

# UNIK 5900 SIL

## Flameproof/Explosion Proof Pressure Sensing Platform, SIL Certified Version

The UNIK 5900 is a compact and rugged version of the high performance UNIK 5000 pressure sensing platform with SIL certification. It also offers intrinsically safe, flameproof/explosion proof or dust ignition protection by enclosure capability as required. It provides a cost-effective alternative to pressure gauges and switches in process and oil and gas industry applications.

### High Quality

With over 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 quick and simple; each UNIK 5900 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)
- Non-linearity, hysteresis and repeatability to  $\pm 0.04\%$  Full Scale (FS) Best Straight Line (BSL)
- Stainless steel construction
- Integrated terminal compartment with long or short body
- Frequency response to 3.5 kHz
- Hazardous area certifications
- SIL certification. For non-SIL certified products, please refer to our standard UNIK 5900 datasheet, 920-582

# UNIK 5900 SIL Conformity Specifications

## 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  
(146 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  
Baker Hughes to discuss your requirements.

### Over Pressure

1.5 × FS

### 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:  
200 bar (2900 psi) maximum  
Ranges above 50 bar (725 psi) absolute:  
1200 bar (17400 psi) maximum

## Electrical Specifications

### Supply and Output Voltage

Supply : 7 to 28 Vdc (32 V maximum for non-hazardous  
area operation)  
Output : 4 to 20 mA

### Supply Sensitivity

±0.005% FS/V

### Power-up Time

10 ms

### Insulation Resistance

>100 MΩ at 500 Vdc (approval option H0 only)

### Isolation

500 Vac: Leakage ≤5 mA (approval options other than  
H0)

## Performance Specifications

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

### Accuracy

Combined effects of non-linearity, hysteresis and  
repeatability:

*Industrial:* ±0.2% FS BSL

*Improved:* ±0.1% FS BSL

*Premium:* ±0.04% FS BSL

### Temperature Effects

Four compensated temperature ranges can be chosen:

Compensated Temperature Range	Industrial (%FS TEB)	Improved and Premium (%FS TEB)
-40 to +125 °C	±2.25	±1.50
-40 to +80 °C	±2.25	±1.50
-20 to +80 °C	±1.50	±1.00
-10 to +50 °C	±0.75	±0.50

### Zero and Span Setting

Zero and span potentiometers allow adjustment range  
of at least ±5% FS.

Factory set to:

*Industrial:* ±0.5% FS

*Improved:* ±0.2% FS

*Premium:* ±0.2% FS

*Note: Adjusting zero or span may invalidate SIL compliance  
- refer to safety manual.*

### Long Term Stability

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

### Safety Accuracy

Safety accuracy includes non-linearity, hysteresis and  
repeatability, thermal error, zero/span setting accuracy  
and lifetime drift.

Compensated Temperature Range	Industrial (%FS)	Improved and Premium (%FS)
-40 to +125 °C	4.45	3.00
-40 to +80 °C	4.45	3.00
-20 to +80 °C	3.70	2.50
-10 to +50 °C	2.95	2.00

Fault State Output: ≤3.6mA or ≥ 21mA

# Physical Specifications

## Environmental Protection

See the Electrical Connector section

## Operating Temperature Range

See the Electrical Connector section

## Pressure Media

- 0 – 200 bar: fluids compatible with stainless steel 316L and Hastelloy C276
- 201 – 500 bar: liquids and group 2 gases compatible with stainless steel 316L
- 501 – 700 bar: group 2 liquids and group 2 gases compatible with stainless steel 316L

## Enclosure Materials

Stainless steel (body), Viton (O-ring), PTFE (vent filter)

## Pressure Connector

See Ordering Information for available options

## Electrical Connector

Option Code	Description	Max Operating Temp Range***		IP Rating	Zero/ Span Adjust
		°C	°F		
B	M20 female conduit with terminal compartment	–40 to +100	–40 to +212	66/67*	Y
J**	½ NPT female conduit with terminal compartment	–40 to +100	–40 to +212	66/67*	Y

*\*Designed to be enclosure Type 4X, IP66 and IP67 when properly installed with conduit fitting.*

*\*\*Option J is supplied with an M20 to ½” NPT female conduit thread adaptor.*

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

## Electrical Connections

Label	Function
I/P+	+ve Supply
O/P+	-
O/P-	-
I/P-	-ve Supply

# Certification

## CE Conformity

- Pressure Equipment Directive 2014/68/EU – Sound Engineering Practice
  - ATEX Directive 2014/34/EU (Optional)
  - EMC Directive 2014/30/EU
    - BS EN 61000-6-1: 2007
    - BS EN 61000-6-2: 2005
    - BS EN 61000-6-3: 2007+A1:2011
    - BS EN 61000-6-4: 2007+A1:2011
    - BS EN 61326-1: 2013
    - BS EN 61326-2-3: 2013
  - RoHS Directive 2011/65/EU
- Susceptibility – Light Industrial  
Susceptibility – Heavy Industrial  
Emissions – Light Industrial  
Emissions – Heavy Industrial  
Electrical Equipment for Measurement, Control and Laboratory Use  
Particular Requirements for Pressure Transducers

## SIL Conformity

- Certificate number: 2103.2494
- Issued by: Method Functional Safety
- Assessed Standard: SIL2 IEC 61508:2010 (Parts 1 & 2)
- Basis of Certification:  
Report 2103.03 v1 – Functional Safety Management, Hardware Requirements, Hardware Reliability
- Safety Manual 124M4659

## Hazardous Area Approvals (Optional)

### ATEX/IECEx Flameproof or Dust Ignition Protection by Enclosure

Ex d IIC T\* Gb  
Ex tb IIIC T\*°C Db  
T6/T85°C ( $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ )  
T5/T100°C ( $-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$ )  
T4/T135°C ( $-40^{\circ}\text{C} \leq T_a \leq +100^{\circ}\text{C}$ )  
Per certificates Baseefa 12ATEX0074X & IECEx BAS 12.0046X

### ATEX/IECEx Intrinsic Safety

Ex ia IIC T5 Ga ( $-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$ )  
Ex ia I Ma ( $-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$ )  
Per certificates Baseefa 10ATEX0204X & IECEx BAS 10.0103X

### FM Approvals (Canada & United States) Explosionproof/Flameproof and/or Dust Ignition Proof by Enclosure

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  
T6/T85°C ( $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ )  
T5/T100°C ( $-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$ )  
T4/T135°C ( $-40^{\circ}\text{C} \leq T_a \leq +100^{\circ}\text{C}$ )  
Single Seal ( $-40^{\circ}\text{C} - +125^{\circ}\text{C}$ )  
Per FM Approvals certificates FM16US0420X (United States) and FM16CA0193X (Canada)

**Note:** Model 59B2, using a metric electrical conduit thread, is not permitted for installation in 'Divisions' classified installations in Canada.

**Note:** Model 59J2, using a metric electrical conduit thread and supplied with a metric to NPT thread adaptor, must be installed with the adaptor fitted.

# Ordering Information

## (1) Select model number

Main Product Variant																	
PTX	4-20 mA Pressure Transmitter																
Product Series																	
5	UNIK 5000																
Diameter and Material																	
9	60mm Stainless Steel 316L Female Conduit with Terminal Compartment																
Electrical Connector																	
B	M20 Female Conduit with Terminal Compartment																
J	1/2" NPT Female Conduit with Terminal Compartment																
Electronics Option																	
2	4 to 20 mA 2-wire (PTX)																
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)																
Accuracy																	
A1	Industrial																
A2	Improved																
A3	Premium																
Calibration																	
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																
H7	FM (C & US) Dust Ignition Proof, Groups IIIC/EFG																
H8	FM (C & US) Flameproof/Explosion Proof, Groups IIC/ABCD																
HA	IECEX/ATEX Intrinsically Safe 'ia' Groups I/IIC [H1 + H2]																
HT	IECEX/ATEX/FM (C & US) Flameproof/Explosion Proof Groups IIC/ABCD [H4 + H8]																
Pressure Connector																	
PM	G1/2 Female																
PN	G1/2 Male																
PP	1/2 NPT Female																
PR	1/2 NPT Male																
RM	G1/2 Female Long Version																
RN	G1/2 Male Long Version																
RP	1/2 NPT Female Long Version																
RR	1/2 NPT Male Long Version																
125M0202      SIL Certification																	
PTX	5	9	J	2	-	TA	-	A1	-	CC	-	H1	-	PN	-	125M0202	Typical Model Number

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

Unit options are:

Symbol	Description	Symbol	Description
bar	bar	mH <sub>2</sub> O	metres water
mbar	millibar	inH <sub>2</sub> O	inches water
psi	pounds/sq. inch	ftH <sub>2</sub> O	feet water
Pa	Pascal	mmHg	mm mercury
hPa	hectoPascal	inHg	inches mercury
kPa	kiloPascal	kgf/cm <sup>2</sup>	kg force/sq. cm
MPa	MegaPascal	atm	atmosphere
mmH2O	mm water	Torr	torr
cmH2O	cm water		

## (3) State pressure reference e.g., gauge

Reference options are:

- gauge
- absolute
- sealed gauge

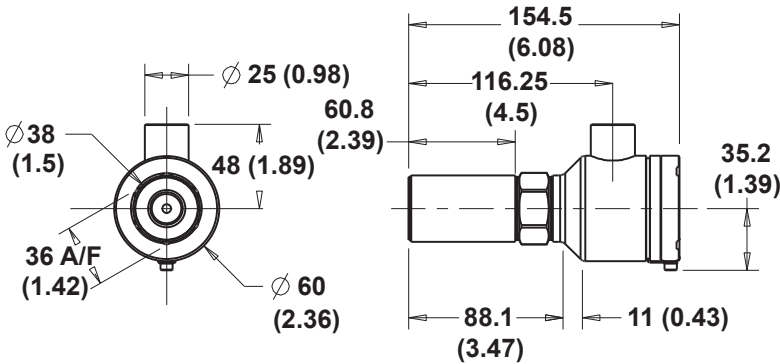
## Typical order examples

PTX59J2-TA-A1-CC-H1-PN-125M0202, 0 to 5 bar absolute

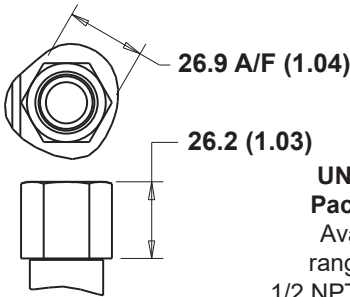
PTX59B2-TB-A2-CC-H0-PR-125M0202, 0 to 10 MPa gauge

# Mechanical Drawings

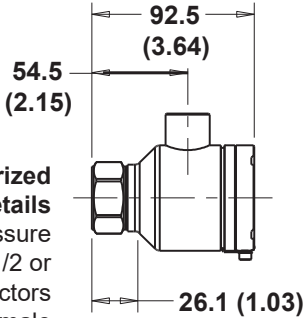
**UNIK 5900 Bracket  
Compatible Outline Details**  
Available for all pressure  
ranges and either G1/2 or  
1/2 NPT pressure connectors  
in Male or Female.



**1/2 NPT Conduit  
Adapter**  
Use to adapt the  
standard M20 x 1.5  
conduit connection.



**UNIK 5900 Miniaturized  
Package Outline Details**  
Available for all pressure  
ranges and either G1/2 or  
1/2 NPT pressure connectors  
in Male or Female



*Note: All dimensions in mm (inches)*