

# UNIK 5800/5900

## Flameproof/Explosion-Proof Pressure Sensing Platform

The 5800 and 5900 are compact and rugged versions of the high performance UNIK 5000 pressure sensing platform offering both flameproof/ explosion-proof or dust ignition protection by enclosure capability as required. Intrinsic safety options are also available. They provide a lightweight and cost effective alternative to pressure gauges and switches in process and in oil and gas industry applications.

### High Quality

With 35 years of pressure measurement experience, our field-proven Druck silicon 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 fast and simple; each UNIK 5000 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)
- Accuracy to  $\pm 0.04\%$  Full Scale (FS) Best Straight Line (BSL)
- Stainless Steel construction
- Integrated terminal compartment with long or short body (5900)
- Frequency response to 3.5 kHz
- High over pressure capability
- Hazardous Area certifications
- mV, mA and voltage outputs
- Oil and drilling fluid (mud) resistant cable options (5800)

# UNIK 5800/5900 Specifications

## Measurement

### 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  
(145 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

4 × FS (up to 200 bar for ranges ≤ 50 bar and up to  
1200 bar for ranges > 50 bar)

#### 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/sealed gauge  
200 bar (2900 psi)

Ranges above 50 bar (725 psi) absolute/sealed gauge  
1200 bar (17400 psi)

### 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 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	Basic Configurable (3-wire)	See below~	See below	<3
6	0 to 10 V 4-wire	12 to 16**	0 to 10 V	<3

<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.

\*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

\*\*32 V maximum for non-hazardous area operation

~Supply voltage is between [Maximum Output + 1V] (7 V minimum) to 16 V (32 V in non-hazardous area operation)

### Basic Configurable (Option 5)

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

Output Specification	Basic Configurable (Option 5)
Minimum span:	4 V
Maximum span:	10 V
Maximum output limit:	11 V
Maximum zero offset:	Span / 2

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

Not true zero, the output will saturate at < 50 mV

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.

### Examples

Allowed	Not Allowed
0 to 5 V	1 to 4 V (span too small)
0.5 to 4.5 V	4 to 11 V (offset too big)
1 to 6 V	-----
1 to 11 V	-----

### Supply Sensitivity

±0.005% FS/Volt (voltage and current version only)

### Power-Up Time

- mV, voltage and current versions: 10 ms

### Insulation Resistance/Isolation

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

### Shunt Calibration (5800 only)

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 version as standard. Shunt calibration is activated by connecting Shunt Cal to -ve Supply.

# 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

≤ 50 bar

Industrial/Improved: ±0.25% FS BSL

Premium: not available

> 50 bar

Industrial/Improved: ±0.5% FS BSL

Premium: not available

Note: For bi-directional ranges, accuracy is specified for each direction separately

### Zero Offset and Span Setting

5900 electrical connector allows access to potentiometers that give at least ±5% FS adjustment

## Factory Set To:

Product Description	Industrial	Improved and Premium
Current and Voltage Versions (5900)	±0.5% FS	±0.2% FS
Current and Voltage Versions (5800)	±1.0% FS	±1.0% FS
mV Versions	±3.0 mV	±3.0 mV

## Long Term Stability

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

## 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 (5900 only)

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 (5900 only)

# Physical Specifications

## Environmental Protection

See the *Electrical Connector* section

## Operating Temperature Range

See the *Electrical Connector* section

## Pressure Media

Fluids compatible with Stainless Steel 316L and Hastelloy C276

## Enclosure Materials

Stainless steel (body), Viton (O-ring)\*, PTFE (vent filter), polyurethane resin (potting)\*\*, and polyolefin (heatshrink)\*\*. Cable sheaths as specified (see the *Electrical Connector* section)

\*Note: 5900 only

\*\*Note: 5800 only

## Pressure Connector

For available options, see *Ordering Information*

## Electrical Connector

Various electrical connector options offering different features are available.

Model	Code No.	Description	Max Operating Temp Range		IP Rating	Zero/ Span Adjust
			°C	°F		
5800	5	M20 Male Conduit with Polyurethane Cable	-40 to +80	-40 to +176	66/67	N
	8	½" NPT Male Conduit with Polyurethane Cable	-40 to +80	-40 to +176	66/67	N
	M	M20 Male Conduit with RADOX® Mud Resistant Cable	-40 to +80	-40 to +176	66/67	N
	S	M20 Male Conduit with ÖLFLEX® Mud Resistant Cable	-40 to +80	-40 to +176	66/67	N
	T	½" NPT Male Conduit with ÖLFLEX® Mud Resistant Cable	-40 to +80	-40 to +176	66/67	N
5900	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

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

\*\*Note: Option J is supplied with an M20 male to 1/2" NPT female conduit thread adaptor.

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

# UNIK 5800/5900 Specifications

## Electrical Connections

Model	Code	Code/Color	Output Option (Codes)			
			mA (2)	Volt 3-wire (4 and 5)	Volt 4-wire (3 and 6)	mV (0 and 1)
5800	5	Red	+ve Supply	+ve Supply	+ve Supply	+ve Supply
		Yellow or White	-	+ve Output	+ve Output	+ve Output
	8	Brown	-	-	-ve Output	-ve Output
		Black	-ve Supply	0V Common	-ve Supply	-ve Supply
		Orange	-	-	-	Shunt Cal
		Green	Case	Case	Case	Case
	M	Screen	-	-	-	-
		Brown	+ve Supply	-	-	-
		Blue	-ve Supply	-	-	-
		Black	Case	-	-	-
	S	1	+ve Supply	-	-	-
		2	-ve Supply	-	-	-
	T	Green and Yellow	Case	-	-	-
		Screen	-	-	-	-
5900	B	I/P+	+ve Supply	+ve Supply	+ve Supply	+ve Supply
	J	O/P+	-	+ve Output	+ve Output	+ve Output
		O/P-	-	-	-ve Output	-ve Output
		I/P-	-ve Supply	0V Common	-ve Supply	-ve Supply

## 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 (except mV versions)

Emissions - Light Industrial

Emissions - Heavy Industrial

Electrical Equipment for Measurement, Control and Laboratory Use

Particular requirements for pressure transducers

# Hazardous Area Approvals (Optional)

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

### UNIK 5800

Ex db IIC T6 Gb ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585#, 588# and 58M#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
Ex tb IIIC T85°C Db ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585#, 588# and 58M#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
Per certificate nos. Baseefa 12ATEX0075X & IECEx BAS 12.0047X

### UNIK 5900

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 certificate nos. Baseefa 12ATEX0074X & IECEx BAS 12.0046X

## ATEX/IECEx Intrinsic Safety

### UNIK 5800 & 5900

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 certificate nos. Baseefa 10ATEX0204X & IECEx BAS 10.0103X

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

### UNIK 5800

XP CL I DIV 1 GP ABCD T6 ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585# and 588#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
CL I ZN 1 AEx/Ex d IIC T6 ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585# and 588#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
CL II, III DIV 1 GP EFG T6/T85°C ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585# and 588#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
ZN 21 AEx tb IIIC T85°C ( $-40^{\circ}\text{C} \leq T_a \leq +63^{\circ}\text{C}$ ) (Models 585# and 588#), ( $-40^{\circ}\text{C} \leq T_a \leq +53^{\circ}\text{C}$ ) (Models 58S# and 58T#)  
Single Seal  
Per FM Approvals certificate nos. FM16US0420X (United States) and FM16CA0193X (Canada)

*Note: Model 585#, using a metric electrical conduit thread, is not permitted for installation in 'Divisions' classified installations in Canada.*

### UNIK 5900

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  
Per FM Approvals certificate nos. FM16US0420X (United States) and FM16CA0193X (Canada)

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

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

# Ordering Information (See the online configuration tool at [www.unik5000.com](http://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

**8** 25mm Stainless Steel 316L Male Conduit

**9** 60mm Stainless Steel 316L Female Conduit with Terminal Compartment

### Electrical Connector Note 4

**5** M20 Male Conduit with Polyurethane Cable (5800 only)

**8** 1/2" NPT Male Conduit with Polyurethane Cable (5800 only)

**B** M20 Female Conduit with Terminal Compartment (5900 only)

**J** 1/2" NPT Female Conduit with Terminal Compartment (5900 only)

**M** M20 Male Conduit with RADOX® Mud Resistant Cable (5800 only) **Note 3**

**S** M20 Male Conduit with ÖLFLEX® Mud Resistant Cable (5800 only) **Note 3**

**T** 1/2" NPT Male Conduit with ÖLFLEX® Mud Resistant Cable (5800 only) **Note 3**

### 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** Basic configurable 3-wire (PMP)

**6** 0 to 10 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) (5900 only)

### Accuracy

**A1** Industrial

**A2** Improved

**A3** Premium

### Calibration

**CA** Zero/Span Data

**CB** Room Temperature

**CC** Full Thermal

### Hazardous Area Approval Note 4

**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

**PA** G1/4 Female **Note 2**

**PB** G1/4 Male Flat End

**PC** G1/4 Male 60 degree Int Cone

**PD** G1/8 Male 60 degree Int Cone

**PE** 1/4 NPT Female **Note 2**

**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

**PM** G1/2 Female

**PN** G1/2 Male **Note 2**

**PP** 1/2 NPT Female

**PQ** G1/4 Quick Connect

**PR** 1/2 NPT Male **Note 2**

**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

**PX** 7/16-20 UNF Male Short Flat

**PY** 3/8-24 UNJF

**PZ** M10 x 1 80° Int Cone

**RA** VCR Female

**RB** G1/4 Male Flat with Snubber

**RC** G1/4 Male Flat with Cross Bore Protection

**RD** M12 x 1.0 74 degree External Cone

**RE** Quick Release Male

**RF** VCR 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

**5800**

**5900**

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PA

Typical Model Number

## Ordering Notes

Note 1: Premium Accuracy is not available on this version

Note 2: Select one of these pressure connectors for pressure ranges over 50 bar (5800 only)

Note 3: Limited to electronics option 2 only.

Note 4: Hazardous area certifications are restricted by electrical connector options in accordance with the following table:

Allowed	Connector						
	5	8	B	J	M	S	T
H0	Y	Y	Y	Y	Y	Y	Y
H1	Y	Y	Y	Y	-	Y	Y
H2	Y	Y	Y	Y	-	Y	Y
H3	Y	Y	Y	Y	Y	Y	Y
H4	Y	Y	Y	Y	Y	Y	Y
H7	Y	Y	Y	Y	-	Y	Y
H8	Y	Y	Y	Y	-	Y	Y
HA	Y	Y	Y	Y	-	Y	Y
HT	Y	Y	Y	Y	-	Y	Y

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

### (4) State cable length and units (5800 only): Minimum length 1 m (3 ft), maximum length 100 m (300 ft), integer values only, e.g., 1 m cable

### (5) State voltage output at minimum and maximum pressure (output option 5 only): Up to 1 decimal place, e.g., output 0.5 to 4.5 V

## Typical order examples:

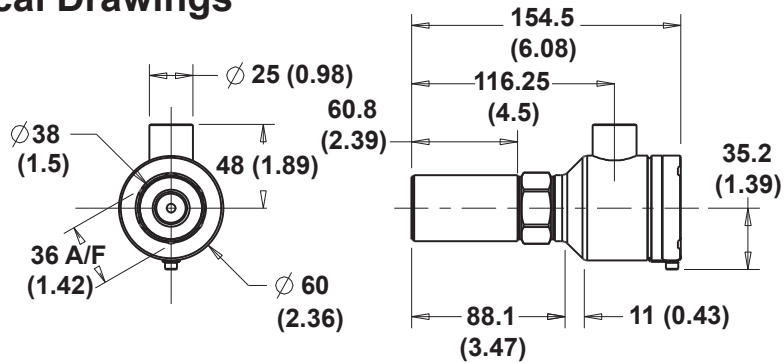
PTX5882-TB-A2-CA-H3-PA, 0 to 10 bar gauge, 3 m cable

PMP59B5-TC-A3-CC-H4-PM, -15 to 75 psi gauge, output 1 to 6 Volts

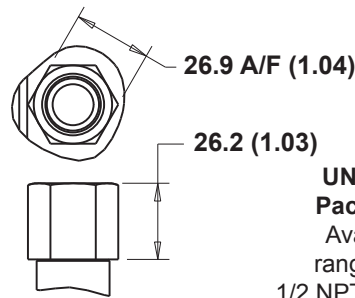
PDCR5881-TB-A1-CB-H0-PN, 0 to 100 bar sealed gauge, 6 ft. cable

## UNIK 5900 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.



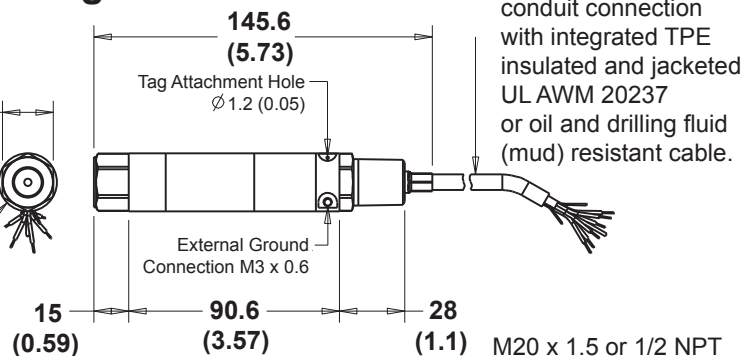
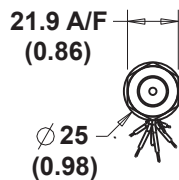
**1/2 NPT Conduit  
Adapter**  
Use to adapt the  
standard M20 x 1/5  
conduit connection.



**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

## UNIK 5800 Mechanical Drawings

**UNIK 5800 High Pressure  
Construction Outline Details**  
Available for pressure ranges  
greater than 50 bar and  
G1/4 or 1/4 NPT female, or  
G1/2 or 1/2 NPT Male  
pressure connectors.



**UNIK 5800 Low Pressure  
Construction Outline Details**  
Available for pressure ranges  
less than or equal to 50 bar  
and can be configured for low  
and medium pressure UNIK 5000  
Series pressure connectors.

Note: Dimensions shown for  
G1/4 and 1/4 NPT Female  
pressure connectors only.  
Refer to main document for  
list of pressure connector  
options - orientation not critical.

