-10		Stainless steel (≥ 300 psi stainless steel and Elgiloy)			
➢ type E-11		Stainless steel			
		O-ring: NBR {Viton®}			
■ Case		Stainless steel			
Internal transmission fluid		Synthetic oil (only for pressure ranges up to 300 psi or flush diaphragm units)			
Power supply U_B	DC V	$10 < U_B < 30$ for 4 ... 20 mA, 2-wire			
		$6 < U_B < 30$ for 1 ... 5 V, 3 wire low power version			
Signal output and		4 ... 20 mA, 2-wire	$R_A \leq (U_B - 10\ V) / 0.02\ A$ with R_A in Ohm and U_B in Volt		
maximum load R_A		1 ... 5 V, 3-wire	$R_A > 10$ kOhm		
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms when media temperatures are below –22 ° F (-30 °C) for pressure ranges up to 300 psi or with flush diaphragm)			
Accuracy [3]	% of span	≤ 0.25 (BFSL)			
	% of span	≤ 0.5 (limit point calibration)			
Hysteresis	% of span	≤ 0.1			
Non-repeatability	% of span	≤ 0.1			
1-year stability	% of span	≤ 0.2 (at reference conditions)			
Permissible temperature of					
■ Medium		-22 ... +212 °F	{-40 ... +221 °F}	-30 ... +100 °C	{-40 ... +105 °C}
■ Ambient		-22 ... +212 °F	{-40 ... +221 °F}	-30 ... +100 °C	{-40 ... +105 °C}
■ Storage		-40 ... +221 °F	{-58 ... +221 °F}	-40 ... +105 °C	{-50 ... +105 °C}
Compensated temp. range		32 ... +176 °F		0 ... +80 °C	
Temperature coefficients in					
compensated temp range					
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure range < 100 InWC)			
■ Mean TC of range	% of span	≤ 0.2 / 10 K			
EMI specifications		89/336/EWG interference emission and immunity see EN 61 326			
Approval authority		■ Factory mutual (FM / CSA) explosion-proof for:			
		Class I, Division 1, Groups A, B, C and D			
		■ Dust ignition-proof for:			
		Class II / III, Division 1, Groups E, F and G			
		FM Standards according to class number 3600, 3615 and 3810			
HF-immunity	V/m	10			
Burst	KV	4			
Shock resistance	g	1,000 according to IEC 60068-2-27 (mechanical shock)			
Vibration resistance	g	20 according to IEC 60068-2-6 (vibration under resonance)			
Wiring protection		Protected against reverse polarity, over voltage and short circuiting			
Ingress protection		NEMA 4X / IP 67			
Weight	lb	Approximately 0.4			

* Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts
**Exceeding the burst pressure may result in destruction of the transmitter

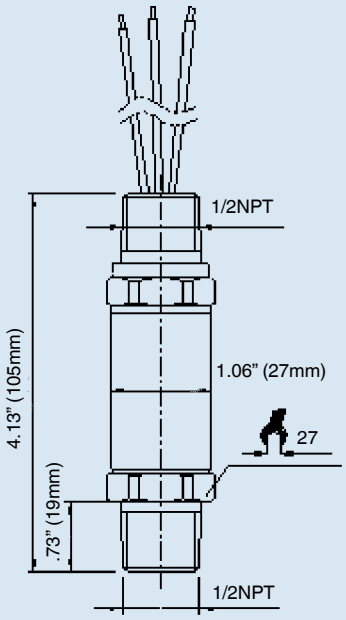
1) Only Type E-10.
2) For Type E-11: the burst pressure is limited to 21,000 psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.
3) Includes non-linearity, hysteresis and repeatability. Limit point calibration performed in vertical mounting position with pressure connection facing down.
4) Wetted parts comply with recommendations per NACE MR0175. Environmental limits apply to certain materials. Consult latest standard for details.
{ } Items in curved brackets are options available at additional cost.

Dimensions in inches (mm)

1/2 male conduit with 6 foot (1.8 m) cable and free ends
NEMA 4X (IP 67)
Order code: 2X

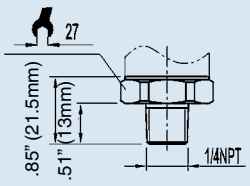


1/2 male conduit with 6 foot (1.8 m) flying leads NEMA 4X (IP 67)
Order code: 3X

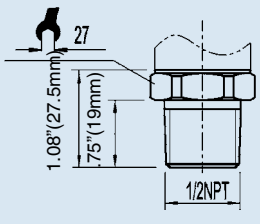


Pressure connections

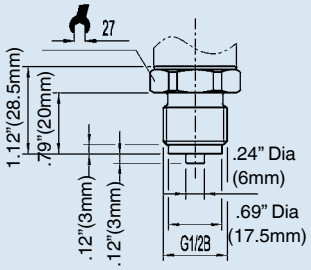
1/4 NPT male
Order code: NB



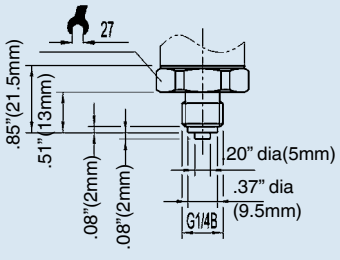
1/ 2 NPT male
Order code: ND



G 1/2 male
EN 837
Order code: GD

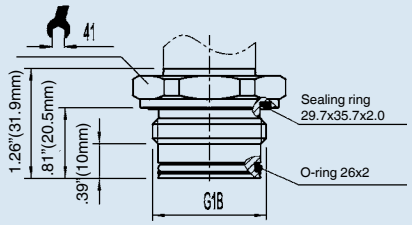


G 1/4 male
EN 837
Order code: GB

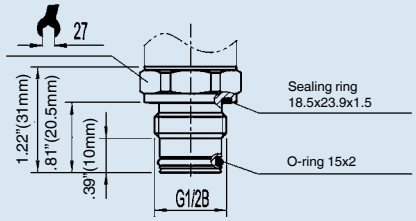


E-11 flush diaphragm pressure connections

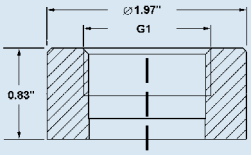
E-11 G 1
50 InWC to 25 psi
Order code: 85



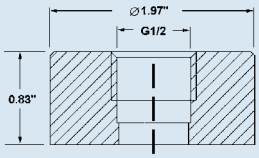
E-11 G 1/2
30 psi to 8,000 psi
Order code: 86



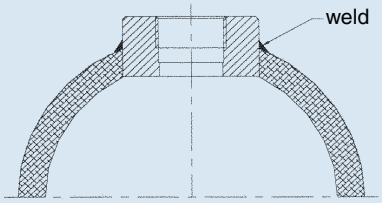
Matching P-1 weld insert adapters for E-11 flush diaphragm transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 25 psi



P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 30 psi

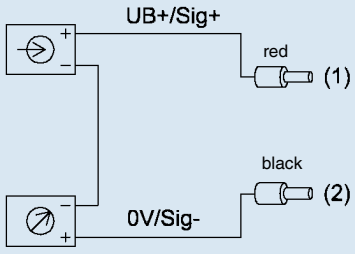


Cross section view of P-1
adapter installed in pipe.

Wiring

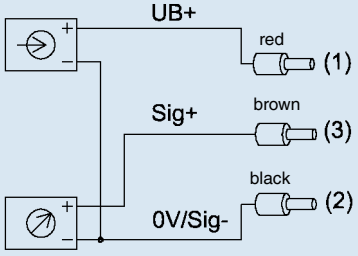
6 foot (1.82m)
cable or flying leads

2-wire system



shield - ground

3-wire system



Green - ground

Legend:

Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

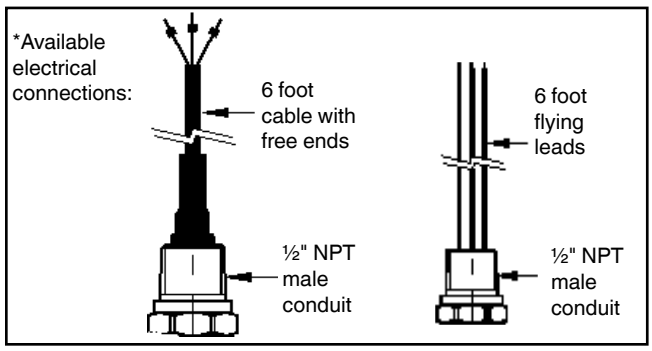
Type E-10 Explosion-proof Pressure Transmitter Vacuum to 15,000 psi

- **Signal output:** 4-20mA, 2-wire or 1-5 V 3-wire low power
- **Supply voltage:** 10-30 VDC or 6-30 VDC (low power version)
- **Process connection:** 1/4" or 1/2" NPT male
- **Electrical connection:** 1/2" male conduit with cable or flying leads

E-10 Part Numbers

To use this table, first find the required process connection (¼" or ½" NPT male), then the signal output (4-20 mA or 1-5 V), electrical connection (cable or flying lead), and the required Pressure range.

Pressure conn.	1/4" NPT male				1/2" NPT male			
Signal output	4-20 mA		1-5V 3-wire low power		4-20 mA		1-5V 3-wire low power	
Electrical conn.	1/2" NPT male conduit connection with:				1/2" NPT male conduit connection with:			
	6ft cable	6ft leads	6ft cable	6ft leads	6ft cable	6ft leads	6ft cable	6ft leads
Compound ranges								
30"-0 inHg vac					4371130			
30"-0-30 psi	4217172	50333330			4365016	4365131	4365255	
30"-0-100 psi	50116703	50300150		4365026	4365149	4365271		
Gauge ranges								
15 psi	50792261	50989333	50792261	50034669	4365034	4365157	4365389	4365386
60 psi	4363082	50989341		50437178	4365042	4365166	4365297	
100 psi	4363090	4363189	4363341	50391020	4365050	4365174	4365301	4365395
200 psi	4364844	50139061	4242150	4368653	4369633	50033948	50834967	4254174
300 psi	4363103	4363197	4363359	4368661	4365068	4365182	4365319	50707319
500 psi	4363111	4363200	4363367	4368679	4365076	4365190	4365327	4365408
1,000 psi	4363129	4363218	4363376	4365337	4365085	4365204	4365336	4365418
1,500 psi	4363137	4363226	4363384	4248337	4364169	4374130	4391256	4254166
2,000 psi	4363146	4363236	4363392	4368687	4365093	4365212	4365344	4254158
3,000 psi	4202506	4363244	4363406	4248329	4365106	4365220	4365352	4365425
5,000 psi	4363155	4363252	4363414	4394034	4365115	4365238	4365360	4365433
8,000 psi	4363163	4363260	50308696	50988906	50070568			50555022
10,000 psi	4363171		4363422	50136623	4365123	4365246	4365378	4260957
15,000 psi			4216673		50603914		4216681	50131613



Items without part numbers are available on special order.

E-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CL	-30 inHg ... 200 psi
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
3	??	Other - please specify
		Process connection
	NB	1/4" NPT
	ND	1/2" NPT
4	??	Other - please specify

E-10 Smart Codes for Custom Order Configurations (cont')

Field no.	Code	Feature
		Special design features
	Z	Without
	L	Low power [1]
5	?	Other - please specify
		Electrical connection
	2X	1/2" NPT male conduit with cable (NEMA 4 / IP 67)
	3X	1/2" NPT male conduit with flying leads (NEMA 4 / IP 67)
	DX	1/2" NPT male conduit with factory sealed cable
6	??	Other - please specify
		Cable length
	6	6 feet
7	?	Other - please specify
		Approvals
	4	Ex d per ATEX (always with DX)
8	7	Explosion-proof per FM and CSA (only with 2X, 3X)
		Quality certificates
	Z	Without
9	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
10	T	Additional order details

1) Low power only with 1-5 V signal output (supply 6 ...30 V)

Order Code:

	1		2	3		4		5		6	7	8		9	10*
E-10 -		**-**			**-**		**-**		**G**				**-**		

*Additional order details _____

Type E-11 Explosion-proof Flush Diaphragm Pressure Transmitter Vacuum to 5,000 psi

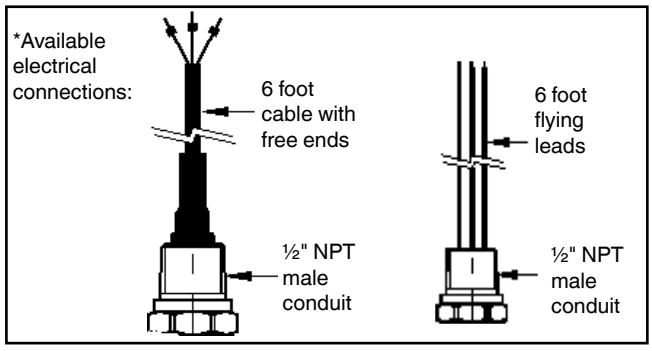
FM APPROVED

- **Signal output:** 4-20mA, 2-wire or 1-5 V 3-wire low power
- **Supply voltage:** 10-30 VDC or 6-30 VDC (low power version)
- **Process connection:** Non-clogging flush diaphragm G1B or G1/2B (depending on pressure range)
- **Electrical connection:** 1/2" male conduit with cable or flying leads

E-11 Part Numbers

Pressure conn.	G1B or G1/2B[1]			
Signal output	4-20 mA		1-5V 3-wire low power	
Electrical conn.	1/2" NPT male conduit connection with:			
	6 ft cable*	6 ft leads*	6 ft cable	6 ft leads*
Compound ranges				
30"-0-30 psi[1]	4373087			
30"-0-100 psi				
Gauge ranges				
0-15 psi[1]	4365441	4235694	4365530	4365581
0-100 psi	4365459	4365492	4365548	4365599
0-200 psi	4252414	50045954		
0-500 psi	50132423			4365611
0-1,000 psi	4365467	4365506	4365556	4365629
0-1,500 psi	50132440			4365637
0-2,000 psi	50055712		4365646	
0-3,000 psi	4365476	4365514	4365565	4365654
0-5,000 psi	4365484	4365522	4365573	4365662

[1] G1B for E-11 15 psi and 30inHg vacuum ranges, G1/2B for ranges > 30 psi



Items without part numbers are available on special order.

E-11 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CL	-30 inHg ... 200 psi
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify
		Process connection
	85	G1B, flush diaphragm with O-ring (up to 25 psi)
	86	G1/2B, flush diaphragm with O-ring (≥ 30 psi)
4	?	Other - please specify

E-11 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Material of wetted parts
	1	Stainless steel and O-ring from NBR
	L	Stainless steel and O-ring from Viton®
5	?	Other- please specify
		Special design features
	Z	Without
6	L	Low power [1)]
		Electrical connection
	2X	1/2" NPT male conduit with free ends
	DX	1/2" NPT male conduit with factory sealed cable
7	3X	1/2" NPT male conduit with flying leads
		Cable length
	6	6 feet
8	?	Other- please specify
		Approvals
	4	Ex d per ATEX (always with DX)
9	7	Explosion-proof per FM and CSA
		Quality certificates
	Z	Without
10	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
11	T	Additional order details

1) Low power only with 1-5 V signal output (supply 6 ...30 V)

Order Code:

	1		2	3		4		5	6		7		8	9		10	11*
E-11	-		-			-		-		**G**					-		

*Additional order details _____

Type N-10, N-11 Hazardous Area Non-incendive Transmitters

FM APPROVED

Applications

- Natural gas compressors
- Wellhead monitoring
- Pipeline pressure
- General industrial applications

Special Features

- FM approved non-incendive for Class I Division 2 hazardous locations
- Engineered to meet the harsh demands of gas compressor applications
- Does not require the use of intrinsically safe barriers
- NACE MR-01-75 compliant wetted parts
- 4-20 mA or low power 1-5 volt output signals available

Left: N-10 pressure transmitter with NPT connection
Right: N-11 flush diaphragm pressure transmitter

Description

Type N-10 pressure transmitters are specifically designed to meet the durability and performance requirements of gas compressor systems. These pressure transmitters feature an industry standard 4-20 mA 2 wire signal output, NEMA 4X (IP 67) weather protection and are extremely resistant to pressure spikes, vibration and moisture intrusion. NACE MR-01-75 compliance provides extra resistance against sulfide stress cracking when exposed to gases containing sulphur.

Type N-11 pressure transmitters feature a flat, non-clogging diaphragm. This is designed for use with viscous fluids or media containing particulates that could clog the pressure port of the standard NPT version.

The transmitters are engineered to meet Class I Division 2 non-incendive protection requirements in hazardous environments. Each undergoes extensive quality control testing and calibration to achieve a linearity of ≤ 0.25% full scale. In addition, each pressure transmitter is temperature compensated to assure accuracy and long term stability when exposed to severe ambient temperature variations.

Specifications — Type N-10, N-11

Pressure range	5 psi	10 psi	15 psi	25 psi	30 psi	60 psi	100 psi	200 psi	300 psi
Maximum pressure*	29 psi	58 psi	72 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi	1,160 psi
Burst pressure**	35 psi	69 psi	87 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi	1,390 psi
Pressure range	500 psi	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi[1]	10,000 psi[1]	15,000 psi[1]
Maximum pressure*	1,160 psi	1,740 psi	2,900 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	5,800 psi	7,970 psi	11,600 psi	14,500 psi	17,400 psi	24,650 psi[2]	34,800 psi	34,800 psi	43,500 psi

{vacuum, gauge pressure, compound ranges, and absolute pressure references are available}

Materials			
■ Wetted parts		Nace compliant [5]	
➢ N-10		Stainless steel	(≥ 300 psi stainless steel and Elgiloy)
➢ N-11		Stainless steel; O-ring: NBR	{Viton or EPDM}
■ Case		Stainless steel	
Internal transmission fluid		Synthetic oil (only for pressure ranges up to 300 psi or flush diaphragm units)	
Power supply U_B	DC V	$10 < U_B \leq 30$ for 4 ... 20 mA, 2-wire	
		$6 < U_B < 30$ for 1 ... 5 V, 3-wire low power version	
Signal output and		4…20 mA: $R_A \leq (U_B - 10\ V) / 0{,}02\ A$ with R_A in Ohm and U_B in Volt	
maximum load R_A		1 ... 5 V, 3-wire: $R_A > 10$ kOhm	
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms when media temperatures are below –22 ° F (-30 °C) for pressure	
		ranges up to 300 psi or with flush diaphragm)	
Isolation voltage	V	500	
Accuracy [3]	% of span	≤ 0.25	(BFSL)
	% of span	≤ 0.5	(limit point calibration)
Non-repeatability	% of span	≤ 0.05	
Hysteresis	% of span	≤ 0.1	
1-year stability	% of span	≤ 0.2	(at reference conditions)
Permissible temperature of			
■ Medium		-22 ... +212 °F	-30 ... +100 °C
■ Ambient		-22 ... +212 °F	-30 ... +100 °C
■ Storage		-22 ... +221 °F	-30 ... +105 °C
Compensated temp. range		32 ... +176 °F	0 ... +80 °C
Temperature coefficients in			
compensated temp range:			
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0,4 for pressure range < 100 InWC)	
■ Mean TC of range	% of span	≤ 0.2 / 10 K	
Approval authority		■ Factory Mutual (FM) non-incendive with entity approval for:	
		Class 1, Division 2, Groups A, B, C, D	
		■ Dust ignition-proof for Class II and III, Division 1, Groups E, F and G	
		Maximum electrical ratings 30 V, 20 mA	
		FM Standards according to FMRC 3600, 3611, 3810	
HF-immunity	V/m	10	
Burst	KV	4	
Ingress protection		NEMA 4X (IP 67)	
Shock resistance	g	1,000 according to IEC 60068-2-27	(mechanical shock)
Vibration resistance	g	20 according to IEC 60068-2-27	(vibration under resonant conditions)
Wiring protection		Protected against reverse polarity, overvoltage, and short circuiting	
Weight	lb	0.4	

* Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts
**Exceeding the burst pressure may result in destruction of the transmitter

1) Only Type N-10.
2) For Type N-11: the burst pressure is limited to 21,000 psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.
3) Includes non-linearity, hysteresis and repeatability. Limit point calibration performed in vertical mounting position with pressure connection facing down.
4) Transmitters will function when exposed to these extended temperature ranges. The media, when exposed to temperature extremes, may change characteristics that effect transmitter performance.
5) Wetted parts comply with recommendations per NACE MR0175. Environmental limits apply to certain materials. Consult latest standard for details.

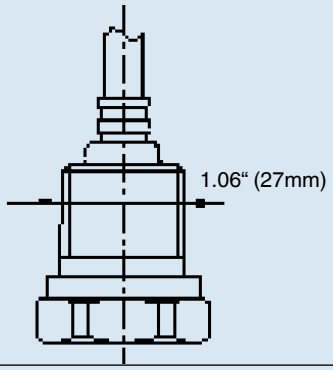
{ } Items in curved brackets are options available at additional cost.

*For full specifications, visit **www.wika.com** to download datasheets N-10, N-11 or call **1-800-381-6549***

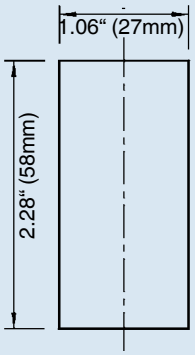
Dimensions in inches (mm)

Electrical connection

6 foot cable with free ends
NEMA 4 / IP 67
Order code: 2X

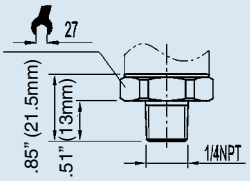


Case

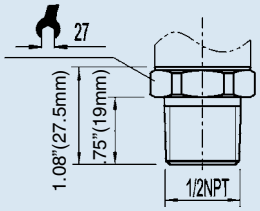


N-10 pressure connections

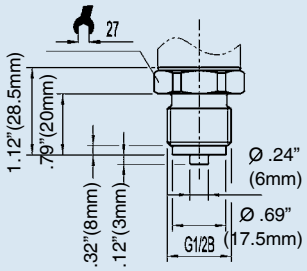
1/4 NPT male
Order code: NB



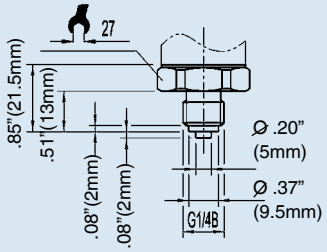
1/ 2 NPT male
Order code: ND



G 1/2
EN 837
Order code: GD

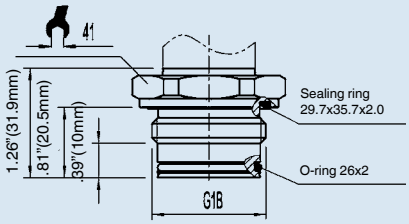


G 1/4
EN 837
Order code: GB

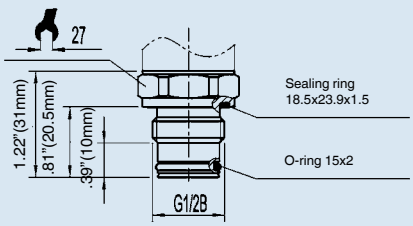


N-11 flush diaphragm pressure connections

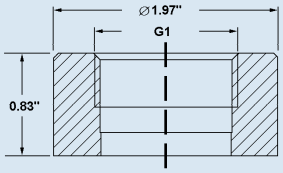
N-11 G 1
50 InWC to 25 psi
Order code: 85



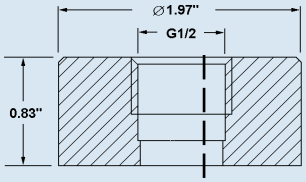
N-11 G 1/2
30 psi to 5,000 psi
Order code: 86



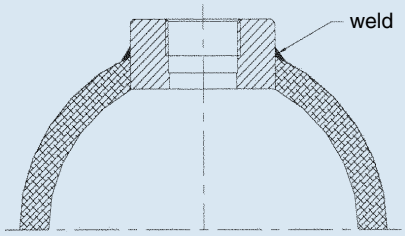
Matching P-1 weld insert adapters for N-11 flush diaphragm transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 25 psi

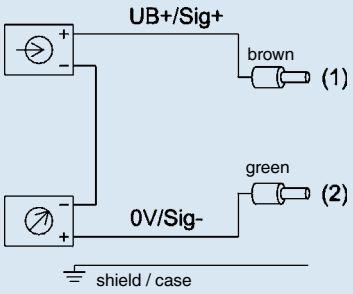
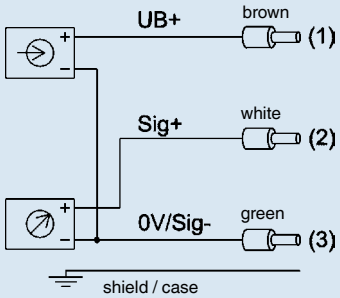


P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 30 psi



Cross section view of P-1
adapter installed in pipe.

Wiring details

	2-wire system	3-wire system
6 foot cable with free ends		

Legend:

Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

Type N-10 Hazardous Area Non-incendive Transmitter Vacuum to 15,000 psi

Standard Features

- **Signal output:** 4-20 mA 2-wire or 1-5 V 3-wire
- **Supply voltage:** 10-30 DC (6-30 VDC for 1-5 V version)
- **Process connection:** 1/4 NPT Male
- **Electrical connection:** 1/2" NPT male conduit with 6 foot cable

FM APPROVED

N-10 Gauge Ranges		
Description		
Range	Part #	
	4-20 mA 2-wire	1-5 V 3-wire
30" INHG Vacuum	4348296	4354619
30"-0-30 psi	4348309	4354627
30"-0-100 psi	4332431	4354636
0-15 psi	4348317	4354644
0-30 psi	4348326	4354652
0-60 psi	4348334	4354660
0-100 psi	4348342	4354678
0-200 psi	4348350	4354686
0-300 psi	4348368	4354695
0-500 psi	4346216	4354708
0-1,000 psi	4332440	4354716
0-1,500 psi	4338597	4354725
0-2,000 psi	4348376	4354733
0-3,000 psi	4347000	4354741
0-5,000 psi	4347018	4354759
0-8,000 psi	4348385	4354767
0-10,000 psi	4348393	4354776
0-15,000 psi	4348406	4354784

N-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CH	-30 inHg ... 100 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	BD	0 psi ... 30 psi
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BH	0 psi ... 200 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
3	??	Other - please specify
		Process connection
	NB	1/4" NPT
4	??	Other - please specify
		Special design features
	Z	Without
	L	Low power [1]
5	?	Other - please specify
		Electrical connection
	2X	1/2" NPT male conduit with cable (NEMA 4X/ IP 67)
	M4	4 Pin locking plug M12x1 (NEMA 4/IP67)
6	??	Other - please specify

N-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Cable length
	6	6 feet
	1	10 feet
	2	20 feet
	3	30 feet
7	?	Other - please specify
		Approvals
	N	EEx nA II 3G T6 7 II 3D per ATEX (always with M4)
8	F	FM, CSA non-incendive (always with 2X)
		Quality certificates
	Z	Without
9	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
10	T	Additional order details

1) Low power only with 1-5 V signal output (supply 6 ...30 V).

Order Code:

	1		2	3		4		5		6	7	8		9	10*
N-10 -		**-**			**-**		**-**		**G**				**-**		

*Additional order details _____

Type N-11 Non-incendive Flush Diaphragm Pressure Transmitter Vacuum to 5,000 psi

Standard Features

- **Signal output:** 4-20 mA 2-wire or 1-5 V 3-wire
- **Supply voltage:** 10-30 DC (6-30 VDC for 1-5 V version)
- **Process connection:** G1B or G1/2B flush diaphragm depending on pressure range
- **Electrical connection:** 1/2" NPT male conduit with 6 foot cable

N-11 Gauge Ranges Ready-To-Ship Transmitters		
Description		
Range	Part #	
	4-20 mA 2-wire	1-5 V 3-wire
30"-0-30 psi	4372579	
0-15 psi[1]	4354822	4354792
0-100 psi	4358428	4354806
0-300 psi	4364410	
0-1,000 psi	4364690	4364428
0-2,000 psi	4358436	4354814
0-3,000 psi	4364509	

Notes:

[1] Pressure ranges from 50 InWC to 25 psi are supplied with a G1B process connection.

N-11 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CH	-30 inHg ... 100 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	BD	0 psi ... 30 psi
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BH	0 psi ... 200 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DQ	0 psi ... 6,000 psi
	DR	0 psi ... 7,500 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify
		Process connection
	85	G1B, flush diaphragm with O-ring (50 InWC to 25 psi)
4	86	G1/2B, flush diaphragm with O-ring (≥ 30 psi)
		Material of wetted parts
	B	Stainless steel and O-ring from EPDM
	L	Stainless steel and O-ring from Viton®
5	?	Other- please specify
		Special design features
	Z	Without
6	L	Low power [1)]
		Electrical connection
	2X	1/2" NPT male conduit with cable (NEMA 4X / IP 67)
	M4	4 Pin locking plug M12x1 (NEMA 4/IP67)
7	??	Other- please specify

N-11 Smart Codes for Custom Order Configurations (con'd)

Field no.	Code	Feature
		Cable length
	6	6 feet
	1	10 feet
	2	20 feet
8	3	30 feet
		Approvals
	N	EEx nA II 3G T6 7 II 3D per ATEX (always with M4)
9	F	FM, CSA (always with 2X)
		Quality certificates
	Z	Without
10	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
11	T	Additional order details

1) Low power only available with 1-5 V signal output (supply 6 ...30 V)

Order Code:

	1		2	3		4		5	6		7	8	9		10	11*
N-11 -		**-**			**-**		**-**			**G**				**-**		

*Additional order details _____

Type IS-20, IS-21, IS-20-F, IS-21-F
Intrinsically Safe Hazardous Area Transmitters

Applications

- Chemical, petrochemical
- Oil and gas refining
- Food industry
- Mechanical engineering

Special Features

- Pressure ranges from 50 InWC to 15,000 psi
- FM, CSA approval for
  - Intrinsically safe Class I, II and III Division 1, Group A, B, C, D, E, F, G
  - Dust Class II and III Division 1, Group E, F, G
  - Class I, Zone 0, AEx ia II C
- Ex- protection EEx ia I/II C T6 according to ATEX for:
  Gases, vapors and mist: Connection to Zone 0, Zone 1 and Zone 2
  Dust: Connection to Zone 20, Zone 21 and Zone 22
  Mining: Category M1 and M2
  Suitable for SIL 2 according to IEC 61508 / IEC 61511

Left: IS-20-S standard version
Center: IS-21-S with flush diaphragm
Right: IS-20-F with integral junction box

Description

Approvals meet international standards
The IS-20 series of intrinsically safe pressure transmitters are designed for industrial pressure measurement applications in hazardous areas where intrinsically safe ratings are required.

Multiple intrinsically safe approvals include FM, ATEX and CSA. These multiple approvals provide for global recognition and acceptance of the intrinsically safe ratings. The transmitters are labeled with all three approvals to help support international shipments of OEM equipment designed with these transmitters.

Rugged construction
The stainless steel wetted parts feature an all-welded measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The compact case is also made of stainless steel and is available with environmental protection ratings up to NEMA 6 (IP 68).

The IS-21-S and IS-21-F transmitters feature a flush diaphragm process connection. They are specifically designed for the measurement of viscous fluids or media containing solids that may clog a NPT process connection.

Types IS-20-F and IS-21-F feature an integral stainless steel junction box with internal terminal block for use in extremely harsh environments. A ½“ NPT female conduit connection is standard on all models and a cable compression electrical connection is available as an option.

All types require a 10 to 30 volt supply provided by an intrinsically safe power supply or through an approved intrinsically safe zener diode barrier.

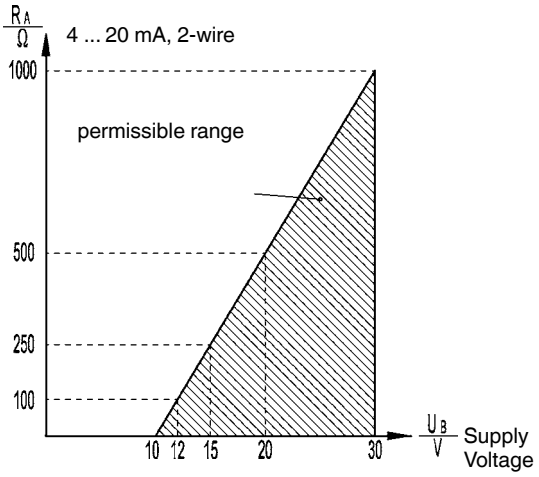
Specifications	Type IS-20-S, IS-21-S, IS-20-F, IS-21-F								
Specifications without type designation apply for all types.									
Pressure range	50 InWC	5 psi	10 psi	25 psi	30 psi	60 psi	100 psi	160 psi	200 psi
Maximum pressure*	15 psi	29 psi	58 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi	1,160 psi
Burst pressure**	29 psi	35 psi	69 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi	1,390 psi
Pressure range	300 psi	500 psi	1,000 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi	10,000 psi[1]	15,000 psi[1]
Maximum pressure*	1,160 psi	1,160 psi	1,740 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	1,390 psi	5,800 psi	7,970 psi	14,500 psi	17,400 psi	24,650 psi[2]	34,800 psi[2]	34,800 psi	43,500 psi
{vacuum, gauge pressure, compound ranges, and absolute pressure references are available}									
[1] Ranges only available with Type IS-20									
[2] For Type IS-21 the burst pressure is limited to 21,000 psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.									
*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts									
**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media									
Materials									
■ Wetted parts		(for other materials see WIKA diaphragm seal program)							
➢ Types IS-20-S, IS-20-F		Stainless steel							
➢ Types IS-21-S, IS-21-F		Stainless steel {Hastelloy® C4}							
		O-ring: NBR {Viton® or EPDM}							
■ Case		Stainless steel							
Internal transmission fluid [3]		Synthetic oil {Halocarbon® oil for oxygen applications} [4] {Listed by FDA for food applications}							
[3] Not available with Type IS-20 in pressure ranges > 300 psi									
[4] Media temperature for oxygen version: -4 ... +140 °CF (-20 ... +60 °C). Not available in vacuum or absolute pressure ranges or in Type IS-21 flush diaphragm version > 500 psi									
Power supply U_B	DC V	10 < U_B ≤ 30 (11 < U_B ≤ 30 with Type IS-20-F)							
Signal output and		4 ... 20 mA, 2-wire							
Maximum load R_A									
➢ Types IS-20-S		R_A ≤ (U_B – 10 V) / 0.02 A – (length of cable in feet x 0.043 Ohm)							
➢ Types IS-20-F		R_A ≤ (U_B – 11 V) / 0.02 A							
		with R_A in Ohms and U_B in Volts							
Test circuit signal / max. load R_A		R_A < 15 Ohm (only for Type IS-20-F)							
Adjustability zero/span	%	± 5 using potentiometers inside the instrument							
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at media temperatures below –22°F (-30°C) for ranges < 300 psi							
Power Pi	W	1 (750 mW with approval for Category 1D)							
Isolation voltage		Isolation complies with EN 50020, 79-11							
Accuracy [5]	% of span	≤ 0.25 {0.125} [6] (BFSL)							
	% of span	≤ 0.5 {0.25} [6] (limit point calibration)							
[5] Including non-linearity, hysteresis and repeatability. Limit point Calibration performed in vertical mounting position with pressure connection facing down.									
[6] For pressure ranges above 100 InWC									
Non-linearity	% of span	≤ 0.2 (BFSL) according to IEC 61298-2							
Non-repeatability	% of span	≤ 0.1							
1-year stability	% of span	≤ 0.2 (at reference conditions)							
Permissible temperature									
■ Medium [7] [8]		-20 ... +80 °C [7]	-4 ... +176 °F [7]						
		{extended temperature ranges see page 6} [7]							
■ Ambient [7] [8]		-20 ... +80 °C [7]	-4 ... +176 °F [7]						
■ Storage [8]		-30 ... +105 °C	-22 ... +221 °F						
[7] Other temperature ranges are possible, depending on the electrical connection; see EC-type									
[8] Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport									
[9] Response time for IS-20: ≤ 10 ms at medium temp. below -30 °C (-22 °F) for pressure ranges up to 300 psi Response time for IS-21: ≤ 10 ms at medium temp. below -30 °C (-22 °F) for all pressure ranges									
Compensated temperature range		32 ... +176°F	0 ... +80°C						
Temperature coefficients (TC) within compensated temperature range:									
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure range ≤ 100 InWC)							
■ Mean TC of range	% of span	≤ 0.2 / 10 K							
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)							

Specifications		Type IS-20-S, IS-21-S, IS-20-F, IS-21-F
■ Directive ATEX of equipment intended for use in potentially explosive atmospheres		94/9/EC
Ex-protection	ATEX	Category [8] 1G, 1/2G, 2G, 1D, 1/2D, 2D, M1, M2
Ignition protection type		Ex ia I/II C T4, Ex ia I/II C T5, Ex ia I/II C T6
	[8] Read the operating conditions and safety-relevant data in the EC-type examination certificate in any case (BVS 04 ATEX E 068 X)	
Ex-protection	FM, CSA	Class I, II and III
Ignition protection type		Intrinsic safe Class I, II, III Division 1,
		Group A, B, C, D, E, F, G and Class I, Zone 0 AEx ia II C
HF-immunity	V/m	10
Burst	kV	2
Functional safety		Suitable for SIL 2 applications according to IEC 61508/ IEC 61511
		Further information: "Additional Instructions Safety-related data IS-2X SIL"
Shock resistance		
» Type IS-2X-S	g	1,000 according to IEC 60068-2-27 (mechanical shock)
» Type IS-2X-F	g	600 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance		
» Type IS-2X-S	g	20 according to IEC 60068-2-6 (vibration under resonance)
» Type IS-2X-F	g	10 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		
■ Short-circuit		Sig+ towards UB-
■ Reverse polarity		UB+ towards UB-
Weight ➢ Type IS-2X-S	lb	Approx. 0.45
➢ Type IS-2X-F	lb	Approx. 0.80

*) In an oxygen version type IS-21 is not available. In an oxygen version type IS-20 is only available in gauge pressure ranges ≥ 0.25 bar with media temperatures between -20 … +60 °C / -4 … +140 °F and using stainless steel or Elgiloy® wetted parts.
{ } Items in curved brackets are optional extras for additional price.

Output signal and permissible load

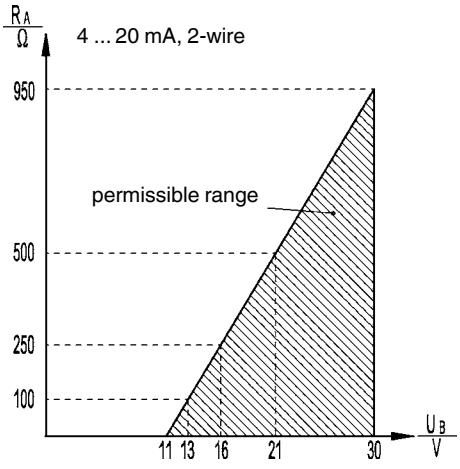
Type IS-2X-S



Output current (2-wire)

4 ... 20 mA: $R_A \leq (U_B - 10\ V) / 0.02\ A$

Type IS-2X-F



Output current (2-wire)

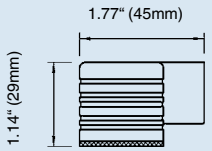
4 ... 20 mA: $R_A \leq (U_B - 11\ V) / 0.02\ A$

Dimensions in inches (mm)

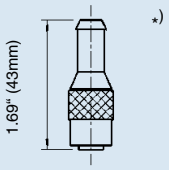
IS-2X-S (electrical connections)

Ingress Protection IP per IEC 60 529

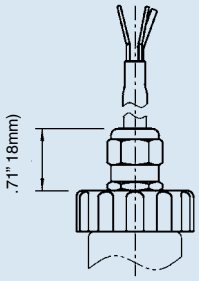
L-connector plug
DIN EN 175301-803,
Form A
½ NPT conduit
IP 65
Order code: AX
ATEX: 1/2 G, M1



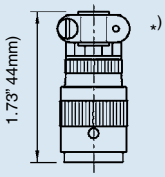
Circular connector,
M 12x1, 4-pin
IP 67
Order code: M4
ATEX: 1/2 G, M1

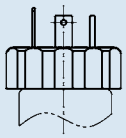


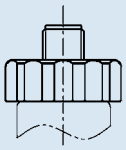
Cable with free ends
outer conductor
diameter 6.8 mm, PUR
NEMA 4 / IP 67
Order code: DL
ATEX: 1/2 G, M1

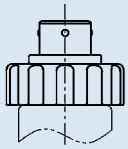


Bayonet connector
6-pin NEMA 4 / IP 67
Order code: C6
ATEX: 1/2 G
(not available with min-
ing approval)

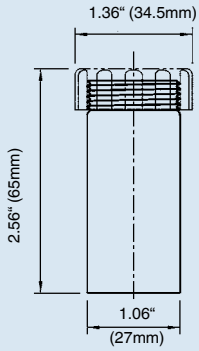






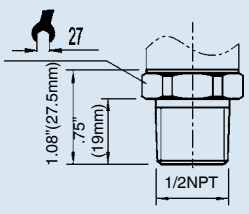


Case

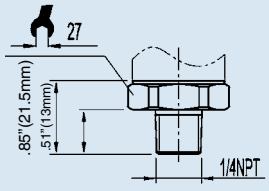


Pressure connections IS-20-S and IS-20-F

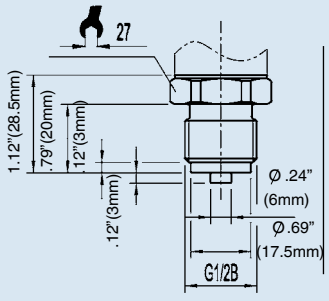
1/ 2 NPT male
Order code: ND



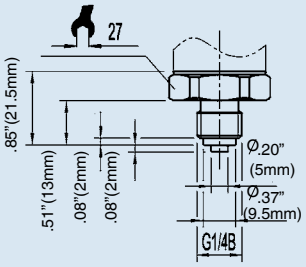
1/4 NPT male
Order code: NB



G 1/2 metric
EN 837
Order code: GD

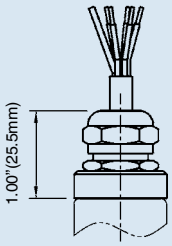


G 1/4 metric
EN 837
Order code: GB



Electrical connections IS-2X-S

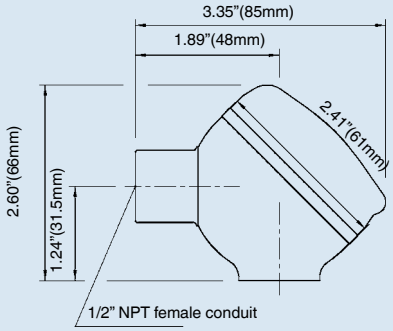
Cable with free ends,
zero/span not adjustable,
conductor outer diameter 6.8 mm, PUR
IP 68/NEMA 6
Order code: EM
ATEX: 1/2 G, M1



Other connections available

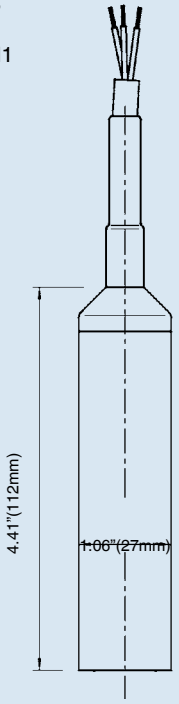
Electrical connections IS-2X-F

Integral junction box with internal spring clip terminals NEMA 4X IP 67
Order code:
FE (1/2“ NPT female conduit standard)
FH (threaded connection brass nickel-plated)
FC (threaded connection stainless steel)
ATEX: 1/2 G, M1

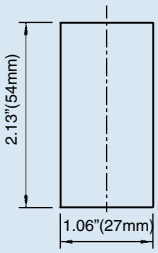


Electrical connections IS-2X-S

Cable with free ends,
zero/span not adjustable,
conductor outer diameter 7.5 mm, PUR {FEP}
NEMA 6P / IP 68
Order code: DM
ATEX: 1G, 1D, M1

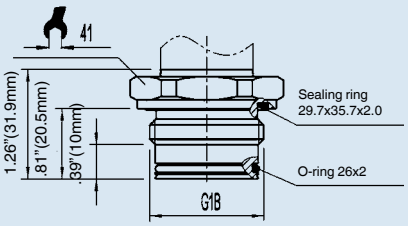


Case dimensions

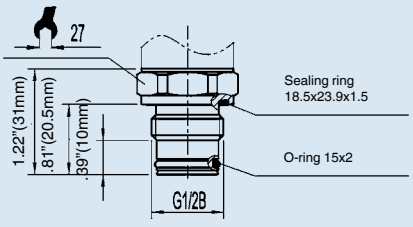


IS-21-S and IS-21-F flush diaphragm pressure connections

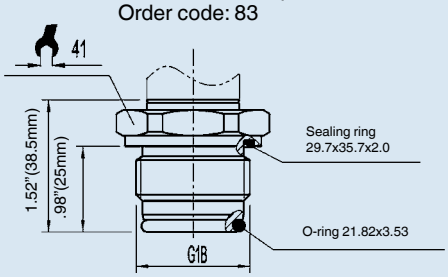
G 1
50 InWC to 25 psi
Order code: 85



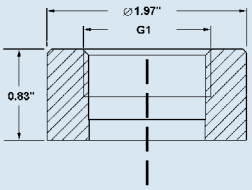
G 1/2
30 psi to 8,000 psi
Order code: 86



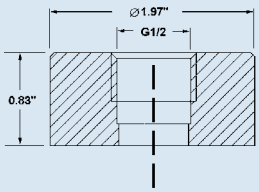
G 1
according to EHEDG **)
100 InWC to 250 psi
Order code: 83



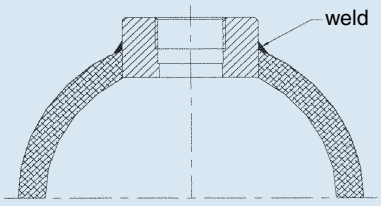
Matching P-1 weld insert adapters for IS-21-S and IS-21-F transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 25 psi



P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 30 psi



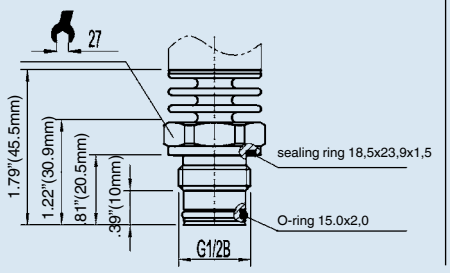
Cross section view of P-1 adapter installed in pipe.

**) European Hygienic Equipment Design Group
{ } Items in curved brackets are optional extras at additional cost.

Pressure connections for high temperature media

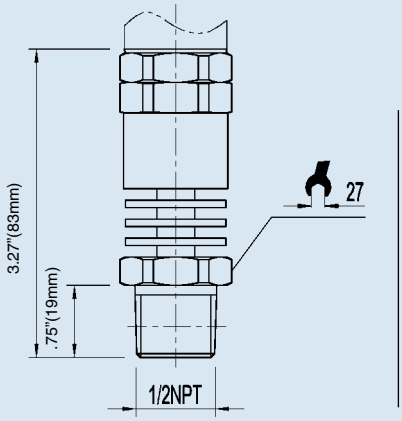
IS-21-S and IS-21-F, flush diaphragm
-4 °F to 302 °F (-20 °C to 150 °C)

G 1/2
with 2 cooling fins (version Ⓐ)
0 ... 30 psi up to 0 ... 8000 psi
Order code: 86 and C



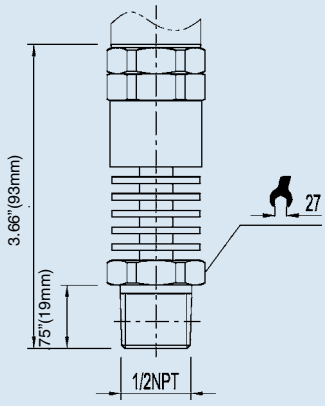
IS-20-S and IS-20-F
-40 °F to 302 °F (-40 °C to 150 °C)

1/2 NPT male
with 3 cooling fins (version Ⓑ)
0 - 5 psi to 0-15,000 psi
Order code: ND and 8

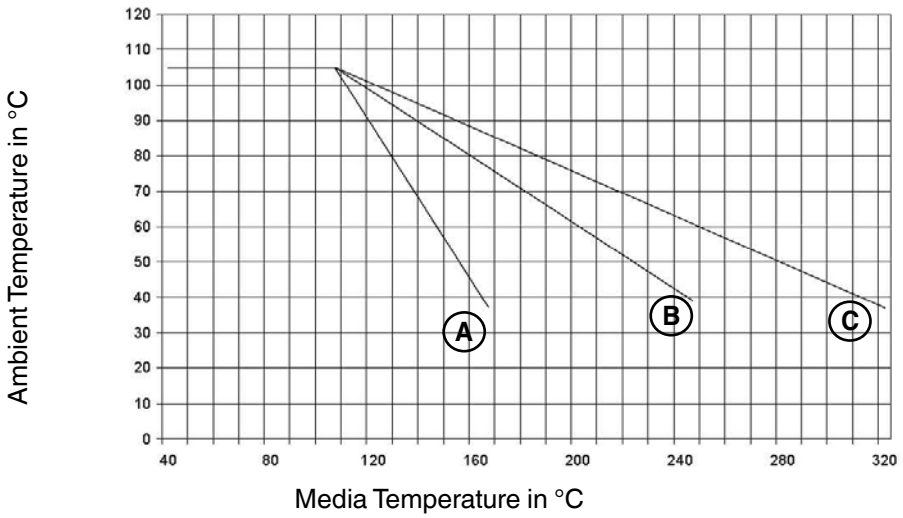


IS-20-S and IS-20-F
-40 °F to 392 °F (-40 °C to 200 °C)

1/2 NPT male
with 5 cooling fins (version Ⓒ)
0-5 psi to 0-15,000 psi
Order code: ND and 9



Relationship of media temperature to ambient temperature



Version	Ⓐ	Ⓑ	Ⓒ
Cooling fins	2	3	5
K *	0.47	0.68	0.76

*cooling constant specific to each version

Calculation of cooling element performance:
$T_B = T_{med} - (T_{med} - T_{amb}) \times K$

T_B = Operating temperature of transmitter
T_{med} = maximum temperature of process media
T_{amb} = maximum ambient temperature
K = Constant of cooling element

Maximum permissible ambient temperature:
$T_{amb} = T_{med} + (T_B - T_{med}) / K$

Permissible temperature ranges depending on electrical connections

Electrical connections	Order-code	Category	Ambient/Medium temperature range	
DIN 175301-803 A L-Connector	A4	1/2 G (IIC)	-40 ... +140 °F (T6) -40 ... +176 °F (T5) -40 ... +221 °F (T4)	-40 ... +60 °C (T6) -40 ... +80 °C (T5) -40 ... +105 °C (T4)
		M1	-40 ... +221 °F	-40 ... +105 °C
M 12x1 Circular connector	M4	1/2 G (IIC)	-13 ... +140 °F (T6) -13 ... +176 °F (T5) -13 ... +194 °F (T4)	-25 ... +60 °C (T6) -25 ... +80 °C (T5) -25 ... +90 °C (T4)
		M1	-13 ... +194 °F	-25 ... +90 °C
Cable	DL	1/2 G (IIC)	-4 ... +140 °F (T6) -4 ... +176 °F (T5) -4 ... +176 °F (T4)	-20 ... +60 °C (T6) -20 ... +80 °C (T5) -20 ... +80 °C (T4)
		M1	-4 ... +140 °F	-20 ... +60 °C
Bayonet connector (not with mining)	C6	1/2 G (IIC)	-58 ... +140 °F (T6) -58 ... +176 °F (T5) -58 ... +221 °F (T4)	-50 ... +60 °C (T6) -50 ... +80 °C (T5) -50 ... +105 °C (T4)
Cable zero/span not adjustable	EM	1/2 G (IIC)	-4 ... +140 °F (T6) -4 ... +176 °F (T5) -4 ... +176 °F (T4)	-20 ... +60 °C (T6) -20 ... +80 °C (T5) -20 ... +80 °C (T4)
		M1	-4 ... +176 °F	-20 ... +80 °C
Fieldcase	FE, FH, FC	1/2 G (IIC)	-58 ... +140 °F (T6) -58 ... +176 °F (T5) -58 ... +221 °F (T4	-50 ... +60 °C (T6) -50 ... +80 °C (T5) -50 ... +105 °C (T4
		M1	-58 ... +221 °F (T4)	-50 ... +105 °C (T4)
PUR Cable zero/span not adjustable	DM	1 G (IIA), 1/2 G (IIC)	14 ... +140 °F (T6) 14 ... +140 °F (T5) 14 ... +140 °F (T4)	-10 ... +60 °C (T6) -10 ... +60 °C (T5) -10 ... +60 °C (T4)
		1D, M1	14 ... +140 °F	-10 ... +60 °C
FEP Cable zero/span not adjustable	DM	1 G (IIA), 1/2 G (IIC)	-22 ... +140 °F (T6) -22 ... +176 °F (T5) -22 ... +221 °F (T4)	-30 ... +60 °C (T6) -30 ... +80 °C (T5) -30 ... +105 °C (T4)
		1D	-22 ... +140 °F	-30 ... +60 °C
		M1	-22 ... +221 °F	-30 ... +105 °C

Wiring details

	L-connector DIN 175301-803 A		Circular connector M12x1, 4 pin		Cable, 1.5 m
					
2-wire	U+ = 1	U- = 2	U+ = 1	U- = 3	U+ = brown | U- = green
Cable screen					PUR-cable: grey FEP-cable: twisted and tinned
Wire gauge	up to max.1.5 mm²		-		0.5 mm² (AWG 20)
Cable diameter	6-8 mm ship approval: 10-14 mm		-		6.8 mm (Order code: DL / EM) 7.5 mm (Order code DM)
Ingress protection according to IEC 60 529	IP 65		IP 67		IP 67 - Order code: DL IP 68 zero/span not adjustable - Order code: EM / DM
	The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.				

	Bayonet connector, 6 pin		Field case (with internal spring clip terminals)				
							
2-wire	U+ = A	U- = B	U+ = 1	U- = 2	Test+ = 3	Test- = 4	screen = 5
Cable diameter			7-13 mm				
Ingress protection according to IEC 60 529	IP 67		IP 67				
	The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.						

Hazardous areas (ATEX zone classifications)

Group II: **Electrical equipment for use in all areas (except mines) which are endangered by an explosive atmosphere.**

Zone	Category	Occurrence of explosive atmosphere
Zone 0	Category 1G (gas)	Continuous
Mounting to zone 0	Category 1/2 G	
Zone 20	Category 1D (dust)	
Mounting to zone 20	Category 1/2 D	
Zone 1	Category 2G	Intermittent
Zone 21	Category 2D	
Zone 2	Category 3G	Hazard under abnormal conditions
Zone 22	Category 3D	

Group I: **Electrical equipment for use in mines (hazard due to mine gas)**

Zone	Category	Requirements
	Category M 1	Very high degree of safety
	Category M 2	High degree of safety (instruments have to be turned off if they are exposed to an explosive atmosphere)

Hazardous areas (ATEX in comparison with FM, CSA)

		ATEX Group	FM / CSA Class	Group
Above ground	Gases and Vapors	IIA / IIB / IIC	I	A / B / C / D / E / F / G
	Dusts		II	
	Fibers		III	
Mining	Gas / Dusts	I	ID / IIF	

ATEX	Zone 0 (Zone 20 Dust)	Zone 1 (Zone 21 Dust)	Zone 2 (Zone 22 Dust)
FM /CSA	Zone 0	Zone 1	Zone 2
	Division 1		Division 2
FM (NEC505)	Zone 0	Zone 1	Zone 2

Type IS-20, IS-20-F Intrinsically Safe Pressure Transmitter

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Process connection:** 1/2 NPT Male
- **Electrical connection:** DIN EN 175301-803 (DIN 43 650) with 1/2" NPT female conduit plug connector

FM APPROVED

IS-20-S

IS-20-F

Gauge Ranges	
Description	
Range	Part #
0-5 psi	12127851
0-10 psi	12127877
0-15 psi	12127885
0-25 psi	12127893
0-30 psi	12127906
0-60 psi	12127914
0-100 psi	12127922
0-160 psi	12127940
0-200 psi	12127966
0-300 psi	12127974
0-500 psi	12127982
0-1,000 psi	12128040
0-1,500 psi	12128058
0-2,000 psi	12128066
0-3,000 psi	12128074
0-5,000 psi	12128104
0-8,000 psi	12128112
0-10,000 psi	12128121

Vacuum & Compound Ranges	
Description	
Range	Part #
30INHG VAC	12127796
30INHG/30 psi	12127833
30INHG/60 psi	12127841

Absolute Pressure Ranges	
Description	
Range	Part #
0-100 psia	12128147

Gauge Ranges	
Description	
Range	Part #
0 - 100 psi	12128554
0 - 1000 psi	12128687
0 - 3000 psi	12128732

IS-20 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Type
	S	Standard version
	F	With integral junction Box
1	H	High pressure version
	P	psi
	N	InWC
	3	psi absolute
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
	BT	0 psi ... 10,000 psi
	BU	0 psi ... 15,000 psi
	??	Other-up to maximum specified pressure range
		0 psi ... 25,000 psi
		0 psi ... 60,000 psi
		0 psi ... 75,000 psi
		0 psi ... 85,000 psi
		0 psi ... 100,000 psi
3		0 psi ... 115,000 psi

IS-20 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	GB	G 1/4 B
	GD	G 1/2 B
	NB	1/4 NPT
	ND	1/2 NPT
	CS	Diaphragm seal - *price see diaphragm seal*
	ML	M16 x 1.5 female, w/sealing cone *only for pressure range over 24,000 psi*
	VZ	9/16 - 18 UNF female F250-C *only for pressure range over 24,000 psi*
	MP	M20 x 1.5 female, w/sealing cone *only for pressure range over 24,000 psi*
4	??	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
	A	Oxygen, oil and grease free [1)]
5	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
6	K	+/- 0.125% B.F.S.L. (≥ 100 InWC)
		Electrical connection
	AX	4 Pin L-plug DIN 43 650 with 1/2" NPT female conduit (NEMA 5/IP 65)
	A4	4 Pin L-plug DIN 43 650 with Pg 9 (NEMA 5 / IP 65)
	DL	Cable with free ends (NEMA 4 / IP 67)
	XM	Submersible cable (NEMA 6 / IP 68)
	D4	4 Pin MIL plug PT02E-8-4P (NEMA 5 / IP 65)
	C6	6 Pin MIL plug PT02E-10-6P (NEMA 5 / IP 65)
	FE	1/2" NPT female conduit (IP67)
	FH	Nickel plated brass cable gland (IP68)
	FC	Stainless steel cable gland (IP68)
7	??	Other - please specify
		Cable length
	Z	Without (always with plug connection)
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
8	?	Other - please specify
		Temperature range of medium
	U	-20 ... +80 °C (-4 ... +176 °F)
	8	-40 ... +150 °C (-40 ... +302 °F)
9	9	-40 ... +200 °C (-40 ... +392 °F)

IS-20 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		SIL2
	Z	Without
10	S	SIL2 according to IEC61508 / IEC61511
		Approvals
	1	EEx ia I M1 + 1/2G, 2G incl. FM, CSA & ATEX
	A	EEx ia II C T6 1/2G, 2G per ATEX incl. FM & CSA [2]
	D	EEx IP6X 1/2D, 2D + 1/2 G, 2G +M1 per ATEX incl. FM and CSA [3] [4]
	S	EEx ia II C T6 1/2G per ATEX
11		incl. FM, CSA and ship approval GL
		Quality certificates
	Z	Without
	I	NIST Certificate of Calibration
12		(always with 0.125% accuracy)
		Digital display
	Z	Without
13	1	Digital display (order separately)
		Additional order details
	Z	Without
14	T	Additional order details

NOTES:
1) Maximum media temperature is -4 ... +140° F (-20 ... +60° C). Pressure ranges 100 InWC to 300 psi (Field 5, Code A).
2) Only available in MIL Plug version (Field 7, Codes 04 and C6).
3) Only available in IP68 version.
4) Maximum media temperature is -4 ... +176° F (-20 ... +80° C) (Field 9, Code U).

Order Code:

	1	2	3		4		5	6	7	8	9	10	11		12	13	14*
IS-20 -		**-**			**-**	**- A**								**-**			

*Additional order details _____

Type IS-21 Intrinsically Safe Flush Diaphragm Pressure Transmitter

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 DC
- **Process connection:** G1B or G1/2B depending upon pressure
- **Electrical connection:** DIN EN 175301-803 (DIN 43 650) with 1/2" NPT female conduit plug connector

FM APPROVED

Gauge Ranges Ready-To-Ship Transmitters	
Description	
Range	Part #
0-5 psi[1]	12128252
0-10 psi[1]	12128287
0-15 psi[1]	12128295
0-30 psi[1]	12128325
0-50 psi	12128333
0-100 psi	12128368
0-1,000 psi	12128376
0-3,000 psi	12128481
0-5,000 psi	12128503
0-8,000 psi	12128538

NOTE:
[1]Pressure ranges from 50 InWC to 30 psi are supplied with G1B flush process connections; see Datasheet for details

IS-21 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Type
	S	Standard version
1	F	Field case / integral junction box
		Unit
	P	psi
	N	InWC
	3	psi absolute (from 15 psi to 250 psi absolute)
2	?	Other - please specify
		Pressure range
	CA	-30 inHg ... 0
	CD	-30 inHg ... 30 psi
	CF	-30 inHg ... 60 psi
	CH	-30 inHg ... 100 psi
	CK	-30 inHg ... 160 psi
	CL	-30 inHg ... 200 psi
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi (0 psi ... 15 psi absolute)
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BD	0 psi ... 30 psi
	DA	0 psi ... 50 psi (0 psi ... 50 psi absolute)
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	BL	0 psi ... 600 psi
	DJ	0 psi ... 750 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BP	0 psi ... 2,000 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	?3	Other-up to maximum specified pressure range

IS-21 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	85	G 1 B, flush diaphragm with O-ring (up to 25 psi)
	86	G 1/2 B, flush diaphragm with O-ring (≥ 30 psi)
4	??	Other - please specify
		Material of wetted parts
	1	Stainless steel, NBR O-ring [1)]
	L	Stainless steel, Viton® O-ring
	S	Hastelloy® C4, Viton® O-ring
5	?	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
6	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
7	K	+/- 0.125% B.F.S.L. (≥ 100 InWC)
		Electrical connection
	A4	4 Pin L-plug DIN 43 650 with pg 9 (NEMA 5 / IP 65)
	AX	4 Pin L-plug DIN 43 650 with 1/2" NPT female conduit (NEMA 5 / IP 65)
	DL	Cable with free ends (NEMA 4 / IP 67)
	XM	Submersible cable (NEMA 6 / IP 68)
	O4	4 Pin MIL Plug PT02E-8-4P (NEMA 5 / IP 65)
	C6	6 Pin MIL Plug PT02E-10-6P (NEMA 5 / IP 65)
	FE	1/2" NPT female conduit (IP67)
	FH	Nickel plated brass cable gland (IP68)
	FC	Stainless steel cable gland (IP68)
8	??	Other - please specify
		Cable length
	Z	Without (always with plug version)
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
9	?	Other - please specify

IS-21 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Temperature range of medium
	U	-20 ... +80 °C (-4 ... +176 °F)
10	C	-20 ... +150 °C (-4 ... +302 °F) with cooling element
		SIL2
	Z	Without
11	S	SIL2 according to IEC61508 / IEC61511
		Approvals
	1	EEx ia I M1 + 1/2G, 2G incl. FM, CSA & ATEX
	A	EEx ia II C T6 1/2G, 2G per ATEX incl. FM & CSA [2]
	D	EEx IP6X 1/2D, 2D + 1/2 G, 2G +M1 per ATEX incl. FM and CSA [3] [4]
	S	EEx ia II C T6 1/2G per ATEX
12		incl. FM, CSA and ship approval GL
		Quality certificates
	Z	Without
	I	NIST Certificate of Calibration (always with 0.125% accuracy)
13	?	Other - please specify
		Digital display
	Z	Without
14	1	Digital display (order separately)
		Additional order details
	Z	Without
15	T	Additional order details

NOTES:
1) Not available with cooling element option (Field 10, Code C)
2) Only available with MIL Plug version (Field 8, Codes 04 and C6)
3) Only available in IP68 version
4) Maximum media temperature is -4 ... +176° F (-20 ... +80° C) (Field 10, Code U)

Order Code: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15*

IS-21 - [ ] - [ ][ ] - [ ] - A [ ][ ][ ][ ][ ][ ][ ][ ] - [ ][ ][ ]

*Additional order details _____

Type LS-10, LH-10 Submersible Liquid Level Transmitters

Applications

- Level measurement in water and wastewater treatment plants, wells, holding tanks, wet wells, rivers

Special Features

- Ranges from 50 InWC to 400 psi
- Rated IP 68 for permanent submersion
- Hastelloy® case available for aggressive media
- 4-20 mA 2-wire output signal, others available
- Lightning protection available
- Cable supports over 220 pounds of strain

Description

The LS-10 liquid level transmitter is designed for economical and reliable performance in a wide variety of level measurement applications. The LS-10 provides a signal output of 4-20mA and an accuracy of 0.25% of span. Standard stocked pressure ranges are assembled with any length cable for fast delivery.

The high performance type LH-10 provides 0.125% accuracy and is available with many custom features for special requirements. LH-10 options include lightning protection, temperature measurement, special output signals, plus FEP cable and Hastelloy® construction for aggressive media.

The LH-10 is available with a low power 0.5-2.5V output signal and 5VDC supply voltage. This is ideal for solar or battery powered installations.

The LH-10 includes a dual cable entry design that prevents ingress of moisture into the electronics even if the cable is damaged. Both types feature watertight vented cable that can withstand over 220 pounds of strain. This allows the transmitter to be supported without any additional cabling.

Compensation for atmospheric pressure changes is accomplished through a vent tube in the cable. Many accessories, including cable clamps, desiccant drying cartridges, additional weights, and junction boxes are available for specific installation requirements. Both models can be equipped with the LevelGuard attachment for protection in difficult environments.

Left: LS-10 level transmitter
Center: LH-10 high performance level transmitter
Right: LH-10 with optional Hastelloy case and FEP cable

Optional WIKA LevelGuard Anti-clog attachment for submersible level transmitters. For use in lift stations, wet wells and other difficult level applications. For more information request bulletin LG-1.

Specifications — Type LS-10, LH-10

Pressure ranges												
LS-10 or LH-10 pressure ranges	100 InWC	150 InWC	250 InWC	400 InWC	5 psi	10 psi	15 psi	25 psi	30 psi	50 psi	100 psi
Maximum pressure*	30 psi	30 psi	60 psi	72 psi	30 psi	60 psi	72 psi	145 psi	145 psi	240 psi	500 psi
Burst pressure**	35 psi	35 psi	70 psi	87 psi	35 psi	70 psi	87 psi	170 psi	170 psi	290 psi	600 psi
LH-10 pressure ranges[1)]	50 InWC	160 psi	200 psi	250 psi	300 psi	400 psi					
Maximum pressure*	14 psi	1,160 psi	1,160 psi	1,160 psi	1,160 psi	1,160 psi					
Burst pressure**	29 psi	1,390 psi	1,390 psi	1,390 psi	1,390 psi	1,390 psi					

[1)] Maximum range for LH-10 with FEP cable is 150 psi

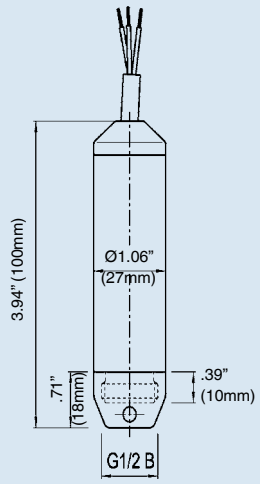
		Type LS-10	Type LH-10
Materials			
■ Body		Stainless steel	Stainless steel {Hastelloy ®}
■ Pressure connection and diaphragm		Stainless steel	Stainless steel {Hastelloy ®}
■ Protective cap		PA	PA {Stainless steel} {Hastelloy ®}
■ Cable		PUR (polyurethane)	PUR {FEP, to 150 psi maximum}
Power supply U_B	DC V	$10 < U_B \leq 30$	$10 < U_B \leq 30$ (14 ... 30 with 0 ... 10 V output signal) (5 ... 30 for battery powered operation, output signal 0.5 ... 2.5 V) [2)]
Output signal		4 ... 20 mA, 2-wire	4 ... 20 mA, 2-wire 0 ... 20 mA, 3-wire {0 ... 5 V, 3-wire} {0 ... 10 V, 3-wire} {0.5 ... 2.5 V, 3-wire for battery powered operation} [3)] {Pt 100, 4-wire; IEC 60751} {Other signal outputs on request}
	[2)] Power supply 5 ... 10 VDC with optional lightning protection		
	[3)] Available with pressure ranges ≥ 0 100inWC		
Pt 100 RTD temperature sensor			
■ I max	mA	Not available	3
■ I mess	mA	Not available	1
Maximum load R_A			
■ Current output signal		$R_A < (U_B - 10V) / 0.02A – (0.043$ Ohm x cable length in feet)	
■ Voltage output signal		-	$R_A > 100$ kOhm
Isolation voltage	DC V	500 [4)]	500 [4)]
	[4)] NEC Class 02 power supply (low voltage and low current max. 100 VA even in fault conditions)		
Accuracy [5)]	% of span	≤ 0.25 (BFSL)	≤ 0.125 [6)] (BFSL)
	% of span	≤ 0.5 (limit point calibration)	≤ 0.25 [6)] (limit point calibration)
	[5)] Including non-linearity, hysteresis, zero point and full scale error per IEC 61298-2 Limit point calibration method performed in vertical mounting position with pressure connection facing down.		
	[6)] For pressure ranges < 0 ... 100inWC accuracy ≤ 0.25% of span (BFSL) . ≤ 0.5% of span (limit point calibration)		
Non-linearity	% of span	≤ 0.2 (BFSL) per IE-61298-2	
Non-repeatability	% of span	≤ 0.1	≤ 0.1
1-year stability	% of span	≤ 0.2 (at reference conditions)	≤ 0.2 (at reference conditions)
Permissible temperature of			
■ Medium [7)]		+14 ... +122 °F / -10 ... +50 °C	+14 ... +122 °F / -10 ... +50 °C {+14 ... +185 °F (-10 ... +85 °C) with FEP-cable option}
■ Storage [7)]		-22 ... +176 °F / -30 ... +80 °C	-22 ... +176 °F / -30 ... +80 °C
	[7)] Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport		
Compensated temperature range		0 ... +50 °C / +32 ... +122 °F	0 ... +50 °C / +32 ... +122 °F
Temperature coefficients (TC) within compensated temperature range:			
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for 50 InWC)	
■ Mean TC of range	% of span	≤ 0.2 / 10 K	≤ 0.2 / 10 K

Specifications		Type LS-10, LH-10
CE-conformity		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and Immunity (industrial locations)
Wiring protection		Protected against reverse polarity, overvoltage and short circuiting on the instrument side {Lightning protection EN 61000-4-5; 1.5J}
Weight		
■ Level transmitter	lb	Approx. 0.4
■ Cable	oz per foot	Approx. 1.0
■ Additional weight	lb	Approx. 1.1

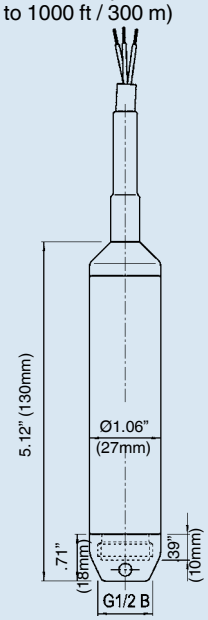
Items in curved brackets { } are optional extras for additional price.

Dimensions in inches (mm) - Ingress Protection NEMA 6P (IP 68 per IEC 60 529)

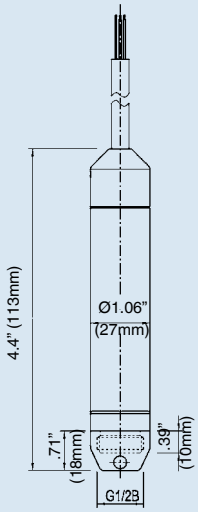
LS -10
(Immersion depth
up to 325 ft /100 m)



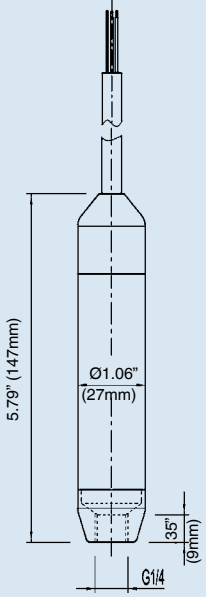
LH-10 with PUR-cable
(Immersion depth
up up to 1000 ft / 300 m)



LH-10 with
FEP-cable *)
(Immersion depth
up to 325 ft / 100 m)



LH-10 with FEP-cable *)
(Immersion depth up to 325 ft /
100 m) {Hastelloy®}



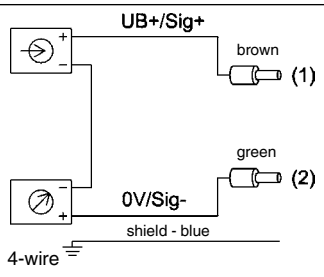
No additional support is required for installation as the cable can withstand over 220 lbs of strain (110 lbs for FEP cable)

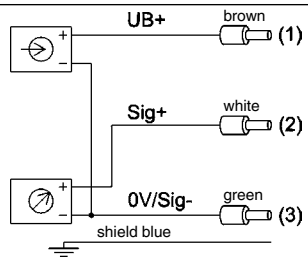
*) FEP-cable and lightning protection EN 61000-4-5; 1,2J on request

100 mm = 3.937 inches

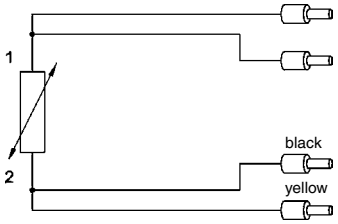
Wiring

Vented PUR-cable
tensile strength 220 Lbs
(110 lbs with FEP-cable)

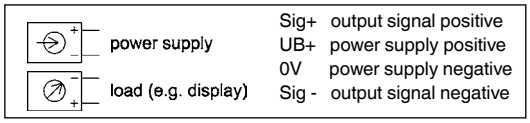




Pt 100 RTD temperature
sensor

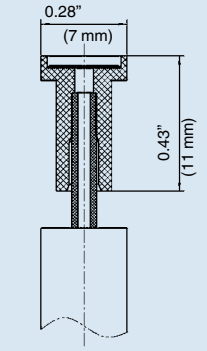


Legend:

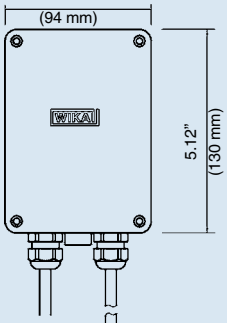


Accessories

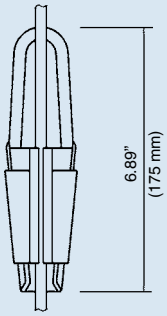
Dimensions in inches (mm)



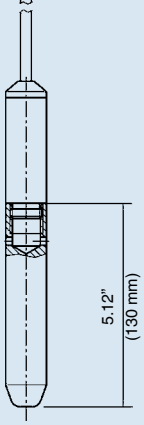
Vent tube filter Part# 7193131
The optional Teflon® vent tube filter protects the vent opening and protects against the entry of dirt and moisture. .



Cable junction box Part# 2459686
The cable junction box is rated NEMA 4 / IP 67 and is suitable for mounting outside tanks or shafts or inside dry control boxes. Can be wall or DIN rail mounted.

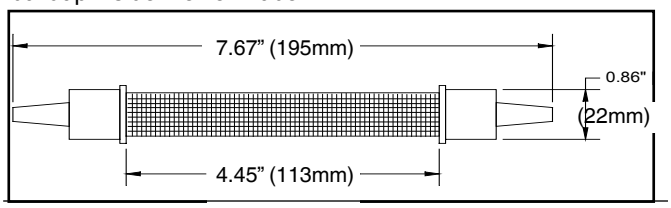


Cable clamp Part# 2074257
The cable clamp secures the cable without bending or kinking that can damage the cable vent tube or outer jacket.

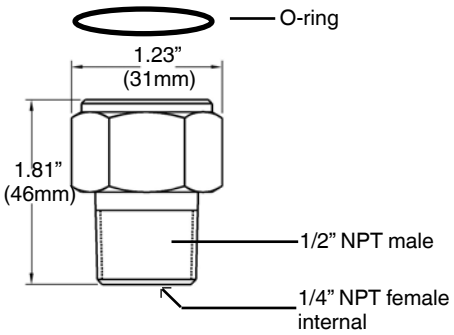


Additional weight Part# 1524399
The additional weight replaces the protective cap and helps to stabilize the transmitter in turbulent conditions. Weight: approximately 1.1 lb, 316 SS.

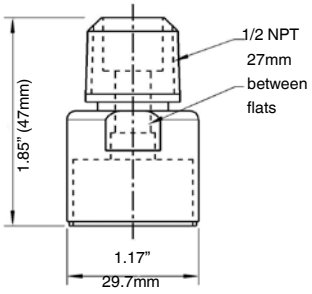
Desiccant drying cartridge Part # 9836700
The desiccant drying cartridge helps prevent moisture buildup inside the vent tube.



NPT adapter Part# 1631322
The 316 SS G1/2 adapter replaces the removable protective cap and converts the threads to 1/2"NPT male external, 1/4" female internal threads. Includes O-ring.



Conduit adapter Part# 50476114
316 SS 1/2" NPT male cable conduit adapter.
Must be factory installed.



LevelGuard Anti-clog attachment Part # 50077091

The stainless steel LevelGuard attachment must be factory installed and calibrated.

Type LH-20 High-Performance Submersible Liquid Level Transmitters

Applications

- Deep well and borehole measurements
- Groundwater monitoring
- Level measurement in open bodies of water
- Sewage lift and pumping stations
- Settling ponds and rainwater basins

Special Features

- Slender design
- Adjustable turndown (option)
- Resistant against the harshest environmental conditions
- Reliable and secure by double-sealed design
- Titanium case for especially high resistance (option)

Submersible pressure transmitter model LH-20
Fig. left: from stainless steel
Fig. right: from titanium

Description

For the most demanding measurement tasks
The model LH-20 submersible pressure transmitter has been designed for the most demanding of level measurement tasks. A slender design, highest accuracies, low temperature errors and an adjustable measuring range ensure the suitability of the LH-20 for all submerged level measurements.

The model LH-20 submersible pressure transmitter can adapt to countless applications and measuring media through a large number of features and options. Depending on the requirements, this level probe is available with, amongst other things, a titanium case, PUR/PE/FEP cable, 0.1 % accuracy, HART®, scaleability or parallel temperature output signal.

For operation in hazardous environments, the model LH-20 submersible pressure transmitter is also available in an intrinsically safe version. For potable and fresh water applications, a potable water conformant product variant is possible in accordance with KTW and ACS.

Hermetically sealed, robust and durable
The model LH-20 submersible pressure transmitter has been engineered for use in the harshest environments. Through a double, redundant sealing concept, it is permanently hermetically sealed. A robust design from stainless steel or titanium, with a spring-reinforced cable seal, ensures a long service life, even under the big mechanical loads of installation and continuous use.

Designs with the highest media resistance using FEP cable and titanium cases, along with the integrated lightning protection, guarantee the longevity of the submersible pressure transmitter even under the most adverse environmental influences in aggressive media, in both indoor and outdoor use.

Measuring ranges

Relative pressure						
bar	**Measuring range**	**0 ... 0.1**	**0 ... 0.16**	**0 ... 0.25**	**0 ...0.4**	**0 ... 0.6**
	Overpressure limit	15	20	30	30	35
	Measuring range	**0 ... 1**	**0 ... 1.6**	**0 ... 2.5**	**0 ... 4**	**0 ... 6**
	Overpressure limit	35	50	50	65	90
	Measuring range	**0 ... 10**	**0 ... 16**	**0 ... 25**		
	Overpressure limit	90	130	130		
inWC	**Measuring range**	**0 ... 50**	**0 ... 100**	**0 ... 150**	**0 ... 250**	
	Overpressure limit	8,000	12,000	12,000	14,000	
psi	**Measuring range**	**0 ... 5**	**0 ... 10**	**0 ... 15**	**0 ... 25**	**0 ... 50**
	Overpressure limit	400	500	700	700	900
	Measuring range	**0 ... 100**	**0 ... 160**	**0 ... 200**	**0 ... 300**	
	Overpressure limit	1,300	1,900	1,900	1,900	
mH_2O	**Measuring range**	**0 ... 1**	**0 ... 1.6**	**0 ... 2.5**	**0 ... 4**	**0 ... 6**
	Overpressure limit	150	200	300	300	350
	Measuring range	**0 ... 10**	**0 ... 16**	**0 ... 25**	**0 ... 40**	**0 ... 60**
	Overpressure limit	350	500	500	650	900
	Measuring range	**0 ... 100**	**0 ... 160**	**0 ... 250**		
	Overpressure limit	900	1,300	1,300		

Absolute pressure						
bar	**Measuring range**	**0 ... 1.6**	**0 ... 2.5**	**0 ... 4**	**0 ... 6**	**0 ... 10**
	Overpressure limit	50	50	60	90	90
	Measuring range	**0 ... 16**	**0 ... 25**			
	Overpressure limit	130	130			

The given measuring ranges are also available in mbar, kPA and MPa.

Output signals

Output signal	
Standard	**4 ... 20 mA**
Option	**4 ... 20 mA and HART® signal, additional Pt100 measurement signal**

Load in Ω

- 4 ... 20 mA:
  ≤ (power supply - 8 V) / 0.022 A
- 4 ... 20 mA and HART® signal:
  ≤ (power supply - 9.6 V) / 0.022 A

Voltage supply

Power supply

The power supply depends on the selected output signal.

- 4 ... 20 mA: DC 8 ... 36 V
- 4 ... 20 mA and HART® signal: DC 9.6 ... 36 V

When being operated in Ex areas, the submersible pressure transmitter must be powered via an Ex isolated barrier.
For Ex isolated barrier see "Accessories"

Additional Pt100 measuring element

The HART® version has an additional Pt100 measuring element for measuring the temperature of the medium.

Specifications:

- Pt100 per DIN EN 60751
- Measuring range -50 ... +100 °C
- Resolution of 1 °K

Reference conditions

Temperature
15 ... 25 °C

Atmospheric pressure
860 ... 1,060 mbar

Humidity
45 ... 75 % relative

Mounting position
Calibrated in vertical mounting position with pressure connection facing downwards.

Accuracy data

Non-linearity at reference conditions

Non-linearity	
Standard	≤ ±0.2 % of span
Option	≤ ±0.1 % of span

By setting a turndown of greater than 5:1, the non-linearity is decreased.

Determined using the limit point method in accordance to IEC 60770

Temperature error of the zero point in the temperature range 0 ... 80 °C

- at non-linearity ≤ 0.2 % of span
  - Standard, without turndown ≤ 0.15 % of span/10 K
  - Turndown ≤ 5:1 ≤ 0.20 % of span/10 K
  - Turndown > 5:1 ≤ 0.25 % of span/10 K
- at non-linearity ≤ ± 0.1 % of span
  - Standard, without turndown ≤ 0.05 % of span/10 K
  - Turndown ≤ 5:1 ≤ 0.10 % of span/10 K
  - Turndown > 5:1 ≤ 0.15 % of span/10 K

Long-term drift
≤ 0.1 % of span/year

Settling time (0 ... 63 %)
Depending on the output signal the following settling times apply:

- 4 ... 20 mA: 100 ms
- 4 ... 20 mA, HART® signal: 200 ms

Scalability (turndown)
The HART® version enables turndown to be set.

It is recommended that turndown is not set to over 5:1, since the accuracy can decrease dependant on the scaling.

Operating conditions

Ingress protection (per IEC 60529)
IP 68

Vibration resistance (per IEC 60068-2-6)
4 g (at 5 ... 100 Hz)

Lightning protection
Nominal discharge current ≥ 5 kA, response time < 25 ns

Explosion protection (optional)
The model LH-20 submersible pressure transmitter is available with the following Ex approvals, which can be ordered separately.

Approval
ATEX II 1G, 2G Ex ia IIC T6
IECEx ia IIC T6

Temperatures

- for use without explosion protection

  The permissible temperature ranges are dependent on the cable material used:

  - Medium
    - PE cable: - 40 ... +60 °C
    - PUR cable: - 40 ... +80 °C
    - FEP cable: - 40 ... +80 °C
  - Ambient
    - PE cable: - 40 ... +60 °C
    - PUR cable: - 40 ... +85 °C
    - FEP cable: - 40 ... +85 °C
  - Storage
    - PE cable: - 40 ... +80 °C
    - PUR cable: - 40 ... +80 °C
    - FEP cable: - 40 ... +80 °C
- for use as Category 1G equipment
  - Ambient
    - Temperature class T6: - 20 ... +50 °C
    - Temperature class T1 ... T5: - 20 ... +60 °C

- for use as Category 2G equipment

  - Ambient
    - Temperature class T6: -40 ... +66 °C
    - Temperature class T1 ... T5: -40 ... +80 °C

Maximum tensile force on the cable
1,200 N

Weight

- Submersible pressure transmitter: approx. 370 g
- Cable: approx. 100 g/m
- Additional weight (accessories): approx. 350 g

Process connections

The model LH-20 is available in two process connection variants:

Process connection	
Standard	M14 x 1 with protective cap
Option	Flush measuring cell

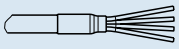
Electrical connections

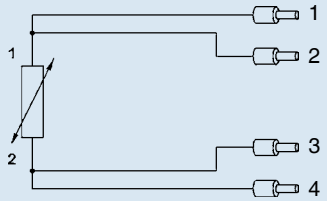
Reverse polarity protection
U_+ vs. U-

Overvoltage protection
see lightning protection under "Operating conditions"

Cable lengths
Cable length to customer requirements, freely selectable

Connection diagrams

Cable outlet		
	**U_+**	brown
	U-	blue
	Shield	black sheathed cable

Pt100 measuring element (4-wire connection)		
	**1**	white
	2	yellow
	3	red
	4	black

Approvals, directives and certificates

Approvals and certificates
On request, the submersible pressure transmitter can be supplied with the following approvals and certificates:

Available approvals
ATEX (explosion protection in accordance with ATEX)
IECEx (explosion protection in accordance with IECEx)
GL (Germanischer Lloyd)

Available certificates
Drinking water declaration of conformity in accordance with KTW and ACS
Test certificate [1]

1) The test certificate documents the product-specific instrument specifications and include a detailed listing of the individual measured values of the acceptance test.

CE conformity

- Outputsignal 4 ... 20 mA:
  EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

- Outputsignal 4 ... 20 mA and HART® signal:
  EMC directive 2004/108/EC, EN 61326 emission (group 1, class A) and interference immunity (industrial application)

- ATEX 94/9/EG (option)

Materials (wetted)

Case	
Standard	Stainless steel 316L
Option	Titan

Cable material	
Standard	PUR
Option 1	PE
Option 2	FEP

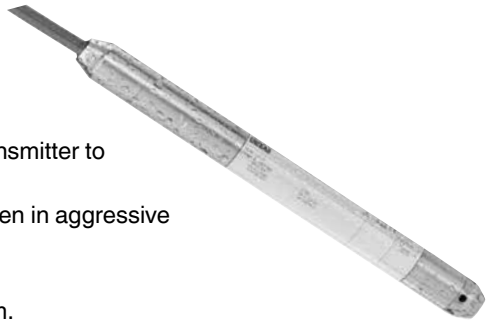
Sealing material [1]	
Standard	FKM
Option	EPDM

1) The model LH-20 is double sealed behind the sensor.

Additional weight	
Standard	Stainless steel 316L
Option	Titan

Sensor
Ceramic Al_2O_3 96 %

Titanium for especially high resistance (option)



For a particularly high resistance against aggressive media, the model LH-20 submersible pressure transmitter is available with a titanium case.

This exceptionally high-quality material enables the submersible pressure transmitter to be used under the most adverse conditions.
The highly chemically-resistant titanium design ensures a long service life, even in aggressive media and the most demanding applications.

The additional weight, available as an accessory, is also obtainable in titanium.

Dimensions in mm

Submersible pressure transmitter model LH-20

with flush measuring cell

with M14 x 1 process connection and protection cap

Accessories

	Description	Order number
	**Cable strain relief clamp** The cable strain relief clamp enables easy and secure mechanical fastening of the submersible pressure transmitter's cable at the measuring point. It acts as a guide for the cable, in order to avoid mechanical damage and to reduce the tensile stress.	14052336
	**Additional weight** The additional weight increases the dead weight of the submersible pressure transmitter. It simplifies the lowering into monitoring wells, narrow shafts and deep wells. It effectively reduces negative environmental influences on the measuring result from the measured medium (e.g. turbulent flow). The additional weight is available in two variants: ■ Stainless steel 316L, approx. 350 g, length 120 mm ■ Titanium, approx. 350 g, length 214.5 mm It is recommended that the design of the additional weight is selected in line with the case material of the submersible pressure transmitter.	 14052322 (316L) 14052330 (Titanium)
	**Terminal box** The terminal box, with IP 67 ingress protection and watertight ventilation element, provides a moisture-free electrical termination for the submersible pressure transmitter. It should be mounted in a dry environment, outside any shafts or vessels, or directly in the switch cabinet.	14052339
	**Ex isolated barrier** Ex isolated barrier, power supply DC 20 ... 32 V, output: max. DC 25.4 V, max. 88.2 mA	2341268
	**Display module DIH52 and DIH62** 5-digit display, 20-segment bargraph, without separate power supply, with additional HART® functionality. Automatic adjustment of measuring range and span. Secondary-master functionality: Setting the measuring range and unit of the connected transmitter using HART® standard commands possible. Optionally explosion protection per ATEX.	on request
	**HART® modem with USB, RS-232 or Bluetooth® interface** For scaling the measuring range using a PC via the HART® protocol, a HART® modem with USB, RS-232 or Bluetooth interface is available. The modem communicates with all registered HART® field devices and can be used with the most popular HART® compatible software programs.	7957522 (RS-232 interface) 11025166 (USB interface) 11364254 (Bluetooth® interface)

Ordering information

Model / Measuring range / Output signal / Accuracy / Cable material / Cable length / Case / Process connection / Sealing / Approval / Certificate / Accessories

VentGuard Cable Protection Kit

Applications

- Protects the vent tube of submersible pressure transmitters from moisture

Special Features

Protection Kit includes the following:

- NEMA 4 / IP 67 cable junction box with transparent polycarbonate cover
- Teflon® vent tube filter
- Reusable desiccant canister regenerates in microwave
- 7 position screw terminal block

Description

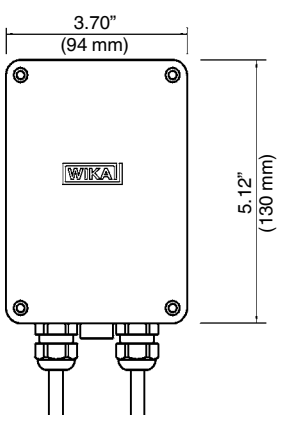
Submersible transmitter cables contain a vent tube that allows the transmitter to automatically compensate for changes in barometric pressure. This tube leads to the back of the sensor inside the transmitter. The transmitter may become damaged if moisture enters this tube.

The submersible cable protection kit is designed for applications where humidity or moisture is present.
It should be mounted in a location that will never be submerged. The NEMA 4X junction box features a transparent cover that allows easy viewing of the desiccant canister. The indicating silica gel in the canister changes color from blue to pink when canister regeneration is needed.

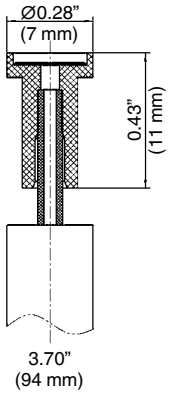
The canister can be regenerated by placing on its end in a microwave oven for approximately two minutes.

A Teflon® vent tube filter provides additional protection against dirt and moisture entering the vent tube.

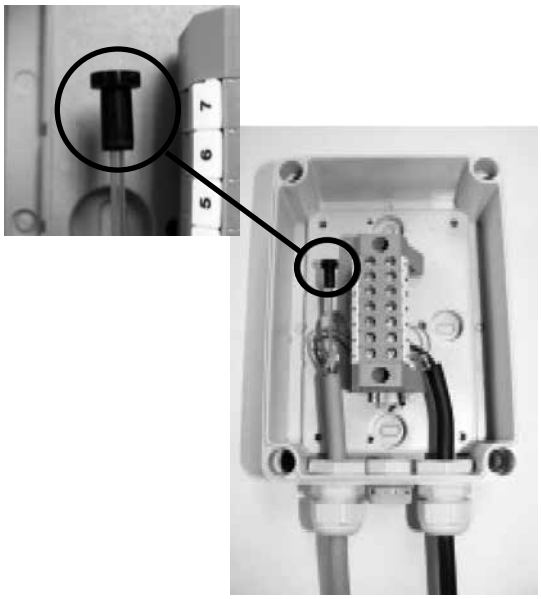
Two compression fittings accommodate the submersible cable entry on one side and standard cable for the exit side.



NEMA 4X junction box with clear cover



Slip-on vent tube filter



The Cable Protection kit includes a teflon vent tube filter protector that slides on to the vent tube after the submersible cable is installed in the junction box. The terminal strip can be oriented vertically or horizontally as required for the application.

Blue = active desiccating canister

Pink = canister regeneration required

The reusable desiccating canister is visible through the plastic cover of the junction box. The canister will adsorb moisture and help keep the air in the junction box dry. When the indicating silica gel changes color from blue to pink the canister can be regenerated.

To regenerate, remove the canister from the junction box. Stand the canister on its end in a microwave oven and microwave on high for about two minutes. Microwave for an additional minute if necessary until the canister contents turn blue. Caution: the canister will be extremey hot when removed from the microwave and should be handled with care. Allow to cool completely before reinstalling inside the junction box.

Description	Part #
VentGuard cable protection kit	50600770

Type LS-10 Submersible Liquid Level Transmitter 100 InWC to 100 psi

Standard Features

- **Signal output:** **4-20 mA 2-wire**
- **Supply voltage:** **10-30 VDC**
- **Process connection:** **G1/2B with removable protective cap**
- **Electrical connection:** **Vented polyurethane cable (must specify length)**

Important Ordering Instructions: Specify the **level transmitter part number** and **cable length part number** corresponding to the total required cable length. For example, a 100 InWC level transmitter with 40 feet of cable should be ordered as 4262761 / 4347931.

Pressure range part number AND cable length part number must be specified on every order!

Cable Length Part Numbers

CABLE LENGTH SELECTOR					
Length	**Part#**	**Length**	**Part #**	**Length**	**Part #**
5 feet	4347868	60 feet	4347974	130 feet	4348075
10 feet	4347876	65 feet	4347982	140 feet	4348083
15 feet	4347885	70 feet	4347990	150 feet	4348091
20 feet	4347893	75 feet	4348006	160 feet	4348105
25 feet	4347906	80 feet	4348016	170 feet	4348113
30 feet	4347915	85 feet	4348024	180 feet	4348121
35 feet	4347923	90 feet	4348032	190 feet	4348139
40 feet	4347931	95 feet	4360903	200 feet	4348147
45 feet	4347949	100 feet	4348040	250 feet	4364479
50 feet	4347957	110 feet	4348058	300 feet	4366340
55 feet	4347966	120 feet	4348066	Contact factory for lengths over 300 feet	

LS-10 Standard Ranges

Gauge Ranges	
Description	
Range	**Part #**
0-100 InWC	4262761
0-150 InWC	4262779
0-250 InWC	4262787
0-400 InWC	4262795
0-5 psi	4262809
0-10 psi	4262817
0-15 psi	4262825
0-25 psi	4262833
0-30 psi	4262841
0-50 psi	4262850
0-100 psi	4262868

Items without part numbers are available on special order.

NOTE: LS-10 "Ready-to-Ship" submersible transmitters require assembly from factory stocked components and usually ship in three days or less.

Type LH-10 Submersible High Performance Liquid Level Transmitter 50 InWC to 400 psi

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Process connection:** G1/2B with removable protective cap
- **Electrical connection:** 40 ft. vented polyurethane cable

Gauge Ranges	
Description	
Range	Part #
0-50 InWC	9699703
0-100 InWC	9699711
0-150 InWC	9699729
0-250 InWC	9699737
0-400 InWC	9699745
0-5 psi	8371846
0-10 psi	9699754
0-15 psi	9736225
0-25 psi	9699762
0-50 psi	9699770
0-100 psi	9699788

LH-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire (Supply 14-30 V)
	G	0 ... 5 V, 3-wire
	S	0.5 ... 2.5 V, 3-wire
1	?	Other - please specify
		Unit
	P	psi
	N	InWC
2	?	Other - please specify
		Pressure range
	GG	0 InWC ... 50 InWC
	GU	0 InWC ... 100 InWC
	GV	0 InWC ... 150 InWC
	GW	0 InWC ... 250 InWC
	GX	0 InWC ... 400 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi
	CQ	0 psi ... 25 psi
	DA	0 psi ... 50 psi
	BF	0 psi ... 100 psi
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	DG	0 psi ... 250 psi
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
3	??	Other - please specify
		Process connection
	GD	G 1/2 B
4	??	Other - please specify
		Special design features
	Z	Without
	K	FEP cable
	O	Lightning protection according to EN 61000-4-5
	J	Temperature measurement Pt 100, 4-wire [1]
	Y	Lightning protection and Pt. 100 [1]
	2	Hastelloy® C4 [2]
5	?	Other - please specify

1) Only with Pur (polyurethane) cable
2) Only with FEP (Teflon®) cable

LH-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Cable
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
6	?	Other
		Quality certificates
7	Z	Without
		Digital display
8	Z	Without
		Additional order details
	Z	Without
9	T	Additional order details

Order Code:

	1		2	3		4		5	6		7	8	9 *
LH-10 -		-			-		-			-			

*Additional order details _____

LH-20 Smart Codes for Custom Order Configurations

Field no.	Code	Feature	
		Unit	
	N	inWC	
	P	psi	
1	?	Other - please specify	
		Pressure reference	
	G	Gauge	
	A	Absolute (not with inWC ranges)	
2	?	Other - please specify	
		Pressure range	
	212	0 InWC ... 50 InWC	
	225	0 InWC ... 100 InWC	
	237	0 InWC ... 150 InWC	
	262	0 InWC ... 250 InWC	
	234	0 psi ... 5 psi	
	269	0 psi ... 10 psi	
	310	0 psi ... 15 psi	
	317	0 psi ... 25 psi	0 psi ... 25 psia
	335	0 psi ... 50 psi	0 psi ... 50 psia
	369	0 psi ... 100 psi	0 psi ... 100 psia
	411	0 psi ... 160 psi	0 psi ... 160 psia
	414	0 psi ... 200 psi	0 psi ... 200 psia
	421	0 psi ... 300 psi	0 psi ... 300 psia
3	???	Other - please specify	
		Cable Material	
	A	PUR (Polyurethane)	
	B	FEP (Fluorinated Ethylene Proplyene)	
4	C	PE (Polyethylene)	
		Unit of Cable Length	
	F	Feet	
5	?	Other - please specify	
		Cable Length	
		PUR per foot price	
		FEP per foot price	
		PE per foot price	
6		Cable length to nearest foot ☐☐☐☐ (Example: 40 feet = 0040)	
		Signal Output	
	A	4 ... 20 mA 2-wire	
7	R	4 ... 20 + Hart + PT 100	

LH-20 Smart Codes for Custom Order Configurations (continued)

Field no.	Code	Feature
		Accuracy
	M	± 0.1% B.F.S.L.
8	P	± 0.05 B.F.S.L.
		Housing
	S	Stainless steel
9	T	Titanium
		Approvals
	A	ATEX
	I	IECEX
	Z	Without
10	?	Other - please specify
		Protection Type
	E	EX ia (intrinsic safety)
	Z	Without
11	?	Other
		Atmosphere
	GA	Gas Zone 0 and 1 (1G, 2G) (With ATEX)
	GB	Gas Zone 0 (1G) with (IECEX)
	ZZ	Without
12	??	Other
		Other Approvals
	Z	Without
	G	Ship approval (GL)
13	?	Other
		Potable Water Conformance Certificate
	Z	Without
14	K	KTW, ACS
		Certificate
	Z	Without
15	K	With test protocols
		Process Connection
	LS	M14 x 1 protective cap
	LT	Flush diaphragm
16	??	Other
		Sensor seal material
	K	Dual FKM (VP2 / A)
17	E	Dual EPDM (A+P 75.5 / KW75F)

LH-20 Smart Codes for Custom Order Configurations (continued)

Field no.	Code	Feature
		Additional order details
	Z	Without
18	T	Additional text

Smart Code: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

LH-20 - [ ][ ][ ] - [ ][ ][ ] - [ ][ ] - [ ] - [ ][ ][ ][ ][ ] - [ ] - [ ][ ] - [ ]

Type IL-10 Intrinsically Safe Submersible Liquid Level Transmitter for Hazardous Environments

Applications

- Level measurement in hazardous areas
- Refineries
- Distilling equipment
- Painting plants
- Filling equipment for combustible gases
- Overfilling systems on tank vehicles, bore holes, waste water plants (biogases from sewage), etc.

Special Features

- Pressure ranges from 50 InWC to 400 psi
- Ex- protection EEx ia I/II C T6 according to ATEX
- Applicable in all hazardous environments:
  Gases and vapor: Zone 0, Zone 1 and Zone 2
  Dusts: Zone 20, Zone 21 and Zone 22
- Cable supports over 220 pounds of strain
- Ingress protection IP 68 for submersion to 1000 feet

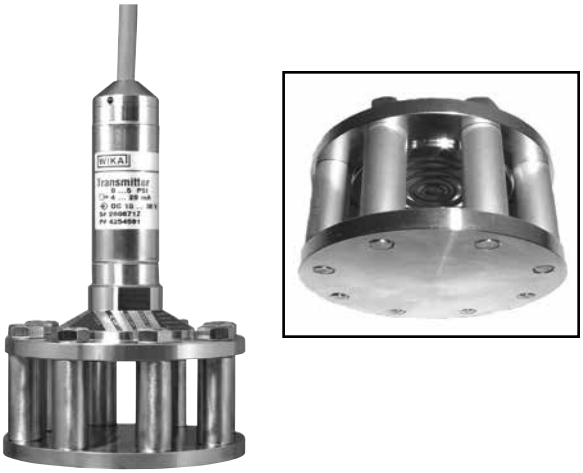
Fig. Intrinsically safe IL-10 level transmitter

Description

The IL-10 intrinsically safe level transmitter is designed for use in a wide variety of level measurement applications. The IL-10 provides a BFSL accuracy better than 0.25% of span and an output signal of 4-20mA.

The IL-10 has FM, ATEX and CSA approvals for installation in hazardous areas when used with the appropriate intrinsically safe zener barrier. The cable can withstand up to 220 pounds of strain, also, no additional cable support is required.

The IL-10 includes a dual cable entry design that prevents ingress of moisture into the electronics even if the cable's outer jacket is damaged. Compensation for changes in barometric pressure is accomplished through a vent tube in the cable. Many accessories, including cable clamps, drying cartridges and junction boxes are available for specific installation requirements.



Optional WIKA LevelGuard Anti-clog attachment for submersible level transmitters. For use in lift stations, wet wells and other difficult level applications.

Specifications Type IL-10

Pressure ranges	100 InWC	150 InWC	250 InWC	400 InWC	5 psi	10 psi	15 psi	25 psi	30 psi	50 psi	100 psi
Over-pressure safety	30 psi	30 psi	60 psi	72 psi	30 psi	60 psi	72 psi	145 psi	145 psi	240 psi	500 psi
Burst pressure	35 psi	35 psi	70 psi	87 psi	35 psi	70 psi	87 psi	170 psi	170 psi	290 psi	600 psi
Materials											
■ Wetted part											
» Cable		PUR {FEP up to 10 bar}									
» Protection cap		Stainless steel {Hastelloy®}									
■ Case		Stainless steel {Hastelloy®}									
■ Internal transmission fluid		Synthetic oil									
Power supply UB	UB in VDC	10 ... 30									
Signal output and		4 ... 20 mA, 2-wire									
maximum ohmic load R_A	R_A in Ohm	$R_A \leq$ (UB – 10 V) / 0.02 A - (0.043Ω x cable length in feet)									
Dielectric strength		Insulation complies with EN 50020, 6.4, 12									
Accuracy	% of span	≤ 0.25 {0.125} [1] (BFSL)									
	% of span	≤ 0.5 [2] {0.25} [1] [2]									
		[1] Accuracy { } for pressure ranges ≥ 0.25 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	≤ 0.2 (BFSL) according to IEC 61298-2									
Non-repeatability	% of span	≤ 0.1									
1-year stability	% of span	≤ 0.2 (at reference conditions)									
Permissible temperature of											
■ Medium [3] [4] [5]		-14 ... +140 °F						-10 ... +60 °C			
		{-14 ... +185 °F with FEP-cable}						{-10 ... +85 °C with FEP-cable}			
■ Storage [3]		-14 ... +140 °F						-10 ... +60 °C			
		[3] Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3									
		[4] Other temperature ranges are possible, depending on the electrical connection; see EC-type examination certificate and table page 4.									
Compensated temp. range		32 ... +122 °F						0 ... +50 °C			
Temperature coefficients within compensated temp range											
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure ranges ≤ 50 InWC)									
■ Mean TC of range	% of span	≤ 0.2 / 10 K									
CE-conformity											
■ EMC directive		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and									
		Immunity (industrial locations)									
■ ATEX-Directive ATEX of equipment intended for use in potentially explosive atmospheres		94/9/EC									
Ex-protection	ATEX	Category [5] 1G (IIA), 1/2G, 2G (IIA), 1D, 1/2D, 2D, M1, M2									
Ignition protection type		EEx ia I/II C T4, EEx ia I/II C T5, EEx ia I/II C T6									
		[5] **Read** the operating conditions and **safety-relevant data in** the **EC-type examination certificate in any case** (DMT 00 ATEX E 045 X)									
Ex-protection	FM, CSA	Class I, II and III									
Ignition protection type		Intrinsic safe Class I, II, III Division 1,									
		Group A, B, C, D, E, F, G and Class I, Zone 0 AEx ia II C									
Approval German Lloyd GL		Environmental Category C, F, EMC 1									
HF-immunity	V/m	10									
BURST	KV	4									
Wiring protection											
■ Short-circuit proofness		Sig+ towards UB-									
■ Reverse polarity protection		UB+ towards UB-									
Weight	lb	Approx. 0.1									
» Cable	oz. per ft.	Approx. 1.0									

{ } Items in curved brackets are optional extras for additional price.

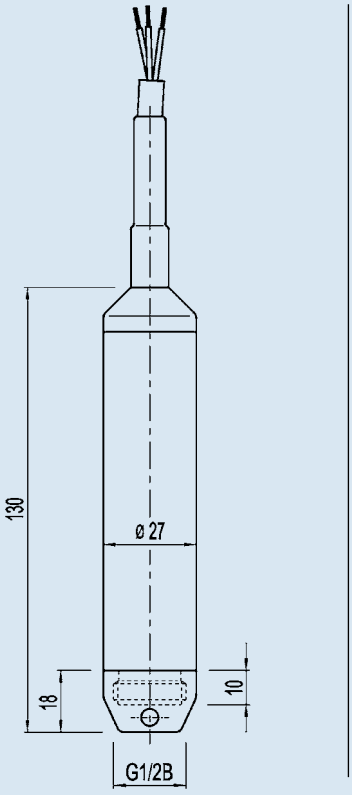
Dimensions in mm

Ingress Protection IP 68 per IEC 60529.

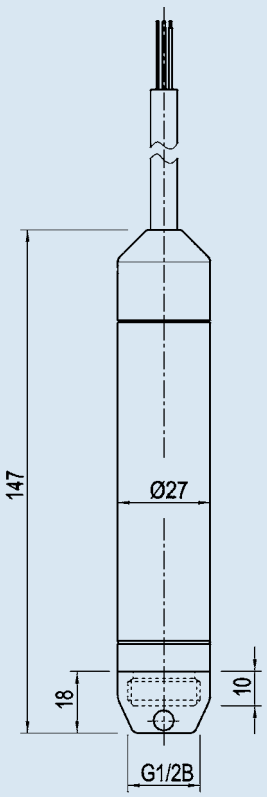
Permissible temperature ranges depending on electrical connections; see table page 4.

Electrical connections

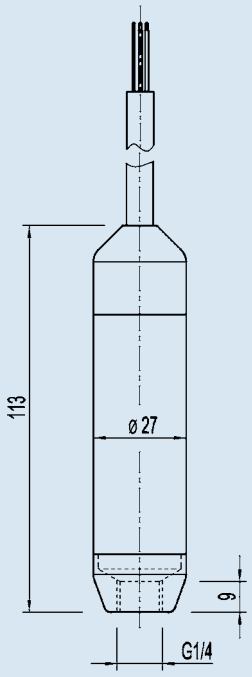
Vented PUR-cable,
max tensile strength of 1000 N
(immersion depth up to 300 m)



FEP-cable
max tensile strength of 500 N
(immersion depth up to 100 m)



FEP-cable
max tensile strength of 500 N
(immersion depth up to 100 m),
{Hastelloy®}



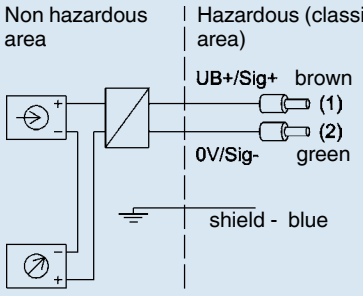
When mounting, no additional strain relief is required.

For installation and safety instructions see the operating instructions for this product.

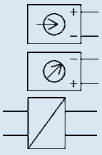
Wiring details

2-wire

Vented cable
conductor cross section 0.25 mm ², AWG 24 with end splices,
conductor outer diameter 7.5 mm



Legend:



Permissible temperature ranges depending on electrical connections

Electrical connections	Category	Medium and Ambient temperature range	
PUR-cable	1 G (IIA), 2 G (IIA), M1, 1 D, 2 D	14 ... +140 °F	-10 ... +60 °C
FEP-cable	1 G (IIA)	-22 ... +140 °F	-30 ... +60 °C
	2 G (IIA), M1	-22 ... +221 °F	-30 ... +105 °C
	1 D, 2 D	-22 ... +176 °F	-30 ... +80 °C

Type IL-10 Intrinsically Safe Submersible Liquid Level Transmitter for Hazardous Environments

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 10-30 VDC
- **Process connection:** G 1/2 B

IL-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Unit
	P	psi
	N	InWC
1	?	Other - please specify
		Pressure range
	GG	0 inWC ... 50 InWC
	GU	0 inWC ... 100 InWC
	GV	0 InWC ... 150 InWC
	GW	0 InWC ... 250 InWC
	GX	0 InWC ... 400 InWC
	CN	0 psi ... 5 psi
	CP	0 psi ... 10 psi
	BC	0 psi ... 15 psi
	CQ	0 psi ... 25 psi
	BD	0 psi ... 30 psi
	BE	0 psi ... 60 psi
	BF	0 psi ... 100 psi
	BG	0 psi ... 160 psi
	BH	0 psi ... 200 psi
	BI	0 psi ... 300 psi
	BK	0 psi ... 400 psi
2	??	Other - please specify
		Process connection
	GD	G 1/2 B
3	??	Other - please specify

IL-10 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Special design features
	Z	Without
	2	Hastelloy® C4
	K	FEP cable [1]
4	?	Other - please specify
		Accuracy
	G	+/- 0.25% B.F.S.L.
5	K	+/- 0.125% B.F.S.L. [2]
		Cable length
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
	4	40 feet
	5	50 feet
6	?	Other
		Approvals
	2	EEx IP6X 1D, 1G, M1 per ATEX incl. FM and CSA
	U	EEx IP6X 1D, 1G, M1 per ATEX incl. FM, CSA and ship approval GL
7	?	Other - please specify
		Quality certificates
	Z	Without
8	1	Other - please specify
		Digital display
9	Z	Without
		Additional order details
	Z	Without
10	T	Additional order details

1) FEP (Fluorinated Ethylene Propylene), also known by the Dupont trade name of Teflon®
2) Must use G 1/4 B Female process connection

Order Code: 1 2 3 4 5 6 7 8 9 *10

IL-10 - A - [ ][ ] - [ ] - [ ][ ][ ][ ] - [ ][ ][ ]

*Additional order details _____

Type MH-2 Special Purpose Pressure Transmitters for Mobile Hydraulic Applications

Applications

- Mobile hydraulic systems
- Load monitoring

Special Features

- Pressure ranges from 100 psi to 8,000 psi
- 4-20 mA, 1-5V, 0-10V, 0.5-4.5V ratiometric outputs available
- Durable thin film sensor technology
- CDS system for protection from pressure spikes and cavitation
- IP 69K high pressure steam wash-down protection available
- MTTF values > 100 years

MH-2 pressure transmitters

Description

MH-2 pressure transmitters are precision engineered for off road and mobile hydraulic applications where performance and durability are critical. Extreme shock and vibration resistance, available high pressure steam wash-down protection and the WIKA CDS system (cavitation dampening system) provide one of the most rugged pressure transmitters available today. Pressure ranges from 1,000 psi to 8,000 psi meet all standard mobile hydraulic pressure applications.

The all-welded thin film measuring cell eliminates the need for additional soft sealing materials that may deteriorate over time. The thin film sensor uses sputtered technology that provides excellent long-term stability in applications producing frequent pressure cycles. The rugged glass reinforced PBT plastic case has been used in under hood automotive applications for many years.

A metal sleeve inside the case provides excellent EMI protection to 100v/m. Several NEMA 4 / IP 67 electrical connections are available. The cable version provides environmental protection to IP 69K for resistance to high-pressure steam wash-down cleaning procedures.

The MH-2 is specifically designed for OEM applications in the mobile hydraulics and automotive industry. It is manufactured on a fully automated production line to provide large quantities of transmitters with consistent quality and highly competitive pricing.

Custom modifications are available for large quantity requirements.

Specifications Type MH-2

Pressure range	-30 InHG/100 psi	-30 InHG/100 psi	100 psi	150 psi	250 psi	300 psi	500 psi
Maximum pressure*	1,740 psi	2,900 psi	290 psi	464 psi	725 psi	725 psi	1,160 psi
Burst pressure**	7,970 psi	11,600 psi	1,450 psi	2,320 psi	3,625 psi	3,625 psi	5,800 psi
Pressure range	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	17,500 psi	8,000 psi
Maximum pressure*	1,740 psi	2,900 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi
Burst pressure**	7,970 psi	11,600 psi	14,500 psi	17,400 psi	26,500 psi	34,800 psi	34,800 psi

*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

Materials:				
■ Wetted parts		Stainless steel		
■ Case		Fiberglass-reinforced polybutylene terephthalate (PBT)		
Power supply U_B		Signal output	Power supply U_B	Maximum load R_A
Signal output and		4 ... 20 mA, 2-wire	10 ... 36 DC V	$R_A \leq (U_B - 10\,V) / 0.02\,A$ with
Maximum load R_A				R_A in Ohm and U_B in Volt
		1 ... 5 V, 3-wire	8 ... 36 DC V	R_A > 2.5 kOhm
		0 ... 10 V, 3-wire	14 ... 36 DC V	R_A > 5 kOhm
		0.5 ... 4.5 V, ratiometric	5 ± 0.5 DC V	R_A > 4.5 kOhm
		Others on request		
Response time (10 ... 90 %)	ms	≤ 2		
Isolation voltage	VDC	500		
Accuracy	% of span	≤ 0.5 (BFSL)		
	% of span	≤ 1.0 (limit point calibration)		
		(Includes non-linearity, hysteresis, zero point and full scale error per IEC 61298-2)		
Non-repeatability	% of span	≤ 0.2		
Non-linearity	% of span	≤ 0.4 (BFSL) according to IEC 61298-2		
1-year stability	% of span	≤ 0.3 (at reference conditions)		
Permissible temperature of:				
■ Media *)		-40 ... +257 °F	-40 ... +125 °C	
■ Ambient *)		-40 ... +212 °F	-40 ... +100 °C	
■ Storage *)		-40 ... +248 °F	-40 ... +120 °C	
	*) Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3			
Compensated temperature range		+32 ... +176 °F	0 ... + 80 °C	
Temperature coefficients (TC) within				
compensated temperature range:				
■ Mean TC of zero	% of span	≤ 0.15 / 10K (special pressure ranges may have increased zero TC)		
■ Mean TC of range	% of span	≤ 0.15 / 10K		
CE conformity		2004/108/EC interference emission and immunity see EN 61 326		
		interference emission limit class A and B		
		97/23/EG Pressure equipment directive		
Shock resistance	g	500 according to IEC 60068-2-27 (mechanical shock)		
Vibration resistance	g	20 according to IEC 60068-2-6(vibration under resonance)		
■ Short circuit protection		S+ towards U-		
■ Reverse polarity protection		S+ towards U- {available with ratiometric signal upon request}		
Weight	oz	Approximately 2.1		

Dimensions in inches (mm)

Electrical connections

Ingress Protection (IP) per IEC 60 529

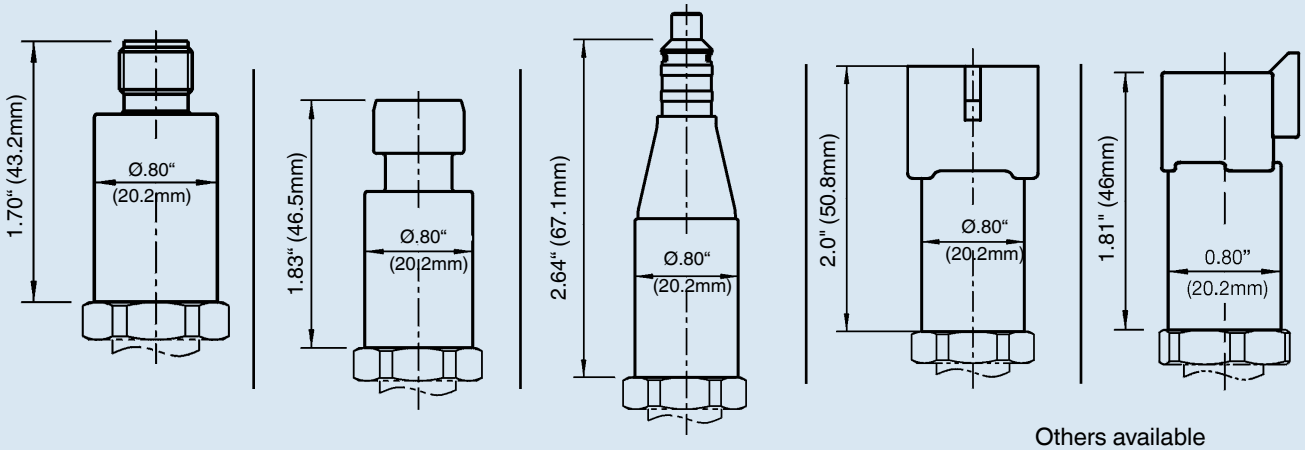
Circular connector
M12 x 1, 4 pin,
NEMA 4 / IP 67
Order code: M4

Metri Pack Connector
Series 150
NEMA 4 / IP 67
Order code: R3

Cable with free ends
IP69K high pressure
steam washdown
Order code: FN

Connector
AMP Superseal 1.5
NEMA 4 / IP 67
Order code: S3

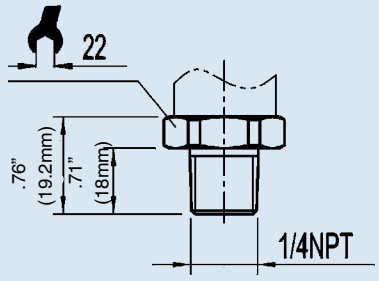
Deutsch 3-Pin
DT04-3P
Order Code: G3



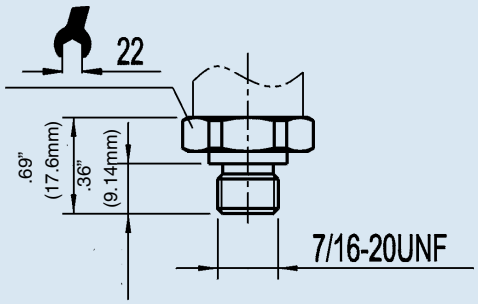
Others available

Pressure connections *)

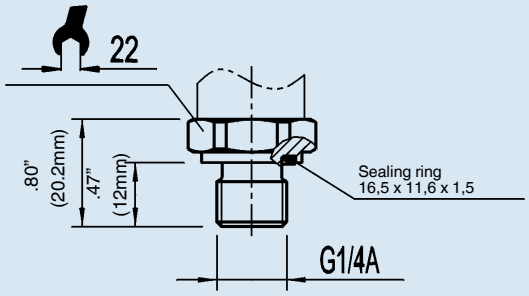
1/4 NPT male
Order code: NB



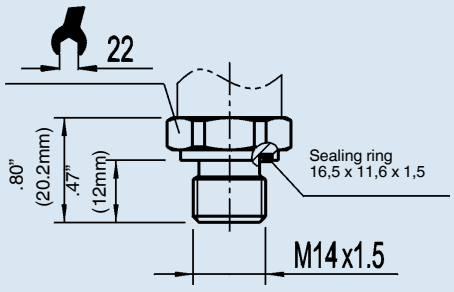
SAE #4 7/16-20 UNF-2A
male o-ring boss
Order code: MV



G 1/4 per DIN 3852-E
Order code: HD



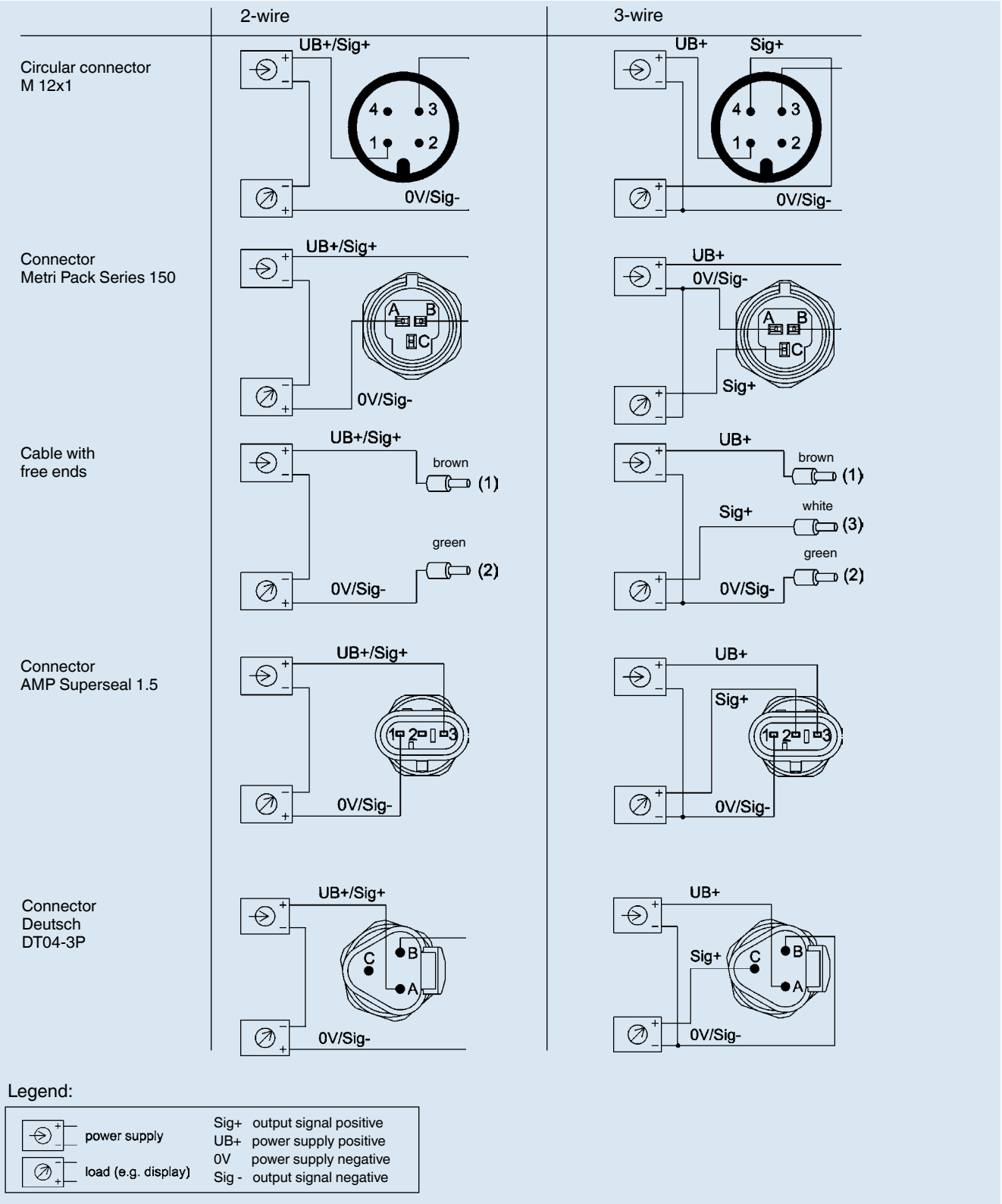
M 14 x1.5 per DaIN 3852-E
Order code: HN



Others available

*) pressure connections incorporate the WIKA CDS system. This includes a reduced diameter pressure port for protection against pressure spikes and cavitation.

Electrical connections



Type MH-2 Mobile Hydraulic Pressure Transmitter
100 psi to 8,000 psi

Note: 50 piece minimum order quantity applies.

MH-2 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	K	1 ... 5 V, 3-wire
	F	0 ... 10, 3-wire
	W	0.5-4.5V ratiometric
1	?	Other - please specify
		Unit
	P	psi
2	?	Other - please specify
		Pressure range
	CH	30 inHg ... 100 psi
	CL	30 inHg ... 200 psi
	BF	0 psi ... 100 psi
	DC	0 psi ... 150 psi
	DG	0 psi ... 250 psi
	BI	0 psi ... 300 psi
	DI	0 psi ... 500 psi
	BN	0 psi ... 1,000 psi
	BO	0 psi ... 1,500 psi
	BQ	0 psi ... 3,000 psi
	BS	0 psi ... 5,000 psi
	DS	0 psi ... 8,000 psi
3	??	Other - please specify
		Process connection
	NB	1/4" NPT
	UA	7/16-20 UNF SAE #4 J514 male
	GB	G 1/4 B
	HD	G 1/4 B DIN 3852-E
	HN	M 14x1.5 DIN 3852-E
	MV	7/16-20 SAE #4 w/O-ring boss)
4	??	Other - please specify

MH-2 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Case material
	M	Fiberglass reinforced ABS plastic (PBT)
5	V	Stainless steel
		Electrical connection
	M4	4 Pin locking plug M12 x 1(NEMA 4/IP67)
	R3	Metri-pack series 150 3-Pin (NEMA 4/IP67)
	V4	4 Pin bayonet connector (IP69K high pressure seam protection) DIN 72 585
	G3	Deutsch 3 Pin DT04-3P
	S3	AMP superseal 1.5 3 Pin (NEMA 4/IP67)
	FN	Cable with free ends (IP 69K high pressure steam protection)
6	??	Other - please specify
		Cable length
	Z	Without (always with plug version)
	A	0.5 meter (1.6 feet)
	B	2 meter (6.5 feet)
	G	5 meter (16.4 feet)
7	?	Other
		Quality certificates
	Z	Without
8	1	Other - please specify
		Digital display
	Z	Without
9	1	Other display (order separately)
		Additional order details
	Z	Without
19	T	Additional order details

Note: 50 piece minimum order quantity applies.

Order Code: 1 2 3 4 5 6 7 8 9 10*

MH-2 - ☐ - ☐☐ - ☐ - ☐ Z ☐☐ - ☐☐☐

*Additional order details _____

Type UT-10, UT-11 UniTrans® Universal Pressure Transmitters

Applications

- Process engineering
- Chemical engineering
- Plant construction

Special features

- Scaleable measuring ranges via turndown of up to 1 : 20
- Measuring range from 0 ... 5 mbar up to 0 ... 4,000 bar
- High measuring accuracy
- Fully welded, stainless steel diaphragm
- Multifunction display

Left - UT-11
Right - UT-10

Description

Turn Down
With its maximum 1 : 20 turndown ratio the UniTrans® can be used in many different applications. This turndown ratio eliminates the necessity of keeping several transmitters in stock; it is much easier to turn down the transmitter instead of changing transmitters (e.g. a 100 bar transmitter can be turned down to 5 bar).

High measuring accuracy
The internal, digital signal processing allows for high measuring accuracy at fast measuring rates and pressure ranges from 5 mbar to 4,000 bar.

Multifunction display
The optional display can be adjusted mechanically and electronically, thus guaranteeing many display variations and an optimal reading from different directions. Bar graph and trend are permanently displayed. Only a minor modification of the case is required in order to be able to read the display from above. All standard units can be displayed. Two further lines are available for entering additional text (e.g. min./max. values or temperature at the sensor).

Configuration
With the easy-to-use menu, the user can set parameters such as language, unit, zero point, span or inverted signal. The UniTrans® can be used for linearization with up to 32 set points.

Signal
The UniTrans® is fed with an input power of DC 12 ... 36 V. The output signal is 4 ... 20 mA, 2-wire system. The user can program an inverted signal 20 ... 4 mA or damping (up to 40 seconds).

Specifications		Type UT-10, standard version Type UT-11, flush diaphragm						
Pressure ranges [1] *	0.4 bar	1.6 bar	6 bar	16 bar	40 bar	100 bar	250 bar	600 bar
Over-pressure safety	2 bar	10 bar	35 bar	80 bar	80 bar	200 bar	500 bar	1,200 bar
Burst pressure	2.4 bar	12 bar	42 bar	96 bar	400 bar	800 bar	1,200 bar	2,400[3] bar
Pressure ranges [1] *	1,000[2] bar	1,600 [2] bar	2,500[2] bar	4,000[2] bar				
Over-pressure safety	1,500 bar	2,000 bar	3,000 bar	4,400 bar				
Burst pressure	3,000 bar	4,000 bar	5,000 bar	7,000 bar				
		{Vacuum, gauge pressure, compound range, absolute pressure are available}						
Materials								
■ Wetted parts		(other materials see WIKA diaphragm seal program)						
➢ Type UT-10		Stainless steel (pressure ranges > 16 bar additional Elgiloy®)						
➢ Type UT-11		Stainless steel {Hastelloy® C4}; O-ring: NBR [4] {FPM/FKM or EPDM}						
■ Case		Highly resistive, fiberglass-enforced plastic (PBT); {Aluminum}						
Internal transmission fluid [5]		Synthetic oil {Halocarbon® oil for oxygen applications} {Listed by FDA for Food & Beverage}						
Power supply U_B	DC V	$12 < U_B \leq 36$						
Signal output		4 ... 20 mA, 2-wire						
Permissible max. load R_A		$R_A \leq (U_B - 12\ V) / 0.023\ A$ with R_A in Ohm and U_B in Volt						
Adjustability								
■ Zero point	%	-2.5 ... 99						
■ Span		Turndown of 1 : 20 (1 : 2 for pressure ranges > 1,000 bar)						
Internal measuring rate	Hz	100						
Accuracy	% of span	≤ 0.1 [6] (≤ 0.3 for pressure ranges 1,000 bar)						
Behavior with turndown (1 : k)								
■ turndown of up to 1 : 5		No change of accuracy						
■ turndown of 1 : 5 to 1 : 20		The accuracy must be multiplied by the factor (k / 5) [Calculation example for TD = 1 : 15] Accuracy = 0.1 x (15 : 5) = 0.3						
Non-linearity	% of span	≤ 0.05 (≤ 0.2 for pressure ranges > 1,000 bar); (BFSL) per IEC 61298-2						
1-year stability	% of span	≤ 0.1 (at reference conditions)						
Overall deviation	%	at +10 ... +40 °C ≤ 0.15 (≤ 0.5 for pressure ranges > 1,000 bar)						
Permissible temperature of								
■ Medium *	°C	-30 ... +105 (G 1 ½ up to 30 min 140°C at an ambient temperature of < 50 °C) -30 ... +150 (G 1 according to EHEDG with cooling element)						
■ Ambience	°C	-40 ... +85 [7] (-20 ... +70 with display)						
■ Storage	°C	-40 ... +85 (-35 ... +80 with display)						
Compensated temp. range	°C	-20 ... +80						
Temperature coefficients within compensated temp range		(the temperature related deviations in the range +10 ... +40 °C included in the overall deviation)						
■ Mean TC of zero	% of span	≤ 0.1/ 10 K						
■ Mean TC of range	% of span	≤ 0.1 / 10 K						
Damping	s	display and signal: 0 ... 40 (adjustable)						
CE-conformity								
■ Pressure equipment directive		97/23/EG (Module H)						
■ EMV directive		2004/108/EG, EN 61326 Emission (Group 1, Class B) and immunity (industrial locations)						
Shock resistance	g	100 per IEC 60068-2-27 (mechanical shock)						
Vibration resistance	g	5 per IEC 60068-2-6 (vibration under resonance)						
Wiring protection		Protected against reverse polarity, short circuiting and {overvoltage} on the instrument side						
Weight	kg	approx. 0.7 {Aluminum version approx. 1.0}						

{ } Items in curved brackets are optional extras for additional price.
*) In an oxygen version model UT-11 is not available. In an oxygen version model UT-10 is only available in gauge pressure ranges from 0.4 bar up to max. 1000 bar and with media temperatures between -20 … +60 °C / -4 … +140 °F.
1) Other measuring ranges (e. g. 4 bar) can be set via the respective Turn down. Even when the measuring range is present by us on (e. g. 4 bar) the standard range of (6 bar) can be set again by a reset.
2) Only Type UT-10.
3) For Type UT-11: the value specified in the table applies only when sealing is accomplished with the sealing ring underneath the hex. Otherwise max. 1500 bar applies.
4) O-ring made of FPM/FKM {EPDM} for Model UT-11 with integrated cooling element.
5) Not for UT-10 with pressure ranges > 25 bar
6) Including non-linearity, hysteresis, non-repeatability, zero point and full scale error (corresponds to error of measurement per IEC 61298-2). Adjusted in vertical mounting position with lower pressure connection.
7) -40 °C only with Aluminium case.

Dimensions in mm

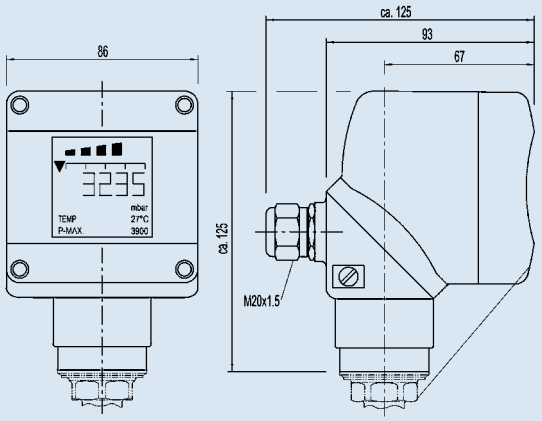
Ingress protection IP per IEC 60529

PBT-case, IP 65
Order code: M

cable gland M 20 x 1,5
with internal terminal block
Order code: A

} see drawings

{locking plug
M 12x1, 4 pin
Order code: M}

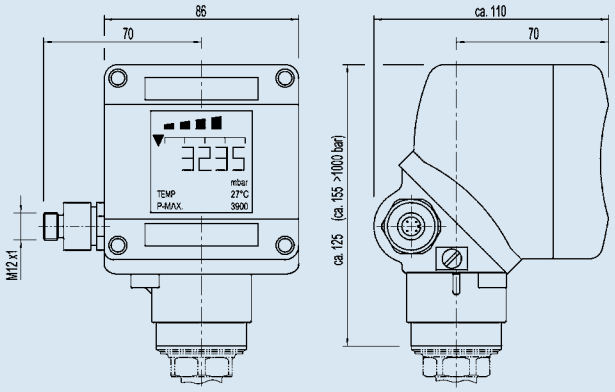


{aluminum case, IP 67
Order code: A}

{locking plug
M 12 x 1, 4-pin
Order code: M}

} see drawings

cable gland
M 20x1,5
with internal terminal block
Order code: A



Pressure connections UT-10

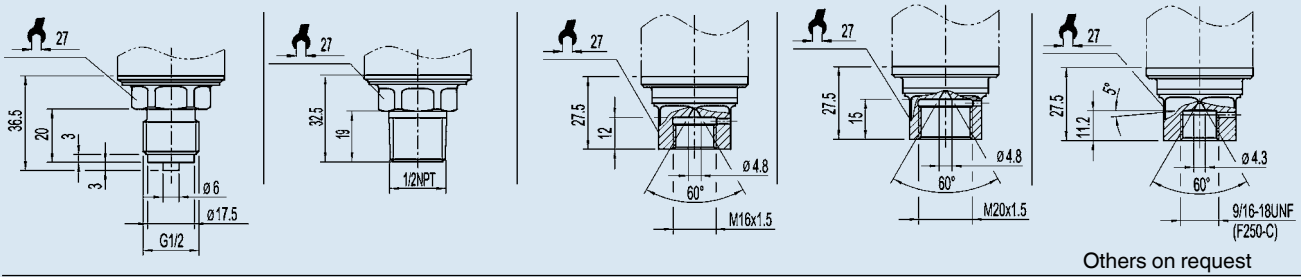
G 1/2
EN 837
max. 1,600 bar
Order code: GD

1/ 2 NPT
per “Nominal size for US standard tapered pipe thread NPT”
max. 1,600 bar
Order code: ND

M 16x1,5 female [1]
from 1,600 bar
Order code: ML

M 20x1,5 [1]
from 1,600 bar
Order code: MP

9/16-18 UNF female [1]
from 1,600 bar
Order code: VZ



Others on request

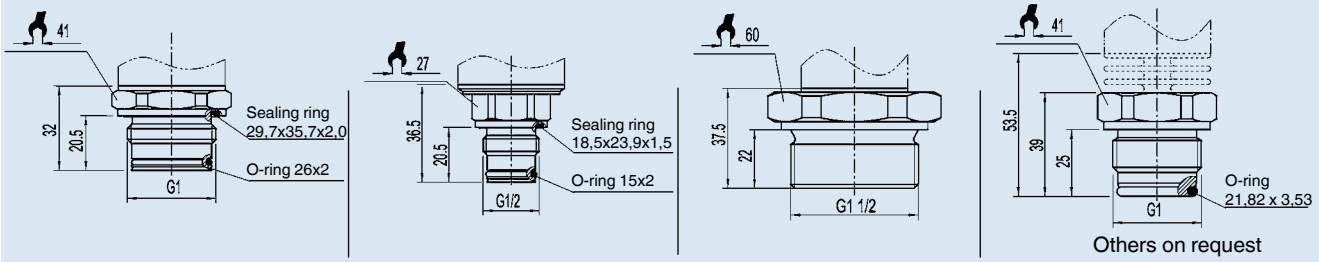
Pressure connections UT-11

G 1
0 ... 0,4 up to 0 ... 1.6 bar
Order code: 85

G 1/2
> 1.6 bar
Order code: 86

G 1 1/2
without O-ring
0 ... 0.4 up to 0 ... 16 bar
Order code: G6

G 1
acc. EHEDG [2],
0 ... 0.4 up to 0 ... 16 bar
Order code: 83
with cooling element up to 150 °C
Order code: 84

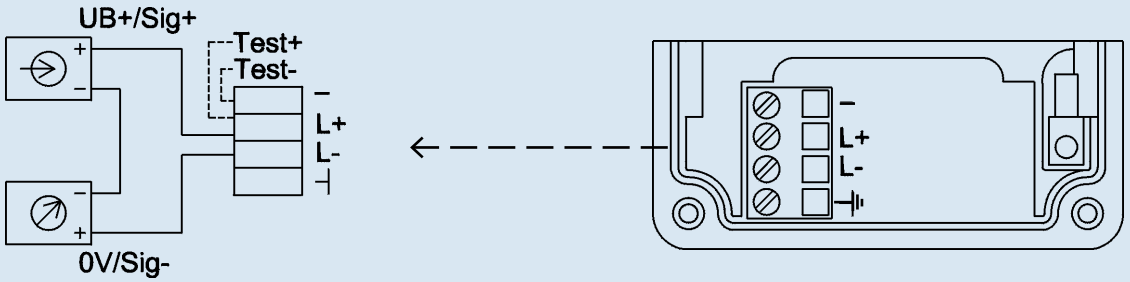


Others on request

1) The respective values for your mounting position please find in the documentation of your high-pressure equipment supplier.
2) European Hygienic Equipment Design Group
{ } Items in curved brackets are optional extras for additional price.

Electrical connection

2-wire



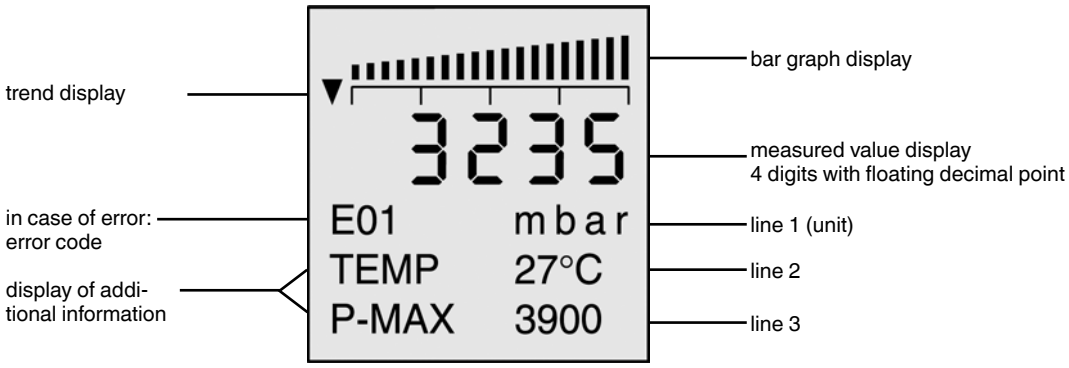
Legend:

Power supply

Load (e.g. display

ground
L - supply minus
L + supply plus
} 2-wire
I test circuit; connect meter between the clamps L+ and I

Random example of the optional display



Type UT-10 UniTrans® Universal Pressure Transmitters

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 12-36 VDC
- **Process connection:** 1/2" NPT male
- **Electrical connection:** M20 x 1.5 cable gland with internal terminal block

Gauge Ranges	
Description	
Range	Part #
0-5 psi	4292333
0-25 psi	4292341
0-100 psi	4292350
0-250 psi	4292368
0-500 psi	4292376
0-1,500 psi	4292384
0-3,000 psi	4292392
0-7,500 psi	4292406
0-15,000 psi	4292414

UT-10 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Unit
	P	psi
1	?	Other - please specify
		Pressure range
	CN	0 psi ... 5 psi
	CQ	0 psi ... 25 psi
	BF	0 psi ... 100 psi
	DG	0 psi ... 250 psi
	DI	0 psi ... 500 psi
	BO	0 psi ... 1,500 psi
	BQ	0 psi ... 3,000 psi
	DR	0 psi ... 7,500 psi
	BU	0 psi ... 15,000 psi
2	??	Other - please specify
		Process connection
	GD	G 1/2 B
	ND	1/2" NPT
3	??	Other - please specify
		Special design features
	Z	Without
	G	Suitable for food
	A	Oxygen, oil and grease free
4	?	Other - please specify
		Case material
	M	Fiberglass reinforced ABS plastic(PBT)
5	A	Aluminum with 3/4" female conduit
		Electrical connection
	A	Cable gland M20x1.5 with internal terminal block
	M	4 Pin locking plug M12 x 1
	C	3/4" NPT female conduit (only with aluminum case)
6	?	Other - please specify
		Digital display
	A	With integrated 4 digit LCD-display
	F	With integrated 4 digit LCD-display & plastic window
7	Z	Without
		Approvals
	Z	Without
8	?	Other - please specify
		Quality certificates
	Z	Without
9	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
10	T	Additional order details

Order Code:

		1	2		3		4	5		6	7	8		9	10 *
UT-10 - A -				**-**		**-**			**S**				**-**		

*Additional order details _____

Type UT-11 UniTrans® Universal Pressure Transmitters

Standard Features

- **Signal output:** 4-20 mA 2-wire
- **Supply voltage:** 12-36 VDC
- **Process connection:** G1B, G1/2B[1]
- **Electrical connection:** M20 x 1.5 cable gland with internal terminal block

Gauge Ranges	
Description	
Range	Part #
0-5 psi[1]	4292006
0-25 psi	4292014
0-100 psi	4292022
0-250 psi	4292031
0-500 psi	4292040
0-1,500 psi	4292058
0-3,000 psi	4292066
0-7,500 psi	4292074

NOTE [1]) G1B for 5 psi range, G1/2B for ranges ≥ 25 psi.

UT-11 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Unit
	P	psi
	3	psi absolute
1	?	Other - please specify
		Pressure range
	CN	0 psi ... 5 psi
	CQ	0 psi ... 25 psi (0 psi ... 25 psi absolute)
	BF	0 psi ... 100 psi (0 psi ... 100 psi absolute)
	DG	0 psi ... 250 psi (0 psi ... 250 psi absolute)
	DI	0 psi ... 500 psi
	BO	0 psi ... 1,500 psi
	BQ	0 psi ... 3,000 psi
	DR	0 psi ... 7,500 psi
2	??	Other - please specify
		Process connection
	85	G 1 B, flush diaphragm with O-ring (up to 25 psi)
	86	G 1/2 B, flush diaphragm with O-ring (> than 25 psi)
3	??	Other - please specify
		Material of wetted parts
	1	Stainless steel,NBR O-ring
	S	Hastelloy® C4,Viton® O-ring
4	?	Other- please specify
		Special design features
	G	Suitable for food
5	Z	Without
		Case material
	M	Fiberglass reinforced ABS plastic(PBT)
6	A	Aluminum with 3/4" NPT female conduit
		Electrical connection
	A	Cable gland M20x1.5 with internal terminal block
	M	4 pin locking plug M12 x 1
	C	3/4" NPT female conduit (only with aluminum case)
7	?	Other - please specify
		Digital display
	A	With integrated 4 digit LCD-display
	F	With integrated 4 digit LCD-display & plastic window
8	Z	Without
		Approvals
	Z	Without
9	?	Other - please specify
		Quality certificates
	Z	Without
10	I	NIST Certificate of Calibration
		Additional order details
	Z	Without
11	T	Additional order details

Order Code:

UT-11 - A - [1][2] **-** [3] **-** [4][5][6] **S** [7][8][9] **-** [10][11*]

*Additional order details _____

Type HP-2 Pressure Transmitter for High Pressure Applications up to 15,000 bar

Applications

- Test benches
- Water jet cutting
- High pressure pasteurisation
- High pressure cleaning

Special Features

- Pressure ranges up to 15,000 bar
- Accuracy 0.5 %
- Output: 4 ... 20 mA, 0 ... 10 V, etc.
- Electrical connection: DIN 175301-803 A L-connector, M12x1 circular connector, flying leads, etc.
- Pressure connections: M16x1.5 female, M20 x1.5 female, 9/16-18 UNF female F250-C

Left - HP-2 w/M12x1 electrical connection
Right - HP-2 w/DIN electrical connection

Description

The pressure transducer HP-2 is designed for superior high pressure applications up to 15,000 bar.

HP-2 provides a very high long-term stability and a very good accuracy.

Due to its excellent life cycle behaviour HP-2 offers an extra long service life also for dynamic pressure curves.

The optional cavitation and peak pressure protection has been developed especially for highly dynamic pressure curves. It provides an extended operating time even in demanding applications.

Specifications — Type HP-2

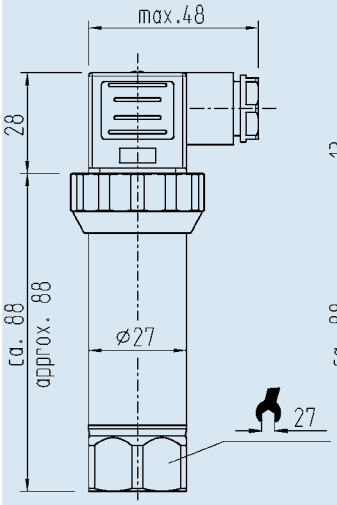
Pressure ranges	bar	1,600	2,500	4,000	5,000	6,000	7,000	8,000	10,000
Over-pressure safety	bar	2,300	3,500	5,000	6,000	7,000	8,000	10,000	11,000
Burst pressure	bar	4,000	6,000	8,000	10,000	11,000	11,000	12,000	12,000
Pressure ranges	psi	23,000	36,000	58,00	72,000	87,000	100,000	115,000	145,000
Over-pressure safety	psi	33,300	50,500	72,500	87,000	101,500	116,000	145,000	159,500
Burst pressure	psi	58,000	87,000	116,000	145,000	159,500	159,500	174,000	174,000
			Up to 15,000 bar / 217,000 psi on request.						
Materials									
■ Wetted parts			1.4534						
■ Case			Stainless steel						
Power supply U_B	U_B in VDC		10 ... 30 (14 ... 30 with signal output 0 ... 10 V)						
Signal output and	R_A in Ohm		4 ... 20 mA, 2-wire		$R_A \leq (U_B - 10\ V) / 0.02\ A$				
maximum resistive load R_A			0 ... 5 V, 3-wire		$R_A > 5$ k				
			0 ... 10 V, 3-wire		$R_A > 10$ k				
			Other signal outputs on request.						
Adjustability zero	%		± 5 using potentiometers inside the instrument						
Response time (10 ... 90 %)	ms		≤ 1						
Insulation voltage	VDC		500						
Accuracy	% of span		≤ ± 0.5 *)						
	% of span		≤ ± 0.25 *) on request						
	*) Including non-linearity, hysteresis, zero point and full scale error (corresponds to error of measurement per IEC 61298-2).								
1-year stability	% of span		≤ 0.1		(at reference conditions)				
Permissible temperature of									
■ Medium **)			0 ... +80 °C		+32 ... +176 °F				
■ Ambience **)			-20 ... +80 °C		-4 ... +176 °F				
■ Storage **)			-40 ... +85 °C		-40 ... +185 °F				
	**) Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3								
Rated temperature range			0 ... +80 °C		+32 ... +176 °F				
Temperature error within									
rated temperature range	%		≤ 1.0 typ.						
			≤ 2.5 max.						
RoHS-conformity			on request						
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)						
Shock resistance	g		100 (2.4 ms)		according to IEC 60068-2-27				
Vibration resistance	mm		0.35 (10 ... 55 Hz)		according to IEC 60068-2-6				
Wiring protection									
■ Short-circuit resistance			Sig+ towards U_B-						
■ Reverse polarity protection			U_B+ towards U_B-						
Weight	kg		Approx. 0.3						

Electrical connections

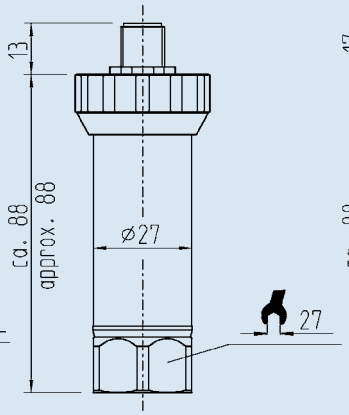
	L-connector DIN 175301-803 A			Circular connector M12x1			Cable		
									
2-wire	UB = 1	0V = 2		UB = 1	0V = 3		UB = brown	0V = green	
3-wire	UB = 1	0V = 2	S+ = 3	UB = 1	0V = 3	S+ = 4	UB = brown	0V = green	S+ = white
Wire gauge	up to max. 1.5 mm²			-			0.5 mm² (AWG 20)		
Diameter of cable	6-8 mm			-			6.8 mm		
Ingress protection per IEC 60 529	IP 65			IP 67			IP 67		
	The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.								

Dimensions in mm

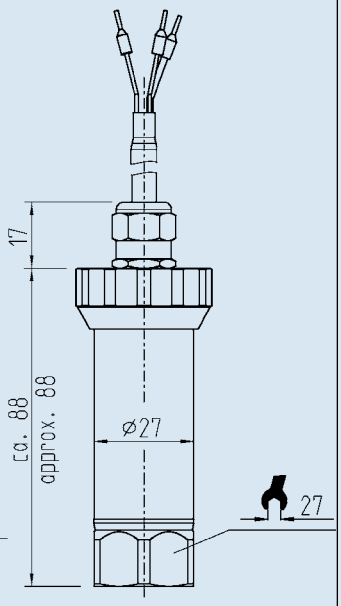
L-connector
DIN 175301-803 A
Order Code: A4



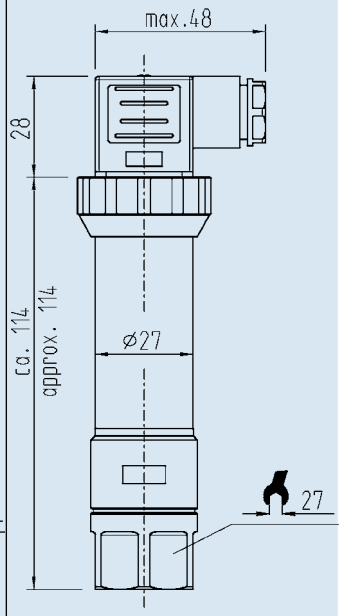
Circular connector M 12x1,
4-pin
Order Code: M4



Flying leads
with 1.5 m length (PUR)
Order Code: DL

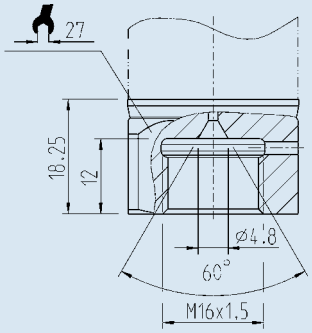


with optional
cavitation and peak pressure
protection

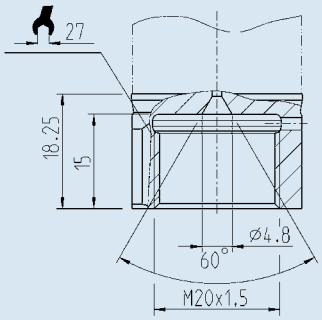


Pressure connections

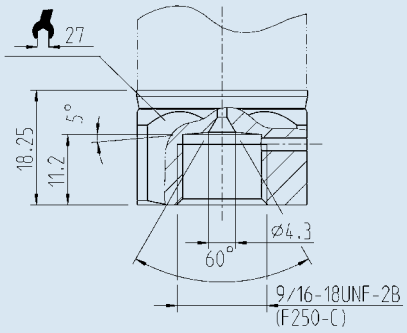
M16x1.5 female,
with sealing cone
(up to 7000 bar) *)
Order Code: ML



M20x1.5 female,
with sealing cone *)
Order Code: MP



9/16-18 UNF female,
F250-C
(up to 7000 bar) *)
Order Code: VZ



For installation and safety instructions see the operating instructions for this product.
The respective values for your mounting torque and maximum pressure please find in the documentation of your high-pressure equipment supplier.

*) The respective values for your mounting position please find in the documentation of your high-pressure equipment supplier.

Type HP-2 Pressure Transmitter for High Pressure Applications up to 15,000 bar

HP-2 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Type
	S	Standard
	D	With DIPS (Diaphragm Impact Protection System)
1	E	With EPS (Exchange Pressure Connection)
		Non-linearity
2	G	0.25% (B.F.S.L.)
		Unit
	B	bar
	P	psi
3	E	MPa
		Pressure reference
4	G	Relative
		Pressure range
	616	0 ... 1,600 bar
	625	0 ... 2,500 bar
	640	0 ... 4,000 bar
	650	0 ... 5,000 bar
	660	0 ... 6,000 bar
	670	0 ... 7,000 bar
	680	0 ... 8,000 bar
5	710	0 ... 10,000 bar

HP-2 Smart Codes for Custom Order Configurations (Cont'd)

Field no.	Code	Feature
		Process connection
	ML	M16 x 1.5 female with sealing cone
	MP	M20 x 1.5 female with sealing cone
6	VZ	9/16 - 18 UNF female F 250-C
		Signal output
	A	4 ... 20 mA, 2-wire
	F	0 ... 10 V, 3-wire
7	G	0 ... 5 V, 2-wire
		Electrical connection
	A4	DIN EN 175301-803 A, IP65
	M4	M12 x 1 5 pin circular connection IP67
8	DL	Cable with free ends IP67
		Cable length
	Z	Without (always with plug connection)
	C	1.5 m
9	?	Other
		Quality certificates
	Z	Without
10	1	Other
		Additional order details
	Z	Without
11	T	Additional order details

Order Code:

HP-2 - [1] **-** [2] **-** [3][4][5] **-** [6] **-** [7] **-** [8][9] **-** [10][11*]

*Additional order details _____

Type P-30, Type P-31 Precision Pressure Transmitter

Applications

- Test benches
- Calibration technology
- Laboratories and maintenance shops
- Machine building

Special Features

- 0.1% accuracy with no additional temperature error between 50 ... 140 °F (10 ... 60°C)
- 0.05% accuracy available
- 1 kHz measuring rate for fast data acquisition
- Space saving, compact design
- Internal USB interface connection for calibration and adjustment

Type P-30 Precision pressure transmitter

Description

High precision

The P-30 provides non-linearity of up to 0.04% of span (B.F.S.L.) for precise measurement in critical applications. Each instrument is provided with a test report at no additional cost. Other test certificates are available.

Fast digital data processing

Active temperature compensation of the P-30 is provided by microprocessor-controllled digital signal processing and internal temperature measurements. There is no additional temperature error between 50 ... 140 °F (10 … 60 °C). The advanced digital processing circuity provides a measuring rate of up to 1 ms and is comparable to analog output pressure transmitters.

The P-30 can be quickly and easily calibrated using the internal USB service interface and optional EasyCom 2009 configuration software. The software also provides for zero and span point adjustments.

Compact design

The robust, compact design allows the P-30 to be installed into standard 19“ test racks or cabinets with limited space.

Many optional features

Pressure ranges are available from 100 INWC to 15,000 PSI. Vacuum, absolute, compound and other engineering units are available to meet specific requirements. A variety of electrical, process connections, and signal outputs are also available.

The P-31 features a flat, non-clogging flush diaphragm for use with slurries or crystallizing media that may clog the orifice of the P-30.

Specifications	Type P-30, P-31									
Pressure ranges	100 InWC	5 psi	10 psi	15 psi	25 psi	30 psi	60 psi	100 psi	160 psi	250 psi
Over-pressure safety	30 psi	30 psi	60 psi	70 psi	150 psi	150 psi	250 psi	500 psi	500 psi	1,160 psi
Burst pressure	35 psi	35 psi	70 psi	87 psi	175 psi	175 psi	300 psi	600 psi	600 psi	1,400 psi
Pressure ranges	500 psi	600 psi	1,000 psi	1,500 psi	2,000 psi	3,000 psi	5,000 psi	8,000 psi	10,000 psi[1)]	15,000 psi[1)]
Over-pressure safety	725 psi	1,150 psi	1,740 psi	2,900 psi	4,640 psi	7,250 psi	11,600 psi	17,400 psi	21,750 psi	21,750 psi
Burst pressure	1,400 psi	5,000 psi	8,000 psi	11,600 psi	15,000 psi	17,400 psi	24,650 psi	34,800 psi	43,500 psi	43,500 psi

Pressure ranges	0.25 bar	0.4 bar	0.6 bar	1 bar	1.6 bar	2.5 bar	4 bar	6 bar	10 bar	16 bar
Over-pressure safety	2 bar	2 bar	4 bar	5 bar	10 bar	10 bar	17 bar	35 bar	35 bar	80 bar
Burst pressure	2.4 bar	2.4 bar	4.8 bar	6 bar	12 bar	12 bar	20.5 bar	42 bar	42 bar	96 bar
Pressure ranges	25 bar	40 bar	60 bar	100 bar	160 bar	250 bar	400 bar	600 bar[1)]	1,000 bar[1)]	
Over-pressure safety	50 bar	80 bar	120 bar	200 bar	320 bar	500 bar	800 bar	1,200 bar	1,500 bar	
Burst pressure	96 bar	400 bar	550 bar	800 bar	1,000 bar	1,200 bar	1,700 bar	2,400 bar	3,000 bar	

Vacuum, gauge pressure, compound ranges and absolute pressures are available}
compound ranges: minimum span 6psi (400 mbar) for example. -200 mbar ... +200 mbar}

[1)] Only Type P-30.

[2)] For Type P-31: the value specified in the table applies only when sealing is accomplished using the sealing ring underneath the hex. Otherwise a maximum of 22,000 PSI (1,500 bar) applies.

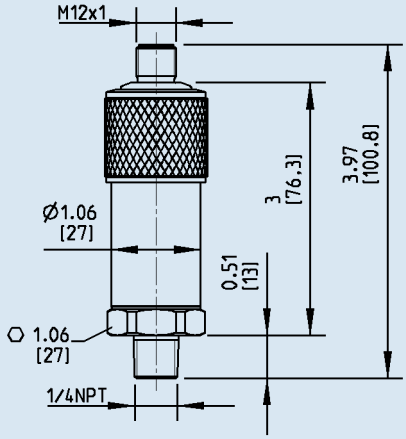
Materials	
■ Wetted parts	Stainless steel (pressure ranges > 300 psi additional 2.4711 / UNSR 30003)
» Type P-30	Stainless steel; O-ring: NBR {FPM/FKM or EPDM}
» Type P-31	Stainless steel
■ Case	Synthetic oil
Internal transmission fluid [3)]	[3)] Does not apply for P-30 with pressure ranges > 300 psi

Power Supply U+	U+ in VDC	9 ... 30 (14 ... 30 with signal output 0 ... 10 V)		
Signal output and	RA in Ohm	4 ... 20 mA, 2-wire	RA ≤ (U+ – 9 V) / 0.02 A	
maximum load RA		0 ... 20 mA, 3-wire	RA ≤ (U+ – 9 V) / 0.02 A	
		4 ... 20 mA, 3-wire	RA ≤ (U+ – 9 V) / 0.02 A	
		0 ... 5 V, 3-wire	RA > 5 k	
		0 ... 10 V, 3-wire	RA > 10 k	
Adjustability				
■ zero	% of span	-5 ... +20 {adjustment using optional EasyCom 2009 software}		
■ span	% of span	-20 ... +5 {adjustment using optional EasyCom 2009 software}		
Measuring rate	ms	1 (with 3-wire); 2 (with 2-wire)		
Warm-up time	min	< 10		
Insulation voltage	VDC	500		
Accuracy [5)]	% of span	≤ 0.10 in the range 50 ... 140 °F(10 ... 60 °C) {< 0.05 at 68 °F / 20 °C} 6)		
		5) Includes non-linearity, hysteresis, zero point and full scale error (corresponds to measurement error per IEC 61298-2). Calibrated in vertical mounting position with pressure connection facing down		
		6) Not available in compound ranges and pressure ranges ≤ 6 PSI		
Non-linearity	% of span	≤ 0.04	(BFSL) according to IEC 61298-2	
1-year stability	% of span	≤ 0.1	(at reference conditions)	
Permissible temperatures:				
■ Medium		-4 ... +221 °F	-20 ... +105 °C	
■ Ambient		-4 ... +176 °F	-20 ... +80 °C	
■ Storage		-40 ... +185 °F	-40 ... +85 °C	
Rated temp. range		-4 ... +176 °F	-20 ... +80 °C	
Temperature coefficients within		(the temperature error between 50 ... 140 °F (10 ... 60 °C)		
rated temp range		is already included in the above accuracy statement)		

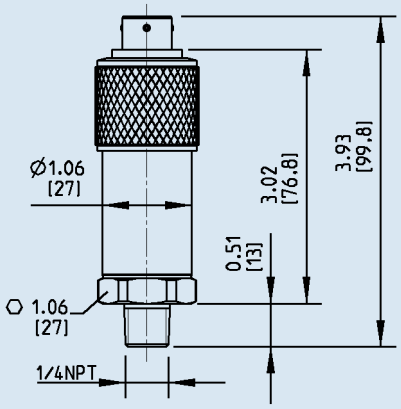
Specifications		Type P-30, P-31
Mean TC of zero	% of span	≤ 0.1 / 10 K
Mean TC of span	% of span	≤ 0.1 / 10 K
RoHS-conformity		Yes (not available with bayonet connector)
CE-conformity		
■ Pressure equipment directive		97/23/EC
■ EMC directive		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and
		Immunity (industrial locations)
Shock resistance	g	200 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance	g	10 according to IEC 60068-2-6(vibration under resonance)
Wiring protection		
Short-circuit protection		S+ to U-
Reverse polarity protection		U+ to U-
Weight	oz (g)	Approx. 10.6 (300)

Dimensions in inches (mm)

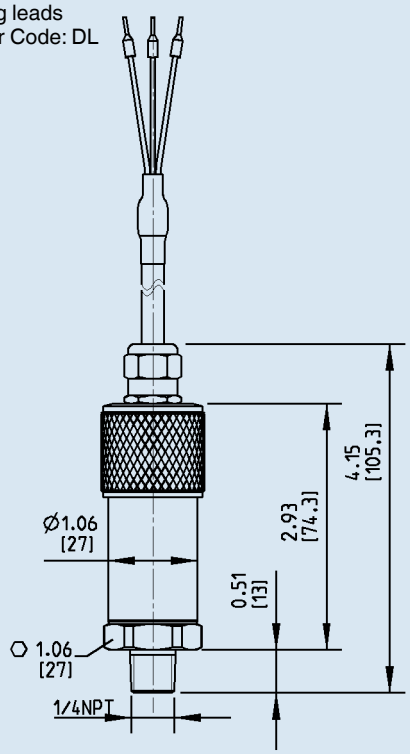
Circular connector
M12x1, 4 pin
Order Code: M4



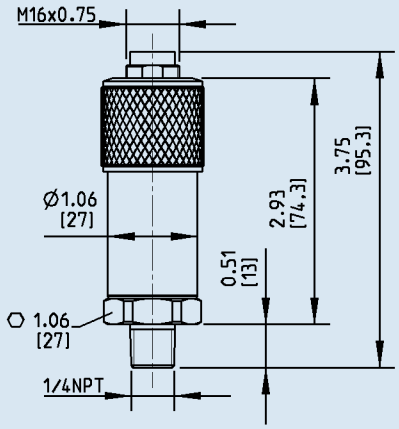
Bayonet connector, 6 pin
Order Code: C6



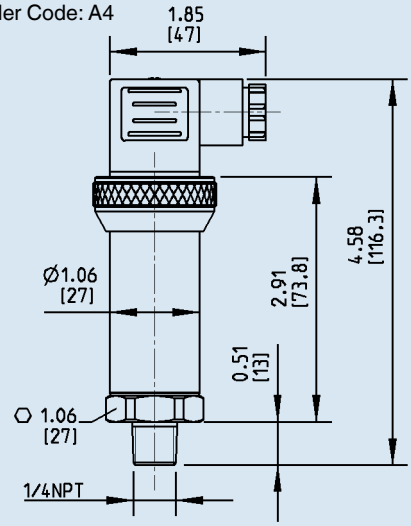
Flying leads
Order Code: DL



Circular connector
M 16x0.75
Order Code: B5

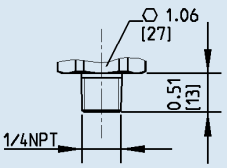


L-connector
DIN 175301-803 A
Order Code: A4

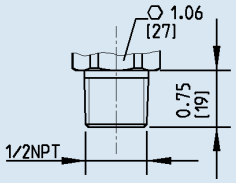


P-30 pressure connections

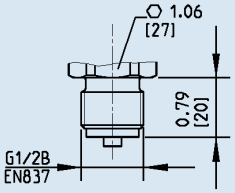
1/4 NPT Male
Order Code: NB



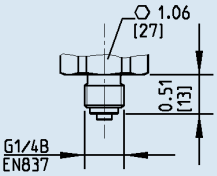
1/2 NPT Male
Order Code: ND



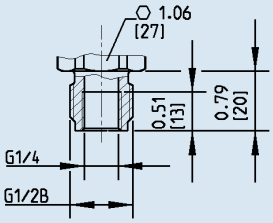
G 1/2
Order Code: GD



G 1/4
Order Code: GB

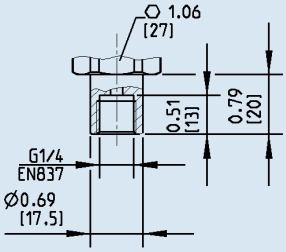


G 1/2 male /
G 1/4 female
Order Code: T4



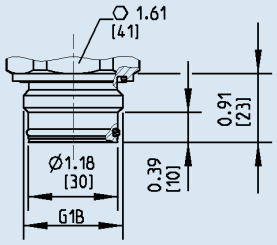
P-30 pressure connection

G 1/4 female
EN 837
with sealing copper
{stainless steel}
Order Code: TB

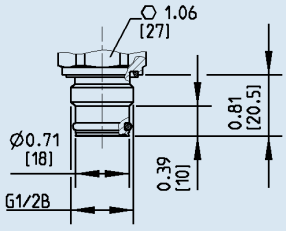


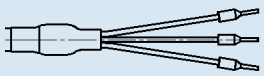
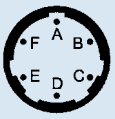
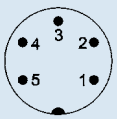
P-31 flush diaphragm pressure connections

G 1B
0 InWC to 25 psi
(0 ... 0.25 up to 0 ... 1.6 bar)



G 1/2 B
30 psi to 8,000 psi
(0 ... 2.5 up to 0 ... 600 bar)



	L-connector DIN 175301-803 A	Circular connector M12x1, 4 pins	Cable with free ends	Bayonet connector, 6 pins	Circular connector M16x0.75, 5 pins
					
2-wire	U+ = 1 | U- = 2	U+ = 1 | U- = 3	U+ = brown | U- = blue	U+ = A | U- = B	U+ = 3 | U- = 1
3-wire	U+ = 1 | U- = 2 | S+ = 3	U+ = 1 | U- = 3 | S+ = 4	U+ = brown | U- = blue | S+ = black	U+ = A | U- = B | S+ = C	U+ = 3 | U- = 4 | S+ = 1
Cable screen	-	-	grey	-	-
Wire gauge	max AWG16 (1.5mm²)	-	AWG20 (0.5 mm²)	-	-
Cable diameter	.24 - .32" 6-8 mm	-	.27" 6.8 mm	-	-
Ingress Protection per IEC 60 529	IP 65	IP 67	IP 67	IP 67	IP 65
	The ingress protection classes above only apply while the pressure transmitter is connected using female connectors that provide the corresponding ingress protection.				

Accessories	Order-No.
USB adaptor cable incl. Software EasyCom 2009 for internal service interface	13193075

Type P-30 Precision Pressure Transmitter

P-30 Pressure Transmitter for Precision Measurement

Field no.	Code	Feature	
		Accuracy	
	P	0.1% of span	
1	R	0.05% of span	
		Unit	
	P	psi	
2	?	Other	
		Absolute or relative pressure	
	G	Gauge	
	A	Absolute	
3	V	Compound	
		Pressure range	
	310	-30 InHg...0	
	320	-30 InHg...+15 psi	
	331	-30 InHg...+30 psi	
	345	-30 InHg...+50 psi	
	379	-30 InHg...+100 psi	
	412	-30 InHg...+160 psi	
	415	-30 InHg...+200 psi	
	234	0...5 psig	0...5 psia
	269	0...10 psig	0...10 psia
	310	0...15 psig	0...15 psia
	317	0...25 psig	0...25 psia
	321	0...30 psig	0...30 psia
	335	0...50 psig	0...50 psia
	369	0...100 psig	0...100 psia
	411	0...160 psig	0...160 psia
	414	0...200 psig	0...200 psia
	421	0...300 psig	
	434	0...500 psig	
	469	0...1,000 psig	
	510	0...1,500 psig	
	514	0...2,000 psig	
	521	0...3,000 psig	
	534	0...5,000 psig	
	569	0...10,000 psig	
4	???	other	

P-30 Pressure Transmitter for Precision Measurement (cont'd)

Field no.	Code	Feature
		Pressure connection
	NB	1/4" NPT
	ND	1/2" NPT
	GD	G 1/2 B
	GB	G 1/4 B
	HD	G 1/4 A DIN 3852-E
	TB	G 1/4 female
	T4	G 1/2 male / G 1/4 female
5	??	Other
		Sealing
	Z	Without (not required for NB, ND, TB or T4))
	1	NBR (only for HD)
	C	Copper (only for GD, GB)
	S	Stainless steel (only for GD, GB)
6	?	Other
		Special design for media
	Z	None
7	?	Other
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire
	G	0 ... 5 V, 3-wire
8	V	4 ... 20 mA, 3-wire
		Electrical connection
	M4	4 circular connector M12x1, 4 pin
	B5	Plug, M16 x 0.75, 5 pin
	C6	Bayonet connector, 6 pin
	A4	4 pin L-plug DIN EN 175301-803, IP65
9	DL	Cable with free ends, IP 67
		Cable length
	Z	Without
	6	6 ft (only with DL)
	7	15 ft (only with DL)
10	?	Other

	YES	NO	
11	1	Z	Quality certificates
12	T	Z	Additional text

Easy Com software with cable: Part #13193075

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

P-30- [ ] - [ ][ ][ ] - [ ][ ][ ] - [ ] - [ ][ ] - [ ][ ]

*Additional order details _____

Type P-31 Precision Pressure Transmitter w/Non-clogging Flush Diaphragm

P-31 Pressure Transmitter for Precision Measurement

Field no.	Code	Feature	
		Accuracy	
	P	0.1% of span	
1	R	0.05% of span	
		Unit	
	P	psi	
2	?	Other	
		Absolute or relative pressure	
	G	Gauge	
	A	Absolute	
3	V	Compound	
		Pressure range	
	310	-30 InHg...0	
	320	-30 InHg...+15 psi	
	331	-30 InHg...+30 psi	
	345	-30 InHg...+50 psi	
	379	-30 InHg...+100 psi	
	412	-30 InHg...+160 psi	
	415	-30 InHg...+200 psi	
	234	0...5 psig	0...5 psia
	269	0...10 psig	0...10 psia
	310	0...15 psig	0...15 psia
	317	0...25 psig	0...25 psia
	321	0...30 psig	0...30 psia
	335	0...50 psig	0...50 psia
	369	0...100 psig	0...100 psia
	411	0...160 psig	0...160 psia
	414	0...200 psig	0...200 psia
	421	0...300 psig	
	434	0...500 psig	
	469	0...1,000 psig	

P-31 Pressure Transmitter for Precision Measurement (cont'd)

Field no.	Code	Feature
		Pressure range continued
	510	0...1,500 psig
	514	0...2,000 psig
	521	0...3,000 psig
	534	0...5,000 psig
4	???	Other
		Pressure connection
	85	G1B flush diaphragm w/O-ring (up to 25 psi)
5	86	G1/2B flush diaphragm w/O-ring (≥ 30 psi)
		Sealing
	1	NBR
	B	EPDM
	L	FPM/FKM
6	?	Other
		Special design for media
	Z	None
7	?	Other
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire
	G	0 ... 5 V, 3-wire
8	V	4 ... 20 mA, 3-wire
		Electrical connection
	M	4 circular connector M12x1, 4 pin
	B5	Plug, M16 x 0.75, 5 pin
	C6	Bayonet connector, 6 pin
	A4	4 pin L-plug DIN EN 175301-803, IP65
9	DL	Cable with free ends, IP 67
		Cable length
	Z	Without
	6	6 ft (only with DL)
	7	15 ft (only with DL)
10	?	Other

			Additional order info
	YES	NO	
11	1	Z	quality certificates
12	T	Z	additional text

Easy Com software with cable: Part #13193075

Order Code:

	1		2	3	4		5	6	7		8		9	10		11	12
P-31		-				-				-		-			-		

*Additional order details _____

Type R-1 Refrigeration and Air Conditioning Pressure Transmitter

Applications

- Refrigeration and air conditioning applications
  - Compressor suction and discharge pressure
  - Compressor staging
  - Condenser fan controls
  - Chiller systems

Special Features

- Stainless steel wetted parts
- Compact design is shock and vibration resistant
- Compatible with all common refrigerants
- Condensation proof

Left: **R-1 with M 12x1**
Center: **R-1 with Metri Pack 150**
Right: **R-1 with cable**

Description

Refrigeration and Air Conditioning applications
The R-1 pressure transmitter is designed for the special requirements of refrigeration and HVAC applications. The all welded stainless steel measuring cell eliminates the need for soft sealing materials between the sensor and process connection. This qualifies the R-1 for use with all typical refrigerants including chlorofluorocarbons R12, R22, R123, R134a and ammonia.

Excellent performance and reliability
The R-1 provides a linear amplified output with short circuit, reverse polarity and overvoltage protection.
The hermetically welded, dry, thin-film measuring cell provides long-term leak resistance. In addition, the sputtered stainless steel measuring cell features excellent long-term stability and an extremely high burst pressure.

Economical price, high performance
Production on highly flexible manufacturing lines provides a very attractive price to performance ratio for large production runs.

Specifications		Type R-1				
Pressure ranges	100 psi[1]	150 psi	200 psi	300 psi	600 psi	850 psi
Over-pressure safety	300 psi	300 psi	480 psi	750 psi	1,200 psi	1,500 psi
Burst pressure	1,500 psi	1,500 psi	2,400 psi	3,750 psi	6,000 psi	6,000 psi
Pressure ranges	6 bar[1]	10 bar	16 bar	25 bar	40 bar	60 bar
Over-pressure safety	20 bar	20 bar	32 bar	50 bar	80 bar	100 bar
Burst pressure	100 bar	100 bar	160 bar	250 bar	400 bar	400 bar
	1. All pressure ranges available starting from 30INHG Vacuum (-1 bar)					
	{Compound ranges available upon request}					
Materials						
■ Wetted parts		Stainless steel				
■ Case		Stainless steel				
■ Electrical connection		Chemical resistant fiberglass- reinforced plastic (PBT GF 30)				
		Signal output	Power supply	Maximum load RA		
		4 ... 20 mA, 2-wire	7 ... 30 VDC	RA ≤ (UB – 7 V) / 0.02 A		
		0 ... 10 V, 3-wire	14 ... 30 VDC	RA > 10 kOhm		
		0.5 ... 4.5 V, ratiometric	5 ± 0.5 VDC	RA > 4.5 kOhm		
		1 ... 5 V, 3-wire	8 ... 30 VDC	RA > 5 kOhm		
Response time (10 ... 90 %)	ms	≤ 5				
Insulation voltage	VDC	500				
Accuracy	% of span	≤ 1.0 (B.F.S.L.) (≤ 2.0 per IEC 61298-2 *)				
		*Including non-linearity, hysteresis, zero point and full scale error				
1-year stability	% of span	≤ 0.3 (at reference conditions)				
Permissible temperature of						
■ Medium		-40 ... +212 °F	-40 ... +100 °C			
■ Ambient		-13 ... +176 °F	-25 ... +80 °C			
■ Storage		-13 ... +176 °F	-25 ... +80 °C			
Rated temperature range		-13 ... +176 °F	-25 ... +80 °C			
Temperature coefficients within rated temperature range						
■ Mean TC of zero	% of span	typ. ≤ 0.5 / 10 K				
■ Mean TC of range	% of span	≤ 0.3 / 10 K				
CE-conformity						
■ Pressure equip. directive		97/23/EC				
■ EMC directive		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and Immunity (industrial locations)				
Wiring protection						
■ Short-circuit protection		Sig+ to UB-				
■ Reverse polarity protection		UB+ to UB-				
■ Overvoltage protection	VDC	36				
Weight	oz	Approx. 2.8				

{ }Items in curved brackets are options available for additional cost

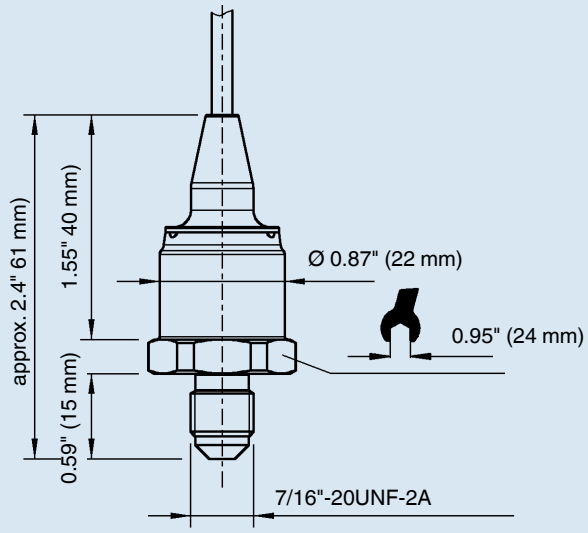
Dimensions in inches (mm)

Ingress Protection IP per IEC 60529. The ingress protection ratings specified only apply while the pressure transmitter is connected with mating connectors that provide the corresponding ingress protection.

Example

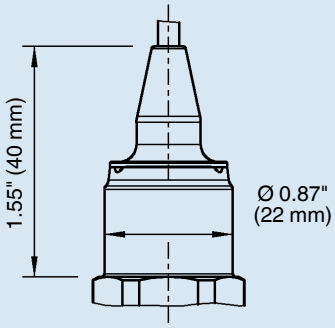
Electrical connection
Cable with free ends
Wire gauge: 3 x 0.14 mm²
Cable diameter: 3.2 mm
IP 69K
Order code: FN

Pressure connection
7/16-20 UNF-2A
90° Cone
Order code: U5

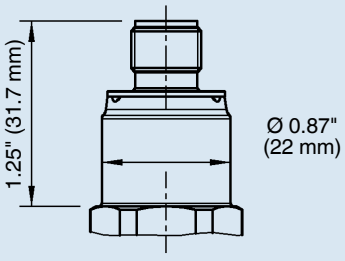


Electrical connections

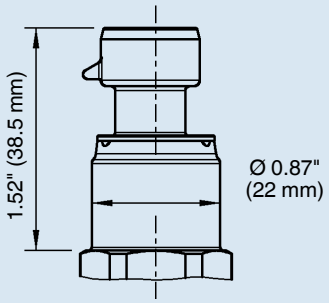
Cable with free ends
Wire gauge: 3 x 0.14 mm²
Cable diameter: 3.2 mm
IP 69K
Order code: FN



Circular connector
M 12x1
4 pin
IP 67
Order code: M4

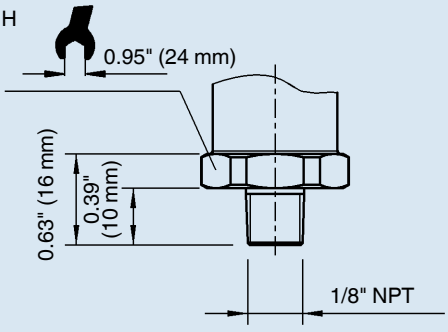


Connector
Metri Pack Series 150
3 pin
IP 67
Order code: R3

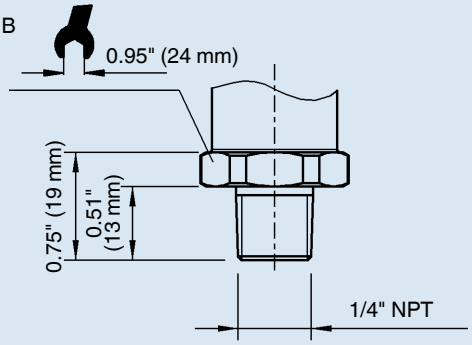


Pressure connections

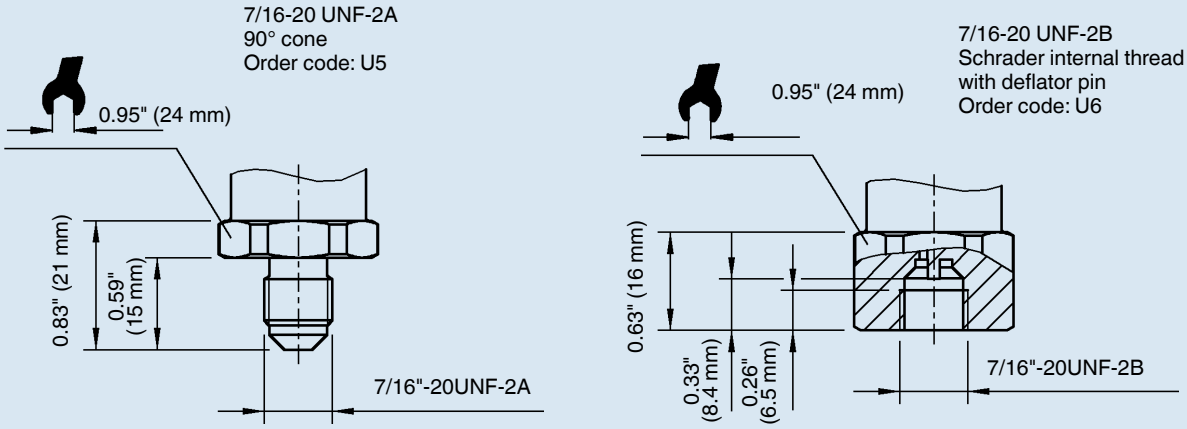
1/8 NPT male
Order Code: NH



1/4 NPT male
Order Code: NB

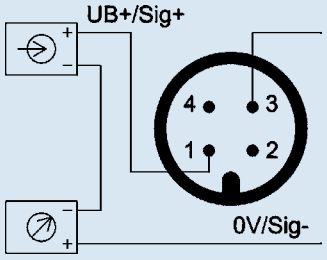
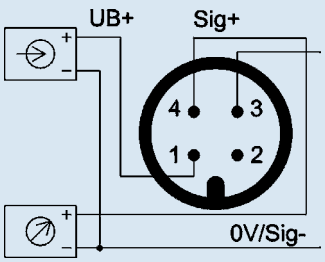
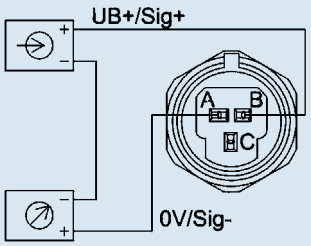
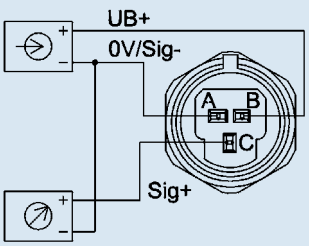
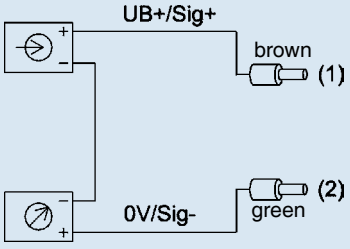
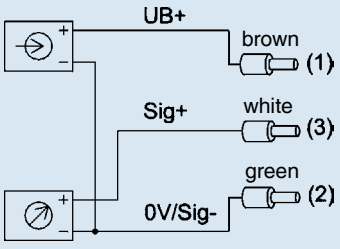


Pressure connections



For installation and safety instructions refer to the operating instructions for this product.

Electrical connections

	2-wire	3-wire
Circular connector M 12x1 4 pin		
Connector Metri Pack Series 150 connector 3 pin		
Cable with free ends		

Custom pin configurations available

Legend:

Specifications and dimensions given in this data sheet 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.

Type R-1 Refrigeration & AC Transmitter

- **All stainless steel construction**
- **Welded case-to-socket connection**

c UL us LISTED

Note: 50 piece minimum order quantity applies.

R-1 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Accuracy
1	A	(</=) 1.0% (B.F.S.L)
		Unit
	P	psi
	B	bar
2	?	Other - please specify
		Reference
	G	Gauge
3	V	Compound
		Pressure range
	379	-30 InHg...+100 psi
	415	-30 InHg...+200 psi
	422	-30 InHg...+300 psi
	442	-30 InHg...+600 psi
	369	0...100 psi
	410	0...150 psi
	414	0...200 psi
	421	0...300 psi
	441	0...600 psi
	459	0...850 psi
	411	-1...+10 bar
	426	-1...+25 bar
	360	0...6 bar
	410	0...10 bar
	416	0...16 bar
	425	0...25 bar
	440	0...40 bar
	460	0...60 bar
4	?	Other

R-1 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Process connection
	NH	1/8" NPT
	NB	1/4" NPT
	U5	7/16-20UNF-2A 90° Cone
	U6	7/16-20UNF-2B Schrader
	HA	G 1/4 B EN 837
5	?	Other
		Signal output
	W	0.5-4.5V 3-wire ratiometric
	A	4-20mA 2-wire
	K	1-5V 3-wire
6	F	0-10V 3-wire
		Supply voltage
	E	5 V DC +/- 10% (only with signal output W)
	G	7...30 V DC (only with signal output A or K)
7	C	14...30 V DC (only with signal output F)
		Electrical connection
	R3	Metri pack series 150 3 pin connector (NEMA 4 / IP 67)
	M4	4 Pin locking plug M12 x 1 (NEMA 4 / IP 67)
8	FN	Cable with free ends (NEMA 4 / IP 69K high pressure steam protection)
		Cable length
	A	0.5 m (1.6 feet)
	H	1 m (3.28 feet)
	B	2 m (6.5 feet)
	G	5 m (16.4 feet)
	Z	Without (always with electrical connection R3 or M4)
9	?	Other
		Approvals
	Z	Without
10	W	c UL us
		Additional order details
	Z	Without
11	T	Additional order details

Note: 50 piece minimum order quantity applies.

Order Code:

1		2	3	4		5		6	7		8	9		10	11
R-1	-				-		-						-		

Additional order details _____

Type AC-1 Refrigeration and Air Conditioning Pressure Transmitter

Applications

- Refrigeration and air conditioning applications
  - Heat pumps, central air conditioners
  - Compressors
  - Chillers

Special Features

- Brass, CR70 (polychloroprene) and ceramic wetted parts
- Compatible with most refrigerants
- Condensation proof

Left: **AC-1 with M 12x1**
Center: **AC-1 with Metri Pack 150**
Right: **AC-1 with cable**

Description

Refrigeration and HVAC applications
The new AC-1 pressure transmitter uses an integrated thick film ceramic pressure sensor to meet the price and performance requirements of commercial and OEM HVAC and refrigeration applications.

The wetted parts include ceramic, brass and a polychloroprene (Neoprene®) sealing ring. These materials are compatible with most common refrigerants.

Performance and reliability
The AC-1 provides a linear, amplified voltage or milliamp signal output with short circuit, reverse polarity and overvoltage protection. The AC-1 was tested using strict protocols designed specifically for the refrigeration and HVAC industry. It meets or exceeds all test requirements including resistance to high pressure steam jets, condensation, dust tightness and icing.

Economical price with high performance
Assembly on highly flexible manufacturing lines provides a cost effective transmitter for both small and large quantity production runs.

Specifications		Type AC-1				
Pressure ranges		100 psi[1]	150 psi	200 psi	300 psi	850 psi
Over-pressure safety		300 psi	300 psi	600 psi	600 psi	1,500 psi
Burst pressure		370 psi	370 psi	730 psi	730 psi	1,800 psi
Pressure ranges		7 bar[1]	10 bar	16 bar	25 bar	60 bar
Over-pressure safety		20 bar	20 bar	40 bar	40 bar	100 bar
Burst pressure		25 bar	25 bar	50 bar	50 bar	120 bar
	1. All pressure ranges available starting from 30INHG Vacuum (-1 bar)					
	{Vacuum and Compound ranges available upon request}					
Materials						
■ Wetted parts		Brass, Al_2O_3 ceramic 96%			O-ring: CR 70 (polychloroprene)	
Media compatibility		Compatible with R12, R22, R134a, R404a, R407c, R410a, R502, R507 refrigerants				
■ Case		Brass				
■ Electrical connection		Chemical resistant fiberglass- reinforced plastic (PBT GF 30)				
		Signal output		Power supply UB		Maximum load RA
		4 ... 20 mA, 2-wire		7 ... 30 VDC		RA ≤ (UB – 7 V) / 0.02 A
		0 ... 10 V, 3-wire		14 ... 30 VDC		RA > 10 kOhm
		0.5 ... 4.5 V, ratiometric		5 ± 0.5 VDC		RA > 4.5 kOhm
Response time (10 ... 90 %)	ms	≤ 5				
Isolation voltage	VDC	500				
Accuracy	% of span	≤ 1.0 (B.F.S.L.) (≤ 2.0 per IEC 61298-2 *)				
		*Including non-linearity, hysteresis, zero point and full scale error				
1-year stability	% of span	≤ 0.3 (at reference conditions)				
Permissible temperature of						
■ Medium		-40 ... +176 °F -40 ... +80 °C				
■ Ambient		-13 ... +176 °F -25 ... +80 °C				
■ Storage		-13 ... +176 °F -25 ... +80 °C				
Rated temperature range		-13 ... +176 °F -25 ... +80 °C				
Temperature coefficients within						
rated temperature range						
■ Mean TC of zero	% of span	typ. ≤ 0.5 / 10 K				
■ Mean TC of range	% of span	≤ 0.3 / 10 K				
CE-conformity						
■ EMC directive		2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and				
		Immunity (industrial locations)				
Wiring protection						
■ Short-circuit protection		Sig+ to 0V				
■ Reverse polarity protection		UB to 0V				
■ Overvoltage protection	VDC	36				
Weight	oz	Approx. 2.8				

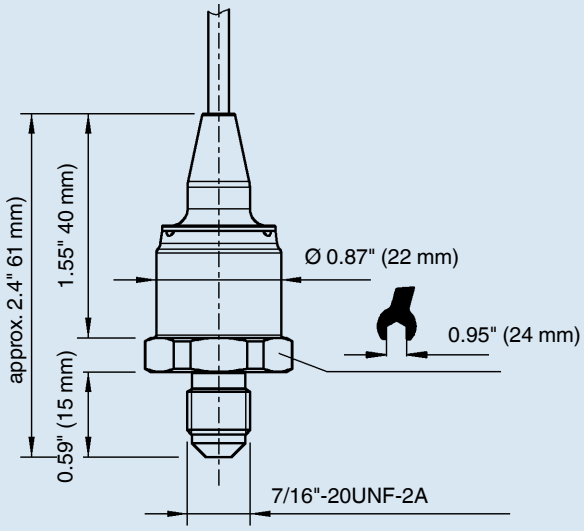
{ }Items in curved brackets are options available for additional cost

Dimensions in inches (mm)

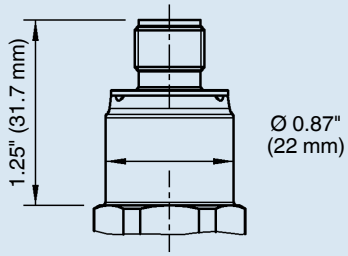
Ingress Protection IP per IEC 60529. The ingress protection ratings specified only apply while the pressure transmitter is connected with mating connectors that provide the corresponding ingress protection.

Example

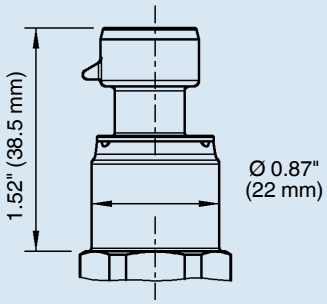
Pressure connection
7/16-20 UNF-2A
90° Cone



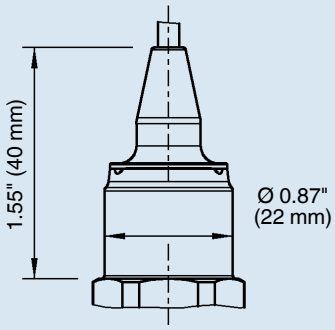
Circular connector
M 12x1
Order Code: M4



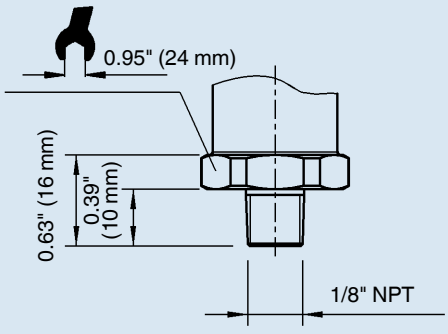
Connector
Metri Pack Series 150
IP67
Order Code: R3



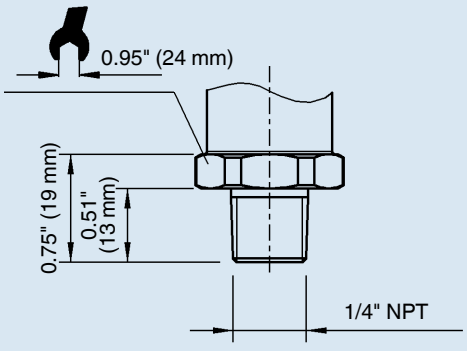
Cable with free ends
IP69K
Order Code: FN

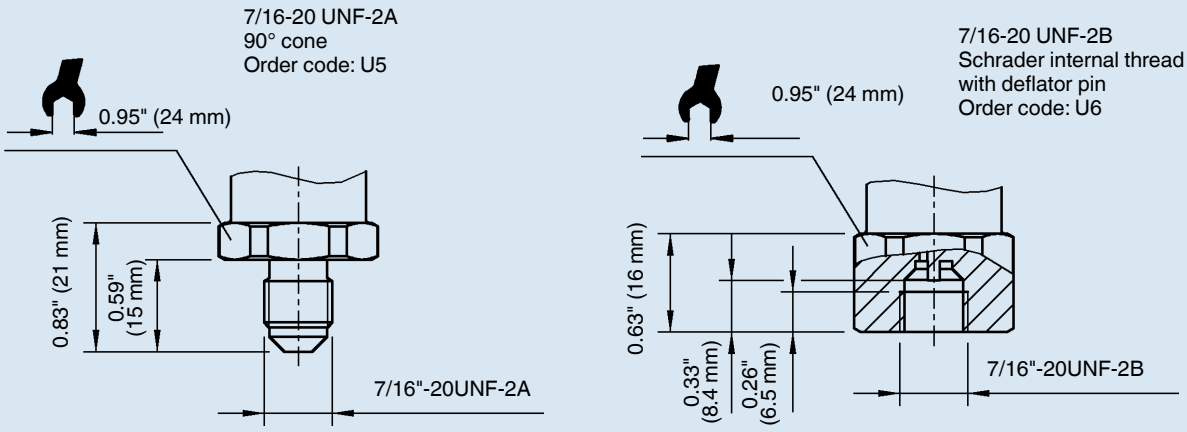


1/8 NPT Male
Order Code: NH



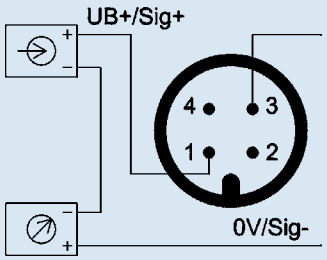
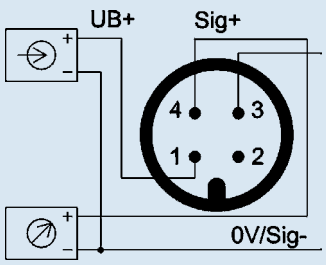
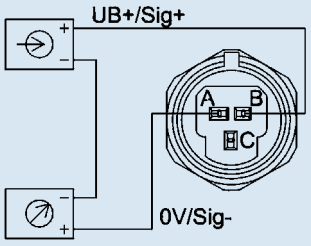
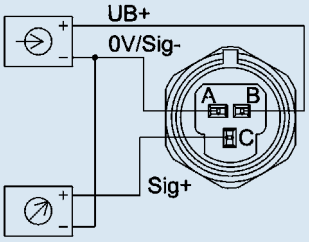
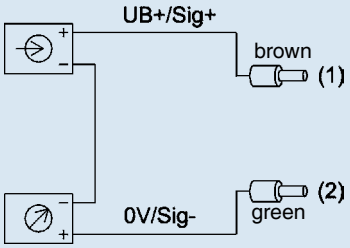
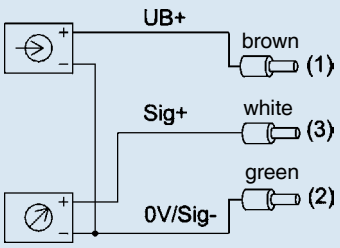
1/4 NPT Male
Order Code: NB



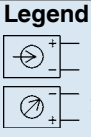


For installation and safety instructions refer to the operating instructions.

Electrical connections

	2-wire	
Circular connector M 12x1 4 pin		
Connector Metri Pack Series 150 connector 3 pin		
Cable with free ends		

Legend:



Type AC-1 Air Conditioning and Refrigeration Pressure Transmitter

AC-1 with M12X1

c UL us LISTED

Note: 50 piece minimum order quantity applies.

AC-1 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Accuracy
1	A	(</=) 1.0% (B.F.S.L)
		Unit
	P	psi
	B	bar
2	?	Other - please specify
		Reference
	G	Gauge
3	V	Compound
		Pressure range
	379	-30 InHg...+100 psi
	415	-30 InHg...+200 psi
	422	-30 InHg...+300 psi
	442	-30 InHg...+600 psi
	369	0...100 psi
	410	0...150 psi
	414	0...200 psi
	421	0...300 psi
	441	0...600 psi
	459	0...850 psi
	411	-1...+10 bar
	426	-1...+25 bar
	360	0...6 bar
	410	0...10 bar
	416	0...16 bar
	425	0...25 bar
	440	0...40 bar
	460	0...60 bar
4	???	Other
		Process connection
	NH	1/8" NPT
	NB	1/4" NPT
	U5	7/16-20UNF-2A 90° Cone
	U6	7/16-20UNF-2B Schrader
	HA	G 1/4 B EN 837
5	??	Other
		Sensor seal material
	C	CR70 (polychlororene)
6	?	Other

AC-1 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Signal output
	W	0.5-4.5V 3-wire ratiometric
	A	4-20mA 2-wire
	F	0-10V 3-wire
7	?	Other
		Supply voltage
	E	5 V DC +/- 10% (only with signal output W)
	G	7...30 V DC (only with signal output A)
8	C	14...30 V DC (only with signal output F)
		Electrical connection
	R3	Metri pack series 150 3 pin connector (NEMA 4 / IP 67)
	M4	4 Pin locking plug M12 x 1 (NEMA 4 / IP 67)
9	FN	Cable with free ends (NEMA 4 / IP 69K high pressure steam protection)
		Cable length
	A	0.5 m (1.6 feet)
	H	1 m (3.28 feet)
	B	2 m (6.5 feet)
	G	5 m (16.4 feet)
	Z	Without (always with electrical connection R3 or M4)
10	?	Other
		Approvals
	Z	Without
11	W	c UL us
		Additional order details
	Z	Without
12	T	Additional text

Note: 50 piece minimum order quantity applies.

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

AC-1 - [ ] - [ ][ ][ ] - [ ][ ] - [ ][ ][ ][ ] - [ ][ ]

Additional order details _____

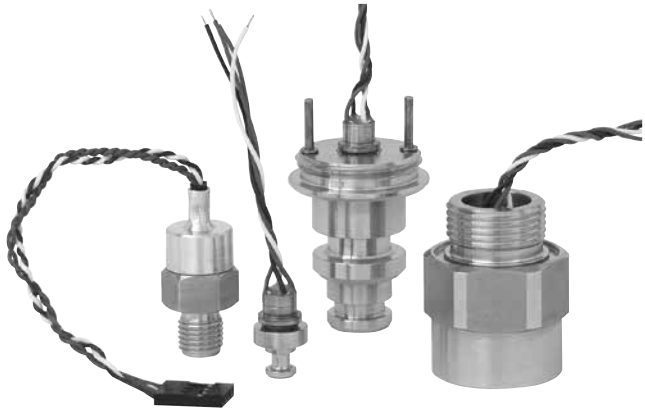
Type TTF-1 Special Purpose Thin-Film OEM-Pressure Transducer

Applications

- Applications with limited installation space
- Embedded pressure sensors
- Design-in solutions
- Hydraulic pressure monitoring

Special Features

- Thin-film technology
- Pressure ranges from 0 ... 10 bar to 0 ... 1,000 bar (150 to 15,000 PSI)
- Stainless steel wetted parts
- Media temperature range: -40 °F ... +212 °F (-40 °C ... +100 °C)
- Integrated temperature compensation



Possible versions of the TTF-1 Pressure Transducer

Description

Flexible installation
The compact size the TTF-1 pressure transducer allows it be used in applications where mounting space is very limited.

Rugged sensor element
The TTF-1 sensor is machined from a single piece of stainless steel. The thin film Wheatstone bridge is applied to the diaphragm using a physical vapor deposition process called “sputtering”. This process forms a tight molecular bond with the sensor diaphragm. This eliminates the risk of “sensor creep” that may occur over time with bonded foil strain gauge designs that use an adhesive to bond the sensor to the diaphragm.

The high grade stainless steel design of the sensor element provides a stainless steel barrier between the sensor element and the media. This completely welded, dry measuring cell does not require the use of any internal pressure transmission fluid. TTF-1 sensors constructed of Elgiloy are available for special requirements.

The sensor element is welded directly to the pressure port. This eliminates the use of soft sealing materials that may deteriorate and leak over time. It also eliminates weak points that sometimes occur when o-rings or adhesive joints seals are used.

Excellent all-around performance
The TTF-1 provides is temperature compensated from -40 °F ... +212 °F (-40 °C ... +100 °C), so that in most applications no additional temperature compensation is required.

The pressure transducer offers high overpressure safety and is resistant to pressure spikes and dynamic pressure changes. In addition the TTF-1 is an excellent sensor for applications where high accuracy, zero point stability and low temperature error are essential requirements.

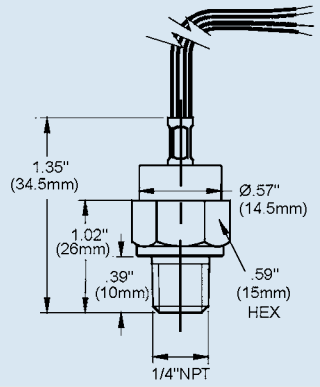
Individual customer designs
Based on many years of production experience, WIKA can provide customer-specific designs for quantities above 1000 pieces.

Specification	Type TTF-1										
Pressure ranges	10 [1] bar	16 [1] bar	25 bar	40 .5 bar	60 bar	100 bar	160 bar	250 bar	400 bar	600 bar	1,000 [2] bar
Over-pressure safety	20 bar	32 bar	50 bar	80 bar	120 bar	200 bar	320 bar	500 bar	800 bar	1,200 bar	1,500 bar
Burst pressure	100 bar	160 bar	250 bar	400 bar	550 bar	800 bar	1,000 bar	1,200 bar	1,700 bar	2,400 bar	3,000 bar
(1 bar = 14.504 psi)	[1] Availability depends on the specific design										
	[2] Higher pressure ranges available on request										

Pressure connection		On request
Materials		
Wetted parts		Stainless steel
Power supply UB	DC V	Typical 6 (6 ... 10 recommended) {other on request}
Dielectric strength	AC V	500
Insulation resistance	MOhm	> 300
Bridge resistance RB	kOhm	6.5 + 1.3 (between + US and – US)
Span at nominal pressure	mV/V	2
Zero signal	mV/V	Typical 0 + 0.2 (maximum 0 + 0.5)
Response time (10 ... 90%)	ms	< 0.1
Linearity		(Limit point calibration)
■ With pressure range	bar	10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 1000
■ Typical	% of span	+0.5 | +0.4 | +0.25 | +0.35 | +0.30 | +0.25 | +0.22 | +0.20 | +0.18 | +0.15 | +0.12
Span tolerance	% of span	±30 | ±25 | ±15 | ±20 | ±15 | ±15 | ±15 | ±15 | ±15 | ±15 | ±15
1-year stability	% of span	0.2 (at reference conditions)
Permissible temperature of		
■ Medium [3]	°C	-40 ... +212 °F / -40 ... +100 °C
■ Ambient [3]	°C	-22 ... +176 °F / -40 ... + 80 °C {extended temperature range on request}
■ Storage [3]	°C	-22 ... +176 °F / -40 ... + 80 °C {extended temperature range on request}
	[3] Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3	
Compensated temperature range	°C	-40 ... +212 °F / -40 ... +100 °C
Temperature coefficients within compensated temperature range		
■ Mean TC of zero	% of span	Typical + 0.1/10K
■ Mean TC of range	% of span	Typical + 0.1/10K

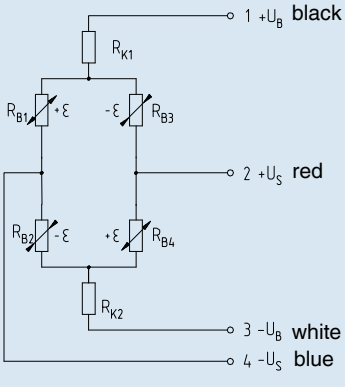
{ } Items in curved brackets are optional extras for additional price.

Dimensions in inches (mm) (1mm = 0.039”)



Typical design example

Circuit diagram



Specifications and dimensions given in this datasheet 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.

Type A-AI-1, A-IAI-1 Attachable Indicator

Applications

- Machine tools
- Test benches
- Level measurement
- General industrial applications

Special Features

- Display range -1999 ... 9999
- Attaches to a 4 ... 20 mA output transmitter using a DIN 43 650 L-plug
- User- adjustable on site without calibration equipment
- IP 65 Ingress protection
- Intrinsically safe explosion protection II 2G EEx ib IIC T4 (type A-IAI-1)

Display installed on Type S-10 or S-11 transmitter

Description

The type A-AI-1 or A-IAI-1 attachable indicator provides an ideal solution for a local read-out with simultaneous 4-20 mA signal transmission.

The universal programmability and simple mounting allows the display to retrofit existing installed transmitters equipped with a full size DIN plug. It is loop powered so no additional power supply is required.

The scaling is adjusted by accessing three buttons under the front cover. The user is prompted through the programming steps by a logically arranged menu and prompts displayed on the LCD.

Two user-selectable filtering levels smooth the display during dynamic pressure changes and brief pressure peaks can be suppressed. All programmed parameters are stored in an EEPROM so in the event of a power failure reprogramming is unnecessary.

The IS attachable indicator type A-IAI is designed for use in potentially explosive atmospheres. This IS attachable indicator can be combined with an IS-transmitter and with an IS signal isolator or IS transmitter power supply to enable the use in Zone 1 hazardous areas.

The display is provided with an integrated, continuous self-diagnostic circuit that monitors indicator function. The integral self-diagnostic system provides error messages for sensor failure along with upper or lower deviation from the range help provide a high degree of safety.

The sturdy and compact plastic case provides IP65 ingress protection, making the display ideally suited for a great variety of industrial applications.

Specifications

Display
Type: 0.4" high LCD
Programmable display range: -1999 to +9999

Accuracy
< 0.2% of span

Programmable Range
4-20 mA can be assigned any display value within the display range. Both scaling points are individually adjustable using push buttons inside the case.

Power
Loop powered - no additional power supply required
Voltage drop: 3 VDC
Maximum current rating: 40 mA

Environmental
Operating temperature: +32 to +122°F (0 to 50°C)
Storage temperature: -22 to +176°F (-30 to +80°C)
Temperature effects: 0.1% of span per 18°F (10°C)
Humidity: <90%, non-condensing

CE Conformity
Interference emission per EN 50 081-1
Interference immunity per EN 50 082-2

Construction
Case: ABS plastic
Viewing window: polycarbonate

Dimensions (inches)
1.9 x 1.9 x 1.4 deep

Weight
Approx. 3 oz.

Programming Instructions

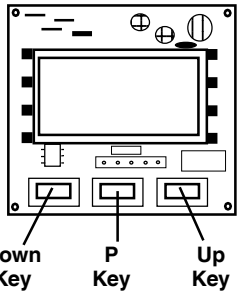
1.) Remove four cover screws and remove cover.
2.) Press the "P" Key. Display shows "dP".
3.) Press the "Up" or "Down" key to select the desired decimal place position.
4.) Press the "P" key twice. Display shows "An 4".
5.) Press the "Up" or "Down" key to set display to zero or other 4 mA display point.
6.) Press the "P" key twice. Display shows "An20".
7.) Press the "Up" or "Down" key to set the maximum range of the transmitter.
8.) Press the "P" Key twice. Display shows "LI ".
9.) Press the "Up" key to activate error code display (display shows " 1") or the down key to disable error codes (display shows "0").

Error codes: under range: Display shows "F1"
over range: Display shows "F2 "

10.) Press the "P" key. Display shows "FILt". A digital filter is available to improve the readability of the display for applications undergoing rapid pressure changes. To set the digital filtering, press the "up" or "down" key to adjust the update rate of the display:

Display	Time delay
" 0"	0.2 s
" 1"	0.5 s
" 2"	1.0 s
" 3"	1.5 s

11.) Press the "P" key to return to the display mode.



Display with cover removed

Ready-To-Ship Meters		
Type	**Part #**	**Description**
A-AI-1	7082534	Loop powered indicator for S-10, S-11 and A-10 using DIN 43 650 electrical connector (4-20 mA 2-wire only)

Type DI-15 Panel Mount Digital Indicator

Applications

- Plant construction
- Machine tools
- Onboard vehicle displays
- General industrial applications

Special Features

- Multi-function process inputs for standard signals, resistance thermometers and thermocouples
- Switching point, hysteresis and output type (NPN, PNP, Push-Pull) are all user-selectable
- EASYBUS Interface included
- High measuring rate using standard signals

Description

The compact design and multiple signal inputs make the DI15 suitable for many industrial applications.

This universal digital indicator easily adapts to specific measurement tasks and installation requirements without additional tools. Signal input selection is accomplished by using specific terminals on the back of the display and selecting the signal input type in the menu. The display can be programmed in any engineering units and the switch settings are programmable using the push buttons under the front bezel.

A user-friendly, structured menu guides the operator through all the necessary program steps by displaying text in the LED display.

Two user-programmable transistor switching outputs with independently adjustable hysteresis are standard. The digital processing ensures that the alarm set points are switched accurately. The response time can be set from 0 to 99 minutes.

An EASYBUS serial interface for measuring data transfer is a standard feature of the DI-15.

Stainless steel retaining clips are provided for easy installation in panels up to 0.39” (10 mm) thick. The compact design is suitable for installations in locations with limited mounting space such as vehicle dashboards.

Specifications Type DI-15

Display		
- Design	7-segment-LED, 4-digit, red	
- Height of digits	0.39” (10 mm)	
- Indication range	-1999 ... 9999	
Input		
- Number and type	1 multi-function input for resistance thermometers, thermocouples and standard signals	
- Input configuration	Selectable via terminal connections and menu-driven programming	
- Resistance thermometers	Pt100 3-wire, Pt1000 2-wire	max. admissible resistance per wire: 20 Ω
- Thermocouples	Type K, S, N, J, T	
- Voltage signals	0 ... 50 mV, 0 ... 1 V, 0 ... 2 V	input resistance ≥ 10 kΩ
	0 ... 10 V	input resistance ≥ 300 kΩ
- Current signals	0 ... 20 mA, 4 ... 20 mA	input resistance ~125 Ω
- Measuring rate	Approx. 4/s with temperature sensors, approx. 100/s using standard signals	
Outputs	2 switch outputs, not galvanically isolated	
- Type of output	Adjustable:	
	Low-Side (NPN, “GND-switching”)	
	High-Side (PNP, “+Uv-switching”)	
	Push-Pull (change-over between GND and power supply +Uv)	
- Connection data	Low-Side: 28 V, 1 A	
	High-Side: Uv, 200 mA	
- Output functions	2-step, 3-step, 2-step with alarm, common or separated Min-/Max-alarm	
- Switching points	Freely selectable	
Operation	Via 3 keys (accessible after removing the bezel) or by interface	
Interface	EASYBUS, galvanically isolated	
Power supply	DC 9 ... 28 V	
Current consumption	Max. 30 mA (without switch output and interface)	
Electrical connection	Removable screw terminals	
	2-pin for interface, 9 pin for all remaining connections	
	Wire cross section from 0.14 mm^2 to 1.5 mm^2	
Ambient conditions		
- Ambient temperature	-4 °F ... +122 °F / -20 °C ... +50 °C	
- Storage temperature	-22 °F ... +158 °F / -30 °C ... +70 °C	
- Humidity	0 ... 80 % relative humidity (non-condensing)	
Case		
- Material	Fiberglass reinforced Noryl, polycarbonate window	
- Ingress protection	Front: IP 54; IP 65 with use of the provided O-ring seals	
- Dimensions	1.89” x .95” x 2.56” (48 mm x 24 mm x 65 mm)	
- Panel cutout	1.77” x .85” (45 mm x 21.7 mm)	
- Mass	Approx. 50 g	
- Mounting	Stainless steel spring clip for a wall thickness from .039” to .39” (1 to 10 mm)	

Input signal	Measuring span		Measuring error in [%] of the span
Current signals			
0 ... 20 mA	-1999 ... 9999 [1]		± 0.2 % ± 1 digit
4 ... 20 mA	-1999 ... 9999 [1]		± 0.2 % ± 1 digit
Voltage signals			
0 ... 50 mV	-1999 ... 9999 [1]		± 0.3 % ± 1 digit
0 ... 1 V	-1999 ... 9999 [1]		± 0.2 % ± 1 digit
0 ... 2 V	-1999 ... 9999 [1]		± 0.2 % ± 1 digit
0 ... 10 V	-1999 ... 9999 [1]		± 0.2 % ± 1 digit
Thermocouples			
Type K, NiCr-Ni	-454 ... +2562 °F	-270 ... +1406 °C	± 0.3 % ± 1 digit
Type J, Fe-CuNi	-274 ... +1742 °F	-170 ... +950 °C	± 0.3 % ± 1 digit
Type S, Pt10Rh-Pt	-58 ... +3182 °F	-50 ... +1750 °C	± 0.5 % ± 1 digit
Type T, Cu-CuNi	-454 ... +752 °F	-270 ... +400 °C	± 0.3 % ± 1 digit
Type N, NiCrSi-NiSi	-454 ... +2372 °F	-270 ... +1300 °C	± 0.3 % ± 1 digit
Resistance thermometers			
Pt100 (3-wire)	-58 ... +392 °F	-50.0 ... +200 °C	± 0.5 % ± 1 digit
	-328 ... +1562 °F	-200 ... +850 °C	± 0.5 % ± 1 digit
Pt1000 (2-wire)	-328 ... +1562 °F	-200 ... +850 °C	± 0.5 % ± 1 digit

1) Decimal point adjustable

Terminal configuration

Terminal	Housing inscription	Meaning
1	Output 1	Switching output 1
2	Output 2	Switching output 2
3	GND	Switching output GND
4	Supply +Uv	Supply voltage +Uv
5	GND, Supply -Uv	Supply voltage GND
6	10 V	Input: 0 ... 10 V
7	GND Pt100(0)	Input: GND, Pt100 (B), Pt1000
8	mV, TC, Pt100	Input: 0 ... 50 mV, thermocouple (+), Pt100 (A)
9	1 V, mA, Freq., Pt100(0)	Input: 0 ... 1 V, 0 ... 2 V, 0(4) ... 20 mA, frequency, Pt100 (B), Pt1000
10	EASYBUS	EASYBUS interface
11	EASYBUS	EASYBUS interface

Note: The terminals 3, 5 and 7 are internally connected.

Ready-To-Ship Meters

Type	Part #	Description	
DI-15	7464880	Digital indicator with 2 solid state relays for panel mounting, accepts 4-20mA, 0-20mA, 01V, 0-10V, Pt1000 signal inputs.	

Type S-10-3A Sanitary Pressure Transmitter

Applications

- Food and beverage
- Pharmaceutical
- Cosmetic

Special Features

- Compliant with 3A
- Available with 3/4", 1.5" or 2.0" Tri-Clamp® connections
- 4-20 mA 2-wire output signal, others available
- Available with an integral cooling extension for high temperature applications
- Stainless steel case and wetted components

S-10-3A

S-10-3A.C

≥1½" Tri-Clamp® process connection

Description

WIKA S-10-3A pressure transmitters are in compliance with 3A 3rd party sanitary criteria for pressure and level measurement in the food, pharmaceutical, cosmetic and beverage industries. They feature 0.5% accuracy, 0.25 % B.F.S.L, rugged stainless steel construction, and a wide operating temperature range.

The 316L SS flush diaphragm minimizes product buildup. The all welded diaphragm seal system includes FDA and USP approved system fill fluid and is designed for "clean in place" (CIP) and "sterilize in place" (SIP) maintenance procedures. The transmitters are available with industry standard 3/4", 1.5" or 2.0" Tri-Clamp® connections. The S-10-3A.C is designed for use with media temperatures up to 350°F (177°C).

Each transmitter undergoes extensive quality control testing and calibration. The printed circuit boards use state-of-the-art surface mount technology and are potted in silicone gel for protection against mechanical shock, vibration and moisture. Each transmitter is manufactured to assure accuracy and long term stability when exposed to severe ambient temperature variations.

STANDARD RANGES (1)

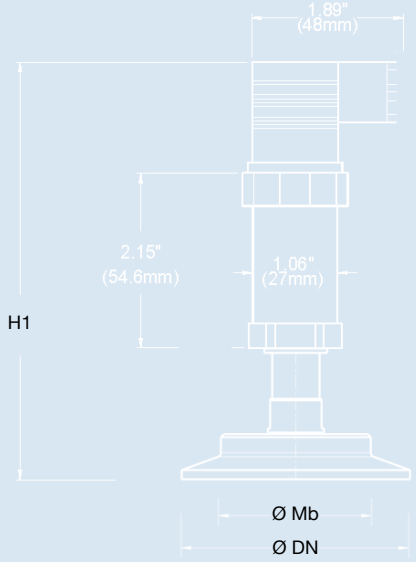
RANGE	1.5" Tri-Clamp® Part #	2.0" Tri-Clamp® Part #
30"-0 HgVac	9766329	9744770
30"-0-30 psi	8997395	4204042
30"-0-60 psi	9799732	4224167
30"-0-100 psi	4204387	4300840
0-15 psi	9748202	9748210
0-30 psi	9748075	4225007
0-50 psi	4215789	4215771
0-60 psi	9744703	9748199
0-100 psi	9748237	9747931
0-160 psi	9748245	9748253
0-200 psi	9749408	4213246
0-250 psi	9776227	4268831
0-300 psi	8990985	4253877
0-500 psi	4205081	9745828
0-1,000 psi	8993470	4281737

(1) Standard part numbers listed above include a S-10-3A, 4-20 mA two wire output signal and a DIN 43650 electrical connector.

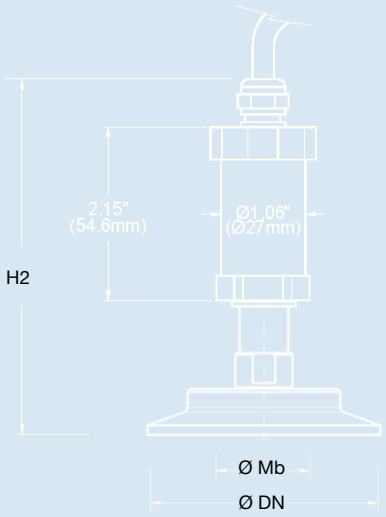
Specifications	Units	Type S-10-3A, S-10-3A-C
Sensing principle		Piezoresistive up to 300 psi, thin film > 400 psi
Pressure ranges	psi	Standard ranges as listed {custom ranges available}
Pressure reference		Relative pressure {absolute pressure reference available}
Pressure connection		
Process connection		1.5" or 2.0" Tri-Clamp® connection {Electropolished available} {others available}
Diaphragm surface finish	Ra	< 20 µin
Material:		
Wetted parts		1.4435 (316L SS) {others available}
■ Case		1.4301 (304 SS)
■ Internal transmitting liquid		KN 92 Mineral oil - FDA and USP approved {others available}
Supply voltage U_B	DC Volts	10 - 30 (14 - 30 for 0 - 10 V output signal)
Output and load limitations:		
Output signal and maximum load		4-20 mA 2-wire system RA[Ohm] < (UB [V] -10V) / 0.02 A {0-20 mA 3-wire system} RA[Ohm] < (UB [V] -10V) / 0.02 A {0-5 V 3-wire system} RA> 5 kOhm (min) {0-10 V 3-wire system} RA> 10 kOhm (min) {other signal outputs available}
Response time (10...90%)	ms	< 10
Zero and span adjustment	% of span	Approximately ±5%
Accuracy [1] (non-linearity, including hysteresis and non-repeatability)	% of span	<0.5% (0.25 % B.F.S.L.) (Calibrated in vertical mounting position with process connection down)
Repeatability	% of span	< 0.05
1 year stability	% of span	< 0.2 (under reference conditions)
Temperature		
■ Media:		
S-10-3A		-22º F to +248º F (-30º C to +120º C)
S-10-3A.C		-22º F to +350º F (-30º C to +177º C)
■ Ambient		-4º F to +176º F (-20º C to +80º C)
■ Storage		-40º F to +212º F (-40º C to +100º C)
Temperature error: (reference 70º F) [2]		
■ On zero point	% of span	< 0.5 per 18º F (10º C) change
■ On span	% of span	< 0.5per 18º F (10º C) change
CE conformity		97/23/EC 2004/108/EEC, EN 61 326 Emission Group (Group 1, Class B) and Immunity)industrial locations
Electrical connection		4 pin L-plug per DIN 43 650 with solderless screw terminal & PG 13 fitting {4 pin L-plug with 1/2"" female conduit opening, 5 foot vented flying lead, 4 or 6 pin MIL plug}
Weight	lb	Approximately 1.2 (0.6 Kg)
Dimensions		See drawing
Electrical protection		Protected against reverse polarity, short circuit, and overvoltage
Environmental protection		IP 65 (NEMA 5) with 4 pin L-plug, {MIL plugs} {IP 67 (NEMA 4) with 5 foot flying lead

Notes: 1) Accuracy valid for 1.5" and 2.0" Tri-Clamp®
2) Temperature error valid for 1.5" and 2.0" Tri-Clamp®
Items in curved brackets { } are available as special order options

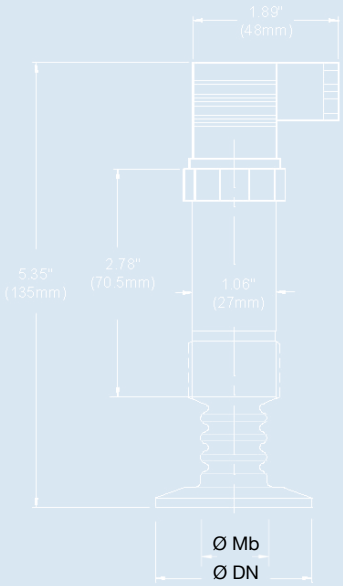
Dimensions



S-10-3A with standard DIN plug



S-10-3A with NEMA 4 cable option



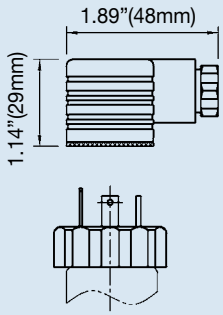
S-10-3A.C with DIN plug and integral cooling extension 1½" and larger Tri-Clamp®

PROCESS CONNECTION	DN	Mb	H1	H2
3/4" Tri-Clamp® *	0.98"	0.6"	5.1"	4.5"
1.5" Tri-Clamp®	1.97"	1.0"	5.0"	4.4"
2.0" Tri-Clamp®	2.52"	1.6"	5.0"	4.4"

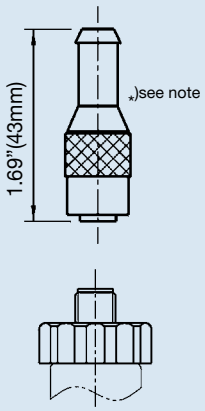
Note: * Accuracy: 1.0% (0.5% B.F.S.L.)
Temperature error on zero point: 1.0 per 18° F (10° C) change
Temperature error on span: 1.0 per 18° F (10° C) change

Electrical connections

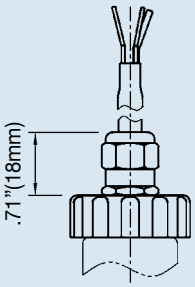
L-connector, DIN EN 175301-803, Form A (DIN 43 650) for conductor cross section up to max. 1.5 mm² , conductor outer diameter 0.3“ (6-8 mm), NEMA 5 / IP 65
Order code: A4



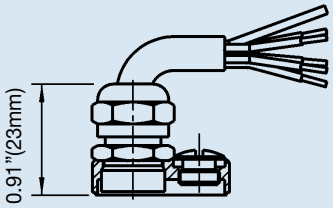
Circular connector M 12x1, 5-pin, NEMA 4 / IP 67
Order code: M5



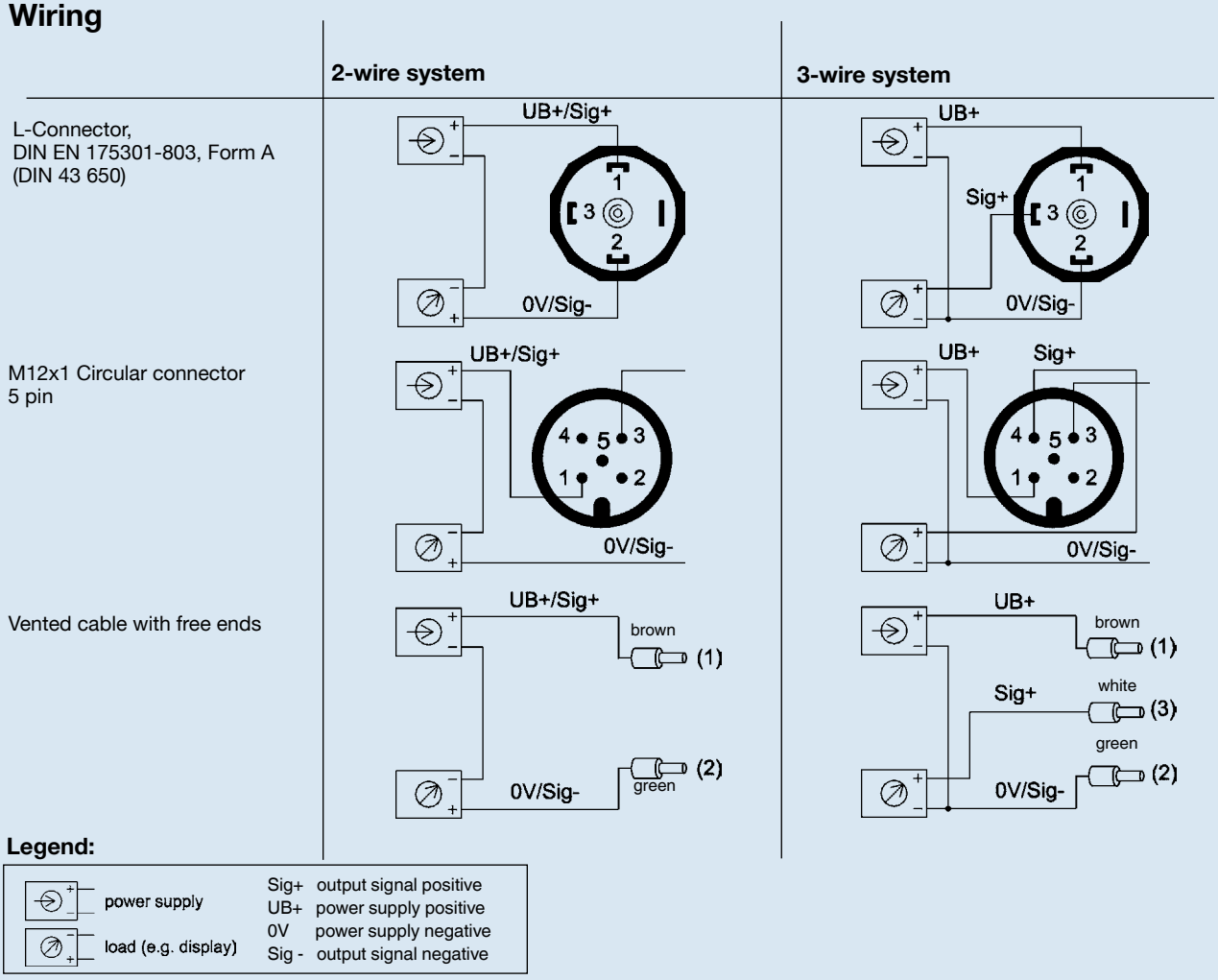
Flying leads conductor cross section up to max. 0.5 mm² / AWG 20 with end splices, conductor outer diameter 6.8 mm, NEMA 4 / IP 67
Order code: DL



Cable with free ends, adjustable zero and span conductor cross section up to max. 0.5 mm² / AWG 20 with end splices, conductor outer diameter 6.8 mm, NEMA 6 P / IP 68
Order code: XM



Wiring



Type S-10-3A Sanitary Pressure Transmitters

- **3A sanitary pressure transmitter**
- **Available with an integral cooling extension for high temperature applications (Type S-10-3A.C)**

S-10-3A

S-10-3A.C

S-10-3A Part Numbers

Pressure conn.	1½" or 2" Tri-Clamp® connections	
Power supply	10-30 VDC	
Signal output	4-20 mA 2-wire	
Elec. conn.	DIN 43 650 with plug connector	
Vacuum and compound ranges		
	1.5" Tri-Clamp®	2" Tri-Clamp®
30"-0 Hg vac	9766329	9744770
30"-0-30 psi	8997395	4204042
30"-0-60 psi	9799732	4224167
30"-0-100 psi	4204387	4300840
Gauge ranges		
0-15 psi	9748202	9748210
0-30 psi	9748075	4225007
0-50 psi	4215789	4215771
0-60 psi	9744703	9748199
0-100 psi	9748237	9747931
0-160 psi	9748245	9748253
0-200 psi	9749408	4213246
0-250 psi	9776227	4268831
0-300 psi	8990985	4253877
0-500 psi	4205081	9745828
0-1,000 psi	8993470	4281737

Special order options	
Output signals	
0-20 mA 3-wire	
0-5 V 3-wire	
0-10 V 3-wire	
Other	
Process connections	
Integral cooling extension for media temp. up to +350°F (177°C) (Type number changes to S-10.3A.C)	
3" Tri-Clamp® connection	
4" Tri-Clamp® connection	
Cherry Burrell® I-Line	
InLine Seal	
Other	
Other options	
Electropolished diaphragm to ≤15 Ra	
NEOBEE® M-20 liquid fill	
Food grade silicone liquid fill	
Non-standard pressure range	
NIST traceable calibration certificate <0.50% B.F.S.L. (part # 502)	
Teflon® coated diaphragm	
Hastelloy® wetted parts	

Items without part numbers are available on special order.

Electrical connector options	
Description	**Part #**
DIN 43 650 PG-9 plug (standard)	1006711
DIN 43 650 ½" female conduit	1632159
Attachable LCD display	7082534
5 foot cable IP 67 / NEMA 4	9744479
10 foot cable IP 67 / NEMA 4	9838915
20 foot cable IP 67 / NEMA 4	4239904
30 foot cable IP 67 / NEMA 4	4239921
50 foot cable IP 67 / NEMA 4	4293348
4 pin MIL plug PT02E-8-4P	2184479
6 pin MIL plug PT02E-10-6P	9744460

Type SA-11 Sanitary Pressure Transmitter

Special features

- Compliant with 3A sanitary criteria
- 1.5" and 2" Tri-Clamp® connections
- Pressure ranges include vacuum, compound and gauge ranges as low as 100 inches water column
- 4-20 mA 2-wire output signal, others available
- Designed for media temperature up to 150°C (300°F)
- Wetted surface finish R_a < 16µ inch

Type S

Type SA-11 with optional IP 68 cable

Description

WIKA SA-11 pressure transmitters meet 3A and EHEDG sanitary criteria for pressure and level measurement in the food, pharmaceutical, cosmetic and beverage industries. They feature 0.25% accuracy, rugged 316L SS wetted construction and a wide operating temperature range.

The SA-11 features an integral cooling extension between the Tri-Clamp® connection and transmitter body. This design increases the maximum permissible media temperature to 150°C (300°F).

The 316L SS flush diaphragm ensures a crevice free seal between the process connection and the pressure measuring diaphragm. The permanently sealed sensing system includes food grade (FDA approved) liquid fill and is designed for "clean in place" (CIP) and "sterilize in place" (SIP) maintenance procedures. The transmitters are available with industry standard 1.5" or 2" Tri-Clamp® connections. They can be ordered with an optional NEMA 6P (IP 68) cable assembly for additional protection in wash down areas.

Tri-Clamp® is a registered trademark of Tri-Clover Inc.

STANDARD RANGES

RANGE	MAXIMUM*	BURST**
0-100 InWC	30 psi	30 psi
0-150 InWC	30 psi	30 psi
0-250 InWC	60 psi	60 psi
0-400 InWC	70 psi	70 psi
0-25 psi	145 psi	145 psi
0-50 psi	250 psi	250 psi
0-100 psi	500 psi	500 psi

Additional ranges are available

PART NUMBERS

Pressure conn.	1½" or 2" Tri-Clamp® connections	
Power supply	10-30 VDC	
Signal output	4-20 mA 2-wire	
Elec. conn.	DIN 43 650 with plug connector	
Gauge ranges		
	1.5" Tri-Clamp®	2" Tri-Clamp®
0-100 InWC	4361853	4361861
0-150 InWC		4373576
0-250 InWC	4361887	4361879
0-400 InWC		50362305
0-25 psi		4209986
0-50 psi	4200104	4200113
0-100 psi	4394866	50006495

Other ranges to 400 psi are available

Notes:
* Pressure applied up to the maximum rating will cause no permanent change in specifications
** Exceeding the burst pressure may result in destruction of the transmitter and loss of media.

Specifications	Units	Type SA-11 Sanitary
Sensing principle Pressure ranges Pressure reference		Piezoresistive Standard ranges as listed {custom ranges available} 100 InWC up to 300 psi relative pressure {absolute and compound are available}
Pressure connection		1.5" or 2" Tri-Clamp® connection {other connections available}
Material: -wetted parts -case -internal transmitting liquid		 1.4435 (316L SS) 1.4571 (316 Ti SS) Synthetic oil KN 77, FDA approved

Supply voltage U_{B+}	DC Volts	10 - 30 (14 - 30 for 0 - 10 V output signal)
Output and load limitations: Output signal and maximum load		 4-20 mA 2-wire system R_A[Ohm] < (U_B [V] -10V) / 0.02 A {0-20 mA 3-wire system} R_A[Ohm] < (U-1 pt [V] -10V) / 0.02 A {0-5 V 3-wire system} R_A> 5 kOhm (min) {0-10 V 3-wire system} R_A> 10 kOhm (min) {other signal outputs available}
Response time (10...90%) zero and span adjustment	ms % of span	≤ 10 Approximately ±5

Accuracy (non-linearity, including hysteresis and non-repeatability)	% of span	<0.25% (B.F.S.L.)	(Calibrated in vertical mounting position with process connection down)
1 year stability	% of span	< 0.2 (under reference conditions)	

Temperature Media Ambient Storage Compensated range		 -4°F to +302°F (-20°C to +150°C) -4°F to +176°F (-20°C to +80°C) -40°F to +212°F (-40°C to +100°C) +32°F to +176°F (0°C to +80°C)
Temperature error (reference 70°F) on zero per 18°F (10°C) on span per 18°F (10°C)	 % of span /10°C % of span /10°C	 <0.25 for 0-150 InWC; <0.40% for 0-100 InWC:<0.20% for >150 InWC <0.2

CE conformity		Interference emission and immunity per EN 61 326
Electrical connection		4 pin L-plug per DIN 43 650 with solderless screw terminal and PG 13 fitting {4 pin L-plug with 1/2" female conduit opening} {5 foot vented flying lead} {4 or 6 pin MIL plug}
Weight Dimensions	lbs.	approximately 1.1 (0.5 Kg) see drawing
Electrical protection		protected against reverse polarity, short circuit and overvoltage
Environmental protection		IP 65 (NEMA 5) with 4 pin L-plug, MIL plugs {IP 67 (NEMA 4) with 5 foot flying lead} {IP 68 (NEMA 6P) with vented cable and non-accessible zero and span}

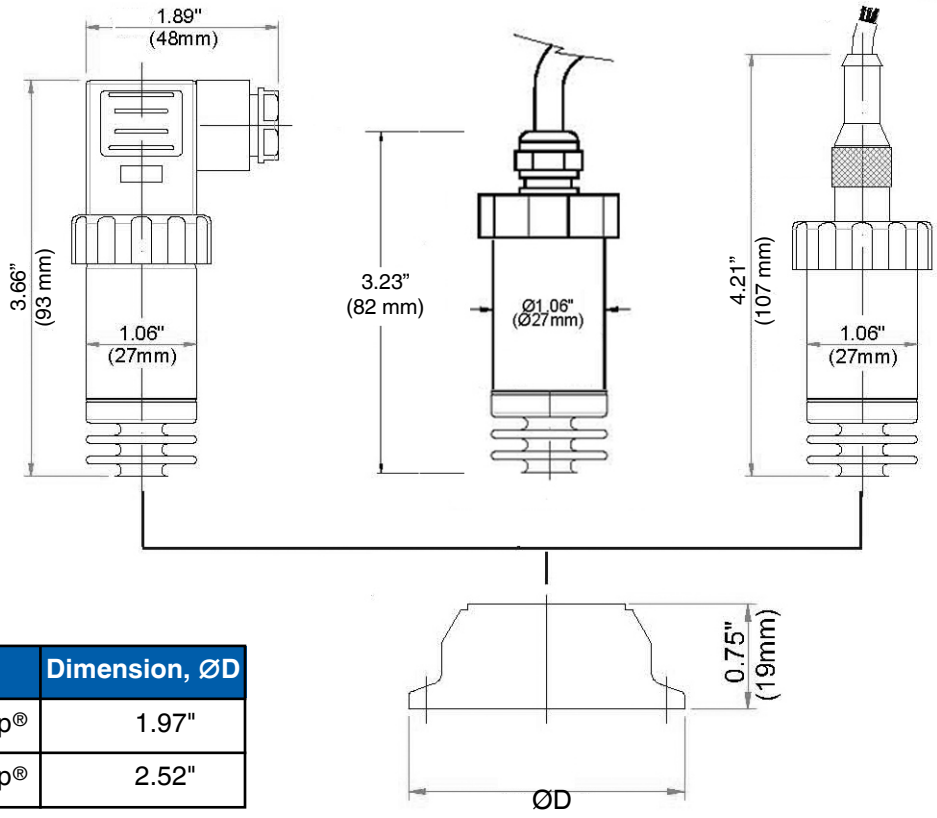
Note: Items in curved brackets { } are available as special order options

Dimensions

4 pin L-plug
DIN43 650

SA-11A with
NEMA 4 cable option

4 or 6 pin MIL plug
(mating connector not included)

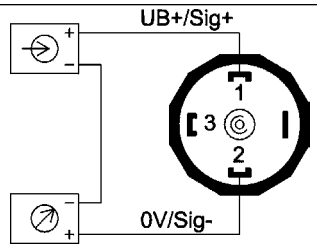
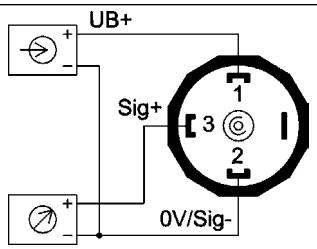
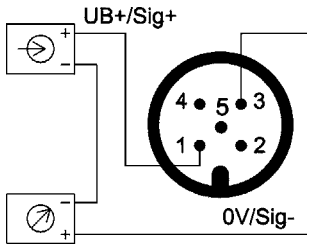
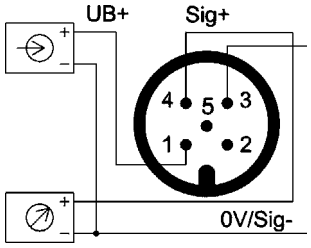
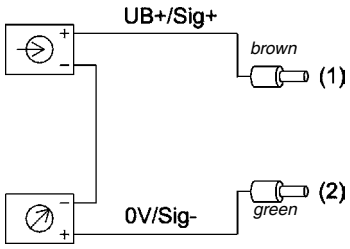
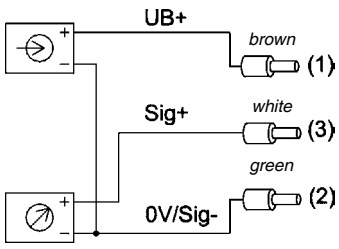


Description	Dimension, ØD
1.5" Tri-Clamp®	1.97"
2.0" Tri-Clamp®	2.52"

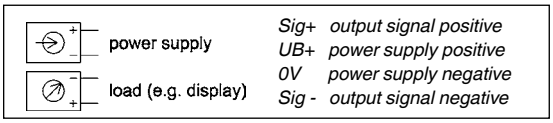
Electrical connections

	Standard			
				
Type	DIN 43 650 plug	Adjustable LCD Display	Vented cable with free ends	MIL plug
Protection	IP 65 / NEMA 5	IP 65 / NEMA 5	IP 67 / NEMA 4	IP 65 / NEMA 5
Description and part numbers	PG9 cable gland (standard) Part #1006711 1/2" NPT female conduit opening Part #1632159	Loop powered programmable 4-20 mA 3.5 digit Part #7082534	5 foot - #9744479 10 foot - #9838915 20 foot - #4239904 30 foot - #4239921 50 foot - #4293348	4 pin PT02E-8-4P Part #8990935 6 pin PT02E-10-6P Part #9744460

Wiring

	2-wire system	3-wire system
L-Connector, DIN EN 175301-803, Form A (DIN 43 650)		
M12x1 Circular connector 5 pin		
Vented cable with free ends		

Legend:



Ordering information
Pressure gauge model / Nominal size / Scale range /
Size and location of connection / Optional extras required

SA-11 Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
	A	4 ... 20 mA, 2-wire
	B	0 ... 20 mA, 3-wire
	F	0 ... 10 V, 3-wire
	G	0 ... 5 V, 3-wire
1	?	Customer specification
		Unit
	P	psi
	3	psi absolute
	N	InWC
2	?	Customer specification
		Pressure range
	CA	-30/0 inHg
	CN	0/5 psi
	CP	0/10 psi
	BD	0/30 psi
	BE	0/60 psi
	BF	0/100 psi
	BG	0/160 psi
	BH	0/200 psi
	BI	0/300 psi
	??	Customer specification
	GU	0/100 InWC
	GV	0/150 InWC
	GW	0/250 InWC
3	GX	0/400 InWC
		Process connection
	RT	Tri-Clamp® DN 1 1/2”
	SA	Tri-Clamp® DN 2”
4	??	Customer specification
		Accuracy
	G	+/- 0.25% B.F.S.L.
5	K	+/- 0.125% B.F.S.L.
		Electrical connection
	A4	4 Pin L-plug DIN EN 175301-803 with pg 9 (NEMA 5 // IP 65)
	M4	4 Pin locking plug M12 x 1 (NEMA 4 / IP 67)
	EM	Vented cable with free ends (NEMA 6 / IP 68)
6	??	Customer specification

SA-11 Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Cable length
	Z	Without
	Y	5 feet
	1	10 feet
	2	20 feet
	3	30 feet
7	?	Customer specification
		Quality certificates
	Z	Without
8	1	Quality certificates
		Digital display
	Z	Without
8	1	Digital display
		Additional order details
	Z	Without
10	T	Additional text

Order Code:

SA-11- [1] **-** [2][3] **-** [4] **-** [5][6][7] **-** [8][9][10]

*Additional order details _____

Type F-20-3A Sanitary Pressure Transmitter NEMA 4X with Integral Junction Box

Applications

- Food and beverage industry
- Pharmaceutical industry
- Biotechnology industry
- Cosmetic industry

F-20-3A shown with 3/4" Tri-Clamp® process connection

F-20-3A shown with 1.5" Tri-Clamp® process connection

Special Features

- Meets "3A" criteria
- Available with 3/4", 1.5" and 2.0" Tri-Clamp® process connection
- Stainless steel transmitter housing
- 316LSS electropolished wetted surfaces, Ra<20 µ inch
- FDA approved system fill fluid
- Standard pressure ranges from 15psi up to 1,500psi (vacuum and compound ranges available)
- 4-20mA or voltage output signals are available

Description

Compact design

WIKA F-20-3A pressure transmitters are in compliance with "3A" third party criteria for pressure and level measurement in all sanitary applications. The process wetted surfaces of 316L SS are electropolished to reduce cleaning time. This transmitter features 0.25% output linearity (BFSL) over a wide operating temperature range.

The transmitters are available with industry standard 3/4", 1.5" and 2.0" Tri-Clamp® process connections. Mineral oil (KN92) is the standard system fill fluid behind the process connection diaphragm (glycerine for positive pressure 3/4" Tri-Clamp®) both approved by FDA. The transmitter assembly is designed for "Clean in Place" (CIP) and "Steam in Place" (SIP) maintenance procedures.

The all stainless steel case meets NEMA 4X / IP 67 requirements for wash down and corrosion resistance and ingress protection is available up to IP 68 per IEC 60 529. The smooth exterior surface finish makes it ideal for the sanitary industry to ensure cleanliness. The all-welded design eliminates all threaded connections (excluding transmitter cover) where contaminants may collect.

Easily accessible electrical connection

The sophisticated design of this transmitter provides for fast and easy installation. The junction box cover unscrews for access to the internal spring clip terminal block.

Additional features

Transmitters with the 4-20mA output signal includes an internal test circuit connection that permits the transmitter to be tested without disconnecting the primary 4-20mA circuit. Removal of transmitter cover allows easy access to zero and span adjustment potentiometers. The standard conduit connection is 1/2"npt-female with the option of a NEMA 6P (IP 68) cable gland.

Documentation

Material identification engraved in seal body. Material conformance documents and Calibration Conformance Report supplied with each assembly (not a direct substitute for 3.1b material traceability certificate or NIST calibration certificate).

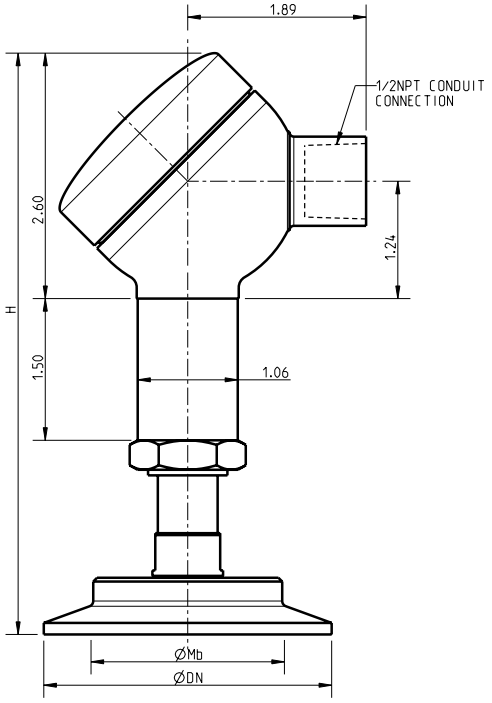
Optional features

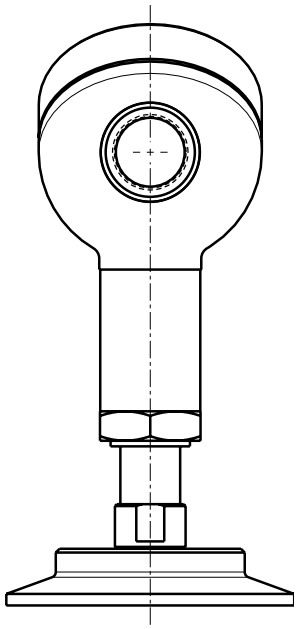
Process connections of 2.5", 3.0" and 4.0" Tri-Clamp® along with other industry specific types and sizes. Pressure ranges below 15 psi are available with the larger process connection sizes. For highly corrosive applications, process wetted materials other than 316L SS are available. Additional FDA approved system fill fluids are available; NEOBEE®-M20 (KN59), glycerine (KN7) and food grade silicone (KN34). Optional certifications are available; NIST calibration, 3.1b material traceability to EN 10 204 and electropolish with nominal surface finish.

Specifications

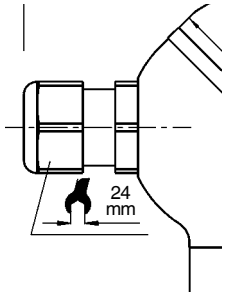
Materials		
■ Wetted parts		316L SS, electropolished
■ Case		Stainless steel
Internal transmission fluid		Mineral Oil, KN92 (Glycerine for 3/4" Tri-Clamp® and positive pressure) {Listed by FDA for food applications}
Process connection size & suitable pressure span		3/4" Tri-Clamp® - 60 psi minimum 1.5" & 2.0" Tri-Clamp® - 15 psi 2.5" and larger Tri-Clamp® - Consult factory
Power supply U_B +	VDC	10 < 40+≤ 30 (11 ... 30 with signal output 4 ... 20 mA, 14 ... 30 with signal output 0 ... 10 V)
Signal output and maximum load R_A		4 ... 20 mA, 2-wire R_A (U_B -10 V) / 0,02 A with R_A in Ohm and UB in Volt 0 ... 20 mA, 3-wire R_A (U_B - 3 V) / 0,02 A with R_A in Ohm and UB in Volt {0 ... 5 V, 3-wire} R_A > 5 kOhm, {0 ... 10 V, 3-wire} R_A >10 kOhm
Test circuit signal / max. load R_A		Only for instruments with 4 ... 20 mA signal output. R_A < 15 Ohm
Adjustability zero/span	% of span	± 5 using potentiometers inside the instrument
Response time (10 ... 90 %)	ms	< 1 (base transmitter)
Isolation voltage	VDC	500
Accuracy [1]		1.5" Tri-Clamp® / 3/4" Tri-Clamp®
	% of span	≤0.25 (BFSL) / ≤0.5 (BFSL)
	% of span	≤0.5 (limit point calibration) / ≤1.0 (limit point calibration)
		[1] Including linearity, hysteresis and repeatability. Limit point calibration performed in vertical mounting position with pressure connection facing down.
Non-repeatability	% of span	0.1%
1-year stability	% of span	0.2 (at reference conditions)
Permissible temperatures		3/4" Tri-Clamp® / ≥1.5" Tri-Clamp®
■ Medium		+32ºF (0ºC) to +250ºF (+121ºC) / -4ºF (-20ºC) to +300ºF (+149ºC)
■ Ambient		+32ºF (0ºC) to +140ºF (+60ºC) / -4ºF (-20ºC) to +140ºF (+60ºC)
■ Storage		-40ºF (-40ºC) to +212ºF (100ºC) / -40ºF (-40ºC) to +212ºF (100ºC)
Temperature coefficients (cumulative values, reference temperature +70ºF)		3/4" Tri-Clamp® / ≥1.5" Tri-Clamp®
Transmitter output	% of span	≤ 0.2 / 10ºC / ≤0.2 / 10ºC
■ Stability, 1 Year		
■ Ambient effects	psi / 10º C	0.6 / 0.03
■ Medium effects	psi / 10º C	0.3 / 0.02
CE- conformity		89/336/EWG interference emission and immunity see EN 61 326 interference emission limit class A and B 97/23/EG Pressure equipment directive (Module H)
Shock resistance	g	600 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance	g	10 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		Protected against reverse polarity, overvoltage and short circuiting
Electrical connection		Internal spring clip terminals; wire cross section 2.5 mm² max, internal ground Terminal for brass nickel-plated or {stainless steel} threaded connection {additional external ground terminal for stainless steel threaded conduit connection}
Weight	lb.	Approx. 1.3

{ } Items in curved brackets are optional extras at additional cost.





Optional cable gland:
Ingress protection
NEMA 6 / IP 68
per IEC 60 529

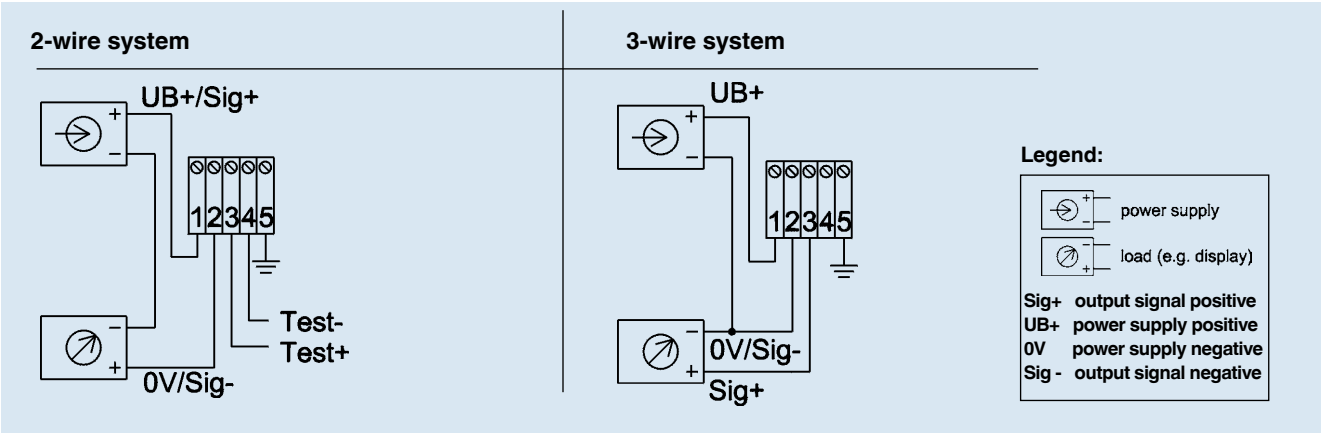


PROCESS CONNECTION	DN	Mb	H
3/4" Tri-Clamp®	0.98"	0.6"	6.3"
1.5" Tri-Clamp®	1.97"	1.0"	6.2"
2.0" Tri-Clamp®	2.52"	1.6"	6.2"

Ouput signal: 4 to 20mA, 2-wire
Conduit connection: 1/2"npt-female
Process wetted materials: 316L SS, electropolished
System fill fluid: Mineral oil, KN92 (Glycerine for 3/4" Tri-Calmp® with positve pressure)

Range	Process Connection		
	3/4" Tri-Clamp®	1.5" Tri-Clamp®	2.0" Tri-Clamp®
0 to 15 psi	n/a	50236407	50236512
0 to 25 psi	n/a	50236415	50236521
0 to 30 psi	n/a	50236423	50236539
0 to 50 psi	n/a	50236431	50236547
0 to 60 psi	50236334	50236440	50236555
0 to 100 psi	50236351	50236458	50236563
0 to 160 psi	50236369	50236466	50236571
0 to 200 psi	50236377	50236474	50236580
0 to 300 psi	- - -	- - -	- - -
0 to 500 psi	- - -	- - -	- - -
0 to 1,000 psi	- - -	- - -	- - -
-30"Hg Vac	n/a	50236482	50236598
-30"Hg to 30 psi	n/a	50236491	50236601
-30"Hg to 60 psi	50236393	50236504	50236610
-30"Hg to 100 psi	- - -	- - -	- - -
-30"Hg to 200 psi	- - -	- - -	- - -

Wiring


2-wire system
UB+/Sig+
12345
Test-
Test+
0V/Sig-
3-wire system
UB+
12345
0V/Sig-
Sig+
Legend:
power supply
load (e.g. display)
Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig - output signal negative

F-20-3A Smart Codes for Custom Order Configurations

Field no.	Code	Feature
		Signal output
		4 ... 20 mA, 2-wire
		0 …10 V, 3-wire (Supply 14-30 V)
		0 ... 5 V, 3-wire
1		Other - please specify
		Units
		psi
		InWC
2		Other - please specify
		Pressure range
		-30 inHg … 0 [1]
		-30 inHg …30 psi [1]
		-30 inHg …60 psi
		-30 inHg …100 psi
		-30 inHg …160 psi
		-30 inHg …200 psi
		0 InWC … 50 InWC [1, 2]
		0 InWC … 100 InWC [1, 2]
		0 psi … 5 psi [1, 2]
		0 psi … 10 psi [1, 2]
		0 psi … 15 psi [1]
		0 psi … 30 psi [1]
		0 psi … 60 psi
		0 psi … 100 psi
		0 psi … 160 psi
		0 psi … 200 psi
		0 psi … 300 psi
		0 psi … 400 psi
		0 psi … 500 psi
		0 psi … 600 psi
		0 psi … 750 psi
		0 psi … 1,000 psi
3		0 psi … 1,500 psi
		Process connection
		¾" Tri-Clamp®
		1½" Tri-Clamp®
		2.0" Tri-Clamp®
		2½" Tri-Clamp®
		3.0" Tri-Clamp®
		4.0" Tri-Clamp®
		Other - please specify

F-20-3A Smart Codes for Custom Order Configurations (cont'd)

Field no.	Code	Feature
		Material of wetted parts
		316L SS (1.4435) electropolished
		Hastelloy® C276 (2.4819)
		PFA coated 316L SS (FDA approved)
4		Other - please specify
		Fill fluid
		KN 7 - Glycerine (note 3 & 4)
		KN 93 - Food grade silicone oil (note 3)
		KN 59 - NEOBEE® M20
		KN 92 - Mineral oil (liquid paraffin)
5		Other - please specify
		Electrical connection
		½" NPT female conduit (IP 67)
		Stainless steel cable gland (IP 68)
6		Other - please specify
		Quality certificates
		Without
		Certificate - electropolish w/ nominal surface finish
		Certificate - EN 10 204 3.1B (material traceable)
		Certiifcate of Compliance (C of C)
		Certificate - NIST calibration
7		Other - please specify
		Additional order details
		Without
		Additional text

Notes:
(1) Not available with ¾" Tri-Clamp® process connection
(2) Consult WIKA for suitable process connection size
(3) Not recommended for vacuum or compound pressure ranges
(4) Standard offering for ¾" Tri-Clamp® with positive pressure ranges

NOTES:

With almost 70 years of experience, WIKA Instrument, LP is the leading global manufacturer of pressure and temperature measurement instrumentation, producing more than 43 million pressure gauges, diaphragm seals, pressure transmitters, thermometers and other instruments annually. WIKA's extensive product line, including mechanical and electronic instruments, provides measurement solutions for any application in a large variety of industries. A global leader in lean manufacturing and instrumentation experience, WIKA also offers a broad selection of stock and custom instrumentation as well as dedicated services to provide customers with the right solutions, at the right time, wherever they need us.

Explosion-proof Pressure Transmitter

E-11

General Purpose Pressure Transmitter

S-10

WIKA provides distinctive service and support to our channel partners and customers:

- Award winning U.S.-based manufacturing, sales and ordering customer service and technical support
- Certified technical specialists who conduct Best Practice Instrument Reviews with performance improvement reports
- An in-house engineering team for product customization and innovation
- Proven capabilities to connect with customer business processes for ordering and inventory management
- Web-based customer service features, including RFQs, literature request and competitor product cross reference

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