



# TERAMESS

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## 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

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# 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 <sup>3</sup>		IP rating	Zero/span adjust
		°C	°F		
B	M20 female conduit with terminal compartment	-40 to +100	-40 to +212	66/67 <sup>1</sup>	Y
J <sup>2</sup>	½ NPT female conduit with terminal compartment	-40 to +100	-40 to +212	66/67 <sup>1</sup>	Y

1. Designed to be enclosure Type 4X, IP66 and IP67 when properly installed with conduit fitting.
2. Option J is supplied with an M20 to ½" NPT female conduit thread adaptor.
3. 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 Susceptibility - Light industrial
  - BS EN 61000-6-2: 2005 Susceptibility - Heavy industrial
  - BS EN 61000-6-3: 2007+A1:2011 Emissions - Light industrial
  - BS EN 61000-6-4: 2007+A1:2011 Emissions - Heavy industrial
  - BS EN 61326-1: 2013 Electrical equipment for measurement, control and laboratory use
  - BS EN 61326-2-3: 2013 Particular requirements for pressure transducers
- RoHS Directive 2011/65/EU

## 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 I24M4659

## 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°C ≤ Ta ≤ +70°C)  
T5/T100°C (-40°C ≤ Ta ≤ +80°C)  
T4/T135°C (-40°C ≤ Ta ≤ +100°C)  
Per certificates Baseefa I2ATEX0074X & IECEx BAS 12.0046X

### ATEX/IECEx intrinsic safety

Ex ia IIC T5 Ga (-40°C ≤ Ta ≤ +80°C)  
Ex ia I Ma (-40°C ≤ Ta ≤ +80°C)  
Per certificates Baseefa I0ATEX0204X & IECEx BAS 10.0103X

### FM approvals (Canada and United States) explosion-proof/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 2I AEx tb IIIC T\*°C  
T6/T85°C (-40°C ≤ Ta ≤ +70°C)  
T5/T100°C (-40°C ≤ Ta ≤ +80°C)  
T4/T135°C (-40°C ≤ Ta ≤ +100°C)  
Single Seal (-40°C - +125°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 N

The logo for TERAMESS features the word "TERAMESS" in a bold, black, sans-serif font. A small red horizontal bar is positioned above the letter "E".

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# 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

I25M0202

SIL Certification

PTX 5 9 J 2 - TA - A1 - CC - HI - PN - I25M0202 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
mmH <sub>2</sub> O	mm water	Torr	torr
cmH <sub>2</sub> O	cm water		

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

### Reference options are:

- gauge
- absolute
- sealed gauge

## Typical order examples

PTX59J2-TA-A1-CC-HI-PN-I25M0202, 0 to 5 bar absolute

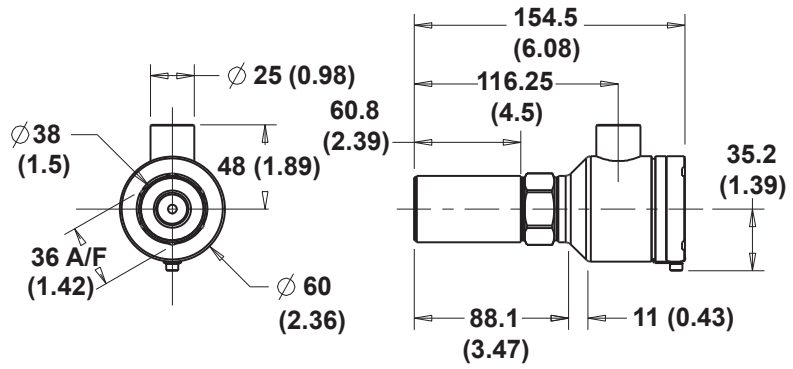
PTX59B2-TB-A2-CC-H0-PR-I25M0202, 0 to 10 MPa gauge

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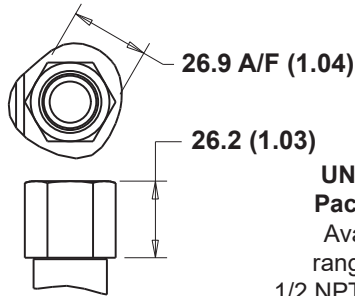
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# Mechanical drawings

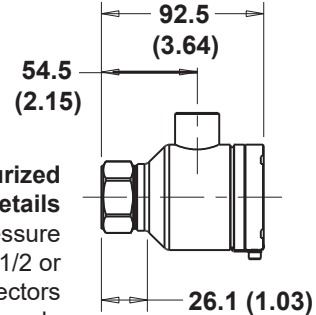
**UNIK 5900 Bracket  
Compatible Outline Details**  
Available for all pressure  
ranges and either G1/2 or  
1/2 NPT pressure connectors  
in Male or Female.



**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)

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**Baker Hughes** 