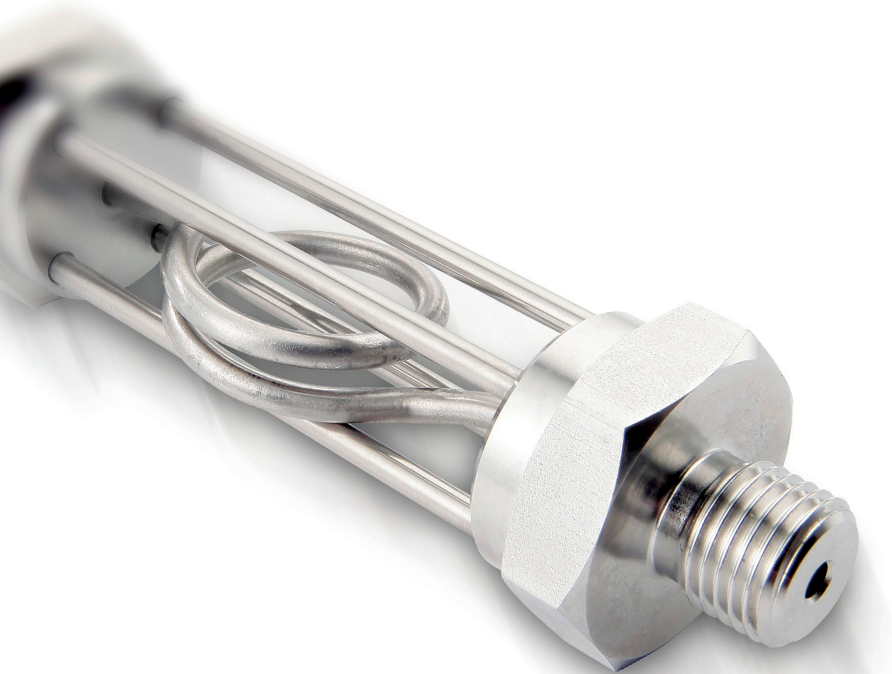




ADHT

HIGH TEMPERATURE
COOLING COIL ADAPTOR



- FOR USE WITH STEAM OR HOT GASSES
- REDUCES THE TEMPERATURE OF MEDIA BEFORE CONTACT WITH TRANSDUCER
- AVAILABLE WITH 1/4" AND 1/2" BSP MALE CONNECTION
- FOR USE WITH MEDIA UP TO 200°C
- SAFE TO USE WITH PRESSURE RANGES UP TO 400BAR
- STAINLESS STEEL SAE316

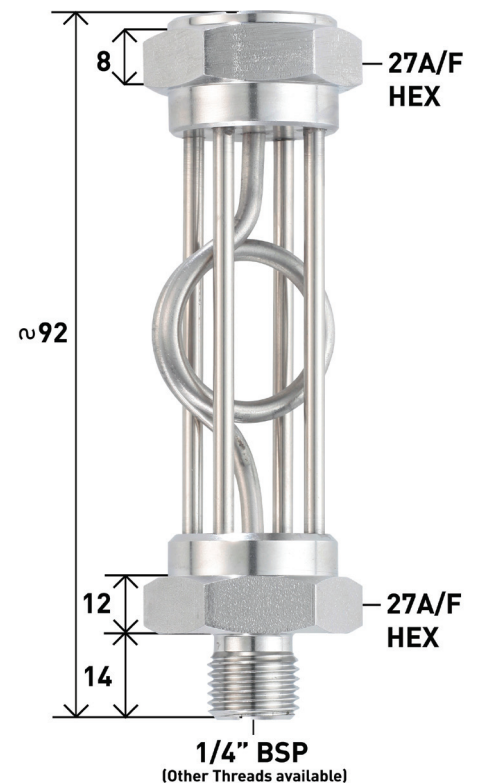
DESCRIPTION

The ADHT Cooling Coil Adaptor provides thermal isolation for a pressure transducer from hot liquid or gas media.

It is an ideal solution for applications where the media temperature exceeds the rating of a pressure transducer or transmitter. The Cooling Coil adaptor will reduce the temperature of the media approximately one fifth before it makes contact with the transducer sensing element. The ADHT can be used with media up to 200°C and with pressure ranges up to 400bar max. Constructed entirely from 316L stainless steel, it offers a simple yet effective solution to high temperature applications when used with ESI pressure sensors.

| Model | Connection to transducer | Process Connection |
|----------|--------------------------|---|
| ADHT25 | 1/4" BSP female | 1/4" BSP male DIN3852-A |
| ADHT25-E | 1/4" BSP female | 1/4" BSP male DIN3852-E with Viton Gasket |
| ADHT50 | 1/4" BSP female | 1/2" BSP male |

DIMENSIONS (in mm)



DISCLAIMER :ESI Technology Ltd operates a policy of continuous product development. We reserve the right to change specification without prior notice. All products manufactured by ESI Technology Ltd are calibrated using precision calibration equipment with traceability to international standards.





Genspec[®] GS4000

GENERAL PURPOSE TRANSDUCER



- THICK FILM STRAIN GAUGE TECHNOLOGY
- PRESSURE RANGES
0-500mbar TO 0-700bar
- OUTPUT OPTIONS 2mV/V,
0-5Vdc, 0-10Vdc AND 4-20mA
- ACCURACY $\pm 0.40\%$ NLHR
- ALL STAINLESS STEEL
CONSTRUCTION
- LOW COST

DESCRIPTION

The Genspec GS4000 series of general-purpose pressure transducers is designed for applications where economical price and reliable pressure measurement is required. Incorporating bonded strain gauge technology and utilising unique manufacturing techniques results in a low cost, high quality transducer ideal for O.E.M applications.

Constructed from stainless steel with 17/4PH stainless steel diaphragm for ranges above 20bar, and a ceramic diaphragm for lower ranges, the GENSPEC series of transducers are of a robust yet compact design. Applications include the continuous pressure monitoring of oil, gas, water and other liquids in a wide range of industries.

GENSPEC transducers are compatible with the PM8000 range of panel meters and controllers which together offer a simple low cost and accurate pressure measuring and control system.

Available in pressure ranges from 0-0.5bar to 0-700bar, gauge or absolute and electrical outputs 2mV/V, 0-5Vdc, 0-10Vdc and 4-20mA.

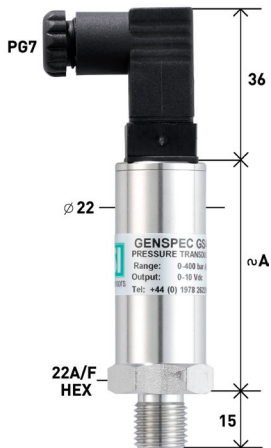


PRESSURE RANGES

0 - 1 bar vac through to 700bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code | Abs Range (bar) | Order Code |
|-------------|------------|-------------|------------|-----------------|------------|
| 0-1 Vac | V001 | 0-25 | 0025 | 0-0.5 | 0.5A |
| 0-0.5 | 00.5 | 0-40 | 0040 | 0-1 | 001A |
| 0-1 | 0001 | 0-60 | 0060 | 0-1.6 | 1.6A |
| 0-1.6 | 01.6 | 0-100 | 0100 | 0-2.5 | 2.5A |
| 0-2.5 | 02.5 | 0-160 | 0160 | 0-4 | 004A |
| 0-4 | 0004 | 0-250 | 0250 | 0-6 | 006A |
| 0-6 | 0006 | 0-400 | 0400 | 0-10 | 010A |
| 0-10 | 0010 | 0-600 | 0600 | 0-16 | 016A |
| 0-16 | 0016 | 0-700 | 0700 | 0-25 | 025A |

DIMENSIONS (in mm)

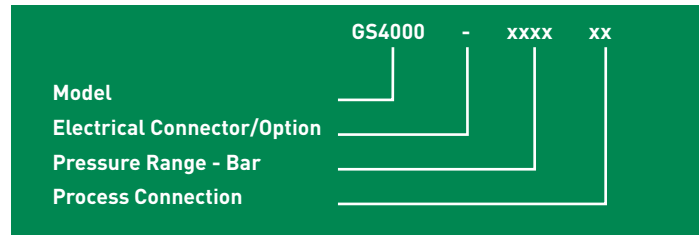


| Model | Dimension 'A' |
|---------------|---------------|
| GS4000/GS4100 | 36 |
| GS4101,2,3 | 55 |
| GS4001,2,3 | 64 |

| ELECTRICAL CONNECTION (mA) | |
|----------------------------|---------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted |
| ⊥ | to case |

| ELECTRICAL CONNECTION (Vdc) | | |
|-----------------------------|---------|---------|
| Pin No. | 4 wire | 3 wire |
| 1 | -supply | common |
| 2 | +supply | +supply |
| 3 | +output | +output |
| ⊥ | -output | to case |

ORDERING INFORMATION



| Output | Model No. | Ranges |
|---------|-----------|------------------|
| 2mV/V | GS4000 | above 20 bar |
| 0-5Vdc | GS4001 | above 20 bar |
| 0-10Vdc | GS4002 | above 20 bar |
| 4-20mA | GS4003 | above 20 bar |
| 2mV/V | GS4100 | 20 bar and below |
| 0-5Vdc | GS4101 | 20 bar and below |
| 0-10Vdc | GS4102 | 20 bar and below |
| 4-20mA | GS4103 | 20 bar and below |

Electrical Connection / Option

- Micro DIN plug and socket
- Cable outlet 1 metre screened
- M12 connector
- Cable outlet 1metre IP67 gland

Process Connection

- 1/4" BSP male thread
- 1/4" NPT male thread

EXAMPLE

Output signal 4-20mA (20 bar and below)
 Micro DIN plug and socket
 Pressure range 0-6 barg
 Pressure connection 1/4" BSP male
Correct Part Number
 For options not listed contact sales team

Order Code

-

A

B

L

Order Code

AB

AM

Order Code

GS4103

-

0006

AB

GS4103-0006AB

SPECIFICATION

PRESSURE REFERENCE

Gauge (to 700bar) or absolute (to 25bar)

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.

1.6x for ranges -1bar to 20bar

2x for ranges 25bar to 250bar

1.5 for 400bar to 700bar

OUTPUT SIGNAL (OPTIONS)

4-20mA (2 wire),
 0-5Vdc (3 or 4 wire),
 0-10Vdc (3 or 4 wire),
 2mV/V (4 wire)

ZERO OFFSET AND SPAN TOLERANCE

$\pm 1.0\%$ FS

SUPPLY VOLTAGE (U_b)

Measured across supply terminals on connector plug

13-36Vdc for 4-20mA versions

13-30Vdc for 0-5Vdc and 0-10Vdc versions

5-15Vdc for 2mV/V versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY(4-20mA VERSION ONLY)

Calculate maximum load $R_s = (U_b - 13V) / 20mA$

e.g. with supply voltage load of 36Vdc, maximum load is 1150ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.40\%$ FS. Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible SAE 303 stainless steel, Alumina and Nitrile seal for ranges up to 20bar, and 17/4PH and SAE 303 stainless steel for ranges above.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+85^\circ\text{C}$

Storage: $+5^\circ\text{C}$ to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

$\pm 2\%$ FS total error band for -20°C to $+70^\circ\text{C}$ Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^\circ\text{C}$

ELECTROMAGNETIC-COMPATIBILITY

Emissions; EN61000-6-4

Immunity; EN61000-6-2

Certification; CE marked

PRESSURE CONNECTION

1/4" BSP or 1/4" NPT male (others on request)

ELECTRICAL CONNECTION

Mating micro DIN socket with screw terminal connections, rated IP65. Options include flying lead with optional cable length and IP67 cable gland or M12.

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Genspec[®] GS4200

GENERAL PURPOSE PRESSURE TRANSDUCER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES
0-500mbar TO 0-1500bar
- $\pm 0.25\%$ ACCURACY NLHR
- 4-20 mA OUTPUT AS STANDARD (0-100mV, 0-5Vdc or 0-10Vdc OPTIONAL)
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- OUTSTANDING PERFORMANCE AND STABILITY

DESCRIPTION

The GENSPEC GS4200 pressure transmitter is designed to meet the operational requirements of demanding pressure measurement applications where good quality, fast delivery and low cost are of the highest priority.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

Accuracy is $\pm 0.25\%$ with a typical over pressure limit of twice the rated pressure range, this together with the standard output of 4-20 mA and easy access for re-calibration affirm the excellent design. All models are supplied with integral 1/4" BSP or alternative pressure connections. Optional connections are available. The all titanium alloy wetted parts offer unbeatable corrosion resistance. Versions are also available offering IP66 sealing for installations requiring high levels of environmental protection. Applications for the GS4200 include the continuous monitoring of hydraulic systems with oil, gas, water and other process liquids, industrial, medical and aerospace industries. Also ideal for the measurement and control of pressure in refrigeration, pneumatic, compressor, HVAC and engine monitoring systems.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

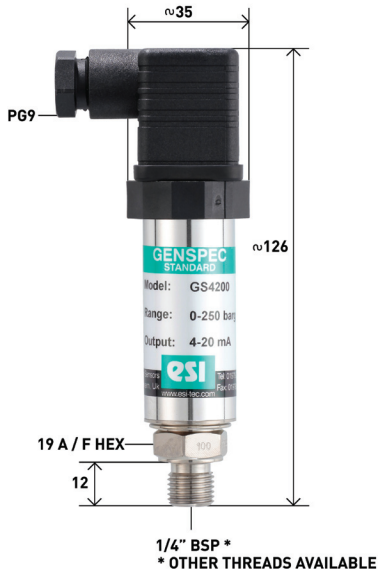


PRESSURE RANGES

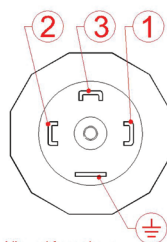
0 - 1 bar vac through to 1500 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 Vac | V001 | 0-40 | 0040 |
| 0-0.5 | 00.5 | 0-60 | 0060 |
| 0-1 | 0001 | 0-100 | 0100 |
| 0-1.6 | 01.6 | 0-160 | 0160 |
| 0-2.5 | 02.5 | 0-250 | 0250 |
| 0-4 | 0004 | 0-400 | 0400 |
| 0-6 | 0006 | 0-600 | 0600 |
| 0-10 | 0010 | 0-700 | 0700 |
| 0-16 | 0016 | 0-1000 | 1000 |
| 0-25 | 0025 | 0-1500 | 1500 |

DIMENSIONS (in mm)



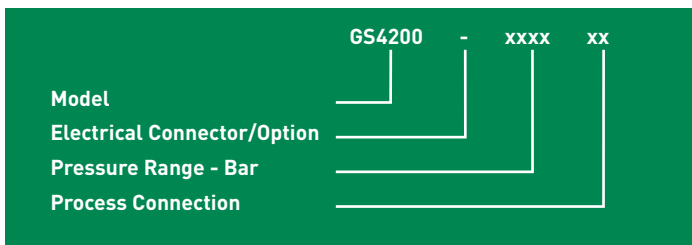
| ELECTRICAL CONNECTION (mA) | |
|----------------------------|---------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted |
| ⊕ | to case |



Viewed from above with socket removed.

| ELECTRICAL CONNECTION (Vdc) | | |
|-----------------------------|---------|---------|
| Pin No. | 4 wire | 3 wire |
| 1 | -supply | common |
| 2 | +supply | +supply |
| 3 | +output | +output |
| ⊕ | -output | to case |

ORDERING INFORMATION



OUTPUT

4-20mA
0-100mV
0-5Vdc
0-10Vdc

ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
Cable outlet 1 metre screened
ATEX certified with DIN43650 plug and socket

PROCESS CONNECTION

1/4" BSP male thread
1/4" NPT male thread

EXAMPLE

Output signal 4-20mA
ATEX certified with DIN43650 plug and socket
Pressure range 0-100bar
Pressure connection 1/4" BSP male
Correct Part Number

For options not listed contact sales team

Model No.

GS4200
GS4201
GS4202
GS4203

Order Code

-
A
EX

Order Code

AB
AM

Order Code

GS4200
EX
0100
AB
GS4200EX0100AB

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
4x for 0.5bar range
2x for ranges 1bar-600bar
1.5x for 1000bar
1.1x for 1500bar

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.
Optional outputs available are
0-5Vdc (3 or 4 wire)
0-10Vdc (3 or 4 wire)
0-100mV for ranges from 1bar and above (4 wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA
 $\pm 0.5\%$ FS adjustment with easy access trimming potentiometers on amplified version only.

SUPPLY VOLTAGE (U_b)

Measured across supply terminals on connector plug
10-36Vdc for 4-20mA versions
13-30Vdc for 0-5Vdc and 0-10Vdc versions
10Vdc for 0-100mV version (Ratiometric output for 5-15Vdc)

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY(4-20mA version only)

Calculate maximum load $R_s = (U_b - 10V) / 20mA$
e.g. with supply voltage load of 36vdc, maximum load is 1300ohms

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.25\%$ FS Typical Max, best fit straight line

PRESSURE MEDIA

All fluids compatible with titanium alloy.

OPERATING TEMPERATURE RANGE

Ambient: -40°C to +85°C
Media: -50°C to +125°C
Storage: +5°C to +40°C

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -20°C to +70°C
Typical thermal zero and span coefficients $\pm 0.015\%$ FS/°C

ATEX APPROVAL (4-20mA version only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

U_i = 28V
I_i = 119mA
P_i = 0.65W
L_i = 0.1
C_i = 74nF
Temperature Range = -20°C to +70°C
Max. cable length = 45m

ELECTROMAGNETIC-COMPATIBILITY

Emissions: EN61000-6-3
Immunity: EN61000-6-2
Certification: CE marked

PRESSURE CONNECTION

1/4" BSP or 1/4" NPT male (others on request)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65. Cable entry P69.
Options include; alternative connectors; flying lead with optional cable length and cable gland rated to IP66.





Genspec[®] GS4200-USB

USB POWERED DIGITAL PRESSURE TRANSDUCER



DESCRIPTION

The GS4200-USB[®] Digital Pressure Transducer has been designed to measure, analyse and record pressure directly on your computer without the need for costly I/O interface boards. It allows the user to measure up to 16 pressure inputs simultaneously and easily create customised test certificates.

The transducer is powered by the computer's USB port, data is then presented on the PC via the ESI-USB[®] configurable Windows Interface software supplied with the transducer. It has instant connection with auto-detection, and will configure automatically with your desktop or laptop pc via USB protocol. The sample rate enables dynamic pressures to be measured with up to 21 bit resolution. For real-time analysis, data transferred to the PC is achieved without loss of accuracy or bandwidth. This pressure transducer is USB 1.1 and USB 2.0 compatible, the ESI-USB[®] interface configuration and analysis software is compatible with Windows[®] 7 (32bit & 64bit), Vista, XP & 2000. Data can be displayed in graphical or tabular form, with a choice of pressure units and fully adjustable scales. Data can be saved to a file or exported to Excel.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. Excellent measurement accuracy provides high resolution with a precision greater than 1 in 10,000. Pressure ranges are available from 2.5bar to 4000bar. Each unit is supplied with ESI-USB[®] software, 2m USB lead rated to IP68 and a convenient carry case.

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-2.5bar TO 0-4000bar
- ACCURACY 0.15% NLHR
- AUTO DETECTION AND CONFIGURATION
- USB 1.1 AND USB 2.0 FULL SPEED COMPATIBLE
- ESI-USB[®] SOFTWARE SUPPLIED
- 2M LEAD & CARRY CASE INCLUDED
- MEASURES UP TO 16 INPUTS SIMULTANEOUSLY
- CREATE CUSTOMISED TEST CERTIFICATES
- INCLUDES BUILT-IN TEMPERATURE MONITORING

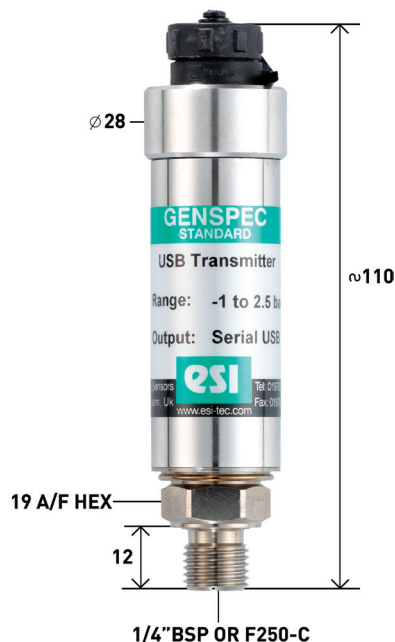


PRESSURE RANGES

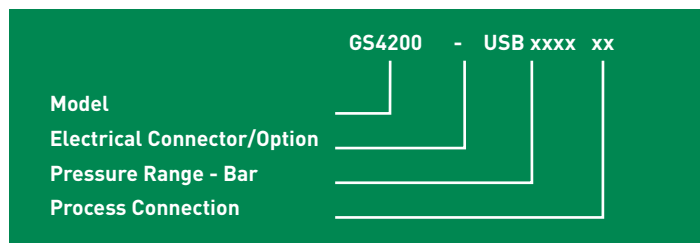
-1 to 2.5bar through to 4000 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| -1-2.5 | 02.5 | 0-2000 | 2000 |
| 0-16 | 0016 | 0-3000 | 3000 |
| 0-100 | 0100 | 0-4000 | 4000 |
| 0-400 | 0400 | | |
| 0-1500 | 1500 | | |

DIMENSIONS (in mm)



ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

2 metre A to USB mini B lead

PROCESS CONNECTION

1/4" BSP male thread

1/4" NPT male thread

9/16" x 18 UNF-2B F250C Autoclave (2000bar +)

EXAMPLE

2 metre A to USB mini B lead

Pressure range 0-100barg

Pressure connection 1/4" BSP male

Correct Part Number

For options not listed contact sales team

Order Code

GS4200-USB

Order Code

AB

AM

DE

Order Code

GS4200-USB

0100

AB

GS4200-USB0100AB

DISCLAIMER :

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SPECIFICATION

PRESSURE REFERENCE

Gauge (default). Absolute reference input by user.

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%FS$.

2x for ranges up to 400bar

1.5x for 1500bar

1.5x for 2000bar

1.25x for 4000bar

OUTPUT SIGNAL

USB 1.1 and USB 2.0 full speed connection.

RECALIBRATION

Fully configured and re-calibrated via PC software, including pressure unit selection linearity and temperature compensation adjustment.

SUPPLY VOLTAGE

5Vdc via USB bus.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.15\%FS$ Typical Max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with titanium alloy.

RESOLUTION

Up to 21 bit pressure measurement.

OPERATING TEMPERATURE RANGE

Ambient: $-20^{\circ}C$ to $+85^{\circ}C$

Media: $-50^{\circ}C$ to $+125^{\circ}C$

Storage: $+5^{\circ}C$ to $+40^{\circ}C$

ELECTROMAGNETIC CAPABILITY

Certification: CE marked

PRESSURE CONNECTION

1/4" BSP male or F250-C (Autoclave)

ELECTRICAL CONNECTION

Mating to USB Mini B socket for cable connection to PC. Supplied with 2m USB lead rated to IP68 as standard.





Genspec[®] GS5000

GENERAL PURPOSE PRESSURE TRANSDUCER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-10bar TO 0-600bar
- ACCURACY $\pm 0.25\%$ NLHR
- 4-20mA OUTPUT AS STANDARD (0-10Vdc OPTIONAL)
- TITANIUM AND STAINLESS STEEL WETTED PARTS
- M12 & DIN 43650 ELECTRICAL CONNECTION
- ROBUST DESIGN

DESCRIPTION

The GENSPEC GS5000 pressure transmitter is designed to meet the operational requirements of demanding pressure measurement applications where good quality, fast delivery and low cost are of the highest priority.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate protects the strain gauge and allows the sensor to operate over a very wide temperature range without loss of performance.

Accuracy is $\pm 0.25\%$ with an over pressure limit of 4 times typically the rated pressure range. The standard output is 4-20mA. All models are supplied with integral G1/4 type A or E thread with other optional connections available. The titanium and stainless steel wetted parts offer excellent corrosion resistance. Versions are also available offering IP66 sealing for installations requiring high levels of environmental protection. Applications for the GS5000 include the continuous monitoring of hydraulic systems with oil, gas and water.

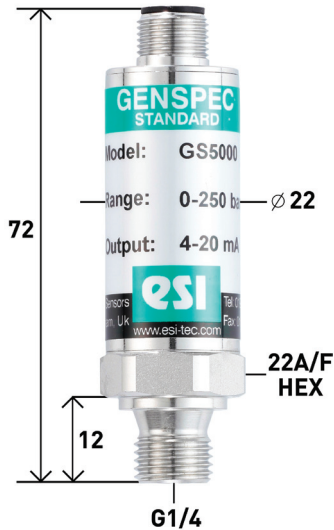


PRESSURE RANGES

0 to 10bar through to 0 to 600bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-10 | 0010 | 0-100 | 0100 |
| 0-16 | 0016 | 0-160 | 0160 |
| 0-25 | 0025 | 0-250 | 0250 |
| 0-40 | 0040 | 0-400 | 0400 |
| 0-60 | 0060 | 0-600 | 0600 |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION

DIN43650

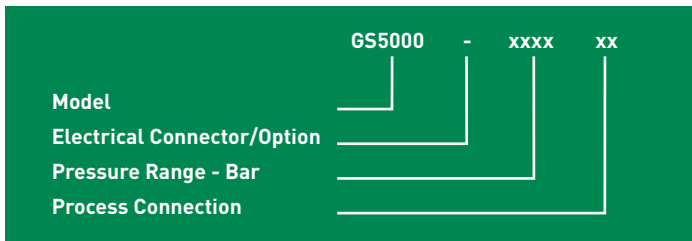
| Pin No. | 2 wire | 3 wire |
|---------|---------------|-----------------|
| 1 | +supply | common |
| 2 | 4-20mA signal | +supply |
| 3 | n/c | +output to case |

ELECTRICAL CONNECTION

M12

| Pin No. | 2 wire | 3 wire |
|---------|---------------|---------|
| 1 | +supply | +supply |
| 2 | n/c | +output |
| 3 | 4-20mA signal | common |
| 4 | n/c | n/c |

ORDERING INFORMATION



Output

4-20mA (2wire)
0-10Vdc (3wire)

Electrical Connection / Option

DIN 43650 plug and socket
M12 connector

Process Connection

1/4" BSP male DIN3852-A
1/4" BSP male DIN3852-E with Viton Gasket
1/4" NPT male thread

EXAMPLE

Output signal 4-20mA
M12 connector
Pressure range 0-400barg
1/4" BSP male DIN3852-E with Viton Gasket
Correct Part Number

For options not listed contact sales team

Model No.

GS5000
GS5002

Order Code

-

A

FA

FE

AM

AM

Order Code

GS5000

A

0400

FE

GS5000A0400FE

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%FS$.

4x (typical) for ranges up to 400bar
1650bar maximum for 600bar version

OUTPUT SIGNAL

4-20mA (2 wire configuration) as standard.
Optional outputs available are 0-10Vdc (3 wire)

SUPPLY VOLTAGE(U_b)

Measured across supply terminals on connector plug
10-36Vdc for 4-20mA (2 wire)
13-30Vdc for 0-10Vdc (3 wire)

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY

4-20mA version $< (U_b - 10V) / 20mA$
0-10Vdc version $> 4.7k\Omega$

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.5\%$ Tolerance
 $\pm 0.25\%$ FS NLHR (typical)

PRESSURE MEDIA

All fluids compatible with titanium alloy and stainless steel

OPERATING TEMPERATURE RANGE

Compensated: $-40^\circ C$ to $+85^\circ C$
Ambient: $-40^\circ C$ to $+125^\circ C$
Media: $-50^\circ C$ to $+125^\circ C$

TEMPERATURE EFFECTS

Typical thermal zero and span coefficients $\pm 0.01\%FS/^\circ C$

ELECTROMAGNETIC-COMPATIBILITY

Emissions: EN61000-6-3
Immunity: EN61000-6-2
Certification: CE marked

PRESSURE CONNECTION

G1/4 Male type A and E

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65 or M12 rated IP67. Options include flying lead with optional cable length.

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Hispec[®] HI2000

HIGH SPECIFICATION PRESSURE TRANSDUCER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES
0-500mbar TO 0-1500bar
- VOLTAGE OUTPUT
- ACCURACY 0.1% NLHR
- OPTIONAL ATEX APPROVED VERSION
- ALL TITANIUM ALLOY WETTED PARTS
- HIGH SPECIFICATION

DESCRIPTION

The HISPEC HI2000 series of pressure transducers with state-of-the-art Silicon-on-Sapphire sensor technology offer levels of accuracy and performance previously unobtainable or prohibitively expensive.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a Titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

Applications include aerospace, laboratory and test, oil and gas monitoring equipment (down-hole) and subsea. Available in pressure ranges from 0-500mbar to 0-1500bar and with electrical outputs of 10mV/V, 0-5Vdc and 0-10Vdc.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

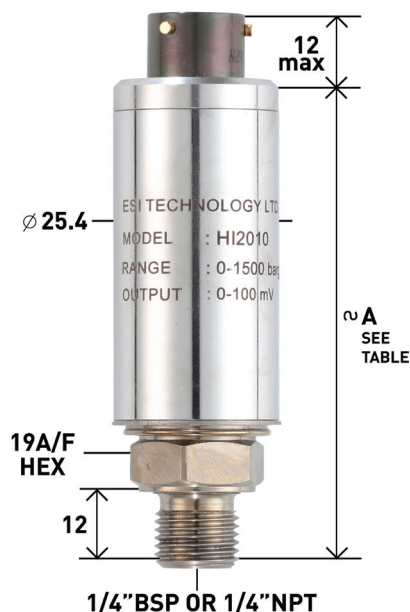


PRESSURE RANGES

0-1bar vac through to 1500 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 Vac | V001 | 0-40 | 0040 |
| 0-0.5 | 00.5 | 0-60 | 0060 |
| 0-1 | 0001 | 0-100 | 0100 |
| 0-1.6 | 01.6 | 0-160 | 0160 |
| 0-2.5 | 02.5 | 0-250 | 0250 |
| 0-4 | 0004 | 0-400 | 0400 |
| 0-6 | 0006 | 0-600 | 0600 |
| 0-10 | 0010 | 0-700 | 0700 |
| 0-16 | 0016 | 0-1000 | 1000 |
| 0-25 | 0025 | 0-1500 | 1500 |

DIMENSIONS (in mm)

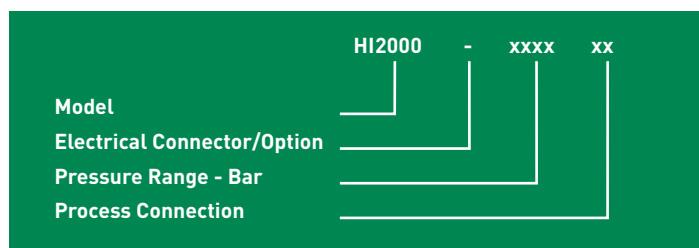


| ELECTRICAL CONNECTION MIL-C-26482 | |
|--------------------------------------|-------------|
| Pin | Designation |
| A | +supply |
| B | +output |
| C | +supply |
| D | -supply |
| E | N/C |
| F | N/C |

| ELECTRICAL CONNECTION CABLE OUTLET | |
|---------------------------------------|-------------|
| WIRE COLOUR | Designation |
| RED | +supply |
| GREEN | +output |
| YELLOW | +supply |
| BLUE | -supply |

| | Dim. A |
|----------|--------|
| HI2x00 | 80 |
| HI2x01/2 | 95 |

ORDERING INFORMATION



OUTPUT

10mV/V
0-5Vdc
0-10Vdc

ELECTRICAL CONNECTION/OPTION

Cable Outlet 1m PTFE (models HI2000 HI2001 HI2002)
MIL-C-26482 6 pin bayonet (models HI2010 HI2011 HI2012)
ATEX certified

PROCESS CONNECTION

1/4" BSP male thread
1/4" NPT male thread

EXAMPLE

Output Signal 10mV/V
MIL-C-26482 6 pin bayonet connector
Pressure range 0-25bar
Pressure connection 1/4" BSP male

Correct Part Number

For options not listed contact sales team

Model No.

HI2000 / HI2010
HI2001 / HI2011
HI2002 / HI2012

Order Code

-
-
EX
Order Code
AB
AM

Order Code

HI2010
-
0025
AB
HI2010-0025AB

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
2x for ranges -1bar to 600bar
1.5x for 1000bar
1.1x for 1500bar

OUTPUT SIGNAL

10mV/V (4 wire non-amplified) Zero offset: ± 1 mV, Span tolerance: $\pm 1\%$ FS
0-5Vdc, 0-10Vdc (4 wire amplified) Zero Offset and Span Tolerance $\pm 0.2\%$ FS

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
5-15Vdc for 10mV/V version
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc (amplified versions)

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.1\%$ FS Typical Max, Best fit straight line.

PRESSURE MEDIA

All fluids compatible with titanium alloy.

OPERATING TEMPERATURE RANGE

Ambient: -40°C to $+125^{\circ}\text{C}$
Media: -50°C to $+125^{\circ}\text{C}$
Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

TEMPERATURE EFFECTS

$\pm 1.0\%$ FS TEb -20°C to $+70^{\circ}\text{C}$
Typical thermal zero and span coefficients $\pm 0.005\%$ FS/ $^{\circ}\text{C}$.

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

Ui = 28V
Ii = 119mA
Pi = 0.65W
Li = 0.1
Ci = 0
Temperature range = -20°C to $+70^{\circ}\text{C}$
Max. cable length = 50m

INSULATION RESISTANCE

100Mohm @50Vdc all electrical connection to case

VIBRATION

30g peak, 10Hz -2KHz, 12mm double amplitude

MECHANICAL SHOCK

3x4ft drop on to concrete floor will not degrade performance

PRESSURE CONNECTION

1/4" BSP or 1/4" NPT male (others on request)

ELECTRICAL CONNECTION

HI200x: PTFE insulated flying lead, conductor size 7/0.1mm
HI201x: MIL-C-26482 (6 pin bayonet connector). Mating connector available (ESI part no. EC-MIL-10-6S)

DISCLAIMER : ESI Technology Ltd operates a policy of continuous product development. We reserve the right to change specification without prior notice. All products manufactured by ESI Technology Ltd are calibrated using precision calibration equipment with traceability to international standards.





Hispec[®] HI2200/2300

HIGH TEMPERATURE PRESSURE TRANSDUCER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-1bar TO 0-1500bar
- 10mV/V TYPICAL OUTPUT
- ACCURACY 0.1% NLHR
- HIGH OPERATING AMBIENT & MEDIA TEMPERATURE UP TO 200°C
- ALL TITANIUM ALLOY WETTED PARTS
- CABLE OUTLET OR MIL-C-26482 ELECTRICAL CONNECTOR

DESCRIPTION

HISPEC - HI2200/2300 series of high temperature pressure transducers with state-of-the-art Silicon-on-Sapphire sensor technology offer levels of accuracy and performance previously unobtainable or prohibitively expensive. It is capable of operating at constant 200°C both media and ambient.

The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate protects the strain gauge circuit and allows the sensor to operate over a very wide temperature range without loss of performance.

With pressure ranges from 0-1bar to 0-1500bar, the high temperature HISPEC transducer is available in two options; model HI2200 offers a non-compensated and un-rationalised signal output of between 10mV/V and 20mV/V, whilst model HI2300 is fully temperature compensated with a rationalised 10mV/V signal output. All models are available with either PTFE cable outlet or military bayonet style plug to MIL-C-26482, both of which are rated for use at 200°C. This means that not only does the transducer perform effectively at high media temperatures but uniquely can be used in environments where there are elevated ambient temperatures of up to 200°C. For instance this device may be mounted inside an oven or thermal chamber.

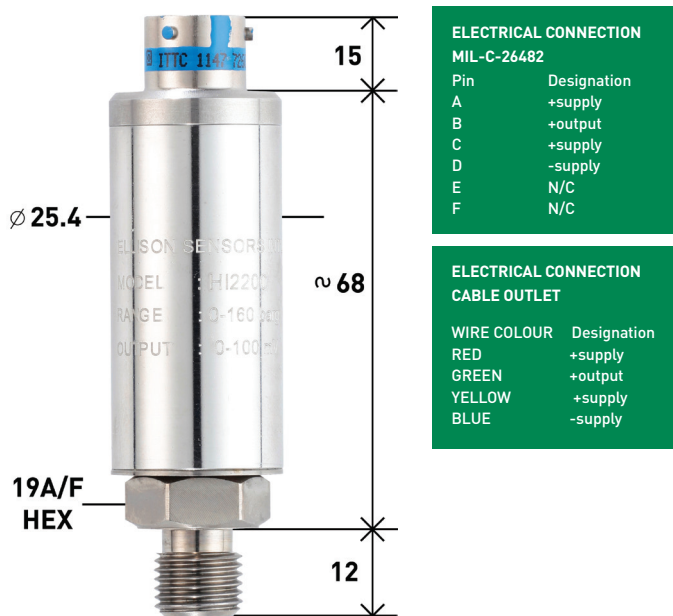


PRESSURE RANGES

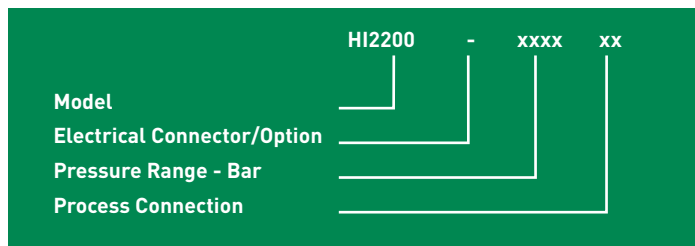
0 to 1bar through to 1500 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 | 0001 | 0-60 | 0060 |
| 0-1.6 | 01.6 | 0-100 | 0100 |
| 0-2.5 | 02.5 | 0-160 | 0160 |
| 0-4 | 0004 | 0-250 | 0250 |
| 0-6 | 0006 | 0-400 | 0400 |
| 0-10 | 0010 | 0-600 | 0600 |
| 0-16 | 0016 | 0-700 | 0700 |
| 0-25 | 0025 | 0-1000 | 1000 |
| 0-40 | 0040 | 0-1500 | 1500 |

DIMENSIONS (in mm)



ORDERING INFORMATION



Output

10-20mV/V Un-rationalised and un-compensated
10mV/V Rationalised and compensated

Electrical Connection / Option

Cable Outlet 1m PTFE (models HI2200 & HI2300)
MIL-C-26482 6 pin bayonet (models HI2210 & HI2310)

Process Connection

1/4" BSP male thread
1/4" NPT male thread

EXAMPLE

Output Signal 10mV/V rationalised and compensated
MIL-C-26482 6 pin bayonet connector
Pressure range 0-25barg
Pressure connection 1/4" BSP male
Correct Part Number
For options not listed contact sales team

Model No.

H2200 or HI2210
H2300 or HI2310

Order Code

-

-

Order Code

AB

AM

Order Code

HI2310

-

0025

AB

HI2310-0025AB

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.

2x for ranges -1bar to 600bar

1.5x for 1000bar

1.1x for 1500bar

OUTPUT SIGNAL

HI22x0: un-rationalised mV output

Zero offset: $\pm 1\text{mV/Vdc}$,

Span tolerance: 10-20mV/V

HI23x0: 10mV/V (temperature compensated)

Zero offset: $\pm 1\text{mV}$

Span tolerance: $\pm 1\%$ FS

SUPPLY VOLTAGE

10Vdc nominal, 5-15Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.1\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with titanium alloy.

OPERATING TEMPERATURE RANGE

Ambient: -40°C to $+200^\circ\text{C}$

Media: -50°C to $+200^\circ\text{C}$

Storage: $+5^\circ$ to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

HI22x0 typical thermal zero and span coefficients compensated $\pm 0.05\%$ FS/ $^\circ\text{C}$.

HI23x0 $\pm 2.0\%$ FS TEb -40°C to $+150^\circ\text{C}$, typical thermal zero and span coefficients $\pm 0.005\%$ FS/ $^\circ\text{C}$.

INSULATION RESISTANCE

100Mohm @50Vdc all electrical connection to case

VIBRATION

30g peak, 10Hz -2KHz, 12mm double amplitude

MECHANICAL SHOCK

3x4ft drop on to concrete floor will not degrade performance

PRESSURE CONNECTION

1/4" BSP or 1/4" NPT Male (others on request)

ELECTRICAL CONNECTION

HI2x00: PTFE insulated flying lead, conductor size 7/0.16mm²

HI2x10: MIL-C-26482 high temperature 6 pin bayonet connector

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Hipres® HP1000/HP1100

HIGH PRESSURE TRANSDUCER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-400bar TO 0-4000bar
- OUTPUTS AVAILABLE 0-100mV, 0-5Vdc, 0-10Vdc or 4-20mA
- ACCURACY 0.25% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- INDUSTRY STANDARD HIGH PRESSURE FITTING
- ALL TITANIUM WETTED PARTS
- HIGH OPERATING TEMPERATURE

DESCRIPTION

The HP1000 series extends the Silicon-on-Sapphire pressure sensor technology into very high pressure applications, with operating ranges up to 4000bar and still maintaining an extremely high performance level.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The wetted parts and pressure diaphragm are machined from a single piece of titanium alloy meaning no weld joints and therefore high pressure integrity and overload capability. All titanium pressure port offers unbeatable corrosion resistance. With a design to meet demanding environments, this transducer will consistently maintain accurate performance while sustaining high durability. Using the industry standard autoclave process connection enables safe and reliable sealing to such high pressures. Available in pressure ranges from 0-400bar to 0-4000bar and with electrical outputs of 0-100mV, 0-5Vdc, 0-10Vdc and 4-20mA. Applications include aerospace, laboratory and test, oil and gas monitoring equipment and general industrial.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

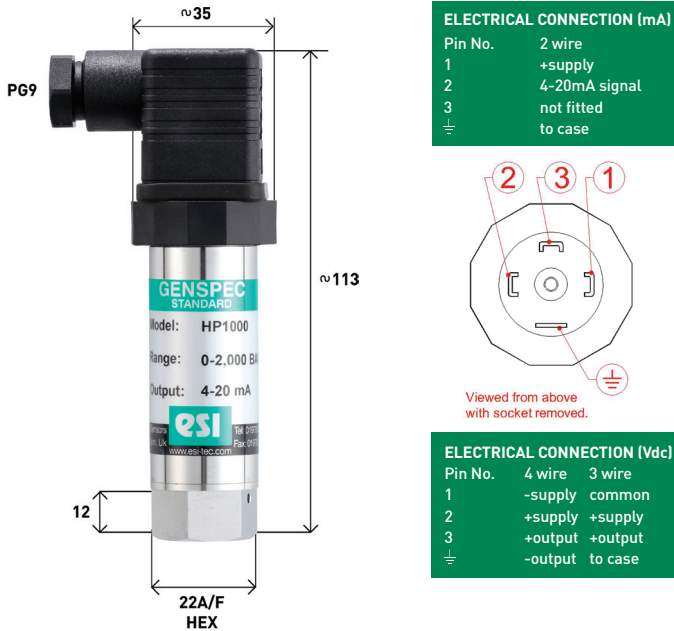


PRESSURE RANGES

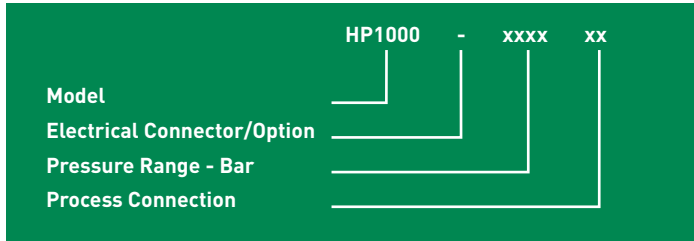
0 to 400bar through to 0 to 4000bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|----------------|------------|
| 0-400 | 0400 | 0-2000 | 2000 |
| 0-600 | 0600 | 0-2500* | 2500 |
| 0-700 | 0700 | 0-3000* | 3000 |
| 0-1000 | 1000 | 0-4000* | 4000 |
| 0-1500 | 1500 | *HP1100 ranges | |

DIMENSIONS (in mm)



ORDERING INFORMATION



| OUTPUT | Model to 2000 bar | Model above 2000bar |
|---------|-------------------|---------------------|
| 0-100mV | HP1000 | HP1100 |
| 0-5Vdc | HP1001 | HP1101 |
| 0-10Vdc | HP1002 | HP1102 |
| 4-20mA | HP1003 | HP1103 |

ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
Cable outlet 1 metre screened
ATEX certified with DIN43650 plug and socket

Order Code

-
A
EX

PROCESS CONNECTION

Autoclave F-250-C female

Order Code

DE

EXAMPLE

Output signal 4-20mA
ATEX certified with DIN43650 plug and socket
Pressure range 0-4000bar
Autoclave F-250-C female

Order Code

HP1103
EX
4000
AB

Correct Part Number

For options not listed contact sales team

HP1103EX4000DE

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
1.5x for ranges 0-1500bar to 0-3000bar
1.25x 4000bar

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.
Optional outputs available are;
0-5Vdc (3 or 4 wire)
0-10Vdc (3 or 4 wire)
0-100mV (4 wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA
 $\pm 5\%$ FS adjustment with easy access trimming Potentiometers on amplified version only

INSTALLATION TORQUE

35Nm maximum. This will cause a zero shift less than 1% FS

SUPPLY VOLTAGE

Measured across supply connector plug
10Vdc for 0-100mV version
13-30Vdc for 0-5Vdc and 0-10Vdc versions
10-36Vdc for 4-20mA version

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc (amplified versions)

LOAD DRIVING CAPABILITY (4-20mA version only)

Calculate maximum load $R_s = (U_b - 10V) / 20mA$
e.g. with supply voltage load of 36Vdc, maximum load is 1300ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.25\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with titanium alloy.

OPERATING TEMPERATURE RANGE

Ambient: -40°C to $+85^\circ\text{C}$
Media: -50°C to $+125^\circ\text{C}$
Storage: $+5^\circ\text{C}$ to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -20°C to $+70^\circ\text{C}$ Typical thermal zero and span coefficients $\pm 0.02\%$ FS/ $^\circ\text{C}$

ATEX APPROVAL (4-20mA version only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28V$
 $I_i = 119mA$
 $P_i = 0.65W$
 $L_i = 0.1$
 $C_i = 74nF$
Temperature range = -20°C to $+70^\circ\text{C}$
Max. cable length = 45m

INSULATION RESISTANCE

100Mohm @50Vdc all electrical connection to case

PRESSURE CONNECTION

F250-C Autoclave fitting.
Thread type 9/16-18UNF-2B (female)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65.

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Lopress[®] LP1000

LOW PRESSURE TRANSDUCER



- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-50mbar TO 0-1000mbar
- OUTPUT OPTIONS 0-100mV, 0-5Vdc, 0-10Vdc OR 4-20mA
- ACCURACY 0.5% NLHR
- ROBUST STAINLESS STEEL CONSTRUCTION
- WIDE OPERATING TEMPERATURE RANGE
- ZERO SPAN & ADJUSTMENT

DESCRIPTION

LP1000 series now extends the pressure sensor technology into very low-pressure applications, with operating ranges down to 0-50mbar whilst still maintaining high performance. The advanced sensor design provides very low hysteresis and excellent long-term stability not normally achievable when measuring very low pressure.

The LP1000 offers a low cost solution for accurate measurement of very low pressures and is specifically designed for use in media such as air, non-corrosive gases and various liquids compatible with silicon. The stainless steel housing, fluorosilicone seals and silicon sensing element enables the product to maintain accurate performance and provide extremely good durability

Available in pressure ranges from 0-50mbar to 0-1000mbar and with electrical outputs of 0-100mV, 0-5Vdc, 0-10Vdc and 4-20mA.

Applications include laboratory and test, air and gas pressure monitoring, leak detection, low pressure liquid and hydrostatic pressure measurements.

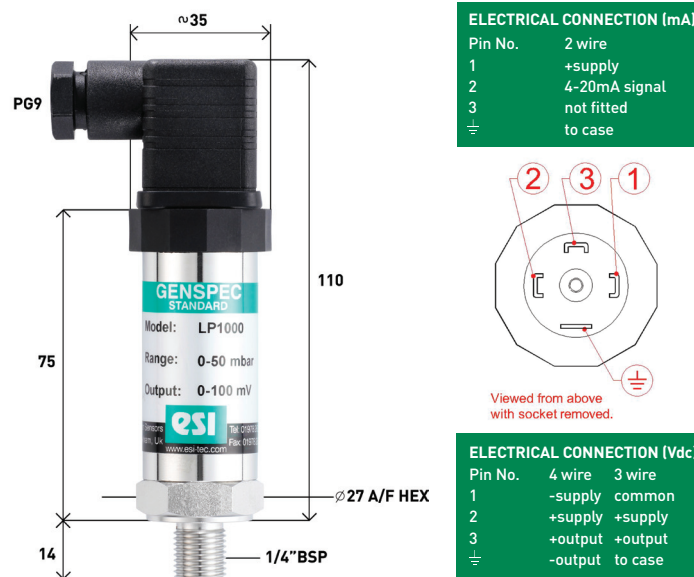


PRESSURE RANGES

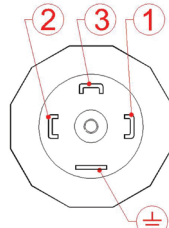
0 to 50mbar through to 0 to 1000mbar, see table below for list of all standard pressure ranges.

| Range (mbar) | Order Code | Range (mbar) | Order Code |
|--------------|------------|--------------|------------|
| 0-50 | 0050 | 0-500 | 0500 |
| 0-100 | 0100 | 0-1000 | 1000 |
| 0-250 | 0250 | | |

DIMENSIONS (in mm)



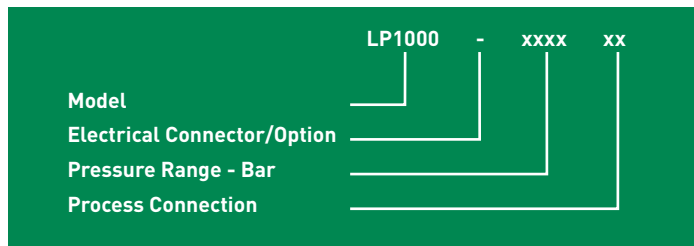
| ELECTRICAL CONNECTION (mA) | |
|----------------------------|---------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted |
| | to case |



Viewed from above with socket removed.

| ELECTRICAL CONNECTION (Vdc) | |
|-----------------------------|-----------------|
| Pin No. | 4 wire 3 wire |
| 1 | -supply common |
| 2 | +supply +supply |
| 3 | +output +output |
| | -output to case |

ORDERING INFORMATION



OUTPUT

0-100mV
0-5Vdc
0-10Vdc
4-20mA

ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
Cable outlet 1 metre screened

PROCESS CONNECTION

1/4" BSP male thread
1/2" BSP male thread
1/4" NPT male thread

EXAMPLE

Output signal 4-20mA
DIN43650 plug and socket
Pressure range 0-100mbar
Pressure connection 1/4" BSP male
Correct Part Number

For options not listed contact sales team

Model No.

LP1000
LP1001
LP1002
LP1003

Order Code

-
A

Order Code

AB
AC
AM

Order Code

LP1003
-
0100
AB
LP1003-0100AB

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%FS$.

4x for ranges 50mbar to 250mbar
3x for ranges 500mbar to 1000mbar

OUTPUT SIGNAL

0-100mV [nominal] (4 wire non-amplified)
Zero offset: $\pm 1mV/V$, Span tolerance: $\pm 30\%FSO$
0-5 Vdc, 0-10 Vdc (4 wire amplified)
Zero Offset and Span Setting $\pm 0.5\%FSO$
4-20mA (2 wire amplified)
Zero Offset and Span Setting $\pm 0.08mA$

ZERO OFFSET AND SPAN TOLERANCE

$\pm 0.08mA$
 $\pm 5\%FS$ adjustment with easy access trimming Potentiometers on amplified version only

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
10Vdc for 0-100mV version
13-30Vdc for 0-5Vdc and 0-10Vdc versions
10-36Vdc for 4-20mA version

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY (4-20mA version only)

Calculate Maximum load $Rs = (U_b - 13V) / 20mA$
E.g. with supply voltage load of 36Vdc, maximum load is 1150ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.50\% FS$ Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316 stainless steel, fluorosilicone and silicon.

OPERATING TEMPERATURE RANGE

Ambient/Media: $-20^{\circ}C$ to $+85^{\circ}C$
Storage: $+5^{\circ}C$ to $+40^{\circ}C$

INSULATION RESISTANCE

100Mohm @50Vdc all electrical connection to case

PRESSURE CONNECTION

1/4" BSP male (others on request)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650 rated IP65.

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PM1000 Series

PLUG-IN DISPLAY



- INDICATION RANGE -999 TO 9999
- PLUG ON TO ANY TRANSMITTER WITH 4-20mA OUTPUT
- FITS TO DIN 43650 CONNECTOR
- BRIGHT LED DISPLAY
- SET POINT OPTION
- EASY TO USE
- PROVIDES LOCALISED DISPLAY

DESCRIPTION

The PM1000 series is a 4 digit LED plug-on display for use with transmitters with 4-20mA 2 wire output and fitted with DIN43650 connector. It provides a local display for a multitude of applications.

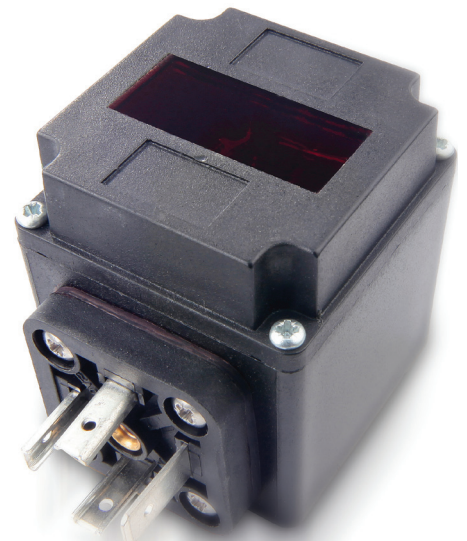
The plug-on display simply fits between the transmitter plug and connecting cable socket and is powered from the 4-20mA current loop signal of the transmitter. No additional power source is required.

Display settings are stored in non-volatile EEPROM, and can be easily modified through the menu using two programming buttons. Set-up parameters (zero, span, decimal point position, filter, and set-point level) can all be reprogrammed and stored and retained when power is removed. The display assembly inside the enclosure can be rotated through 90° steps, which will suit any mounting angle and simply installation.

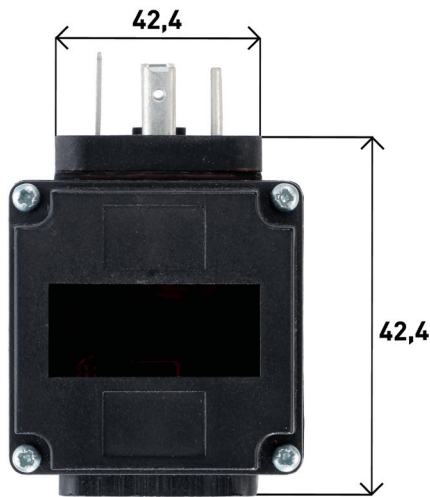
Model PM1000 is the standard version providing a 4 digit LED display. An integral open-drain switch output is provided on model PM1001. This can be programmed to open or close at a set-point level. The output can then be used to trigger an alarm or provided external controller.

Typical applications for the plug-on display include use on pressure, temperature, level, RH, or flow transmitters for local readout, alarm activation or control.

Adaptations for custom connectors can be made and available on request.



DIMENSIONS (in mm)



ELECTRICAL CONNECTION

| Pin No. | PM1000/2 | PM1001 |
|---------|--------------------------------------|----------------------------|
| 1 | +Supply | +Supply |
| 2 | 4-20mA Return | 4-20mA Return |
| 3 | Not connected | open drain (P type switch) |
| ⊥ | Connected through to transducer plug | |

ORDERING INFORMATION

OUTPUT

Standard plug-in display
Plug-in display with single set point

Model No.

PM1000
PM1001

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SPECIFICATION

DISPLAY

4 digit red LED display, 7mm digit height.

DISPLAY OUTPUT RANGE

-999 to 9999

INPUT SIGNAL

4-20mA, 2 wire current loop.

DISPLAY CALIBRATION

Factory set to display 4.00 to 20.00 for 4-20mA input.

ACCURACY

0.2% of full-scale input +/- 1 digit

POWER SUPPLY VOLTAGE:

Requires 5 V or less from loop supply.

ALLOWED LOOP CURRENT

Maximum 60mA. Above this automatic circuit protection is activated.

DISPLAY UPDATE RATE

300mS to 25.5 S, adjustable filter setting from menu.

OPEN DRAIN SWITCH OUTPUT

Model number PM1001 only: P type MOSFET switch. Maximum current source: 90mA, with automatic circuit protection.

PROGRAMMING

Via two press buttons, menu assisted. Access to the programming buttons is made by removing front cover.

MENU SELECTION

Zero adjustment: -999 to 9999
Span adjustment: 0 to 9999
Decimal point: 3 positions or off
Filter: 0.3 to 25.5 second
Over-range: On/Off Setpoint: -999 to 9999
Setpoint direction: Up/Down
Settings stored in Non-volatile EEPROM

TEMPERATURE RANGE

Operating: -10°C to + 60°C
Storage: + 5°C to + 40°C

CASE MATERIAL

Moulded ABS plastic, Red Acrylic display window, Nitrile seal.

INGRESS PROTECTION TYPE

Splash-proof, enclosure sealed to IP65

ELECTRICAL CONNECTION

Plugs directly onto transmitters with 4-20 mA output and right-angle DIN 43650 (3-pin +earth) connector plug.



PM8005/8006

SERIES PANEL METERS



- AC AND DC SUPPLY OPTIONS
- 5 DIGIT LED DISPLAY
- DIRECT ACCESS MENU FUNCTIONS FOR CALIBRATION, ALARM SETTING AND MORE
- LARGE RANGE OF OPTIONAL FUNCTIONS

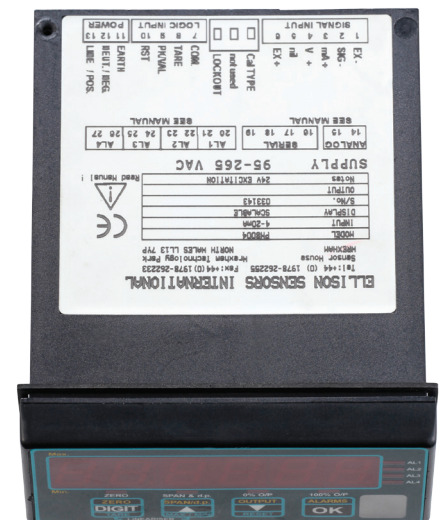
DESCRIPTION

The PM8000 Series digital panel meters are easy to set up and commission, whilst offering extremely high precision and long term reliability.

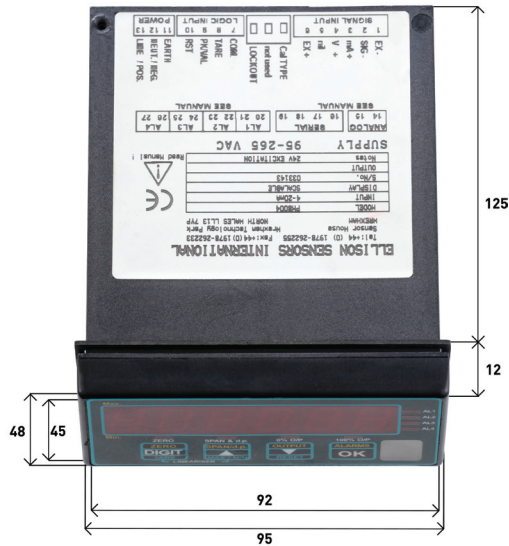
A MENU-FREE calibration system is employed with this panel meter design. This makes calibration and set-up of operating parameters very straightforward and radically simplifies this process compared with the usual menu arrangement used on most digital meters. The menu in this case is replaced by simple push buttons enabling zero, span, analogue output or alarms to be adjusted via a button on the front of the panel.

The 5 digit red LED display is standard, providing +/-30000 count resolution and an accuracy of 0.10% of range. Input signals include 4-20mA, 0-10V, 1-5V and 0-10mA. A 24V sensor excitation supply is provided and can be used to power an external transmitter current loop.

Optional features include; AC or DC excitation, 4-20mA or 0-10Vdc analogue output, zero, two or four alarms/relays, various serial data outputs. Please contact us with your specifications and we will advise you on the suitable model for your application.



DIMENSIONS MM



ORDERING INFORMATION

| Model | Excitation | Analogue Output | Alarm | Serial Output | Power Supply | Analogue Output | Number of Alarms | Serial Output |
|-------|------------|-----------------|-------|---------------|--------------|-----------------|------------------|---------------|
|-------|------------|-----------------|-------|---------------|--------------|-----------------|------------------|---------------|

Standard 5 Digit Panel Meters Without Features

| | | | | | | | | |
|--------|-------|--|--|--|-----------|----|----|----|
| PM8005 | - AC | | | | 95-265Vac | No | No | No |
| PM8005 | - VDC | | | | 11-30Vdc | No | No | No |

Panel Meters With Options - AC Mains Supply

| | | | | | | | | |
|--------|------|-----|-----|-----|-----------|---------|----|-------|
| PM8006 | - AC | - I | | | 95-265Vac | 4-20mA | No | No |
| PM8006 | - AC | - I | AL2 | | 95-265Vac | 4-20mA | 2 | No |
| PM8006 | - AC | - I | AL4 | | 95-265Vac | 4-20mA | 4 | No |
| PM8006 | - AC | - I | AL2 | 232 | 95-265Vac | 4-20mA | 2 | RS232 |
| PM8006 | - AC | - I | AL4 | 232 | 95-265Vac | 4-20mA | 4 | RS232 |
| PM8006 | - AC | - I | AL2 | 485 | 95-265Vac | 4-20mA | 2 | RS485 |
| PM8006 | - AC | - I | AL4 | 485 | 95-265Vac | 4-20mA | 4 | RS485 |
| PM8006 | - AC | - V | | | 95-265Vac | 0-10Vdc | No | No |
| PM8006 | - AC | - V | AL2 | | 95-265Vac | 0-10Vdc | 2 | No |
| PM8006 | - AC | - V | AL4 | | 95-265Vac | 0-10Vdc | 4 | No |
| PM8006 | - AC | - V | AL2 | 232 | 95-265Vac | 0-10Vdc | 2 | RS232 |
| PM8006 | - AC | - V | AL4 | 232 | 95-265Vac | 0-10Vdc | 4 | RS232 |
| PM8006 | - AC | - V | AL2 | 485 | 95-265Vac | 0-10Vdc | 2 | RS485 |
| PM8006 | - AC | - V | AL4 | 485 | 95-265Vac | 0-10Vdc | 4 | RS485 |
| PM8006 | - AC | - | AL2 | | 95-265Vac | No | 2 | No |
| PM8006 | - AC | - | AL4 | | 95-265Vac | No | 4 | No |
| PM8006 | - AC | - | AL2 | 232 | 95-265Vac | No | 2 | RS232 |
| PM8006 | - AC | - | AL4 | 232 | 95-265Vac | No | 4 | RS232 |
| PM8006 | - AC | - | AL2 | 485 | 95-265Vac | No | 2 | RS485 |
| PM8006 | - AC | - | AL4 | 485 | 95-265Vac | No | 4 | RS485 |
| PM8006 | - AC | - | | 232 | 95-265Vac | No | No | RS232 |
| PM8006 | - AC | - | | 485 | 95-265Vac | No | No | RS485 |

Panel Meters With Options - DC Supply

| | | | | | | | | |
|--------|-------|-----|-----|-----|----------|--------|----|-------|
| PM8006 | - VDC | - I | | | 11-30Vdc | 4-20mA | No | No |
| PM8006 | - VDC | - I | AL2 | | 11-30Vdc | 4-20mA | 2 | No |
| PM8006 | - VDC | - I | AL4 | | 11-30Vdc | 4-20mA | 4 | No |
| PM8006 | - VDC | - I | AL2 | 232 | 11-30Vdc | 4-20mA | 2 | RS232 |
| PM8006 | - VDC | - I | AL4 | 232 | 11-30Vdc | 4-20mA | 4 | RS232 |
| PM8006 | - VDC | - I | AL2 | 485 | 11-30Vdc | 4-20mA | 2 | RS485 |

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SPECIFICATION

DISPLAY

High intensity red LED display, 14.2mm digit height.

RESOLUTION

+/-30000 counts maximum over full range, with 5 Digit Display (-20000 to +99999)

INPUT RESISTANCE

33ohms for current input, 1.1Mohms for voltage

FILTERING / SMOOTHING

Selectable time constant of 0 to 5 seconds

ACCURACY

0.1% of reading +/-2 counts
TEMPERATURE STABILITY:
100 ppm/°C for span, 50/°C for zero

OUTPUT FOR EXTERNAL SENSORS

24Vdc

ACCURACY OF THE EXCITATION SUPPLY

+/-20% accuracy.

CURRENT CAPACITY OF THE EXCITATION SUPPLY

30mA for 24V

POWER SUPPLY

Optional 95 to 265 Vac, 11 to 30Vdc or 110-240AC

CURRENT CONSUMPTION

8VA maximum

TEMPERATURE RANGE

Operating: 0°C to + 50°C
Storage: -10°C to + 70°C

HUMIDITY

90% RH maximum at 40°C, non-condensing

ELECTROMAGNETIC-COMPATIBILITY

Emissions EN61000-6-4
Immunity EN61000-6-2
Certification CE marked

ELECTRICAL CONNECTION

4 way detachable screw terminal connector for conductor size 0.5 to 1.5mm

BEZEL SIZE

96mm wide x 48mm high (1/8 DIN)

CUTOUT SIZE

92mm wide x 45 mm high

DEPTH BEHIND PANEL

125 mm minimum required

WEIGHT

300 grams typically
CASE MATERIAL:
UL 94V0 rated black ABS

ALARM RELAYS RELAY VOLTAGE RATING

250Vac, 24Vdc

ALARM HYSTERESIS

Settable from 0 to 9998 counts

ALARM SET-POINT STABILITY

+/- 100 ppm/°C typical

ALARM SPEED OF RESPONSE

15mS typical





Protran® PR3100

STANDARD PRESSURE TRANSMITTER



- CERAMIC THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-1bar TO 0-600bar
- 4-20mA TWO WIRE OUTPUT AS STANDARD (2mV/V, 0-20mA, 0-5Vdc or 0-10Vdc OPTIONAL)
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- ALL STAINLESS STEEL HOUSING
- ALTERNATIVE PROCESS THREADS AVAILBLE
- AVAILABLE IN GAUGE OR ABSOLUTE REFERENCE

DESCRIPTION

The PR3100 series pressure transmitters have been designed to meet the requirements of the majority of industrial applications of pressure measurement requiring an output of 4-20mA.

Robustly constructed from stainless steel this range of pressure transmitters incorporates the latest strain gauge technology together with a custom IC amplifier offering excellent stability and accuracy over a long service life. Output options include 2mV/V, 0-20mA, 0-5Vdc and 0-10Vdc. Electrical connection is via a detachable DIN connector allowing easy access to zero and span adjustment. Standard pressure connection is 1/2" BSP. Optional 1/4" BSP, 1/4" BSPT, 1/2" BSPT, 1/4" NPT, 1/2" NPT are also available on request. In addition PR3100 is available in corrosion resistant materials e.g. Hastalloy C, Inconel etc. Pressure ranges available from 0-1bar to 0-600bar.

Typical applications for this series of standard transmitters includes, mechanical and civil engineering installations, process plant, production test facilities, water resources, power generation and any application on fluid or gas requiring a stable repeatable and accurate output signal of 4-20mA.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

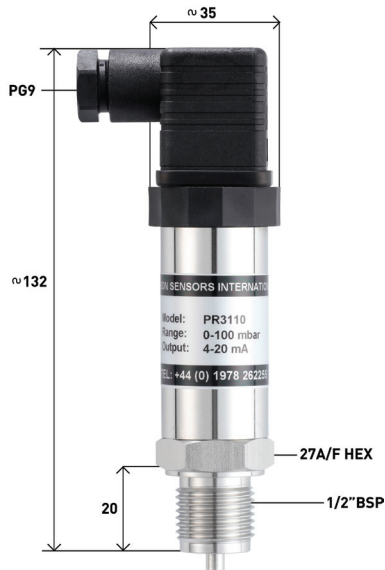


PRESSURE RANGES

0 to 1bar through to 600bar, see table below for list of all standard pressure ranges.

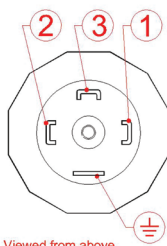
| Range (bar) | Order Code | Range (bar) | Order Code | Abs range (bar) | Order Code |
|-------------|------------|-------------|------------|-----------------|------------|
| 0-1 Vac | V001 | 0-40 | 0040 | 0-1 | 001A |
| 0-1 | 0001 | 0-60 | 0060 | 0-1.6 | 1.6A |
| 0-1.6 | 01.6 | 0-100 | 0100 | 0-2.5 | 2.5A |
| 0-2.5 | 02.5 | 0-160 | 0160 | 0-4 | 004A |
| 0-4 | 0004 | 0-250 | 0250 | 0-6 | 006A |
| 0-6 | 0006 | 0-400 | 0400 | 0-10 | 010A |
| 0-10 | 0010 | 0-600 | 0600 | 0-16 | 016A |
| 0-16 | 0016 | 0-700 | 0700 | 0-25 | 025A |
| 0-25 | 0025 | 0-1000 | 1000 | | |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION (mA)

| Pin No. | 2 wire |
|---------|---------------|
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted |
| ⊥ | to case |

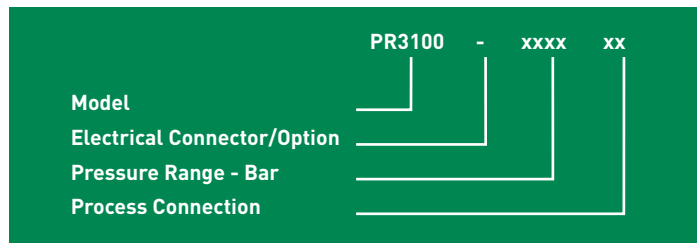


Viewed from above with socket removed.

ELECTRICAL CONNECTION (Vdc)

| Pin No. | 4 wire | 3 wire |
|---------|---------|---------|
| 1 | -supply | +supply |
| 2 | +supply | -supply |
| 3 | +output | +output |
| ⊥ | -output | to case |

ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

- DIN 43650 plug and socket 4-20mA Output
- Cable outlet 1 metre screened 4-20mA Output
- DIN 43650 plug and socket 0-5Vdc Output
- DIN 43650 plug and socket 0-10Vdc Output

Order Code

-
- A
- B
- C

PROCESS CONNECTION

- 1/4" BSP male thread
- 1/2" BSP male thread
- 1/4" NPT male thread

Order Code

- AB
- AC
- AM

EXAMPLE

- Base Model
- DIN 43650 plug and socket 4-20mA Output
- Pressure range 0-16bar
- Pressure connection 1/2" BSP male

Order Code

- PR3100
-
- 0016
- AC

Correct Part Number

For options not listed contact sales team

PR3100-0016AC

SPECIFICATION

PRESSURE REFERENCE

Gauge or Absolute

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
2x for ranges 1bar to 400bar
1.5x for 600bar

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.
Optional outputs available are
0-5Vdc (4 wire),
0-10Vdc (4 wire),
2mV/V (4wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA
 $\pm 0.5\%$ FS adjustment with easy access trimming potentiometers on amplified version only.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
13-36Vdc for 4-20mA versions
5-15Vdc for 2mV/V
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY (4-20mA version only)

Calculate Maximum load $R_s = (U_b - 13V) / 20mA$
E.g. with supply voltage load of 36vdc, maximum load is 1150ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 17/4PH and 303 stainless steel for ranges over 20bar, or alumina and 303 stainless steel for ranges 20bar and below.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+85^\circ\text{C}$
Storage: $+5^\circ\text{C}$ to $+40^\circ\text{C}$

ATEX APPROVAL(4-20mA version only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28V$
 $I_i = 119mA$
 $P_i = 0.65W$
 $L_i = 0.1$
 $C_i = 74Nf$
Temperature range = -20°C to $+70^\circ\text{C}$
Max. cable length = 45m

PRESSURE CONNECTION

1/2" BSP male (others on request)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65.
Option: flying lead with optional cable length

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Protran[®] PR3110

LOW PRESSURE TRANSMITTER



- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-100mbar TO 0-900mbar
- 4-20mA TWO WIRE OUTPUT AS STANDARD (0-5Vdc, 0-10Vdc OPTIONAL)
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- ALL STAINLESS STEEL HOUSING
- AVAILABLE IN GAUGE AND ABSOLUTE REFERENCE

DESCRIPTION

The PR3110 series pressure transmitters have been designed to meet the requirements of the majority of industrial applications where accurate low pressure measurement is required.

Robustly constructed from stainless steel this range of pressure transmitters incorporates the latest silicon strain gauge technology together with a custom IC amplifier offering excellent stability and accuracy over a long service life.

Typical applications for this series of standard transmitters includes, mechanical and civil engineering installations, process plant, production test facilities, water resources, power generation and any application on fluid or gas requiring a stable repeatable and accurate output signal of 4-20mA. Outputs options include 0-20mA, 0-5Vdc and 0-10Vdc. Electrical connection is via a detachable DIN connector allowing easy access to zero and span adjustment. Standard pressure connection is 1/2" BSP. Optional 1/4" BSP, 1/4" BSPT, 1/2" BSPT, 1/4" NPT, 1/2" NPT are also available on request. Pressure ranges available from 0-100mbar to 0-900mbar.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).



PRESSURE RANGES

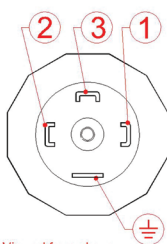
0-100mbar through to 900mbar, see table below for list of all standard pressure ranges.

| Range (mbar) | Order Code | Range (mbar) | Order Code | Abs Range (mbar) | Order Code |
|--------------|------------|--------------|------------|------------------|------------|
| 0-100 | 00.1 | 0-500 | 00.5 | 0-500 | 0.5A |
| 0-200 | 00.2 | 0-600 | 00.6 | 0-600 | 0.6A |
| 0-250 | 0.25 | 0-750 | 0.75 | 0-750 | .75A |
| 0-300 | 00.3 | 0-900 | 00.9 | 0-900 | 0.9A |
| 0-400 | 00.4 | | | | |

DIMENSIONS (in mm)



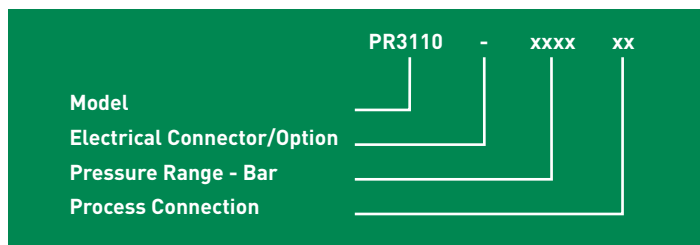
| ELECTRICAL CONNECTION (mA) | |
|----------------------------|---------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted |
| ⊥ | to case |



Viewed from above with socket removed.

| ELECTRICAL CONNECTION (Vdc) | |
|-----------------------------|-----------------|
| Pin No. | 4 wire 3 wire |
| 1 | -supply +supply |
| 2 | +supply -supply |
| 3 | +output +output |
| ⊥ | -output to case |

ORDERING INFORMATION



OUTPUT

4-20mA
0-100mV
0-5Vdc
0-10Vdc

Model No.

PR3110
PR3111
PR3112
PR3113

ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
Cable outlet 1 metre screened 4-20mA Output

Order Code

-
A

PROCESS CONNECTION

1/4" BSP male thread
1/2" BSP male thread
1/4" NPT male thread

Order Code

AB
AC
AM

EXAMPLE

Base Model
DIN 43650 plug and socket 4-20mA Output
Pressure range 0-250mbar
Pressure connection 1/2" BSP male

Order Code

PR3110
-
0.25
AC

Correct Part Number

For options not listed contact sales team

Order Code

PR3110-0.25AC

SPECIFICATION

PRESSURE REFERENCE

Gauge or absolute

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
6x for 100mbar
3x for ranges 200mbar to 900mbar

OUTPUT SIGNAL

4-20mA (2 wire configuration) as standard.
Optional outputs available are:
0-5Vdc (3 or 4 wire)
0-10Vdc (3 or 4 wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA
 $\pm 0.5\%$ FS adjustment with easy access trimming potentiometers on amplified version only.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
13-36Vdc for 4-20mA versions
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY (4-20mA version only)

Calculate Maximum load $R_s = (U_b - 13V) / 20mA$
E.g. with supply voltage load of 36Vdc, maximum load is 1150ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316L stainless steel and Nitrile.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+85^\circ\text{C}$
Storage: $+5^\circ\text{C}$ to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

$\pm 2\%$ FS total error band for -20°C to $+70^\circ\text{C}$
Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^\circ\text{C}$

ATEX APPROVAL (4-20mA version only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28V$
 $I_i = 119mA$
 $P_i = 0.65W$
 $L_i = 0.1$
 $C_i = 62nF$
Temperature range = -20°C to $+70^\circ\text{C}$
Max. cable length = 105m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4
Immunity: EN61000-6-2

PRESSURE CONNECTION

1/2" BSP male (others on request)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65.
Flying lead with optional cable length version available.

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Protran® PR3200

DIFFERENTIAL PRESSURE TRANSMITTER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 500mbarDP TO 200barDP
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION
- WET/WET OPERATION
- UNI AND BI-DIRECTIONAL OPERATION
- HIGH PRESSURE DIFFERENTIAL RANGES AVAILABLE

DESCRIPTION

The PR3200 differential pressure transmitter uses two titanium alloy pressure sensors, offering high stability and performance with true wet/wet operation, suitable for use with all liquids and gases compatible with stainless steel and titanium.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

Applications include flow measurement with orifice plates and mass flow meters, plus static differential pressure measurement and control in combustion chambers, also condition monitoring and filter monitoring in high pressure hydraulic systems or any application on liquid or gas requiring reliable differential pressure measurement. Electrical connector is DIN plug and socket. Access to zero and span adjustment is by removing top plate for easy on-site adjustment. Pressure connection as standard is via two 1/4" BSP female connections. Mounting plate is available for bulkhead mounting. Ranges available from 0-500mbarDP to 0-200barDP

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

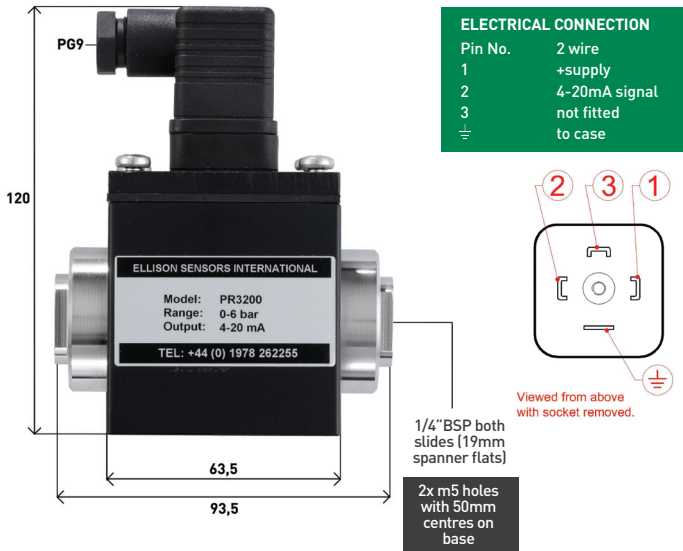


PRESSURE RANGES

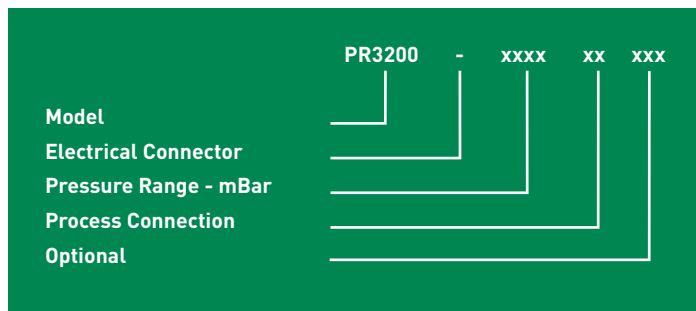
500mbar to 200bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-0.5 | 00.5 | 0-20 | 0020 |
| 0-1 | 0001 | 0-40 | 0040 |
| 0-2 | 0002 | 0-100 | 0100 |
| 0-4 | 0004 | 0-200 | 0200 |
| 0-10 | 0010 | | |

DIMENSIONS (in mm)



ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

| | |
|--|----|
| DIN 43650 plug and socket 4-20mA Output | - |
| DIN 43650 plug and socket 0-5Vdc Output | A |
| DIN 43650 plug and socket 0-10Vdc Output | B |
| DIN 43650 plug and socket 4-20mA Output ATEX | EX |

PROCESS CONNECTION

| | |
|------------------------|----|
| 1/4" BSP female thread | AR |
| 1/4" BSP female thread | AS |

EXAMPLE

| | |
|---|--------|
| Base Model | PR3200 |
| DIN 43650 plug and socket 4-20mA Output | - |
| Pressure range 0-100 bar DP | 0100 |
| Pressure connection 1/4" BSP female | AR |

Correct Part Number

For options not listed contact sales team

Order Code

-
A
B
EX

Order Code

AR
AS

Order Code

PR3200
-
0100
AR

PR3200-0100AR

SPECIFICATION

PRESSURE REFERENCE

Differential pressure (DP) only.

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below without any damage or change in calibration above $\pm 0.5\%$ FS. 1.5x Maximum static line pressure for all ranges.

COMMON MODE (STATIC LINE PRESSURE)

| DP Pressure Range | Maximum Static Line Pressure |
|-------------------|------------------------------|
| 0-0.5 | 2.5 bar |
| 0-1 | 4 bar |
| 0-2 | 10 bar |
| 0-4 | 16 bar |
| 0-6 | 25 bar |
| 0-10 | 40 bar |
| 0-20 | 60 bar |
| 0-40 | 160 bar |
| 0-100 | 400 bar |
| 0-200 | 600 bar |

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.

ZERO OFFSET AND SPAN TOLERANCE

± 0.16 mA
 $\pm 5\%$ FS zero adjustment with easy access trimming potentiometers.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug. 10-36Vdc for 4-20mA versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316 stainless steel and titanium.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+85^{\circ}\text{C}$
Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

TEMPERATURE EFFECTS

$\pm 3.0\%$ FS TEB -20°C to $+70^{\circ}\text{C}$
Typical thermal zero and span coefficients $\pm 0.05\%$ FS/ $^{\circ}\text{C}$

ATEX APPROVAL (4-20mA versions only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28\text{V}$
 $I_i = 119\text{mA}$
 $P_i = 0.65\text{W}$
 $L_i = 0.1$
 $C_i = 74\text{Nf}$
Temperature range = -20°C to $+70^{\circ}\text{C}$
Max. cable length = 45m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4
Immunity: EN61000-6-2

PRESSURE CONNECTION

1/4" BSP Female (others available on request)

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65

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Protran® PR3202

DIFFERENTIAL PRESSURE TRANSMITTER



- PIEZORESISTIVE SENSOR TECHNOLOGY
- DP PRESSURE RANGES 5mbar TO 1000mbar
- ULTRA LOW RANGES ON REQUEST
- 4-20mA TWO WIRE OUTPUT AS STANDARD (0-5Vdc, 0-10Vdc OPTIONAL)
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- R.F.I. SHIELDED

DESCRIPTION

Our low range air differential pressure transmitter provides an accurate solution for low pressure sensing with ranges available from 0-5mbar to 0-1000mbarDP. Incorporating the latest silicon sensor and electronics technologies, these 4-20mA transmitters are fully temperature compensated for unrivalled stability at very low pressure.

Housed in an RFI shielded wall mountable box for EMC protection, these transmitters combine precise measurement for control at very low pressures, with the robustness and flexibility for industrial and commercial installations. An optional heavy-duty aluminium die-cast housing is available for the harshest environments.

Applications include flow measurement with pitot tubes, orifice plates and mass flow meters, plus static pressure measurement and control, in combustion chambers and clean rooms, or any application on air or gas requiring reliable ultra low differential pressure measurement. Access to screw terminal electrical connections and to zero span potentiometers is by removing the front covers, making installation and on-site adjustment. Cable entry is through a compression seal gland, or optional M20 conduit fitting. Standard pressure connections are to push-on hose fittings for 4mm ID hose. Ranges available from 0-5mbar to 0-1000mbar in DP, gauge reference or bi-directional. Ultra low pressure ranges from 0-25 Pa are also available.

An optional ATEX/IECEX certified version of this product is available (in ranges 0-5mbar and above only) approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).



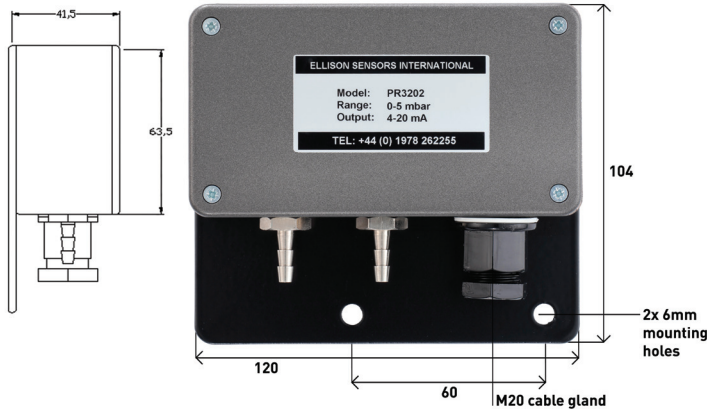
PRESSURE RANGES

0-5mbar through to 0-1000mbar, see table below for list of all standard pressure ranges.

| Range (mbar) | Order Code | Range (mbar) | Order Code |
|--------------|------------|--------------|------------|
| 0-5 | 0005 | 0-80 | 0080 |
| 0-10 | 0010 | 0-100 | 0100 |
| 0-20 | 0020 | 0-250 | 0250 |
| 0-30 | 0030 | 0-500 | 0500 |
| 0-50 | 0050 | 0-1000 | 1000 |

*Ultra low pressure ranges from 25pa available. Please contact the sales team.

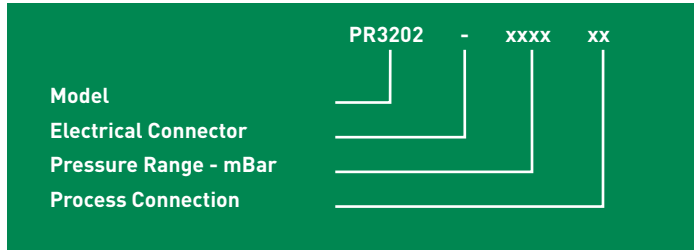
DIMENSIONS (in mm)



ELECTRICAL CONNECTION

| Pin No. | 2 wire |
|---------|---------------|
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | earth/case |

ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

| Option | Order Code |
|---|------------|
| PG7 cable gland 4-20mA output | - |
| PG7 cable gland 4-20mA output Aluminium Housing | A |
| PG7 cable gland 4-20mA output. ATEX certified | EX |

PROCESS CONNECTION

| Option | Order Code |
|--------------------------------------|------------|
| 4.8mm Tube Connection (push-on stem) | AW |
| 1/4" BSP male | AB |

EXAMPLE

| Option | Order Code |
|---|------------|
| Base Model | PR3202 |
| DIN 43650 plug and socket 4-20mA Output | - |
| Pressure range 0-10mbar | 0010 |
| Pressure connection 4.8mm tube connection | AW |

Correct Part Number

For options not listed contact sales team

Order Code

| |
|----|
| - |
| A |
| EX |

Order Code

| |
|----|
| AW |
| AB |

Order Code

| |
|--------|
| PR3202 |
| - |
| 0010 |
| AW |

PR3202-0010AW

SPECIFICATION

PRESSURE REFERENCE

Differential for all ranges.

OVERPRESSURE

Unidirectional pressure can exceed rated range up to the proof pressure limits shown below with no damage or change in calibration above $\pm 0.5\%$ FS.
For ranges 5mbar and 10mbar Proof pressure: 25mbar maximum
For ranges 20mbar and 100mbar Proof pressure: 200mbar maximum
For ranges 150mbar and 1000mbar Proof pressure: 1200mbar maximum

COMMON MODE PRESSURE

For ranges 5mbar and 10mbar: 375mbar maximum equal to both ports
For ranges 20mbar and 1000mbar: 2 bar maximum equal to both ports

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard. Optional outputs available are:
0-5 Vdc (3 wire)
0-10 Vdc (3 wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.16 mA
 $\pm 5\%$ FS zero adjustment with easy access trimming potentiometers.

SUPPLY VOLTAGE

Measured across supply terminals on connector.
13-36Vdc for 4-20mA versions
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY (4-20mA version only)

Calculate Maximum load $R_s = (U_b - 13V) / 20mA$
E.g. with supply voltage load of 36Vdc, maximum load is 1150ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS. Typical max. Best fit straight line.

PRESSURE MEDIA

Dry non-corrosive gas only

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+70^\circ\text{C}$
Storage: $+5^\circ\text{C}$ to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

$\pm 2.0\%$ FS total error band for 0°C to $+50^\circ\text{C}$
Typical thermal zero and span coefficients $\pm 0.04\%$ FS/ $^\circ\text{C}$

ATEX APPROVAL (4-20mA versions only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28V$
 $I_i = 119mA$
 $P_i = 0.65W$
 $L_i = 0.1$
 $C_i = 66nF$
Max. cable length = 85m

PRESSURE CONNECTION

4mm I.D. hose (others on request)

ELECTRICAL CONNECTION

Screw terminals for conductor sizes 0.2-2.0mm² are located beneath the enclosure lid. Cable entry is through an IP66 cable gland with compression seal for cable sizes 4-8mm. Optional M20 conduit fitting available.

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Protran® PR3400

SUBMERSIBLE DEPTH PRESSURE TRANSMITTER



- CERAMIC THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-5mWG TO 0-500mWG
- 4-20mA TWO WIRE OUTPUT AS STANDARD (0-5Vdc, 0-10Vdc OPTIONAL)
- OPTIONAL ATEX APPROVED VERSION
- ALL STAINLESS STEEL HOUSING
- NYLON OVER TUBE FOR TROUBLE FREE VENTING

DESCRIPTION

The PR3400 submersible depth and level transmitter has been designed for the accurate measurement of the depth and level of fluids. Standard version has output signal of 4-20mA, two wire. Options include; outputs of 0-5Vdc and 0-10Vdc, remote amplifier for surface adjustment of zero and span.

For submersion in aggressive or corrosive liquids the PR3400 is available in specialist materials such as Inconel 625, Hastalloy C, titanium and plastic. The standard depth transmitter is fitted with a Delrin® nose cone to reduce sludge build-up. The nose cone connection may be replaced by a variety of threaded process connections common in sub-sea requirements. ESI has many options available for high pressure and hydraulic sub-sea applications. Standard applications include reservoir and borehole level monitoring, water mains pressure metering, power level and outlet pressure on submersible pumps. Electrical connection is via a screened cable protected by a tough nylon pressure tight sheath, which allows excellent trouble-free venting to the surface.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).



PRESSURE RANGES

0 to 5mWG through to 0 to 500mWG, see table below for list of all standard pressure ranges.

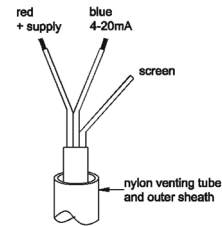
| Range (mWG) | Order Code | Range (mWG) | Order Code |
|-------------|------------|-------------|------------|
| 0-5 | 0005 | 0-80 | 0080 |
| 0-10 | 0010 | 0-100 | 0100 |
| 0-20 | 0020 | 0-150 | 0150 |
| 0-30 | 0030 | 0-200 | 0200 |
| 0-50 | 0050 | 0-500 | 0500 |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION

Red + supply
Blue 4-20mA signal
Screen to case



cable termination

ORDERING INFORMATION

| Model | Electrical Connector | Pressure Range - mWG | Process Connection | Cable Length |
|--------|----------------------|----------------------|--------------------|--------------|
| PR3400 | - | xxxx | xx | -xxx |

ELECTRICAL CONNECTION/OPTION

Nylon sheathed vented cable, 4-20mA 2 wire
Nylon sheathed vented cable, 0-5Vdc 4 wire
Nylon sheathed vented cable, 0-10Vdc 4 wire
Nylon sheathed vented cable, 4-20mA 2 wire ATEX

Order Code

-
A
B
EX

PROCESS CONNECTION

Protective nose cone

Order Code

AX

EXAMPLE

Base Model
Nylon sheathed vented cable, 4-20mA 2 wire
Pressure range 0-10mWG
Protective nose cone
Cable length 10 metres

Order Code

PR3400
-
0010
AX
010

Correct Part Number

For options not listed contact sales team

PR3400-0010AX-010

SPECIFICATION

PRESSURE REFERENCE

Vented gauge

OVERPRESSURE

Pressure can be exceeded by up to 1.6x full scale range with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20mA (2 wire configuration).

ZERO OFFSET AND SPAN TOLERANCE

± 0.16 mA

SUPPLY VOLTAGE

13-36Vdc

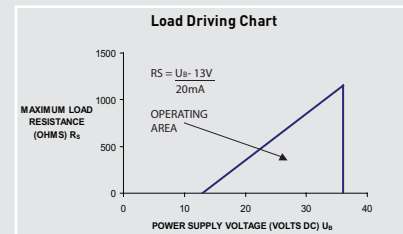
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY

For power supply voltages 13-36Vdc



ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 303 or 316L stainless steel housing, alumina diaphragm, nylon over tube and Nitrile o-ring seal.

OPERATING TEMPERATURE RANGE

Operating: -20°C to $+60^{\circ}\text{C}$
Media must not freeze around sensor
Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

TEMPERATURE EFFECTS

$\pm 2.0\%$ FS total error band for -20°C to $+60^{\circ}\text{C}$
Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^{\circ}\text{C}$

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28\text{V}$
 $I_i = 119\text{mA}$
 $P_i = 0.65\text{W}$
 $L_i = 0.1$
 $C_i = 62\text{Nf}$
Temperature range = -20°C to $+70^{\circ}\text{C}$
Max. cable length = 105m

PRESSURE CONNECTION

Delrin® nose cone with radial pressure inlets.

ELECTRICAL CONNECTION

Screened cable in pressure tight, flexible nylon sheath. Cable conductor size 7/0.20mm2(24awg), resistance 8.9ohms/100metre (x2).

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Protran[®] PR3440

SUBMERSIBLE DEPTH PRESSURE TRANSMITTER



DESCRIPTION

The PR3440 submersible depth and level transmitter has been designed for the accurate measurement of the depth and level of fluids. Standard version has output signal of 4-20mA, two wire. Options include; outputs of 0-5Vdc and 0-10Vdc.

For submersion in aggressive or corrosive liquids the PR3440 is available in specialist materials such as Inconel 625, Hastalloy C, titanium and plastic. The standard depth transmitter is fitted with a stainless steel nose cone to reduce sludge build-up. The nose cone connection may be replaced by a variety of threaded process connections common in sub-sea requirements. Standard applications include reservoir and borehole level monitoring, water mains pressure metering, power level and outlet pressure on submersible pumps. Electrical connection is via a screened cable protected by a tough nylon pressure tight sheath, which allows excellent trouble-free venting to the surface.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

- CERAMIC THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 10mWG
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- OPTION ATEX APPROVED VERSION
- PRESSURE TIGHT CABLE SHEATH FOR TROUBLE-FREE VENTING



PRESSURE RANGES

0-10mWG through to 0-500mWG, see table below for list of all other standard pressure ranges.

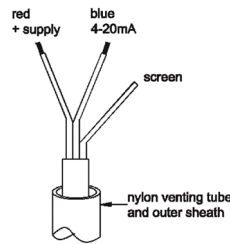
| Range (mWG) | Order Code | Range (mWG) | Order Code |
|-------------|------------|-------------|------------|
| 0-10 | 0010 | 0-100 | 0100 |
| 0-20 | 0020 | 0-150 | 0150 |
| 0-30 | 0030 | 0-250 | 0250 |
| 0-50 | 0050 | 0-500 | 0500 |
| 0-80 | 0080 | | |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION

Red + supply
Blue 4-20mA signal
Screen to case



cable termination

ORDERING INFORMATION

| | PR3440 | - | xxxx | xx | -xxx |
|----------------------|---|---|------|----|------|
| Model | [Diagram showing PR3440 as the base model] | | | | |
| Electrical Connector | [Diagram showing - as the electrical connector] | | | | |
| Pressure Range - mWG | [Diagram showing xxxx as the pressure range] | | | | |
| Process Connection | [Diagram showing xx as the process connection] | | | | |
| Cable Length | [Diagram showing -xxx as the cable length] | | | | |

ELECTRICAL CONNECTION/OPTION

- Nylon sheathed vented cable, 4-20mA 2 wire
- Nylon sheathed vented cable, 0-5Vdc 4 wire
- Nylon sheathed vented cable, 0-10Vdc 4 wire
- Nylon sheathed vented cable, 4-20mA 2 wire ATEX

PROCESS CONNECTION

- Protective nose cone

EXAMPLE

- Base Model
- Nylon sheathed vented cable, 4-20mA 2 wire
- Pressure range 0-20mWG
- Protective nose cone
- Cable length 25 metres

Correct Part Number

For options not listed contact sales team

DISCLAIMER : ESI Technology Ltd operates a policy of continuous product development. We reserve the right to change specification without prior notice. All products manufactured by ESI Technology Ltd are calibrated using precision calibration equipment with traceability to international standards.

Order Code

-
- A
- B
- EX

Order Code

- AX

Order Code

- PR3440
-
- 0020
- AX
- 025

PR3440-0020AX-025

SPECIFICATION

PRESSURE REFERENCE

Vented gauge

OVERPRESSURE

Pressure can be exceeded by up to 2x full scale range with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20 mA (2 wire configuration).

ZERO OFFSET AND SPAN TOLERANCE

± 0.16 mA

SUPPLY VOLTAGE

13-36Vdc

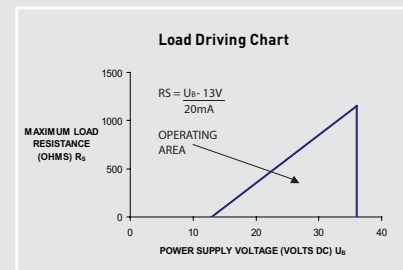
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY

For power supply voltages 13-36Vdc



ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 1.00\%$ FS Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316L stainless steel housing, alumina diaphragm, nylon cable sheath and nitrile o-ring seal.

OPERATING TEMPERATURE RANGE

Operating: -20°C to $+60^{\circ}\text{C}$
Media must not freeze around sensor
Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

TEMPERATURE EFFECTS

$\pm 2.0\%$ FS total error band for -20°C to 60°C .
Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^{\circ}\text{C}$

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135 $^{\circ}\text{C}$ Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28\text{V}$
 $I_i = 119\text{mA}$
 $P_i = 0.65\text{W}$
 $L_i = 0.1$
 $C_i = 62\text{Nf}$
Temperature range = -20°C to $+70^{\circ}\text{C}$
Max. cable length = 105m

ELECTROMAGNETIC-COMPATIBILITY

Emissions EN61000-6-4
Immunity EN61000-6-2
Certification CE marked

PRESSURE CONNECTION

Stainless Steel nose cone with radial pressure inlets.

ELECTRICAL CONNECTION

Screened cable in pressure tight flexible nylon sheath. Cable conductor size 7/0.20mm²(24awg), resistance 8.9ohms/100metre (x2).





Protran® PR3441

SUBMERSIBLE DEPTH PRESSURE TRANSMITTER



- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-1mWG
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION
- 316L STAINLESS STEEL CONSTRUCTION
- HIGH STRENGTH MOULDED POLYURETHANE CABLE WITH VENT TUBE

DESCRIPTION

The PR3441 submersible transmitter has been designed for the accurate measurement of the depth and level of liquids in many applications.

Standard output signal is 4-20mA two wire with supply range 13-36Vdc. Electrical connection is via a high strength moulded polyurethane cable with integral tube for excellent trouble-free venting to the surface atmosphere. The standard depth transmitter is fitted with a stainless steel nose cone with radial inlet holes to prevent sludge build-up. The PR3441 transmitter is suitable for depth and level measurement in boreholes 25mm diameter or greater.

Applications include borehole level and reservoir level monitoring, water mains pressure measurement in inspection chambers, power level and outlet pressure measurement on submersible pumps.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).



001

PRESSURE RANGES

0 to 1mWG through to 0 to 500mWG, see table below for list of all standard pressure ranges.

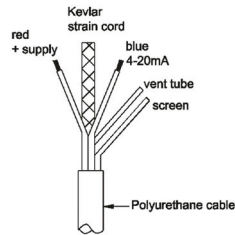
| Range (mWG) | Order Code | Range (mWG) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 | 0001 | 0-50 | 0050 |
| 0-3 | 0003 | 0-80 | 0080 |
| 0-4 | 0004 | 0-100 | 0100 |
| 0-5 | 0005 | 0-250 | 0250 |
| 0-10 | 0010 | 0-500 | 0500 |
| 0-20 | 0020 | | |
| 0-30 | 0030 | | |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION

Red + supply
Blue 4-20mA signal
Screen to case



polyurethane cable termination

ORDERING INFORMATION

| Model | PR3441 | - | xxxx | xx | xxx |
|----------------------|--------|---|------|----|-----|
| Electrical Connector | | | | | |
| Pressure Range - mWG | | | | | |
| Process Connection | | | | | |
| Cable Length | | | | | |

ELECTRICAL CONNECTION/OPTION

- Cable PU sheathed with internal vent, 4-20mA
- Cable PU sheathed with internal vent, 0-5Vdc
- Cable PU sheathed with internal vent, 0-10Vdc
- Cable PU sheathed with internal vent, 4-20mA ATEX

PROCESS CONNECTION

- Protective nose cone
- 1/4" BSP male

EXAMPLE

- Base Model PR3441
- Cable PU sheathed with internal vent, 4-20mA -
- Pressure range 0-2mWG 0002
- Protective nose cone AX
- Cable length 5 metres 005
- Correct Part Number PR3441-0002AX-005

For options not listed contact sales team

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SPECIFICATION

PRESSURE REFERENCE

Vented gauge

OVERPRESSURE

Pressure can be exceeded by up to 2x full scale range with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20 mA (2 wire configuration).

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA

SUPPLY VOLTAGE

13-36Vdc

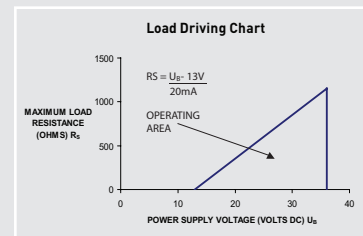
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY

For power supply voltages 13-36Vdc



ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS. Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316L stainless steel housing and diaphragm, polyurethane cable and Nitrile o-ring seal.

OPERATING TEMPERATURE RANGE

Operating: -20°C to $+60^{\circ}\text{C}$
Media must not freeze around sensor
Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

TEMPERATURE EFFECTS

$\pm 2.0\%$ FS total error band for -20° to $+60^{\circ}\text{C}$.
Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^{\circ}\text{C}$

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28\text{V}$
 $I_i = 119\text{mA}$
 $P_i = 0.65\text{W}$
 $L_i = 0.1$
 $C_i = 62\text{Nf}$
Temperature range = -20°C to $+70^{\circ}\text{C}$
Max. cable length = 105m

ELECTROMAGNETIC-COMPATIBILITY

Emissions EN6100-6-4
Immunity EN6100-6-2
Certification CE marked

PRESSURE CONNECTION

Stainless steel nose cone with radial pressure inlets

ELECTRICAL CONNECTION

Submersible black polyurethane cable moulded to housing. With integral screen, Kevlar strain cord and vent tube. Conductor size 7/0.20mm²(24awg), resistance 8.9ohms/100metre (x2).





Protran® PR3442

SUBMERSIBLE DEPTH PRESSURE TRANSMITTER



- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-30mWG
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- 316L STAINLESS STEEL CONSTRUCTION
- HIGH STRENGTH MOULDED POLYURETHANE CABLE WITH VENT TUBE

DESCRIPTION

The PR3442 submersible transmitter has been designed for the accurate measurement of the depth and level of liquids in borehole applications.

Standard output signal is 4-20mA two wire. Supply range 13-36Vdc, with integral transient voltage protection. Electrical connection is via a high strength moulded polyurethane cable with internal tube for excellent trouble-free venting to the surface atmosphere. The standard depth transmitter is fitted with a stainless steel nose cone with radial inlet holes to prevent sludge build-up. The PR3442 has a slim-line 17.5mm diameter suitable for 19mm boreholes or greater.

Applications include borehole level and reservoir level monitoring, water mains pressure measurement in inspection chambers, power level and outlet pressure measurement on submersible pumps.



001

PRESSURE RANGES

0 - 30mWG through to 0 - 500mWG, see table below for list of all standard pressure ranges.

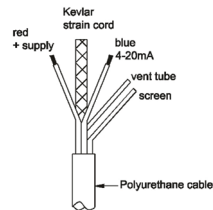
| Range (mWG) | Order Code | Range (mWG) | Order Code |
|-------------|------------|-------------|------------|
| 0-30 | 0030 | 0-150 | 0150 |
| 0-50 | 0050 | 0-250 | 0250 |
| 0-80 | 0080 | 0-500 | 0500 |
| 0-100 | 0100 | | |

DIMENSIONS (in mm)



ELECTRICAL CONNECTION

Red + supply
Blue 4-20mA signal
Screen to case



polyurethane cable termination

ORDERING INFORMATION

| | PR3442 | - | xxxx | xx | xxx |
|----------------------|---|---|------|----|-----|
| Model | [Diagram showing PR3442 connected to Model] | | | | |
| Electrical Connector | [Diagram showing '-' connected to Electrical Connector] | | | | |
| Pressure Range - mWG | [Diagram showing 'xxxx' connected to Pressure Range] | | | | |
| Process Connection | [Diagram showing 'xx' connected to Process Connection] | | | | |
| Cable Length | [Diagram showing 'xxx' connected to Cable Length] | | | | |

ELECTRICAL CONNECTION/OPTION

Cable PU sheathed with internal vent, 4-20mA

Order Code

-

PROCESS CONNECTION

Protective nose cone

Order Code

AX

EXAMPLE

Base Model

Order Code

PR3442

Cable PU sheathed with internal vent, 4-20mA

-

Pressure range 0-30mWG

0030

Protective nose cone

AX

Cable length 35 metres

035

Correct Part Number

PR3442-0030AX-035

For options not listed contact sales team

DISCLAIMER : ESI Technology Ltd operates a policy of continuous product development. We reserve the right to change specification without prior notice. All products manufactured by ESI Technology Ltd are calibrated using precision calibration equipment with traceability to international standards.

SPECIFICATION

PRESSURE REFERENCE

Vented or sealed gauge

OVERPRESSURE

Pressure can be exceeded by up to 2x full scale range with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20 mA (2 wire configuration).

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA

SUPPLY VOLTAGE

13-36Vdc

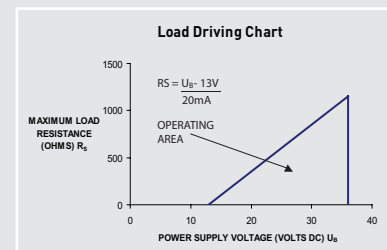
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

LOAD DRIVING CAPABILITY

For power supply voltages 13-36Vdc



ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS. Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316L stainless steel housing and diaphragm and polyurethane cable.

OPERATING TEMPERATURE RANGE

Operating: -20°C to $+60^{\circ}\text{C}$

Storage: $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$

Media must not freeze around sensor

TEMPERATURE EFFECTS

$\pm 2.0\%$ FS total error band for -20° to $+60^{\circ}\text{C}$.

Typical thermal zero and span coefficients $\pm 0.03\%$ FS/ $^{\circ}\text{C}$

ELECTROMAGNETIC-COMPATIBILITY

Emissions EN6100-6-4

Immunity EN6100-6-2

Certification CE marked

PRESSURE CONNECTION

Stainless steel nose cone with radial pressure inlets

ELECTRICAL CONNECTION

Submersible black polyurethane cable moulded to housing. With integral screen, Kevlar strain cord and vent tube. Conductor size 7/0.20mm²(24awg), resistance 8.9ohms/100metre (x2).





Protran® PR3850

FLUSH DIAPHRAGM PRESSURE TRANSMITTER



DESCRIPTION

The PR3850 pressure transmitter has been designed to meet the requirements of the majority of industrial pressure measurement applications where a hygienic flush diaphragm connection is required.

Robustly constructed from stainless steel this range of pressure transmitters incorporates the latest strain gauge technology together with a custom IC amplifier offering excellent stability and accuracy over a long service life. Output options include 0-5Vdc, 0-10Vdc and 0-20mA. This transmitter is particularly suitable for use with high viscosity materials. Typical applications include food processing, pharmaceutical, petrochemical, waste water and slurry handling. The flush membrane can be easily cleaned for long term reliability and outstanding performance.

The PR3850 offers a stable and accurate output signal of 4-20mA with options for 0-5Vdc, 0-10Vdc, 0-20mA and other output signals. Electrical connection is via a detachable DIN connector allowing easy access to zero and span adjustment. In addition to the standard 1/2" BSP connection, optional 1" BSP and 1/2" NPT male flush diaphragm process connections are also available. Pressure ranges available from 0-4bar to 0-400bar.

Optional weldable boss is available to ensure flush-face installation of transmitter to tanks and pipe-work.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

- THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-4bar TO 0-400bar
- 4-20mA TWO WIRE OUTPUT AS STANDARD
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- 316 STAINLESS STEEL MEMBRANE
- ALL STAINLESS STEEL HOUSING
- INTEGRAL O-RING SEAL



PRESSURE RANGES

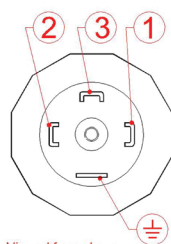
0 - 4bar through to 0 - 400bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-4 | 0004 | 0-60 | 0060 |
| 0-6 | 0006 | 0-100 | 0100 |
| 0-10 | 0010 | 0-160 | 0160 |
| 0-16 | 0016 | 0-250 | 0250 |
| 0-25 | 0025 | 0-400 | 0400 |
| 0-40 | 0040 | | |

DIMENSIONS (in mm)



| ELECTRICAL CONNECTION (mA) | |
|----------------------------|--------------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted to case |
| ⊕ | |



Viewed from above with socket removed.

| ELECTRICAL CONNECTION (Vdc) | | |
|-----------------------------|---------|---------|
| Pin No. | 4 wire | 3 wire |
| 1 | -supply | common |
| 2 | +supply | +supply |
| 3 | +output | +output |
| ⊕ | -output | to case |

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can be exceeded by up to 1.5 x Range with no damage or change in calibration greater than ±0.5%FS

OUTPUT SIGNAL

4-20mA (2 wire configuration) as standard. Optional outputs available are:
0-5Vdc (4 wire),
0-10Vdc (4 wire)

ZERO OFFSET AND SPAN TOLERANCE

±0.16mA
±5%FS zero adjustment with easy access trimming potentiometers.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
13-36Vdc for 4-20mA versions
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

±0.30% FS. Typical max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316 stainless steel.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to +85°C
Storage: +5°C to +40°C

TEMPERATURE EFFECTS

±2.5%FS total error band for -20°C to +70°C.
Typical thermal zero and span coefficients ±0.04%FS/°C

ATEX APPROVAL (4-20mA versions only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

Ui = 28V
Ii = 119mA
Pi = 0.65W
Li = 0.1
Ci = 62nF
Temperature range = -20°C to +70°C
Max. cable length = 105m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4
Immunity: EN61000-6-2

PRESSURE CONNECTION

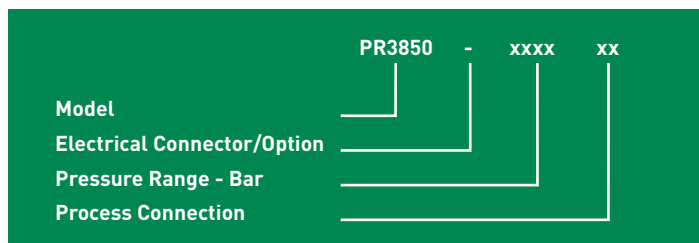
1/2" BSP male integral Nitrile seal and flush 316L diaphragm.

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65.

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ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
ATEX certified with DIN43650 plug and socket

Order Code

-
EX

PROCESS CONNECTION

1/2" BSP male flush diaphragm
1" BSP male semi-flush diaphragm

Order Code

BA
BC

EXAMPLE

Output signal 4-20mA
DIN 43650 plug and socket
Pressure range 0-10barg
Pressure connection 1/2" BSP male flush diaphragm

Order Code

PR3850
-
0010
BA

Correct Part Number

For options not listed contact sales team

PR3850-0010BA





Protran® PR3860

HIGH TEMPERATURE PRESSURE TRANSMITTER



- THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-10bar TO 0-400bar
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED VERSION (4-20mA ONLY)
- UP TO 250°C MEDIA TEMPERATURE
- ½" BSP WITH FLUSH DIAPHRAGM
- 316L STAINLESS STEEL MEMBRANE
- ALL STAINLESS STEEL HOUSING

DESCRIPTION

The PR3860 high temperature pressure transmitter has been designed to meet the requirements of the majority of industrial pressure measurement applications where a hygienic flush diaphragm connection is required.

Robustly constructed from stainless steel, the PR3860 pressure transmitter permits accurate pressure measurement at elevated temperatures. Output options include 0-5Vdc, 0-10Vdc and 0-20mA. This transmitter is suitable for use at media temperature up to 250°C. Typical applications include food processing, pharmaceutical and petrochemical. The flush membrane can be easily cleaned for long term reliability and outstanding performance. The PR3860 offers a stable and accurate output signal of 4-20mA with options for 0-5Vdc, 0-10Vdc, 0-20mA and other output signals. Electrical connection is via a detachable DIN connector allowing easy access to zero and span adjustment. Pressure ranges available from 0-10bar to 0-400bar.

Optional weldable boss is available to ensure flush-face installation of transmitter to tanks and pipe-work.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

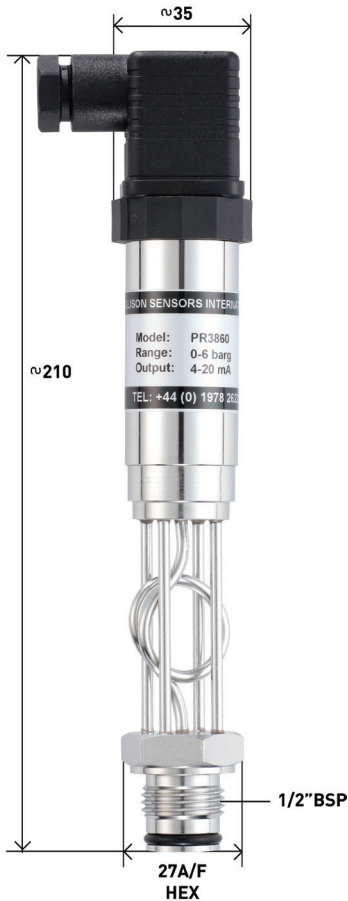


PRESSURE RANGES

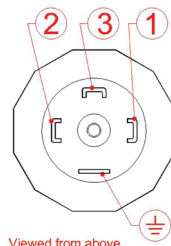
0 - 10bar through to 0 - 400bar see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-10 | 0010 | 0-100 | 0100 |
| 0-16 | 0016 | 0-160 | 0160 |
| 0-25 | 0025 | 0-250 | 0250 |
| 0-40 | 0040 | 0-400 | 0400 |
| 0-60 | 0060 | | |

DIMENSIONS (in mm)

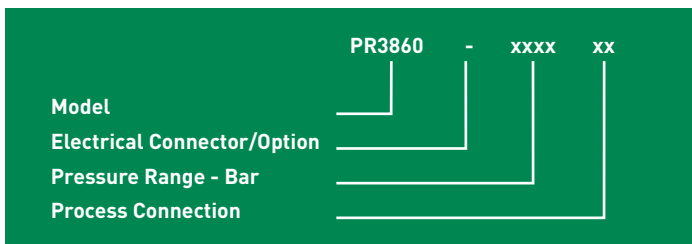


| ELECTRICAL CONNECTION (mA) | |
|----------------------------|--------------------|
| Pin No. | 2 wire |
| 1 | +supply |
| 2 | 4-20mA signal |
| 3 | not fitted to case |
| | ⊥ |



| ELECTRICAL CONNECTION (Vdc) | | |
|-----------------------------|---------|---------|
| Pin No. | 4 wire | 3 wire |
| 1 | -supply | common |
| 2 | +supply | +supply |
| 3 | +output | +output |
| | -output | to case |
| | | ⊥ |

ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

DIN 43650 plug and socket
ATEX certified with DIN43650 plug and socket

PROCESS CONNECTION

1/2" BSP male flush diaphragm

EXAMPLE

Output signal 4-20mA
ATEX certified with DIN43650 plug and socket
Pressure range 0-100barg
Pressure connection 1/2" BSP male flush diaphragm
Correct Part Number

For options not listed contact sales team

Order Code

-

EX

Order Code

BA

Order Code

PR3860

EX

0100

BA

PR3860EX0100BA

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can be exceeded by 1.5x full scale range with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.
0-5Vdc and 0-10Vdc available on request.

ZERO OFFSET AND SPAN TOLERANCE

± 0.16 mA (at room temperature)
 $\pm 5\%$ FS zero adjustment with easy access trimming potentiometers.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
13-36Vdc for 4-20mA versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical Max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 316 stainless steel.

OPERATING TEMPERATURE RANGE

Media: 0°C to +250°C
Sensor and electronics thermally insulated from media temperature.
Operating : -20°C to +85°C
Storage: 5°C to +40°C

TEMPERATURE EFFECTS

$\pm 2.5\%$ FS total error band for -20°C to +70°C.
Typical thermal zero and span coefficients $\pm 0.04\%$ FS/°C

ATEX APPROVAL (4-20mA versions only)

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

Ui = 28V
Ii = 119mA
Pi = 0.65W
Li = 0.1
Ci = 62nF
Temperature range = -20°C to +70°C
Max. cable length = 105m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4
Immunity: EN61000-6-2

PRESSURE CONNECTION

1/2" BSP male with flush 316L diaphragm.

ELECTRICAL CONNECTION

Mating socket with screw terminal connections to DIN 43650, rated IP65. Flying lead with optional cable length also available.

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Protran® PR3900

HAZARDOUS AREA PRESSURE TRANSMITTER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-10bar TO 0-1500bar
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- PROTECTION BY INTRINSIC SAFETY TO EEX IA IIC T4
- ATEX CERTIFIED FOR HAZARDOUS AREAS: ZONE 0 GAS GROUP IIC, TEMPERATURE CLASS T4, ZONE 20 DUST AND M1 MINING
- NACE CORROSION RESISTANCE

DESCRIPTION

The PR3900 pressure transmitter is designed to meet the majority of industrial pressure measurement applications where installation in an explosive and hazardous area is required.

Designed and certified in accordance with the ATEX directive 94/9/EC this product is intended for installation and operation in potentially explosive atmospheres in zone 0 gas group IIC, temperature class T4 and zone 20 dust and M1 mining. Protection is by intrinsic safety when used with a safety or isolation barrier. The PR3900 provides a stable and accurate intrinsically safe two wire output signal of 4-20mA when powered through a safety or isolating barrier such as MTL7706+, MTL5541 or other similar protection device.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

The fully welded stainless steel enclosure makes the product extremely robust and able to withstand corrosive demanding environments. Electrical connection is via a strong and durable polyurethane cable with integral vent tube for effective gauge venting to atmosphere. In addition to the standard 1/4"NPT female connection optional 1/4" and 1/2"BSP male and 1/2"NPT male process connections are also available. Applications include any above ground explosive / hazardous environment installations, oil and gas industries and volatile chemical processing and storage. Pressure ranges available from 0-10bar to 0-1500bar.



PRESSURE RANGES

0 - 10bar through to 1500 bar, see table below for list of all standard pressure ranges.

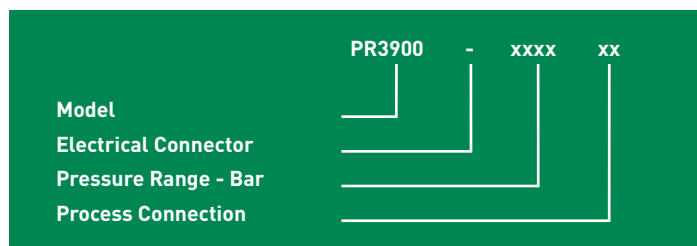
| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-10 | 0010 | 0-160 | 0160 |
| 0-16 | 0016 | 0-250 | 0250 |
| 0-25 | 0025 | 0-400 | 0400 |
| 0-40 | 0040 | 0-600 | 0600 |
| 0-60 | 0060 | 0-1000 | 1000 |
| 0-100 | 0100 | 0-1500 | 1500 |

DIMENSIONS (in mm)



| ELECTRICAL CONNECTION | |
|-----------------------|-------------------|
| Colour code | Function |
| Red | Supply (13-36Vdc) |
| Blue | Signal (4-20mA) |
| Drain Wire | Cable Screen |

ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

1/2" NPT Conduit with 1m Pu cable

PROCESS CONNECTION

1/4" BSP male thread

1/4" NPT female thread

9/16" x 18 UNF-2B (F250C)

EXAMPLE

Output signal 4-20mA ATEX

1/2" NPT conduit with 1m Pu cable

Pressure range 0-100barg

Pressure connection 1/4" NPT female thread

Correct Part Number

For options not listed contact sales team

Order Code

-

Order Code

AB

AR

DE

Order Code

PR3900

-

0100

AR

PR3900-0100AR

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.

2x for ranges up to 600 bar

1.5x for 1000 bar

1.1x for 1500 bar

HAZARDOUS AREA

ATEX II 1 GD for operation in explosive atmospheres in zone 0 gas group IIC, temperature class T4, zone 20 dust, and ATEX 1 M1 mining. Protection is by intrinsic safety when used with a safety or isolation barrier. In accordance with ATEX directive 94/9/EC.

ATEX CERTIFICATION CODE

Ex II 1 G Ex ia IIC T4 (zone 0)

Ex II 1 D Ex ia IIIC T135°C (zone 20)

Ex I M 1 Ex ia I (mining M1)

having the following safety values; $U_i=28V$, $I_i=119mA$,

$P_i=0.65W$, $L_i=0.1\mu H$, $C_i=74nF$,

$T_A = -20^\circ C$ to $+70^\circ C$.

OUTPUT SIGNAL

4-20mA (2 wire configuration) as standard.

ZERO OFFSET AND SPAN TOLERANCE

$\pm 0.08mA$

SUPPLY VOLTAGE

Measured across supply terminals on connector plug 13-36Vdc, $U_i=28Vdc$

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical Max. Best fit straight line.

PRESSURE MEDIA

All fluids compatible with 300 series stainless steel and titanium alloy diaphragm.

OPERATING TEMPERATURE RANGE

Ambient: -40° to $+85^\circ C$

Media: -50° to $+125^\circ C$

Storage: 5° to $40^\circ C$

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -20° to $+70^\circ C$

Typical thermal zero and span coefficients $\pm 0.015\%$ FS/ $^\circ C$

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4

Immunity: EN61000-6-2

PRESSURE CONNECTION

1/4" NPT female standard (others available on request)

INGRESS PROTECTION

Fully welded housing, IP67 when correctly installed to conduit connection.

ELECTRICAL CONNECTION

Submersible polyurethane cable (1 meter length) with integral screen, Kevlar strain cord and vent tube. Conductor size 7/0.20mm2(24awg).

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Protran® PR3913

SUBSEA CONTROL VALVE
PRESSURE TRANSMITTER



DESCRIPTION

The PR3913 Valve-Mountable pressure transmitter has been designed to meet the requirements of the sub-sea oil industry and is configured to mount directly to the industry standard control valve flange arrangement.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

Housed in fully welded body with wetted parts conforming to the NACE recommendation for material corrosion resistance, this product will provide a durable solution for long term accurate pressure measurement even when permanently situated in extreme depth sub-sea environments. The pressure connection is achieved with an 8mm diameter stem with integral dual redundant o-ring seal grooves. Optional connections are available. Alternative connections are available. The fitting is constructed from Inconel 625 for high chemical resistance. Providing a two wire output signal of 4-20mA with high stability and repeatability for pressure ranges up to 1000bar+. Intended for permanent immersion in pressurised dielectric oil and protected from ingress with a high pressure glass-to-metal lead through the product can withstand external pressure up to 3000 metres depth water and provides secondary pressure containment up to 1650bar. Units can be supplied with hyperbaric test certificates to 3000metres water submersion. Electrical connection is via strong PTFE Raychem Flexlite leads. Pressure ranges available from 0-200bar to 0-1000bar.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-200bar TO 0-1000bar
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.25% NLHR
- OPTIONAL ATEX VERSION
- HYPERBARIC TEST CERTIFICATE
- SUBMERSION TO 3000mtrs DEPTH

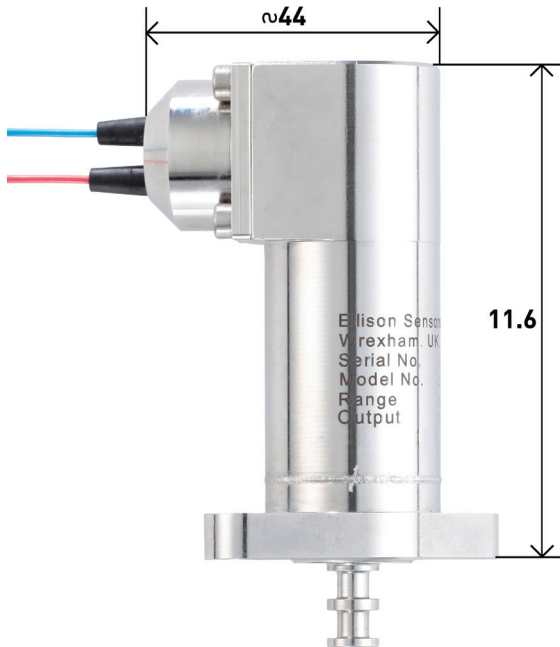


PRESSURE RANGES

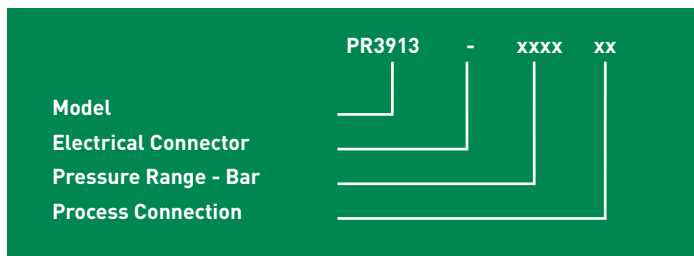
Typical ranges from 0-200bar to 0-1000bar. Contact the sales office for further information.

DIMENSIONS (in mm)

| ELECTRICAL CONNECTION | |
|-----------------------|-------------------|
| Colour code | Function |
| Red | Supply (10-36Vdc) |
| Blue | Signal (4-20mA) |



ORDERING INFORMATION



The PR3913 is available with numerous design options. Please contact the sales office for further information.

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SPECIFICATION

PRESSURE REFERENCE

Sealed gauge

OVERPRESSURE

Pressure can be exceeded by up to a minimum of 1.5x with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20 mA (2 wire)

ZERO OFFSET AND SPAN TOLERANCE

± 0.10 mA

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
10-36Vdc min

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc.

LOAD DRIVING CAPABILITY

Calculate max. load $R_s = (U_b - 10V) / 20mA$
e.g. with supply voltage load of 32Vdc, maximum load is 1100ohms.

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.25\%$ FS Typical Max, Best fit straight line.

PRESSURE MEDIA

Hydraulic control fluids (mineral and synthetic oils)

OPERATING TEMPERATURE RANGE

Ambient/Media: -20°C to $+40^\circ\text{C}$
Storage: 5°C to $+40^\circ\text{C}$

TEMPERATURE EFFECTS

$\pm 0.015\%$ fs total error band for -20° to $+40^\circ\text{C}$.
Typical thermal zero and span coefficients $\pm 0.005\%$ FS/ $^\circ\text{C}$.

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

$U_i = 28V$
 $I_i = 119mA$
 $P_i = 0.65W$
 $L_i = 0.1$
 $C_i = 74nF$
Temperature range = -20°C to $+70^\circ\text{C}$
Max. cable length = 45m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4
Immunity: EN61000-6-2

PRESSURE CONNECTION

Many specialised pressure connection options available to suit individual requirements. Contact the sales team for more information.

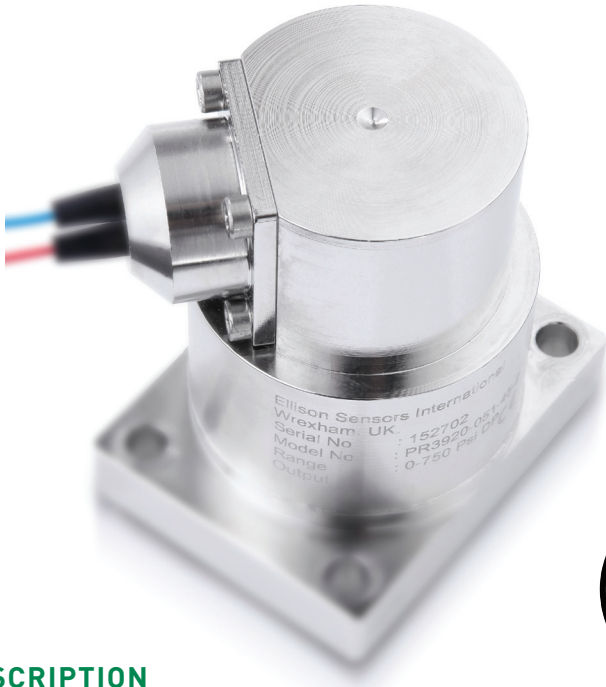
ELECTRICAL CONNECTION

Cable outlet or Subsea connector options available



Protran® PR3920

SUBSEA D.P. TRANSMITTER



DESCRIPTION

The PR3920 differential pressure transmitter provides very accurate low pressure wet-wet differential pressure measurement on extremely high line pressure sources. Designed for permanent installation in very demanding subsea applications the housing is completely sealed to resist 300 bar external pressure. Intended for submersion in pressurised dielectric oil with seawater for monitoring of subsea well control valves or hydraulic pressure measurement.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

The PR3920 pressure transmitter provides surface mounting with a stainless steel mounting plate and dual redundant o-ring face seals. Both the high and low pressure ports can withstand 1000bar overpressure with no damage or loss of performance. The titanium alloy wetted parts provide conformance to NACE corrosion resistance requirements. Electrical connection is via a heavy duty PTFE cable with optional angle of orientation. Output signal is a 4-20mA, 2 wire current loop which can be powered from an external 10-36Vdc supply. Application includes control of chemical injection for sub-sea wells for oil and gas extraction.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- STANDARD SENSING RANGE 0-50barDP
- 690bar LINE PRESSURE
- 1200bar SECONDARY CONTAINMENT
- 3000metres SUBMERSIBLE DEPTH
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.25% NLHR
- OPTIONAL ATEX APPROVED VERSION
- NACE CORROSION RESISTANCE
- TITANIUM ALLOY DIAPHRAGM

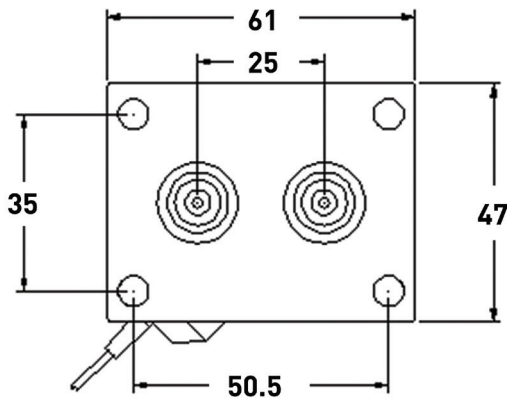
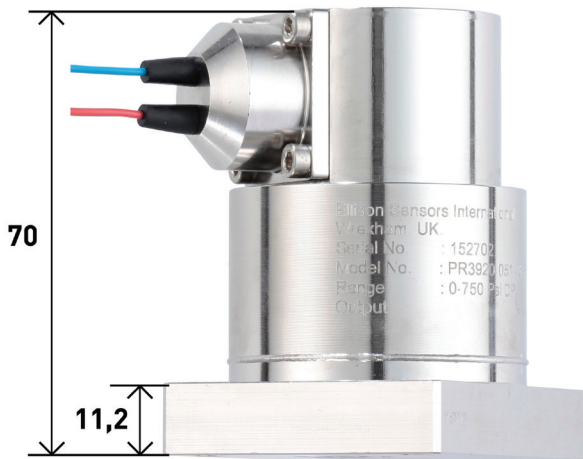


PRESSURE RANGES

The standard calibrated range is 0-50bar with a line pressure of 0-690bar. The PR3920 can be designed to meet the required specification of the application. Contact the sales team for further information.

DIMENSIONS (in mm)

| ELECTRICAL CONNECTION | |
|-----------------------|-------------------|
| Colour code | Function |
| Red | Supply (10-36Vdc) |
| Blue | Signal (4-20mA) |



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SPECIFICATION

PRESSURE REFERENCE

Differential sealed gauge

DIFFERENTIAL PRESSURE RANGE

0-750psi (51barDP)

LINE PRESSURE

To both ports simultaneously 690bar with less than 1%FS change on output signal.

OVERPRESSURE

Either pressure ports can withstand up to 690bar with no damage or change in calibration greater than $\pm 0.5\%$ FS.

OUTPUT SIGNAL

4-20mA (2 wire)

ZERO SETTING

4mA ± 0.20 mA

SPAN TOLERANCE

16mA. ± 0.20 mA

SUPPLY VOLTAGE

Measured across supply terminals on connector plug. 10-36Vdc min (Unregulated)

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.25\%$ FS Typical Max, Best fit straight line.

PRESSURE MEDIA

Sub-sea chemicals, typically wax and scale inhibitors

CORROSION RESISTANCE

NACE compliant materials

SECONDARY PRESSURE CONTAINMENT

1200bar max

OPERATING ENVIRONMENT

Sealed for immersion in pressurised dielectric fluid up to 300bar and for short periods in seawater.

TEMPERATURE RANGE

Ambient/Media: -10° C to $+70^{\circ}$ C
Storage: 5° C to $+40^{\circ}$ C

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -10° to $+70^{\circ}$ C
Typical thermal zero and span coefficients $\pm 0.02\%$ FS/ $^{\circ}$ C

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)
Ex II 1 D Ex ia IIIC T135°C Da (zone 20)
EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

Ui = 28V
Ii = 119mA
Pi = 0.65W
Li = 0.1
Ci = 74Nf
Temperature range = -20° C to $+70^{\circ}$ C
Max. cable length = 45m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4 / Immunity: EN61000-6-2

PRESSURE CONNECTION

Face sealing mounting plate with dual redundant elastomeric O ring seals on both pressure ports.

ELECTRICAL CONNECTION

Raychem wire (optional cable outlet orientation available on request)



Protran® PR9000

PROCESS/INDUSTRIAL PRESSURE TRANSMITTER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES UP TO 1500bar
- 4-20mA OUTPUT
- ACCURACY 0.2% NLHR
- OPTIONAL ATEX APPROVED VERSION
- ALL STAINLESS STEEL HOUSING
- WETTED PARTS IN VARIOUS MATERIALS
- FULL RANGE OF BARRIER SEALS AND PROCESS FITTINGS
- ROBUST CONSTRUCTION

DESCRIPTION

The PR9000 Series pressure transmitters have been designed to meet the requirements of the majority of demanding industrial and process applications for pressure measurement requiring an output of 4-20mA. With robust stainless steel housing construction, this range of pressure transmitters incorporates the latest Silicon-on-Sapphire strain gauge technology, together with a custom design amplifier offering excellent stability and accuracy over a long service life.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

An important feature of this transmitter is the easily accessible screw terminal connections and the zero/span potentiometers conveniently positioned inside the screw cover head for simplified on-site adjustment and installation. Cable entry to the transmitter head is through a PG9 gland or an optional M20 conduit fitting. Pressure connection is 1/2" BSP as standard, 1/2" BSPT, 1/2" NPT are also available together with hygienic and process flanges with media barriers. Pressure ranges are -1 to 0bar to 0-1500bar. Typical applications for this series of standard transmitters includes mechanical and civil engineering, process plant, production test facility, water resource, and power generation installations, and for any fluid or gas application requiring stable, repeatable and accurate pressure measurement.

An optional ATEX certified version of this product is available approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I MI).

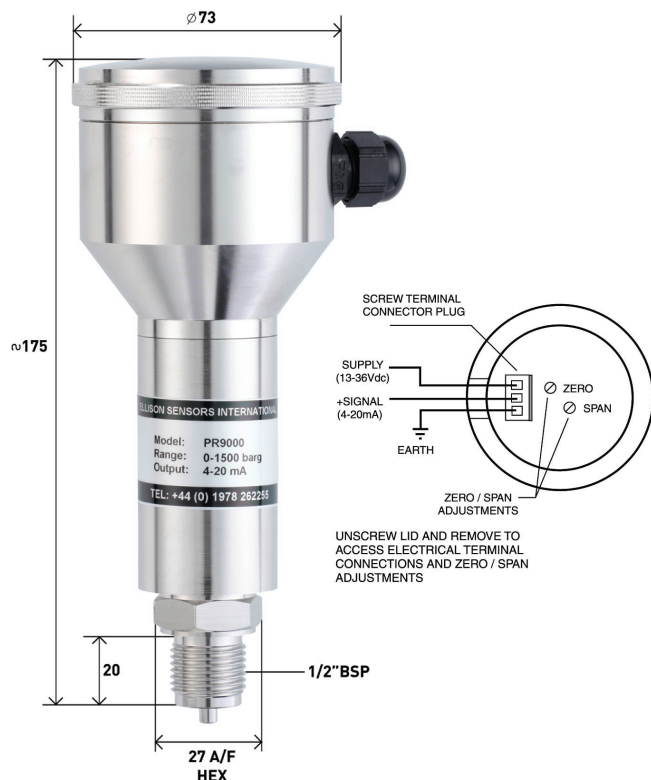


PRESSURE RANGES

0 - 10bar through to 1500 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 Vac | V001 | 0-40 | 0040 |
| 0-0.1 | 00.1 | 0-60 | 0060 |
| 0-0.5 | 00.5 | 0-100 | 0100 |
| 0-1 | 0001 | 0-160 | 0160 |
| 0-1.6 | 01.6 | 0-250 | 0250 |
| 0-2.5 | 02.5 | 0-400 | 0400 |
| 0-4 | 0004 | 0-600 | 0600 |
| 0-10 | 0010 | 0-1000 | 1000 |
| 0-16 | 0016 | 0-1500 | 1500 |
| 0-25 | 0025 | | |

DIMENSIONS (in mm)



ORDERING INFORMATION

| Model | Electrical Connector | Pressure Range - Bar | Process Connection |
|--------|----------------------|----------------------|--------------------|
| PR9000 | - | XXXX | XX |

ELECTRICAL CONNECTION/OPTION

- 4-20mA output with cable gland IP68
- 4-20mA output with M20 conduit connector
- ATEX certified with M20 conduit connector

PROCESS CONNECTION

- 1/2" BSP male thread
- 1/2" NPT male thread

EXAMPLE

- Output signal 4-20mA
- M20 conduit connector
- Pressure range 0-100barg
- Pressure connection 1/2" NPT male thread

Correct Part Number

For options not listed contact sales team

Order Code

-

A

EX

Order Code

AC

AN

Order Code

PR9000

A

0100

AN

PR9000A0100AN

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.

2x for ranges 1bar to 600bar

1.5x for 1000bar

1.1x for 1500bar

OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard.

ZERO OFFSET AND SPAN TOLERANCE

± 0.08 mA

$\pm 5\%$ FS adjustment with easy access trimming potentiometers.

SUPPLY VOLTAGE

Measured across supply terminals on connector plug
13-36Vdc for 4-20mA versions
13-30Vdc for 0-5Vdc and 0-10Vdc versions

PROTECTION OF SUPPLY VOLTAGE

Protected against supply voltage reversal up to 50Vdc

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.20\%$ FS Typical Max. Best Fit Straight Line.

PRESSURE MEDIA

All fluids compatible with titanium alloy diaphragm and 316 stainless steel wetted parts.

OPERATING TEMPERATURE RANGE

Ambient/Media: -20° to $+85^{\circ}$ C

Storage: 5° to $+40^{\circ}$ C

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -20° to $+70^{\circ}$ C

Typical thermal zero and span coefficients $\pm 0.02\%$ FS/ $^{\circ}$ C

ATEX APPROVAL

Ex II 1 G Ex ia IIC T4 Ga (zone 0)

Ex II 1 D Ex ia IIIC T135 $^{\circ}$ C Da (zone 20)

EX I M 1 Ex ia I Ma (group I M1)

ATEX SAFETY VALUES

Ui = 28V

Ii = 119mA

Pi = 0.65W

Li = 0.1

Ci = 66Nf

Temperature range = -20° C to $+70^{\circ}$ C

Max. cable length = 85m

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4

Immunity: EN61000-6-2

PRESSURE CONNECTION

1/2" BSP male (others on request)

ELECTRICAL CONNECTION

Screw terminals for conductor sizes 0.2-2.0mm are located beneath the screw lid.

Cable entry to head is through an IP66 cable gland with compression seal for cable sizes 4-8mm. Optional M20 conduit fitting available.

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Protran® PR9500

WIRELESS INDUSTRIAL PRESSURE TRANSMITTER



- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES UP TO 0-1500bar
- BATTERY POWERED OR 8-30Vdc SUPPLY
- ACCURACY 0.30% NLHR
- LICENCE FREE RADIO TRANSMISSION UP TO 500 METRES
- FOR USE WITH RX9500 WIRELESS RECEIVER
- ALL STAINLESS STEEL HOUSING
- ROBUST CONSTRUCTION

DESCRIPTION

The PR9500 pressure transmitter, used in conjunction with the RX9500 receiver, provides a wireless solution for safe operation in tough industrial and process applications eliminating the need for hard wiring. The PR9500 transmitter can be situated in inaccessible areas, allowing the operator to monitor at safe distances on site. No hard wiring means lower installation cost and maintenance.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form a single crystalline structure. The sapphire sensor element is then molecularly bonded to a titanium alloy sub-diaphragm. This enables the sensor to endure higher over-pressures and provides superb corrosion resistance. The completed sensor exhibits virtually no hysteresis and excellent long-term stability. With outstanding insulation properties, the sapphire substrate allows the sensor to operate over a very wide temperature range without loss of performance.

Robustly constructed from stainless steel, the PR9500 transmitter offers optimum stability and repeatability in all industrial and process environments. The PR9500 transmitter operates by sending data signals by radio telemetry to a RX9500 receiver which provides a 4-20mA output signal. Powered by an internal battery or 8-30Vdc supply, the transmitter is capable of sending data signals at distances of up to 500metres. Typical applications include mechanical and civil engineering installations, process plant, water utilities, petrochemical, power generation and any application on fluid or gas requiring a stable, repeatable and accurate pressure measurement at distances on site. The removal of the large cap at the head of the unit, allows easy access for zero/span adjustment and re-calibration or for battery replacement. Standard pressure connection is 1/2" BSP or optionally 1/2" NPT is available. Pressure ranges are from 0-500mbar to 0-1500bar.

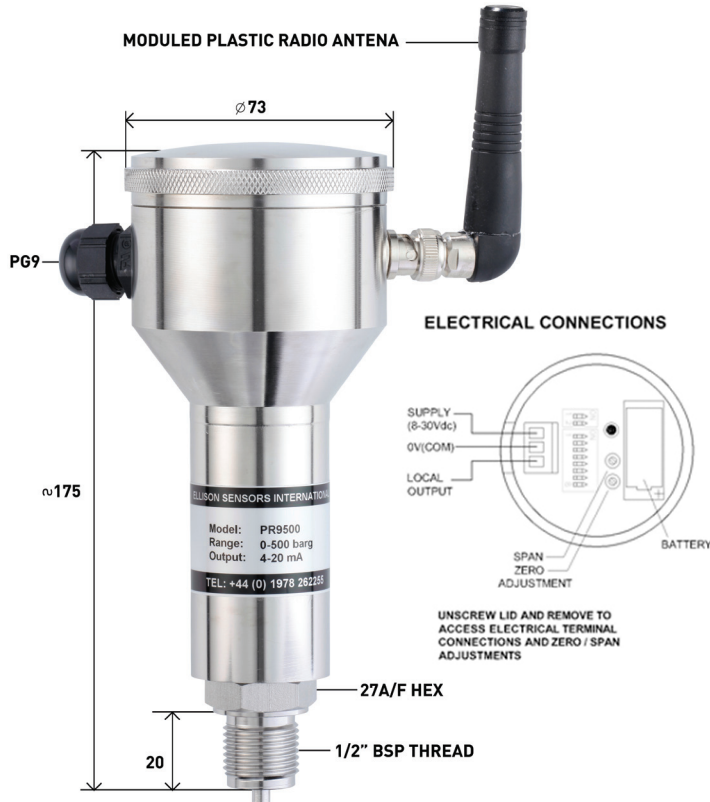


PRESSURE RANGES

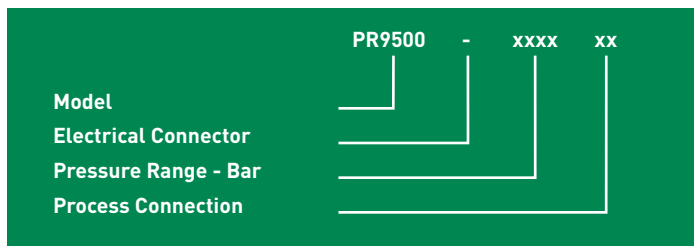
-1 to 0bar through to 1500 bar, see table below for list of all standard pressure ranges.

| Range (bar) | Order Code | Range (bar) | Order Code |
|-------------|------------|-------------|------------|
| 0-1 Vac | V001 | 0-40 | 0040 |
| 0-0.5 | 00.5 | 0-60 | 0060 |
| 0-1 | 0001 | 0-100 | 0100 |
| 0-1.6 | 01.6 | 0-160 | 0160 |
| 0-2.5 | 02.5 | 0-250 | 0250 |
| 0-4 | 0004 | 0-400 | 0400 |
| 0-10 | 0010 | 0-600 | 0600 |
| 0-16 | 0016 | 0-1000 | 1000 |
| 0-25 | 0025 | 0-1500 | 1500 |

DIMENSIONS (in mm)



ORDERING INFORMATION



ELECTRICAL CONNECTION/OPTION

Wireless output with cable gland IP68

PROCESS CONNECTION

1/2" BSP male thread

1/2" NPT male thread

EXAMPLE

Wireless output

Cable gland IP68

Pressure range 0-100barg

Pressure connection 1/2" BSP male thread

Correct Part Number

For options not listed contact sales team

Order Code

-

Order Code

AC

AN

Order Code

PR9500

-

0100

AC

PR9500A0100AC

SPECIFICATION

PRESSURE REFERENCE

Gauge

OVERPRESSURE

Pressure can exceed rated range by the multiple shown below with no damage or change in calibration above $\pm 0.5\%$ FS.

2x for ranges up to 600bar

1.5x up to 1000bar

1.1x above 1500bar

UHF RADIO TRANSMITTER / RECEIVER

Low power (license free), transmission frequency 418 MHz, 433MHz

TRANSMISSION RANGE

Point-to-point radio transmission up to 500 metres line-of-sight

DATA TRANSMISSION RATE

Serial radio packet at 4800/9600 baud

RESOLUTION

$\pm 0.024\%$ FS (12 BIT ADC)

ACCURACY (NON LINEARITY, HYSTERESIS & REPEATABILITY)

$\pm 0.30\%$ FS Typical Max. Best fit straight line.

POWER SUPPLY

Replaceable 3.2Vdc (1/2AA) Lithium Thionyl Chloride battery or 8-30Vdc supply.

PRESSURE MEDIA

All fluids compatible with 316 series stainless steel and titanium alloy diaphragm.

OPERATING TEMPERATURE RANGE

Ambient/ Media -20° to $+85^{\circ}$ C

Storage: $+5^{\circ}$ C to $+40^{\circ}$ C

TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for -20° to $+70^{\circ}$ C

Typical thermal zero and span coefficients $\pm 0.02\%$ FS/ $^{\circ}$ C

ELECTROMAGNETIC CAPABILITY

Emissions: EN61000-6-4 / Immunity: EN61000-6-2

RADIO TYPE APPROVALS

MPT1328
EN300220

PRESSURE CONNECTION

1/2" BSP male as standard, optionally 1/2" NPT is also available.

ELECTRICAL CONNECTION

Screw terminals for conductor sizes 0.2-2.0mm² are located beneath the screw lid. Cable entry to head is through an IP66 cable gland with compression seal for cable sizes 4-8mm. Optional M20 conduit fitting available.

WIRELESS RECEIVER

RX9500 radio receiver station. Please see separate datasheet.

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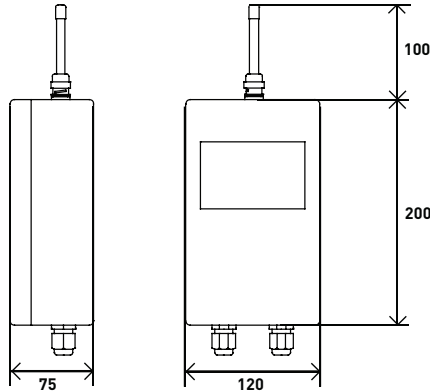




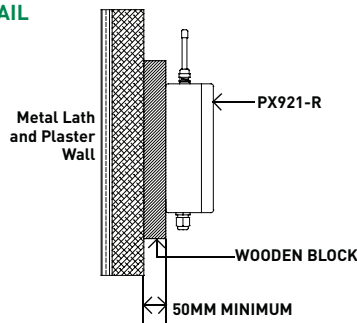
PROTRAN[®] RX9500

WIRELESS RECEIVER

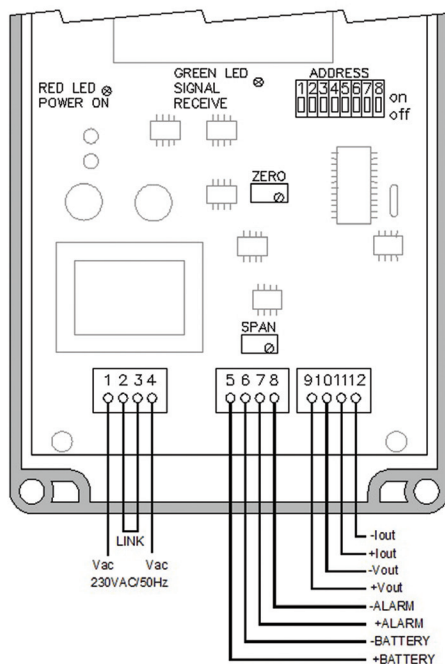
DIMENSIONS (in mm)



MOUNTING DETAIL



ELECTRICAL CONNECTIONS



SPECIFICATION

RADIO TYPE

UHF/FM receiver

SENSITIVITY

-110dBm (range of 200m light-of-sight)

IDENTIFICATION ADDRESS

8 Bit, 256 selectable combinations

COMMUNICATION WATCHDOG

128 seconds before alarm output is activated

ALARM OUTPUT

Open drain switch, maximum current 250mA

ANALOGUE OUTPUT

4-20mA, 0.2-2.0Vdc

OUTPUT COMPLIANCE

8.5Vdc

RESOLUTION

Better than 0.05% (12 Bit)

POWER REQUIREMENTS

10/240V, 50-60Hz or 10.5-30Vdc

CURRENT REQUIREMENTS

32mA_{dc}

HOUSING

High impact polycarbonate, rated to IP65

DIMENSIONS

200 x 120 x 75mm

WEIGHT

Approx. 2lbs

OPERATING TEMPERATURE

-10°C to +60°C

STORAGE TEMPERATURE

-20°C to +65°C

ANTENNA

¼ wave helical in plastic moulding

RF CONNECTOR

External BNC

CABLE ENTRY

IP65 nylon cable gland for cable diameter 4-8mm

ELECTRICAL CONNECTIONS

Screw terminal plug and socket.
Wire size from 0.5-1.5mm

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