

# UNIK 5000

## Pressure Sensing Platform

The UNIK 5000 is a high performance configurable solution to pressure measurement. The use of Druck silicon technology and analogue circuitry enables best in class performance for stability, low power and frequency response. The use of modular design and lean manufacturing techniques allow users to design the product required to their unique application requirements and for them to be delivered inside standard product lead times.



### Features

- Ranges from 70 mbar (1 psi) to 700 bar (10,000 psi)
- Accuracy to  $\pm 0.04\%$  Full Scale (FS) Best Straight Line (BSL)
- Stainless Steel construction
- Hazardous Area certifications (Pending)
- mV, mA, voltage and configurable voltage outputs
- Multiple electrical connector options
- Multiple pressure connector options
- Operating temperature ranges to  $-55$  to  $125$  °C ( $-67$  to  $257$ °F)
- Frequency response to 5 kHz
- High reliability
- High stability
- High over pressure capability

# 5000 Specifications

## Measurement

### Operating Pressure Ranges

#### Gauge ranges

Any zero based range between 70 mbar and 70 bar (1 to 1,000 psi) (values in psi are approximate)

#### Sealed Gauge Ranges

Any zero based range between 10 and 700 bar (145 to 10,000 psi)

#### Absolute Ranges

Any zero based range between 350 mbar and 700 bar (5 to 10,000 psi)

#### Differential Ranges

*Wet/Dry*

Uni-directional or bi-directional 70 mbar to 35 bar (1 to 500 psi)

*Wet/Wet*

Uni-directional or bi-directional 350 mbar to 35 bar (5 to 500 psi)

Line pressure: 70 bar max (1000 psi)

#### Barometric Ranges

Barometric ranges are available with a minimum span of 350 mbar (5.1 psi)

#### Non Zero Based Ranges

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

#### Over Pressure

- 10 × FS for ranges up to 150 mbar (2 psi)
- 6 × FS for ranges up to 700 mbar (10 psi)
- 2 × FS for barometric ranges
- 4 × FS for all other ranges (up to 200 bar for ranges ≤70 bar and up to 1200 bar for ranges >70 bar)

For differential versions the negative side must not exceed the positive side by more than:

- 6 × FS for ranges up to 150 mbar (2 psi)
- 4 × FS for ranges up to 700 mbar (10 psi)
- 2 × FS for all other ranges up to a maximum of 15 bar (200 psi)

#### Containment Pressure

Gauge, Sealed Gauge, Absolute and Differential (+ve port):

- 6 × FS for ranges up to 70 bar (1000 psi) (200 bar (2,900 psi) maximum)
- 6 × FS for ranges above 70 bar (1000 psi) (1200 bar (17,000 psi) maximum)

Differential (-ve port) must not exceed positive port by more than 4 × FS (15 bar (200 psi) maximum)

## Supply and Outputs

Electronics Option	Description	Supply voltage (V)	Output	Current Consumption (mA)
0	mV Passive	2.5 to 12	10 mV/V <sup>^</sup>	<2 at 10 V
1	mV Linearised	7 to 12	10 mV/V <sup>^</sup>	<3
2	mA	7 to 32	4-20 mA	4-20
3	0 to 5 V 4-wire	7 to 32	0 to 5 V	<3
4	0 to 5 V 3-wire	7 to 32	0 to 5 V*	<3
5	1 to 6 V 3-wire	7 to 32	1 to 6 V	<3
6	0 to 10 V 4-wire	12 to 32	0 to 10 V	<3
7	0.5 to 4.5 V Ratiometric	5.0 ± 0.5	0.5 to 4.5 V	<3
8	Isolated/Configurable	7 to 36	See below	See below

<sup>^</sup> with a 10 volt supply mV output sensors give 100 mV over the full scale pressure.

- Output is ratiometric to the supply voltage
- Output reduces pro-rata below 350 mbar (5 psi)

\*0 to 5 V 3-wire output does not reach true zero voltage output at zero pressure. Minimum output is less than 50 mV

### Isolated/Configurable (Option 8)

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

- Minimum span: 2 V
- Maximum span: 20 V
- Output limits: ±10 V
- Maximum zero offset: ≤ span

Reverse output response to pressure is available.

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.

Current consumption is <20 mA @ 7 Vdc supply, reducing to <5 mA @ 32 Vdc supply. On startup <100 mA drawn for 10 ms typically.

### Examples

Allowed	Not Allowed
-10 to 0 V	0 to 12 V (outside ±10 V limits)
0 to 5 V	6 to 10 V (offset too big)
-5 to +5 V	0 to 0.5 V (span too small)
-2 to 10 V	
1 to 6 V	
10 to 0 V	

### Power-Up Time

- mV, Voltage and current versions: 10 ms
- Isolated/configurable version: 500 ms

### Shunt Calibration

Shunt Calibration provides customer accessible connections which, when shorted together, cause a shift in output of 80% FS in order to simulate applied pressure. It is fitted to the mV and Isolated/Configurable versions as standard. It is not available with a DIN electrical connector (Option 7).

## Performance Specifications

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

### Accuracy

#### Voltage, Current and mV Linearised

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

≤ 70 bar

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

> 70 bar

Industrial:	±0.5% FS BSL
Improved:	±0.5% FS BSL

### Zero Offset and Span Setting

#### Voltage and Current Outputs

##### Adjustable Zero and Span Connector Versions

Adjustable electrical connector options allow access to potentiometers that give at least ±5% FS adjustment (see Electrical Connector section)

Factory set to:

Industrial:	±0.5% FS
Improved:	±0.2% FS
Premium:	±0.2% FS

##### Fixed Zero and Span Connector Versions

All specifications: ±1% FS

#### mV Outputs

All specifications ±3 mV

### Long Term Stability

±0.05% FS typical (±0.1% FS maximum) per year  
increasing pro-rata for pressure ranges below 350 mbar

### 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

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

Temperature effects increase pro-rata for pressure

ranges below 350 mbar (5 psi) and are doubled for barometric ranges.

## Physical Specifications

### Environmental Protection

- See Electrical Connector section
- Hyperbaric Pressure: 20 bar (300 psi) maximum

### Operating Temperature Range

See Electrical Connector section

### Pressure Media

Fluids compatible with Stainless Steel 316L and Hastelloy C276.

For the wet/dry differential version, the negative pressure port: fluid compatible with stainless steel 316L, pyrex, silicone and structured adhesive.

### Pressure Connector

Available options are

- G1/4 female\*
- G1/4 male flat
- G1/4 male 60° internal cone
- G1/8 male 60° internal cone
- 1/4 NPT female\*
- 1/4 NPT male
- 1/8 NPT male
- M20 x 1.5 male
- M14 x 1.5 60° internal cone
- M12 x 1 60° internal cone
- 7/16-20 UNF male
- G1/2 Male via welded Adaptor\*
- 1/2 NPT Male via welded Adaptor\*
- Depth Cone (G1/4 female)

Choose connectors marked \* for pressure ranges over 70 bar.

Other pressure connectors may be available.

Contact GE Sensing to discuss your requirement

### Electrical Connector

Various electrical connector options are available offering different features

Code Number	Description	Max Operating temp range		IP rating	Zero span Adjust
		°C	°F		
0	No Connector	-55 to +125	-67 to +257	-	Y
1	Cable Gland	-40 to +80	-40 to +176	65	N
2	Raychem Cable	-55 to +125	-67 to +257	65	N
3	Polyurethane Depth	-40 to +80	-40 to +176	68	N
4	Hytrell Depth	-40 to +80	-40 to +176	68	N
6	Bayonet MIL-C-26482	-55 to +125	-67 to +257	67	N
7	DIN 43650 Demountable	-40 to +80	-40 to +176	65	Y
A	Bayonet MIL-C-26482 Demountable	-55 to +125	-67 to +257	65	Y
C	1/2 NPT Conduit	-40 to +80	-40 to +176	67	N

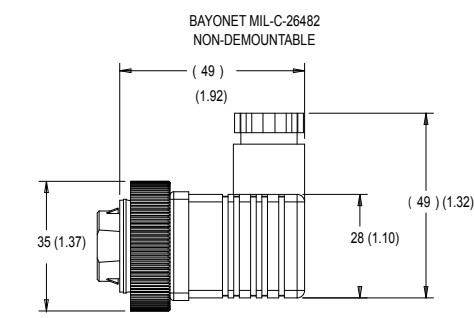
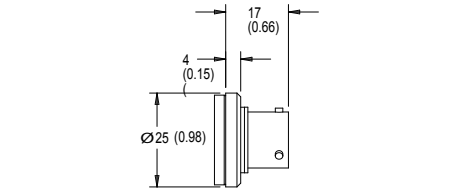
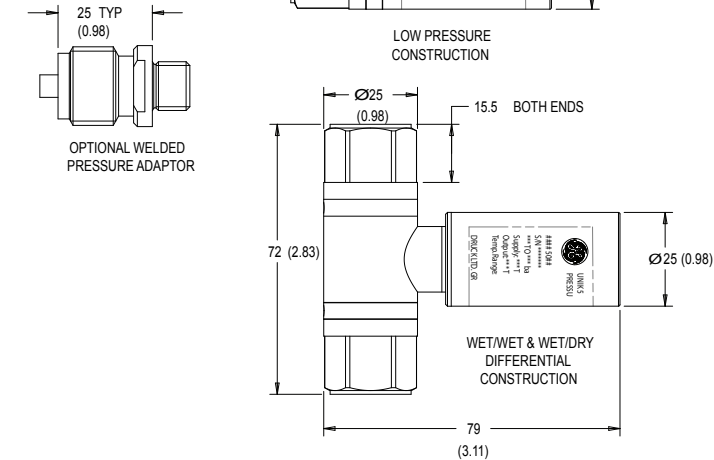
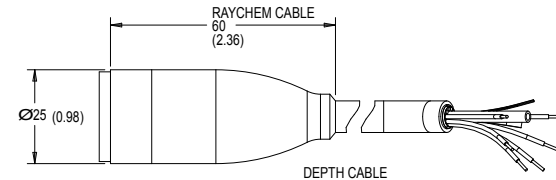
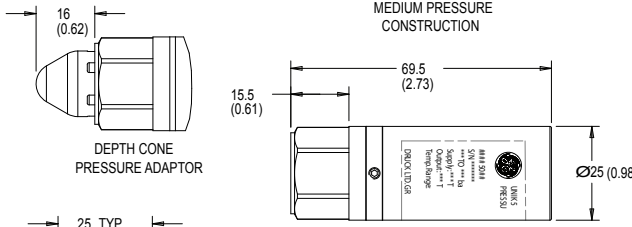
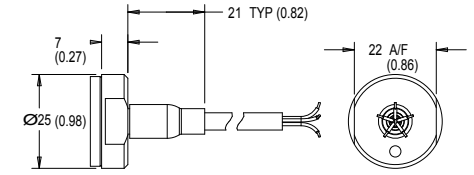
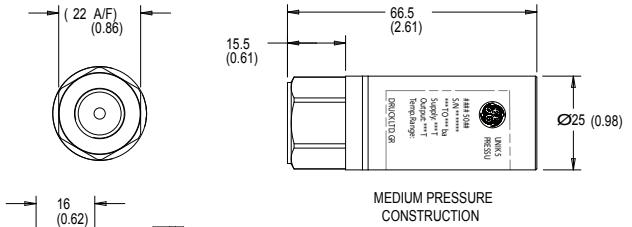
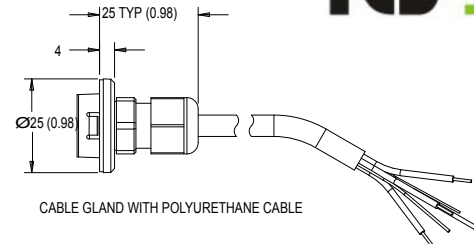
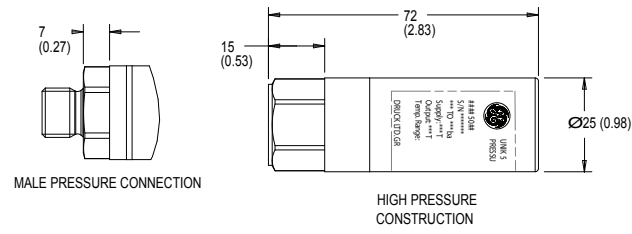
## Electrical Connector

Connector Type	Option code		Electronics Option				
			4 to 20 mA	Voltage (3-wire)	Voltage (4-wire)	Isolated/Configurable	mV
Bayonet	6, A	A	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		B	-	+ve Output	+ve Output	+ve Output	+ve Output
		C	-	-	-ve Output	-ve Output	-ve Output
		D	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		E	-	-	-	Shunt Cal	Shunt Cal
		F	-	-	-	-	-
DIN	7	1	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		2	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		3	-	+ve Output	+ve Output	+ve Output	+ve Output
		E	Case	Case	-ve Output	-ve Output	-ve Output
Cable	1, 3, 4, C	Red	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		Yellow	-	+ve Output	+ve Output	+ve Output	+ve Output
		Blue	-	-	-ve Output	-ve Output	-ve Output
		White	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		Orange	-	-	-	Shunt Cal	Shunt Cal
		Black	-	-	-	-	-
		Screen	-	-	-	-	-
Raychem Cable	2	Red	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		White	-	+ve Output	+ve Output	+ve Output	+ve Output
		Green	-	-	-ve Output	-ve Output	-ve Output
		Blue	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		Black	-	-	-	Shunt Cal	Shunt Cal
		Screen	-	-	-	-	-
Molex	0	1 Red	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		2 Yellow	-	+ve Output	+ve Output	+ve Output	+ve Output
		3 Green	-	-	-ve Output	-ve Output	-ve Output
		4 Blue	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		5 Orange	-	-	-	Shunt Cal	Shunt Cal
		6 Black	-	-	-	-	-

### Certification

- CE Marked
- RoHS
- EMC Standards

BS EN 61000-6-1: 2007 Susceptibility - Light Industrial  
 BS EN 61000-6-2: 2005 Susceptibility - Heavy Industrial (except mV versions)  
 BS EN 61000-6-3: 2007 Emissions - Light Industrial  
 BS EN 61000-6-4: 2007 Emissions - Heavy Industrial  
 BS EN 61326-1: 2006 Electrical Equipment for Measurement,  
 Control and Laboratory Use - EMC requirements



NOTES:

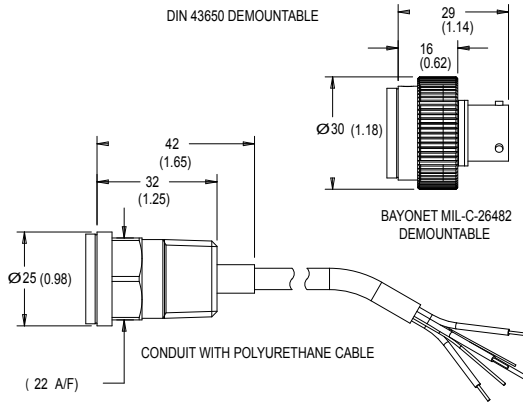
[1] DIMENSIONS SHOWN ARE FOR STANDARD LENGTH PRODUCTS WITH THE FOLLOWING ELECTRICAL OUTPUT OPTIONS:  
 mV LINEARISED (PDCR)  
 4 TO 20 mA (PTX)  
 STANDARD VOLTAGE OPTIONS (PMP)

FOR mV PASSIVE (PDCR) - SUBTRACT 10mm (0.39 in)  
 FOR ELECTRICALLY ISOLATED VOLTAGE (PMP) - ADD 15mm (0.59 in)

[2] REFER TO PAGE 3 FOR LIST OF PRESSURE CONNECTION OPTIONS (ORIENTATION NOT CRITICAL)

[3] ALL DIMENSIONS ARE IN MILLIMETERS (INCHES IN PARENTHESIS)

(4) HIGH PRESSURE IS >70 BAR (1000 PSI)  
 MEDIUM PRESSURE IS >2 BAR <70 BAR (1000 PSI)  
 LOW PRESSURE IS ≤ 2 BAR (29 PSI)



(1) Select model number

**Main Product Variant**

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

**Product Series**

5 UNIK 5000

**Diameter and Material**

0 25mm Stainless Steel 316L

**Electrical Connector**

- 0 No Electrical Connector
- 1 Cable Gland (Polyurethane Cable)
- 2 Raychem Cable
- 3 Polyurethane Cable (Depth)
- 4 Hytrel Cable (Depth)
- 6 MIL-C-26482 (6-pin Shell Size 10) (Mating connector not supplied)
- 7 DIN 43650 Demountable (Mating connector supplied)
- A Demountable MIL-C-26482 (6-pin Shell Size 10) (Mating connector not supplied)
- C 1/2" NPT Conduit (Polyurethane cable)

**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 1 to 6 V 3-wire (PMP)
- 6 0 to 10 V 4-wire (PMP)
- 7 0.5 to 4.5 V Ratiometric 3-wire (PMP)
- 8 Isolated/Configurable 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) **Note 2**

**Accuracy**

- A1 Industrial
- A2 Improved
- A3 Premium

**Calibration**

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

**Hazardous Area Approval**

- H0 None

**Pressure Connector**

- PA G1/4 Female **Note 3**
- PB G1/4 Male Flat
- PC G1/4 Male 60 degree Int Cone
- PD G1/8 Male 60 degree Int Cone
- PE 1/4 NPT Female **Note 3**
- PF 1/4 NPT Male
- PG 1/8 NPT Male
- PH M20x1.5
- PJ M14x1.5 60° Cone
- PK M12x1 Internal Cone
- PL 7/16 UNF Male
- PN G1/2 Male via Adaptor **Note 3**
- PR 1/2 NPT Male via adaptor **Note 3**
- PW Depth Cone (G1/4 Female)

PTX 5 0 7 2 - TA - A2 - CB - H0 - PA **Typical Model Number**

**Ordering Notes**

- Note 1 Premium Accuracy is not available on this version
- Note 2 Please ensure that the electrical connector selected is option 0, 2, 6, or A.
- Note 3 Select one of these pressure connectors for pressure ranges over 70 bar

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

Unit options are:

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

3) State Pressure reference: e.g. gauge

Reference options are:

gauge  
absolute  
sealed gauge barometric  
wet/dry differential  
wet/wet differential

4) State cable lengths and units: e.g. 1m cable, 8 ft cable (only required on certain electrical connectors)

5) Output option 8 only: State voltage output at minimum and maximum pressure: e.g. output -1 to 9 V

**Typical order examples:**

X5012-TB-A2-CA-H0-PA, 0 to 10 bar, gauge, 3 m cable

A5028-TD-A3-CC-H0-PE, -15 to 75 psi, gauge, 15ft cable, output voltage -1 to 5 volts

D5071-TB-A1-CB-H0-PB, 0 to 100 bar, sealed gauge