GE
Measurement & Control Solutions

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 ±0.04% Full Scale (FS) Best Straight Line (BSL)
- Stainless Steel construction
- Hazardous Area certifications
- 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 100 mbar and 700 bar (1.5 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

Ranges up to 150 mbar (2 psi) gauge 10 x FS
Ranges up to 70 bar (1000 psi) gauge 6 x FS
(200 bar (3000 psi) max)
Ranges up to 70 bar (1000 psi) absolute
200 bar (3000 psi)
Ranges above 70 bar (1000 psi)
1200 bar (17500 psi)

Differential (-ve port) must not exceed positive port by more than 6 × 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^	<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	1 to 6 V 3-wire	7 to 16**	1 to 6 V	<3
6	0 to 10 V 4-wire	12 to 16**	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

^ 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 for pressure ranges below 350 mbar (5 psi)

*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
**7 to 32 V in non-hazardous area operation

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

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.
Note: Restricted to 80°C (176°F) for this option.

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

Insulation

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

Shunt Calibration

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 and Isolated/Configurable versions as standard. It is not available with DIN or M12 x 1 electrical connectors. (options 7, D and G)

Shunt calibration is activated in different ways depending on the electrical connector and version:

- mV versions: connect Shunt Cal to -ve Supply or, where available, connect both Shunt Cal connections together
- Isolated/Configurable version: connect Shunt Cal to -ve Output or, where available, connect both Shunt Cal connections together.

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/Improved:	±0.2% FS BSL
Premium not available	

> 70 bar

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

Note: For the barometric pressure range, accuracy is of span, not full scale.

Zero Offset and Span Setting

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

Factory set to:

Product Description	Industrial	Improved and Premium
Current and Voltage Versions (Demountable Electrical Connections and Cable Gland)	±0.5% FS	±0.2% FS
Current and Voltage Versions (All Other Electrical Connections)	±1.0% FS	±1.0% FS
mV Versions	±3.0 mV	±3.0 mV

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

General Certifications

RoHS 2002/95/EC

CE Conformity

Pressure Equipment Directive 97/23/EC
ATEX 94/9/EC (Optional)
EMC Directive 2004/108/EC

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
BS EN 61326-2-3: 2006	Particular requirements for pressure transducers

Hazardous Area Approvals (optional)

General applications	IECEx/ATEX Intrinsically Safe 'ia' Group IIC
Mining applications	IECEx/ATEX Intrinsically Safe 'ia' Group I

For full certification details, refer to the Hazardous Area Installation Instructions.

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.

Line Pressure Effects (Differential Version Only)

Zero shift: <±0.03% span/bar of line pressure

Span shift: <±0.03% span/bar of line pressure

Effects increase pro-rata for differential pressure ranges below 700 mbar.

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, negative pressure port: fluid compatible with stainless steel 316L, pyrex, silicon and structural adhesive.

Enclosure Materials

Stainless steel (body), nitrile- or silicone-rubber (o-rings, gaskets), EPDM (gaskets, depth cone), PTFE (vent filter), Nickel plated brass (lock rings), glass filled nylon (electrical connector assemblies), delrin (depth cone). Cable sheaths as specified (see Electrical Connector).

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
- 1/4 Swagelok Bulkhead
- G1/4 Male Flat Long
- 7/16 UNF Long 37° Flare Tip
- 7/16-20 UNF Female
- 7/16-20 UNF Male Short Flat
- M10 x 1 80° internal cone
- G1/4 Male Flat with snubber
- 3/8-24 UNJF
- 7/16-20 UNJF male 74° external cone
- G1/2 Male via Adaptor*
- 1/2 NPT Male via Adaptor*
- Depth Cone (G1/4 female open face)

Choose connectors marked * for pressure ranges over 70 bar.

Other pressure connectors may be available.

Contact GE 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	Hytrel Depth	-40 to +80	-40 to +176	68	N
6/E	Bayonet MIL-C-26482	-55 to +125	-67 to +257	67	N
7	DIN 43650 Form A Demountable	-40 to +80	-40 to +176	65	Y
A/F	Bayonet MIL-C-26482 Demountable	-55 to +125	-67 to +257	65	Y
C	1/2 NPT Conduit	-40 to +80	-40 to +176	65	N
D	Micro DIN (9.4 mm pitch)	-40 to +80	-40 to +176	65	N
G	M12x1 4pin	-55 to +125	-67 to +257	67	N

Note: Electronics output option 8, Isolated/Configurable, is restricted to a maximum operating temperature of 80°C (176°F).

Note: Hazardous area approved versions are restricted to a maximum operating temperature range of -40°C to 80°C (-40°F to 176°F).

Electrical Connector

Connector Type	Option code		Electronics Option				
			4 to 20 mA	Voltage (3-wire)	Voltage (4-wire)	Isolated/Configurable	mV
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	Case	Case	Case	Case	-
Cable (Not Raychem)	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	-	-	-	-	-
Bayonet	6, A	A	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		B	-ve Supply	+ve Output	+ve Output	+ve Output	+ve Output
		C	-	-	-ve Output	-ve Output	-ve Output
		D	-	0V common	-ve Supply	-ve Supply	-ve Supply
		E	-	-	-	Shunt Cal	Shunt Cal
		F	-	-	-	-	Shunt Cal
DIN A Micro DIN	7 D	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
Bayonet Alternative Wiring Options	E, F	A	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		B	-	0V common	-ve Supply	-ve Supply	-ve Supply
		C	-	+ve Output	+ve Output	+ve Output	+ve Output
		D	-ve Supply	-	-ve Output	-ve Output	-ve Output
		E	-	-	-	Shunt Cal	Shunt Cal
		F	-	-	-	Shunt Cal	-
M12 X 1 4-Pin	G	1	+ve Supply	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		2		+ve Output	+ve Output	+ve Output	+ve Output
		3	-ve Supply	0V common	-ve Supply	-ve Supply	-ve Supply
		4	Case	Case	-ve Output	-ve Output	-ve Output

Ordering Information

See the online configuration tool at www.unik5000.com

(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

Electrical Connector Note 6

0 No Electrical Connector **Note 7**
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 Form A 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)
D Micro DIN (9.4 mm Pitch) (Mating connector supplied)
E MIL-C-26482 (6 pin Shell Size 10) Alternative Wiring (Mating connector not supplied)
F Demountable MIL-C-26482 (6 pin Shell Size 10) Alternative Wiring (Mating connector not supplied)
G M12 x 1 4-pin male (Mating connector not supplied)

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) **Note 5**
8 Isolated/Configurable 4-wire (PMP) **Note 4, 5**

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 Note 6

H0 None
H1 IECEx/ATEX Intrinsically Safe 'ia' Group IIC
H2 IECEx/ATEX Intrinsically Safe 'ia' Group I
HA H1 + H2

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° Internal Cone
PK M12x1 Internal Cone
PL 7/16-20 UNJF Male 74° External Cone
PN G1/2 Male via Adaptor **Note 3**
PR 1/2 NPT Male via adaptor **Note 3**
PS 1/4 Swagelok Bulkhead
PT G1/4 Male Flat Long
PU 7/16-20 UNF Long 37 degree flare tip
PV 7/16-20 UNF Female
PW Depth Cone (G1/4 Female open face)
PX 7/16-20 UNF Male Short Flat
PY 3/8-24 UNJF
PZ M10 x 1 80° Int Cone
RB G1/4 Male Flat with Snubber

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, A, E, F or G.
Note 3 Select one of these pressure connectors for pressure ranges over 70 bar
Note 4 Max operating temperature is 80°C (176°F)
Note 5 Hazardous area certifications not available
Note 6 Hazardous area certifications are restricted by electrical connector options in line with the following table:

	Connector										
Approval	0	1	2	3	4	6/E	7	A/F	C	D	G
H1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
H2	Y	-	Y	Y	Y	Y	-	-	Y	-	Y
HA	Y	-	Y	Y	Y	Y	-	-	Y	-	Y

Note 7 Has component certification and must be incorporated into certified apparatus with an IP rated enclosure appropriate to the certification type supplied.

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_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
- barometric
- sealed gauge
- wet/dry differential
- wet/wet differential

4) State cable lengths and units: Integer values only, e.g. 1m cable, 8 ft, minimum length 1 m (3 ft) cable (only required on certain electrical connectors), Maximum cable length 190 m (570 ft)

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

Typical order examples:

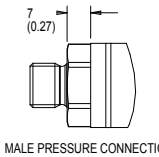
PTX5012-TB-A2-CA-H0-PA, 0 to 10 bar, gauge, 3 m cable
PMP5028-TD-A3-CC-H0-PE, -15 to 75 psi, gauge, 15ft cable, output voltage -1 to 5 volts
PDCR5071-TB-A1-CB-H0-PB, 0 to 100 bar, sealed gauge

Accessories

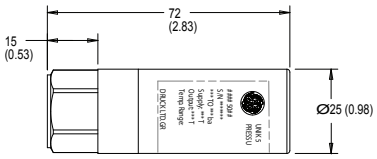
Mating connector for MIL-C-26482 (Electrical connector option 6, A, E and F) under part number S_163-009,

Note: Not considered suitable for use in hazardous areas.

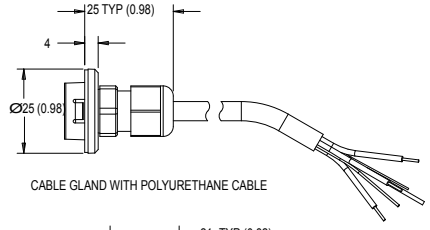
Mechanical Drawings



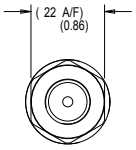
MALE PRESSURE CONNECTION

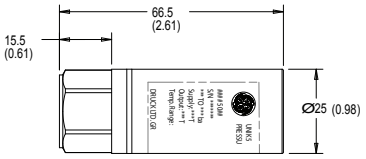


HIGH PRESSURE CONSTRUCTION

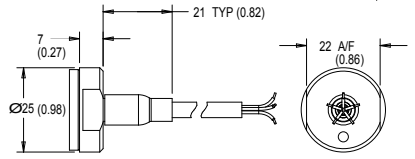


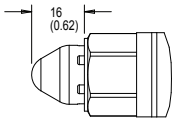
CABLE GLAND WITH POLYURETHANE CABLE



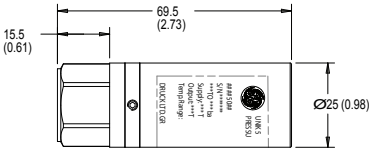


MEDIUM PRESSURE CONSTRUCTION

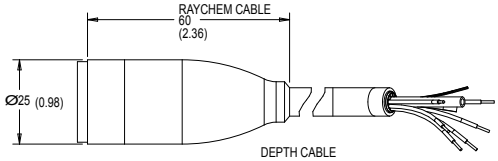




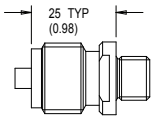
DEPTH CONE PRESSURE ADAPTOR



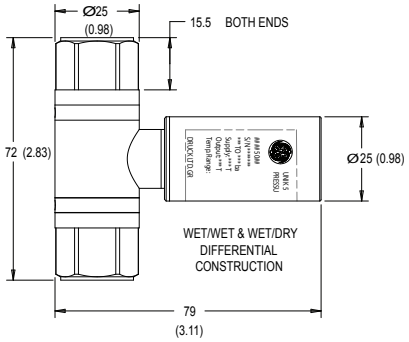
LOW PRESSURE CONSTRUCTION



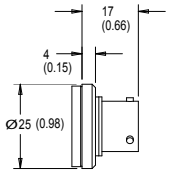
DEPTH CABLE



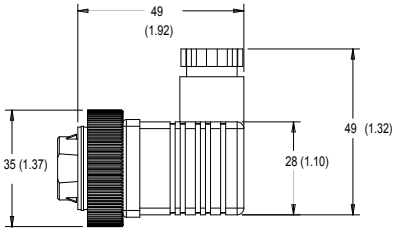
OPTIONAL PRESSURE ADAPTOR



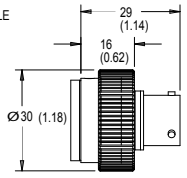
WET/WET & WET/DRY DIFFERENTIAL CONSTRUCTION



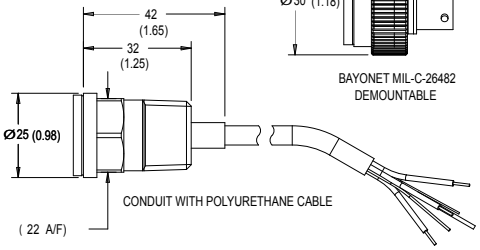
BAYONET MIL-C-26482 NON-DEMOUNTABLE



DIN 43650 DEMOUNTABLE



BAYONET MIL-C-26482 DEMOUNTABLE



CONDUIT WITH POLYURETHANE CABLE

NOTES:

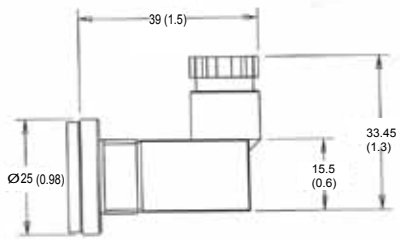
[1] DIMENSIONS SHOWN ARE FOR STANDARD LENGTH PRODUCTS WITH THE FOLLOWING ELECTRICAL OUTPUT OPTIONS:
- mV LINEARISED (PDCR)
- 4 TO 20 mA (PTX)
- STANDARD VOLTAGE OPTIONS (PMP)

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

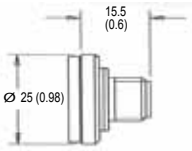
[2] REFER TO PAGE 4 FOR LIST OF PRESSURE CONNECTION OPTIONS (ORIENTATION NOT CRITICAL)

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

(4) HIGH PRESSURE IS >70 BAR
MEDIUM PRESSURE
INDUSTRIAL ACCURACY >1 BAR ≤ 70 BAR
IMPROVED/PREMIUM ACCURACY >2 BAR ≤ 70 BAR
LOW PRESSURE
INDUSTRIAL ACCURACY ≤ 1 BAR
IMPROVED/PREMIUM ACCURACY ≤ 2 BAR



MICRO DIN (9.4 mm)



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