UNIK5800/5900

Flameproof/explosion-proof pressure sensing platform

The 5800 and 5900 are compact and rugged versions of the high performing UNIK5000 pressure sensing platform. Both 5800 and 5900 offer flameproof/explosion-proof or dust ignition protection by enclosure capability. They provide a lightweight cost effective alternative to pressure gauges and switches in process, as well as in oil and gas operations.

High quality

With more than 40 years of pressure measurement experience, our field-proven Druck technology is at the heart of the new platform, resulting in a range of high quality, high stability pressure sensors.

Bespoke as standard

Custom-built from standard components, manufacturing sensors to your requirement is fast and simple; each UNIK 5000 is a “bespoke” pressure sensing solution, but with the short lead times and competitive pricing you would expect from standard products.

Expertise

We have the people and the knowledge to support your needs for accurate and reliable product performance; our team of experts can help you make the right sensor selection, guiding you and providing the help and tools you need. It is important that you ensure that the sensor materials and performance selected are suitable for your application.

Features

- Ranges from 2 to 700 bar (30 to 10000 psi)
- Accuracy to ±0.04% Full Scale (FS) Best Straight Line (BSL)
- Stainless steel construction
- Integrated terminal compartment with long or short body (5900)
- Frequency response to 3.5 kHz
- High over pressure capability
- Hazardous area certifications
- mV, mA and voltage outputs
- Oil and drilling fluid (mud) resistant cable option (5800)
- SIL certified version available (see separate datasheet)

UNIK5800/5900 specifications

Measurement
Operating pressure ranges

Gauge ranges

Any zero based range from 2 to 50 bar
(30 to 725 psi)

Sealed gauge ranges

Any zero based range from 10 to 700 bar (145 to 10000 psi)

Absolute ranges

Any zero based range from 2 to 700 bar (30 to 10000 psi)

Non zero based ranges

Non zero based ranges are available. Please contact Druck to discuss your requirements

Over pressure

4 × FS (up to 200 bar for ranges ≤ 50 bar and up to 1200 bar for ranges > 50 bar)

Containment pressure

Ranges up to 50 bar (725 psi) gauge 6 x FS
(200 bar (2900 psi) max)

Ranges up to 50 bar (725 psi) absolute/sealed gauge
200 bar (2900 psi)

Ranges above 50 bar (725 psi) absolute/sealed gauge
1200 bar (17400 psi)

Supply and outputs

Electronics option	Description	Supply voltage (V)	Output	Current consumption (mA)
0	mV Passive	2.5 to 12	10 mV/V^	<2 at 10 V
1	mV Linearised	7 to 12	10 mV/V^	<3
2	mA	7 to 28**	4-20 mA	<30
3	0 to 5 V 4-wire	7 to 16**	0 to 5 V	<3
4	0 to 5 V 3-wire	7 to 16**	0 to 5 V*	<3
5	Basic Configurable (3-wire)	See below~	See below	<3
6	0 to 10 V 4-wire	12 to 16**	0 to 10 V	<3

^ with a 10 volt supply mV output sensors give 100 mV over the full scale pressure. Output is ratiometric to the supply voltage.

*0 to 5 V 3-wire output is non true zero. At pressures below 1% of span the output will be fixed at approximately 50 mV

**32 V maximum for non-hazardous area operation

~Supply voltage is between [Maximum Output + 1V] (7 V minimum) to 16 V (32 V in non-hazardous area operation)

Basic configurable (Option 5)

Any pressure signal output configurations will be available, subject to the following limitations:

Output specification	Basic configurable (Option 5)
Minimum span:	4 V
Maximum span:	10 V
Maximum output limit:	11 V
Maximum zero offset:	Span / 2

Output voltage range can be specified to a resolution of 0.1 V

Not true zero, the output will saturate at < 50 mV

The output will continue to respond to 110% FS. i.e. if a 0 to 10 V output is specified, the output will continue to increase proportionally to applied pressure until at least 11 V.

Examples

Allowed	Not allowed
0 to 5 V	1 to 4 V (span too small)
0.5 to 4.5 V	4 to 11 V (offset too big)
1 to 6 V	
1 to 11 V	

Supply sensitivity

±0.005% FS/Volt (voltage and current version only)

Power-up time

mV, voltage and current versions: 10 ms

Insulation resistance/isolation

- 500 Vdc: ≥ 100 MOhms
- 500 Vac: ≤ 5 mA leakage current
  (mV and mA versions only)

Shunt calibration (5800 only)

Shunt calibration provides a customer accessible connection which, when applied, causes a shift in output of 80% FS in order to simulate applied pressure. It is fitted to the mV version as standard. Shunt calibration is activated by connecting Shunt cal to -ve supply.

Performance specifications

There are three grades of performance specification: Industrial, Improved and Premium

Accuracy

Voltage, current and mV linearized

Combined effects of non-linearity, hysteresis and repeatability:

Industrial: ±0.2% FS BSL
Improved: ±0.1% FS BSL
Premium: ±0.04% FS BSL

mV passive

≤ 50 bar

Industrial/Improved: ±0.25% FS BSL
Premium: not available

> 50 bar

Industrial/Improved: ±0.5% FS BSL
Premium: not available

Zero offset and span setting

5900 electrical connector allows access to potentiometers that give at least ±5% FS adjustment

Factory set to:

Product description	Industrial	Improved and premium
Current and voltage versions (5900)	±0.5% FS	±0.2% FS
Current and voltage versions (5800)	±1.0% FS	±1.0% FS
mV versions	±3.0 mV	±3.0 mV

Long term stability

±0.05% FS typical (±0.1% FS maximum) per year

Temperature effects

Four compensated temperature ranges can be chosen.

Industrial Accuracy performance:

-10 to +50°C (+14 to +122°F): ±0.75% FS Temperature Error Band (TEB)

- -20 to +80°C (-4 to +176°F): ±1.5% FS TEB
- -40 to +80°C (-40 to +176°F): ±2.25% FS TEB
- -40 to +125°C (-40 to +257°F): ±2.25% FS TEB (5900 only)

Improved and Premium Accuracy performance:

- -10 to +50°C (+14 to +122°F): ±0.5% FS TEB
- -20 to +80°C (-4 to +176°F): ±1.0% FS TEB
- -40 to +80°C (-40 to +176°F): ±1.5% FS TEB
- -40 to +125°C (-40 to +257°F): ±1.5% FS TEB (5900 only)

Physical specifications

Environmental protection

See the electrical connector section

Operating temperature range

See the electrical connector section

Pressure media

Fluids compatible with stainless steel 316L and Hastelloy C276

Do not use with media that has an oxygen concentration >21% or other strong oxidising agents.

Enclosure materials

Stainless steel (body), Viton (O-ring)1, PTFE (vent filter), polyurethane resin (potting)2, and polyolefin (heatshrink)2. Cable sheaths as specified (see the electrical connector section)

Note 1: 5900 only
Note 2: 5800 only

Pressure connector

For available options, see ordering information

Electrical connector

Various electrical connector options offering different features are available.

Model	Code	Description	Max operating temp range		IP rating	Zero/ span adjust
			°C	°F		
5800	5	M20 male conduit with polyurethane cable	-40 to +80	-40 to +176	66/67	N
	8	½" NPT male conduit with polyurethane cable	-40 to +80	-40 to +176	66/67	N
	M	M20 male conduit with RADOX® mud resistant cable	-40 to +80	-40 to +176	66/67	N
	S	M20 male conduit with mud resistant cable	-40 to +80	-40 to +176	66/67	N
	T	½" NPT male conduit with mud resistant cable	-40 to +80	-40 to +176	66/67	N
5900	B	M20 female conduit with terminal	-40 to +100	-40 to +212	66/67[1]	Y
	J[2]	½" NPT female conduit with terminal	-40 to +100	-40 to +212	66/67[1]	Y

Note 1: Designed to be enclosure Type 4X, IP66 and IP67 when properly installed with conduit fitting.

Note 2: Option J is supplied with an M20 male to 1/2" NPT female conduit thread adaptor.

Note: Hazardous area approved versions may be restricted to a reduced maximum operating temperature range – see hazardous area approvals.

UNIK5800/5900 specifications

Electrical connections

Model	Code	Code/color	Electronics option (Codes)			
			mA (2)	Volt 3-wire (4 and 5)	Volt 4-wire (3 and 6)	mV (0 and 1)
5800	5	Red	+ve Supply	+ve Supply	+ve Supply	+ve Supply
	8	Yellow or white	-	+ve Output	+ve Output	+ve Output
		Brown	-	-	-ve Output	-ve Output
		Black	-ve Supply	0V Common	-ve Supply	-ve Supply
		Orange	-	-	-	Shunt cal
		Green	Case	Case	Case	Case
		Screen	-	-	-	-
	M	Brown	+ve Supply	-	-	-
		Blue	-ve Supply	-	-	-
		Black	Case	-	-	-
		Screen	-	-	-	-
	S	1	+ve Supply	-	-	-
	T	2	-ve Supply	-	-	-
		Green and yellow	Case	-	-	-
		Screen	-	-	-	-
5900	B	I/P+	+ve Supply	+ve Supply	+ve Supply	+ve Supply
	J	O/P+	-	+ve Output	+ve Output	+ve Output
		O/P-	-	-	-ve Output	-ve Output
		I/P-	-ve Supply	0V Common	-ve Supply	-ve Supply

Regulatory Compliance Information

Australia/New Zealand

- EMC (RCM) - compliant
- IECEx - Hazardous area (optional, refer to approvals)

Note: RCM mark is placed on H0 and IECEx approved options H1, H2, H3 and H4

Brazil

- Hazardous area (optional, refer to approvals)

Canada

- CRN registered : OF18611.513467890YTN-Rev1 & OF18611.52 New design for Alberta, For operating pressures ≤ 350 bar (5076 psi)

Canada & USA

- Hazardous locations (optional, refer to approvals)

China

- Hazardous area (optional, refer to approvals)
- China RoHS - compliant

EAEU Eurasian Economic Union (Russia, Kazakhstan, Belarus)

- EMC CU TR 020/2011 - exempt
- Hazardous area CU TR 012/2011 (optional, refer to approvals)
- Kazakhstan metrology approved

European Union: CE marked

- PED 2014/68/EU - Sound engineering practice
- ATEX Directive 2014/34/EU – (optional, refer to approvals)
- EMC Directive 2014/30/EU - compliant
- RoHS Directive 2011/65/EU - compliant
- WEEE 2012/19/EU - compliant
- REACH EC 1907/2006 - compliant

Refer to EU Declaration of Conformity for details on CE compliance standards

India

- Hazardous area (optional, refer to approvals)

Note: India CCOE approval is added on H1 & H4 options for UNIK5900 and on H1 for UNIK5800

South Korea

- EMC approved
- Hazardous area (optional, refer to approvals)

UAE

- Hazardous area (optional, refer to approvals)

Hazardous area approvals (optional)

Product	Protection concept	Approval type	Ex marking
UNIK5800 and UNIK5900	Intrinsic safety	ATEX - EU	Ex ia IIC T5 Ga, Ex ia I Ma (-40°C ≤ Ta ≤ +80°C)
		IECEx - Global	
		FM - USA	IS CL I DIV 1 GP ABCD T5 Ex ia, Class I, Zone 0, AEx/Ex ia IIC T5 (-40°C ≤ Ta ≤ +80°C) IP64 Type 4X single seal (-40°C to +125°C)
		FM - Canada	
		INMETRO - Brazil	Ex ia IIC T5 Ga, Ex ia I Ma (-40°C ≤ Ta ≤ +80°C)
		CU TR 012 - EAEU	0Ex ia IIC T5 Ga X, PO Ex ia I Ma X (-40°C ≤ Ta ≤ +80°C)
		CCoE - India	Ex ia IIC T5 Ga (-40°C ≤ Ta ≤ +80°C)
		ECASEx - UAE	Ex ia IIC T5 Ga (-40°C ≤ Ta ≤ +80°C)
		NEPSI - China	Ex ia IIC T5 Ga (-40°C ≤ Ta ≤ +80°C) only available for UNIK5900
UNIK5800	Explosion-proof/ flameproof and/or dust ignition proof by enclosure	ATEX - EU	Ex db IIC T6 Gb, Ex tb IIIC T85°C Db (-40°C ≤ Ta ≤ +Tmax°C) Tmax = 63 for models 585#, 588# & 58M2, Tmax = 53 for models 58S2 & 58T2
		IECEx - Global	
		FM - USA	XP CL I DIV 1 GP ABCD T6, CL I ZN 1 AEx/Ex d IIC T6, CL II, III DIV 1 GP EFG T6/T85°C, ZN 21 AEx tb IIIC T85°C (-40°C ≤ Ta ≤ +Tmax°C), SINGLE SEAL Tmax = 63 for models 585# & 588#, Tmax = 53 for models 58S2 & 58T2
		FM - Canada	
		CU TR 012 - EAEU	1Ex db IIC T6 Gb X, Ex tb IIIC T85°C Db X (-40°C ≤ Ta ≤ +Tmax°C) Tmax = 63 for models 585#, 588# & 58M#, Tmax = 53 for models 58S2 & 58T2
UNIK5900	Explosion-proof/ flameproof and/or dust ignition proof by enclosure	ATEX - EU	Ex d IIC T6...T4 Gb, Ex tb IIIC T85/T100/T135°C Db T6/T85°C (-40°C ≤ Ta ≤ +70°C) T5/T100°C (-40°C ≤ Ta ≤ +80°C) T4/T135°C (-40°C ≤ Ta ≤ +100°C)
		IECEx - Global	
		FM - USA	XP CL I DIV 1 GP ABCD T*, CL I ZN 1 AEx/Ex d IIC T*, CL II, III DIV 1 GP EFG T*/T*°C ZN 21 AEx tb IIIC T*°C (Ta range same as IECEx) single seal
		FM - Canada	
		INMETRO - Brazil	Ex db IIC T6 ... T4 Gb , Ex tb IIIC T85°C ... T135°C Db (Ta range same as IECEx)
		CU TR 012 - EAEU	1Ex db IIC T6 ... T4 Gb X, Ex tb IIIC T85°C ... T135°C Db X (Ta range same as IECEx)
		CCoE - India	Ex d IIC T6 ... T4 Gb (Ta range same as IECEx)
		KTL - South Korea	Ex d IIC T6 ... T4, Ex tb IIIC T85°C ... T135°C (Ta range same as IECEx)
		NEPSI - China	Ex d IIC T4...T6 Gb (Ta range same as IECEx)
		ECASEx - UAE	Ex d IIC T6...T4 (Ta range same as IECEx)

Notes:

- For full certification details, refer to the type examination certificate (or approval listings) and supplied hazardous area installation instructions.
- Model 585# & 59B#, using a metric electrical conduit thread, are not permitted for installation in 'Divisions' classified installations in Canada.
- Model 59J#, using a metric electrical conduit thread and supplied with a metric to NPT thread adapter, must be installed with the adapter fitted.

Ordering information

(See the online configuration tool at Druck.com)

1. Select model code

Main product variant

- PMP Amplified Pressure Transducer
- PDCR mV Pressure Transducer
- PTX 4-20 mA Pressure Transmitter

Product series

- 5 UNIK 5000

Diameter, material and isolation

- 8 25 mm Stainless Steel 316L Male Conduit
- 9 60 mm Stainless Steel 316L Female Conduit with Terminal Compartment

Electrical connector

- 5 M20 Male Conduit with Polyurethane Cable (5800 only)
- 8 1/2" NPT Male Conduit with Polyurethane Cable (5800 only)
- B M20 Female Conduit with Terminal Compartment (5900 only)
- J 1/2" NPT Female Conduit with Terminal Compartment (5900 only)
- M M20 Male Conduit with RADOX® Mud Resistant Cable (5800 only) (Note 3)
- S M20 Male Conduit with Mud Resistant Cable (5800 only) (Note 3)
- T 1/2" NPT Male Conduit with Mud Resistant Cable (5800 only) (Note 3)

Electronics option

- 0 mV Passive 4-wire (PDCR) (Note 1)
- 1 mV Linearised 4-wire (PDCR)
- 2 4 to 20 mA 2-wire (PTX)
- 3 0 to 5 V 4-wire (PMP)
- 4 0 to 5 V 3-wire (PMP)
- 5 Basic configurable 3-wire (PMP)
- 6 0 to 10 V 4-wire (PMP)

Compensated temperature range

- TA -10 to +50°C (+14 to +122°F)
- TB -20 to +80°C (-4 to +176°F)
- TC -40 to +80°C (-40 to +176°F)
- TD -40 to +125°C (-40 to +257°F) (5900 only)

Accuracy

- A1 Industrial
- A2 Improved
- A3 Premium

Calibration

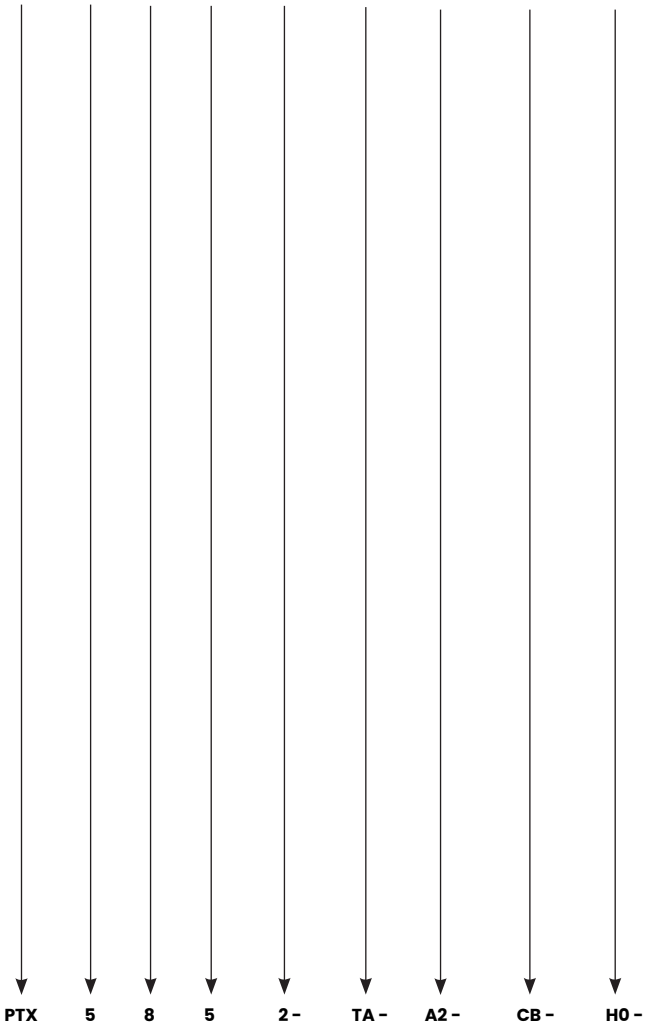
- CA Zero/Span Data
- CB Room Temperature
- CC Full Thermal

Hazardous area approval

- H0 None
- H1 IECEx/ATEX Intrinsically Safe 'ia' Group IIC
- H2 IECEx/ATEX Intrinsically Safe 'ia' Group I
- H3 IECEx/ATEX Protected by Enclosure Group IIIC
- H4 IECEx/ATEX Flameproof Group IIC
- H6 FM (C&US) Intrinsically Safe 'ia' Group IIC/ABCD
- H7 C & US Dust Ignition Proof, Groups IIIC/EFG
- H8 C & US Flameproof/Explosion-proof, Groups IIC/ABCD
- HA IECEx/ATEX Intrinsically Safe 'ia' Groups I/IIC [H1 + H2]
- HS IECEx/ATEX/FM (C&US) Intrinsically Safe 'ia' Groups IIC/ABCD [H1 + H6]
- HT IECEx/ATEX/FM (C&US) Flameproof/Explosion-proof Groups IIC/ABCD [H4 + H8]
- J1 IECEx/ATEX/NEPSI Intrinsically Safe, Group IIC (5900 only)
- J4 IECEx/ATEX/NEPSI Flameproof Group IIC (5900 only)
- JC INMETRO Protected By Enclosure, Group IIIC (5900 only)
- JD INMETRO Flameproof, Group IIC (5900 only)
- JF INMETRO Intrinsically Safe, Group IIC/I
- JP EAEU Intrinsically Safe/Protected By Enclosure/Flameproof
- K5 Korean Protected By Enclosure/Flameproof (5900 only)

Ordering information (cont.)

(See the online configuration tool at Druck.com)



Pressure connector		5800	5900
PA	G1/4 Female	x (Note 2a)	
PB	G1/4 Male Flat End	x	
PC	G1/4 Male 60 degree Int Cone	x	
PD	G1/8 Male 60 degree Int Cone	x	
PE	1/4 NPT Female	x (Note 2a)	
PF	1/4 NPT Male	x	
PG	1/8 NPT Male	x	
PH	M20x1.5	x	
PJ	M14x1.5 60° Internal Cone	x	
PK	M12x1 Internal Cone	x	
PL	7/16-20 UNJF Male 74° External Cone	x	
PM	G1/2 Female		x
PN	G1/2 Male	x (Note 2a)	x
PP	1/2 NPT Female		x
PQ	G1/4 Quick Connect	x	
PR	1/2 NPT Male	x (Note 2a)	x
PS	1/4 Swagelok Bulkhead	x	
PT	G1/4 Male Flat Long	x	
PU	7/16-20 UNF Long 37 degree flare tip	x	
PV	7/16-20 UNJF Female	x	
PX	7/16-20 UNF Male Short Flat	x	
PY	3/8-24 UNJF	x	
PZ	M10x1 80° Int Cone	x	
RA	VCR Female	x	
RB	G1/4 Male Flat with Snubber	x	
RC	G1/4 Male Flat with Cross Bore Protection	x	
RD	M12x1.0 74 degree External Cone	x	
RE	Quick Release Male	x	
RF	VCR Male	x	
RM	G1/2 Female Long Version		x
RN	G1/2 Male Long Version		x
RP	1/2 NPT Female Long Version		x
RR	1/2 NPT Male Long Version		x

PTX 5 8 5 2 - TA - A2 - CB - H0 - PA **Typical model number**

Ordering notes

Note 1: Premium accuracy is not available on this version

Note 2a: For 5800, select one of these pressure connectors for pressure ranges over 50 bar.

Note 2b: For 5900, all pressure connectors are suitable for pressure ranges over 50 bar.
Note 3: Limited to hazardous area approval options H0, H1, H2, H3, H4 and HA only, and electronics opton 2 only.

Note 4: Hazardous area certifications are restricted by electrical connector options in accordance with the following table:

Electrical Connector							
Allowed	5	8	B	J	M	S	T
H0	Y	Y	Y	Y	Y	Y	Y
H1	Y	Y	Y	Y	-	Y	Y
H2	Y	Y	Y	Y	-	Y	Y
H3	Y	Y	Y	Y	Y	Y	Y
H4	Y	Y	Y	Y	Y	Y	Y
H6	Y	Y	Y	Y	-	Y	Y
H7	Y	Y	Y	Y	-	Y	Y

Electrical Connector							
Allowed	5	8	B	J	M	S	T
H8	Y	Y	Y	Y	-	Y	Y
HA	Y	Y	Y	Y	-	Y	Y
HS	Y	Y	Y	Y	-	Y	Y
HT	Y	Y	Y	Y	-	Y	Y
J1	-	-	Y	Y	-	-	-
J4	-	-	Y	Y	-	-	-
JC	-	-	Y	Y	-	-	-
JD	-	-	Y	Y	-	-	-
JF	Y	Y	Y	Y	-	Y	Y
JP	Y	Y	Y	Y	-	Y	Y
K5	-	-	Y	Y	-	-	-

2. State pressure range and units: e.g., 0 to 10 bar, -5 to + 100 psi

Unit options are:

Symbol	Description
bar	bar
mbar	millibar
psi	pounds/sq. inch
Pa	Pascal
hPa	hectoPascal
kPa	kiloPascal
MPa	megaPascal
mmH_2O	mm water
cmH_2O	cm water
mH_2O	metres water
inH_2O	inches water
ftH_2O	feet water
mmHg	mm mercury
inHg	inches mercury
kgf/cm^2	kg force/sq. cm
atm	atmosphere
Torr	torr

3. State Pressure reference: e.g., gauge

Reference options are:

- gauge
- absolute
- sealed gauge

4. State cable length and units (5800 only): Minimum length 1 m (3 ft), maximum length 100 m (300 ft), integer values only, e.g., 1 m cable.

5. State voltage output at minimum and maximum pressure (Electronics option 5 only): Up to 1 decimal place, e.g., output 0.5 to 4.5 V

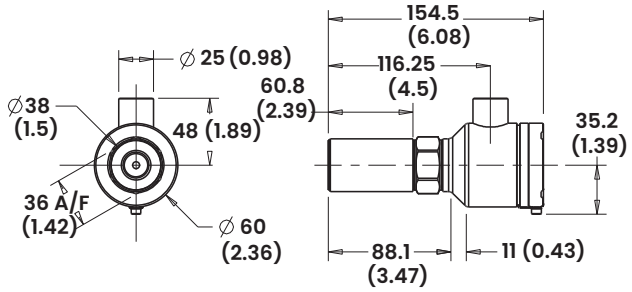
Typical order examples:

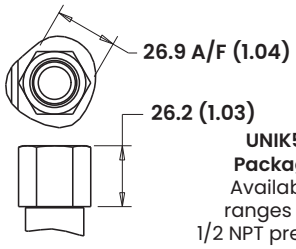
PTX5882-TB-A2-CA-H3-PA, 0 to 10 bar gauge, 3 m cable
PMP59B5-TC-A3-CC-H4-PM, -15 to 75 psi gauge, output 1 to 6 Volts
PDCR5881-TB-A1-CB-H0-PN, 0 to 100 bar sealed gauge, 6 ft. cable

Mechanical drawings

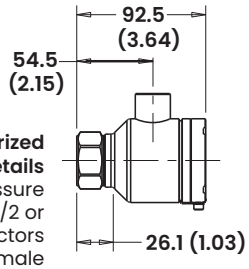
UNIK5900 mechanical drawing

UNIK5900 Bracket Compatible Outline Details
Available for all pressure ranges and either G1/2 or 1/2 NPT pressure connectors in Male or Female.





1/2 NPT Conduit Adapter
Use to adapt the standard M20x1.5 conduit connection.



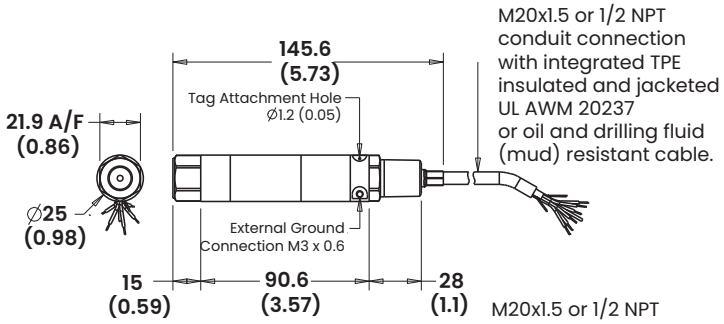
UNIK5900 Miniaturized Package Outline Details
Available for all pressure ranges and either G1/2 or 1/2 NPT pressure connectors in Male or Female

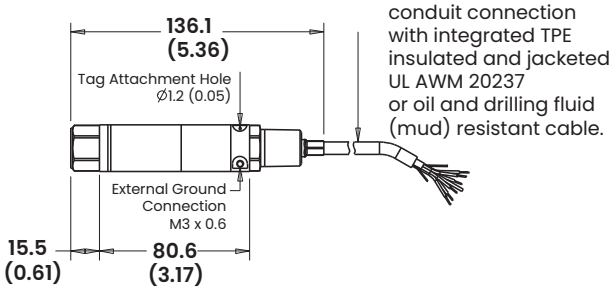
UNIK5800 mechanical drawing

UNIK5800 High Pressure Construction Outline Details
Available for pressure ranges greater than 50 bar and G1/4 or 1/4 NPT female, or G1/2 or 1/2 NPT Male pressure connectors.

UNIK5800 Low Pressure Construction Outline Details
Available for pressure ranges less than or equal to 50 bar and can be configured for low and medium pressure UNIK5000 Series pressure connectors.

Note: Dimensions shown for G1/4 and 1/4 NPT Female pressure connectors only. Refer to main document for list of pressure connector options - orientation not critical.





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