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 ±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

Druck.com
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 BHGE to discuss your requirements.

**Over Pressure**
1.5 × FS

**Containment Pressure**
Ranges up to 50 bar (725 psi) gauge:
6 × 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**
>$100\ \text{MΩ}$ 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:

<table>
<thead>
<tr>
<th>Compensated Temperature Range</th>
<th>Industrial (%FS TEB)</th>
<th>Improved and Premium (%FS TEB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40 to +125 °C</td>
<td>±2.25</td>
<td>±1.50</td>
</tr>
<tr>
<td>-40 to +80 °C</td>
<td>±2.25</td>
<td>±1.50</td>
</tr>
<tr>
<td>-20 to +80 °C</td>
<td>±1.50</td>
<td>±1.00</td>
</tr>
<tr>
<td>-10 to +50 °C</td>
<td>±0.75</td>
<td>±0.50</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Compensated Temperature Range</th>
<th>Industrial (%FS)</th>
<th>Improved and Premium (%FS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40 to +125 °C</td>
<td>4.45</td>
<td>3.00</td>
</tr>
<tr>
<td>-40 to +80 °C</td>
<td>4.45</td>
<td>3.00</td>
</tr>
<tr>
<td>-20 to +80 °C</td>
<td>3.70</td>
<td>2.50</td>
</tr>
<tr>
<td>-10 to +50 °C</td>
<td>2.95</td>
<td>2.00</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
<th>Max Operating Temp Range***</th>
<th>IP Rating</th>
<th>Zero/ Span Adjust</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>M20 female conduit with terminal compartment</td>
<td>-40 to +100 °C (-40 to +212 °F)</td>
<td>66/67*</td>
<td>Y</td>
</tr>
<tr>
<td>J**</td>
<td>½ NPT female conduit with terminal compartment</td>
<td>-40 to +100 °C (-40 to +212 °F)</td>
<td>66/67*</td>
<td>Y</td>
</tr>
</tbody>
</table>

*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**

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/P+</td>
<td>+ve Supply</td>
</tr>
<tr>
<td>O/P+</td>
<td>-</td>
</tr>
<tr>
<td>O/P-</td>
<td>-</td>
</tr>
<tr>
<td>I/P-</td>
<td>-ve Supply</td>
</tr>
</tbody>
</table>
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 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 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°C ≤ Ta ≤ +70°C)
- T5/T100°C (-40°C ≤ Ta ≤ +80°C)
- T4/T135°C (-40°C ≤ Ta ≤ +100°C)
- Per certificates Baseefa 12ATEX0074X & 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 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°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 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 IIC/EF
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 1/2 NPT Female
PR 1/2 NPT Male
RM G1/2 Female Long Version
RN 1/2 NPT Female Long Version
RP 1/2 NPT Female Long Version
RR 1/2 NPT Male Long Version

125M0202 SIL Certification

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar</td>
<td>bar</td>
<td>mH₂O</td>
<td>metres water</td>
</tr>
<tr>
<td>mbar</td>
<td>millibar</td>
<td>inH₂O</td>
<td>inches water</td>
</tr>
<tr>
<td>psi</td>
<td>pounds/sq. inch</td>
<td>ftH₂O</td>
<td>feet water</td>
</tr>
<tr>
<td>Pa</td>
<td>Pascal</td>
<td>mmHg</td>
<td>mm mercury</td>
</tr>
<tr>
<td>hPa</td>
<td>hectoPascal</td>
<td>inHg</td>
<td>inches mercury</td>
</tr>
<tr>
<td>kPa</td>
<td>kiloPascal</td>
<td>kgf/cm²</td>
<td>kg force/sq. cm</td>
</tr>
<tr>
<td>MPa</td>
<td>MegaPascal</td>
<td>atm</td>
<td>atmosphere</td>
</tr>
<tr>
<td>mmH₂O</td>
<td>mm water</td>
<td>Torr</td>
<td>torr</td>
</tr>
<tr>
<td>cmH₂O</td>
<td>cm water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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
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.