



# 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).

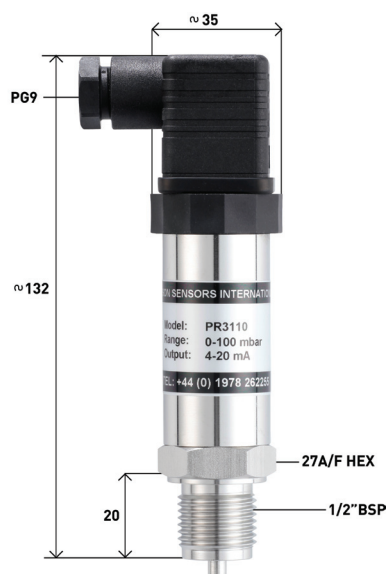


## PRESSURE RANGES

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

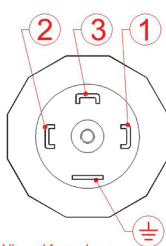
Range (bar)	Order Code	Range (bar)	Order Code	Abs range (bar)	Order Code
0-1 Vac	V001	0-40	0040	0-1	001A
0-1	0001	0-60	0060	0-1.6	1.6A
0-1.6	01.6	0-100	0100	0-2.5	2.5A
0-2.5	02.5	0-160	0160	0-4	004A
0-4	0004	0-250	0250	0-6	006A
0-6	0006	0-400	0400	0-10	010A
0-10	0010	0-600	0600	0-16	016A
0-16	0016	0-700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

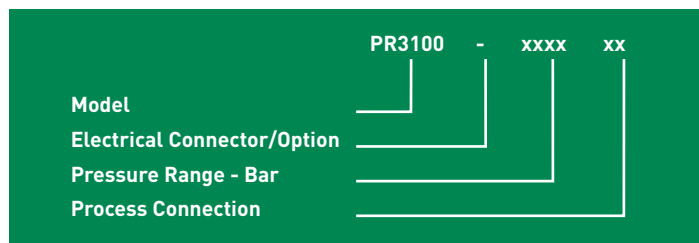


Viewed from above with socket removed.

### ELECTRICAL CONNECTION (Vdc)

Pin No.	4 wire	3 wire
1	-supply	Common
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	A
DIN 43650 plug and socket 0-5Vdc Output	B
DIN 43650 plug and socket 0-10Vdc Output	C

### Order Code

### PROCESS CONNECTION

1/4" BSP male thread	AB
1/2" BSP male thread	AC
1/4" NPT male thread	AM

### Order Code

### EXAMPLE

Base Model	PR3100
DIN 43650 plug and socket 4-20mA Output	-
Pressure range 0-16barg	0016
Pressure connection 1/2" BSP male	AC

### Order Code

### 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

$\pm 0.08$ 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:  $-20^\circ\text{C}$  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 =  $-20^\circ\text{C}$  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<sup>®</sup> 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

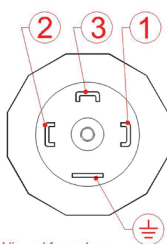
0-100mbar through to 900mbar, see table below for list of all standard pressure ranges.

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)



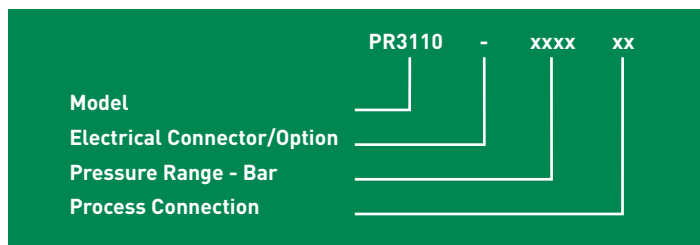
ELECTRICAL CONNECTION (mA)	
Pin No.	2 wire
1	+supply
2	4-20mA signal
3	not fitted
⊥	to case



Viewed from above with socket removed.

ELECTRICAL CONNECTION (Vdc)	
Pin No.	4 wire 3 wire
1	-supply Common
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 0-250mbarg  
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

$\pm 0.08$ 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:  $-20^\circ\text{C}$  to  $+85^\circ\text{C}$   
Storage:  $+5^\circ\text{C}$  to  $+40^\circ\text{C}$

### TEMPERATURE EFFECTS

$\pm 2\%$ FS total error band for  $-20^\circ\text{C}$  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 =  $-20^\circ\text{C}$  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).

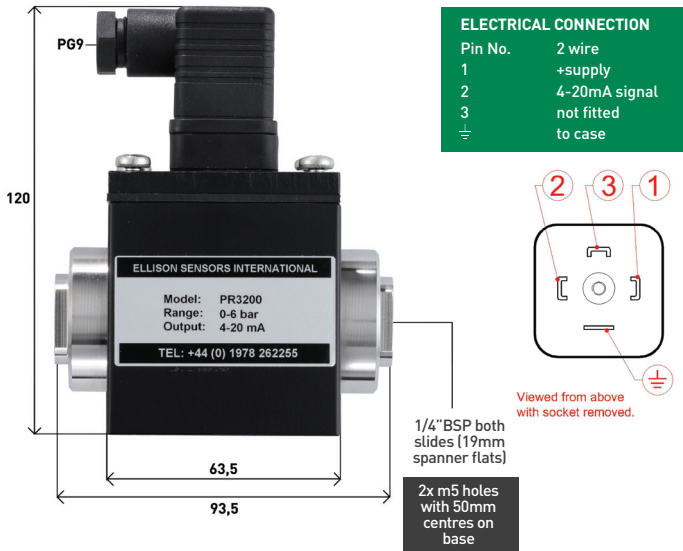


## PRESSURE RANGES

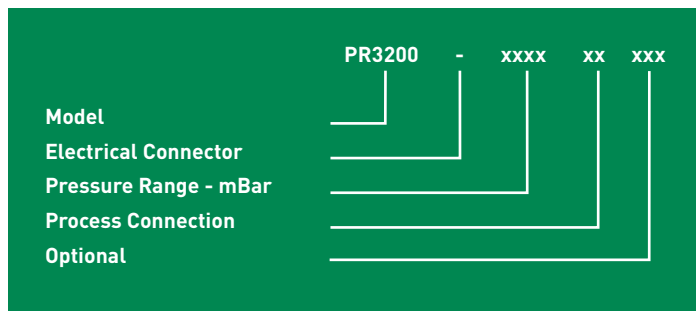
500mbar to 200bar, see table below for list of all standard pressure ranges.

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

Option	Order Code
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

Option	Order Code
1/4" BSP female thread	AR
1/4" BSP female thread	AS

### EXAMPLE

Option	Order Code
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

$\pm 0.16$ 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:  $-20^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
Storage:  $+5^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$

### TEMPERATURE EFFECTS

$\pm 3.0\%$ FS TEB  $-20^{\circ}\text{C}$  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 =  $-20^{\circ}\text{C}$  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<sup>®</sup> PR3202

DIFFERENTIAL PRESSURE TRANSMITTER



## 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).

- 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



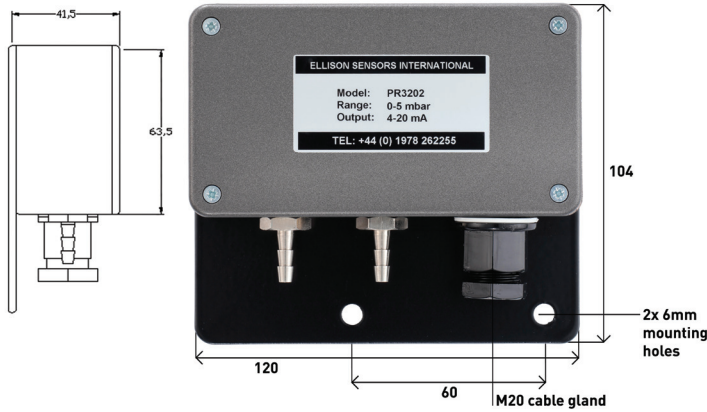
## PRESSURE RANGES

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

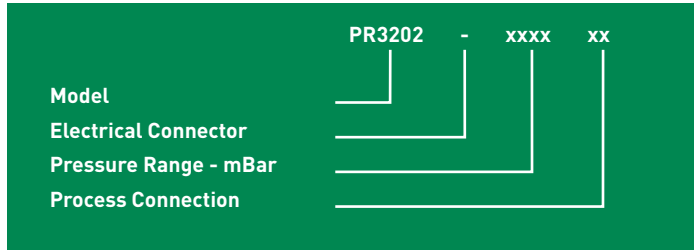
\*Ultra low pressure ranges from 25pa available. Please contact the sales team.

## DIMENSIONS (in mm)



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

## ORDERING INFORMATION



### ELECTRICAL CONNECTION/OPTION

	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

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

### EXAMPLE

	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

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

$\pm 0.16$ 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:  $-20^\circ\text{C}$  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  $0^\circ\text{C}$  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 0.2-2.0mm<sup>2</sup> 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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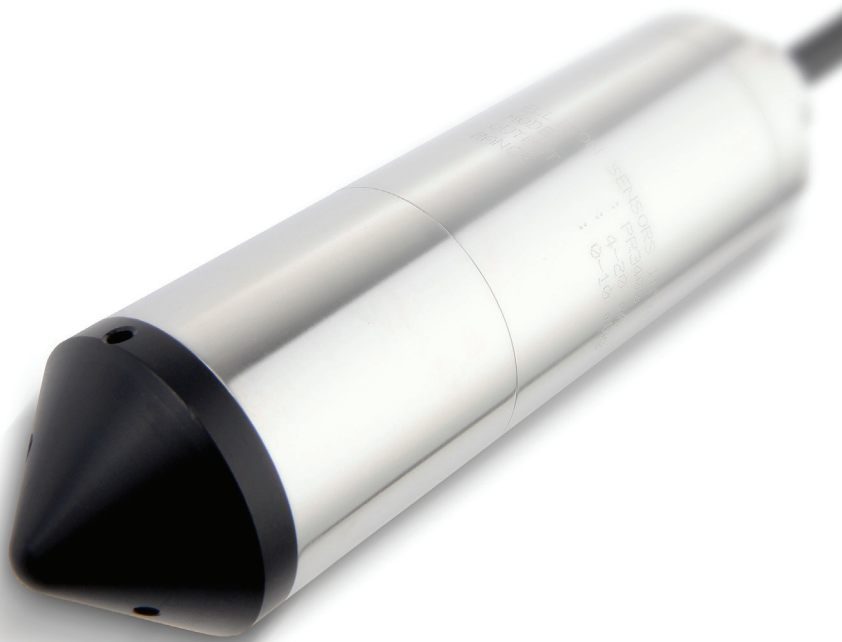






# Protran® PR3400

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.

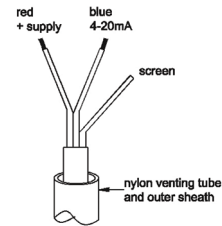
Range (mWG)	Order Code	Range (mWG)	Order Code
0-5	0005	0-80	0080
0-10	0010	0-100	0100
0-20	0020	0-150	0150
0-30	0030	0-200	0200
0-50	0050	0-500	0500

## 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

$\pm 0.16$ mA

### SUPPLY VOLTAGE

13-36Vdc

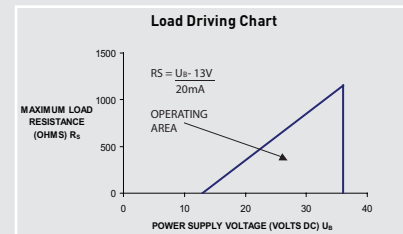
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

### 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:  $-20^{\circ}\text{C}$  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  $-20^{\circ}\text{C}$  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 $^{\circ}\text{C}$  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 =  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Max. cable length = 105m

### PRESSURE CONNECTION

Delrin<sup>®</sup> nose cone with radial pressure inlets.

### ELECTRICAL CONNECTION

Screened cable in pressure tight, flexible nylon sheath. Cable conductor size 7/0.20mm<sup>2</sup>(24awg), resistance 8.9ohms/100metre (x2).

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# Protran<sup>®</sup> 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.

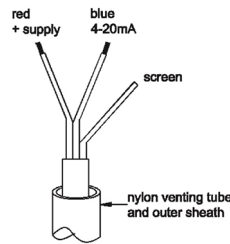
Range (mWG)	Order Code	Range (mWG)	Order Code
0-10	0010	0-100	0100
0-20	0020	0-150	0150
0-30	0030	0-250	0250
0-50	0050	0-500	0500
0-80	0080		

## 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 the model code breakdown]				
Electrical Connector	[Diagram showing the electrical connector code]				
Pressure Range - mWG	[Diagram showing the pressure range code]				
Process Connection	[Diagram showing the process connection code]				
Cable Length	[Diagram showing the cable length code]				

### 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

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### 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

$\pm 0.16$ mA

### SUPPLY VOLTAGE

13-36Vdc

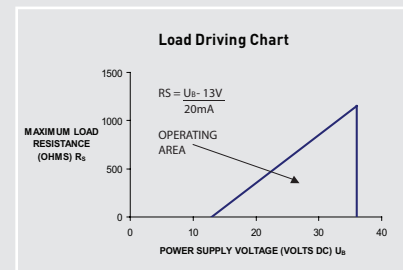
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

### 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:  $-20^{\circ}\text{C}$  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  $-20^{\circ}\text{C}$  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 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 =  $-20^{\circ}\text{C}$  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 7/0.20mm<sup>2</sup>(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.

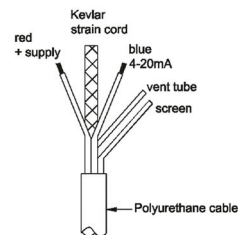
Range (mWG)	Order Code	Range (mWG)	Order Code
0-1	0001	0-50	0050
0-3	0003	0-80	0080
0-4	0004	0-100	0100
0-5	0005	0-250	0250
0-10	0010	0-500	0500
0-20	0020		
0-30	0030		

## 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

$\pm 0.08$ mA

### SUPPLY VOLTAGE

13-36Vdc

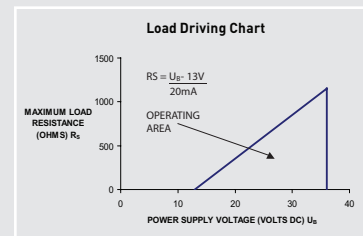
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

### 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:  $-20^{\circ}\text{C}$  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  $-20^{\circ}$  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 =  $-20^{\circ}\text{C}$  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 7/0.20mm<sup>2</sup>(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.

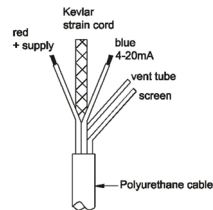
Range (mWG)	Order Code	Range (mWG)	Order Code
0-30	0030	0-150	0150
0-50	0050	0-250	0250
0-80	0080	0-500	0500
0-100	0100		

## DIMENSIONS (in mm)



### ELECTRICAL CONNECTION

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



polyurethane cable termination

## ORDERING INFORMATION

	PR3442	-	xxxx	xx	xxx
Model	[Line connecting PR3442 to Model]				
Electrical Connector	[Line connecting - to Electrical Connector]				
Pressure Range - mWG	[Line connecting xxxx to Pressure Range - mWG]				
Process Connection	[Line connecting xx to Process Connection]				
Cable Length	[Line connecting xxx 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

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## 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

$\pm 0.08$ mA

### SUPPLY VOLTAGE

13-36Vdc

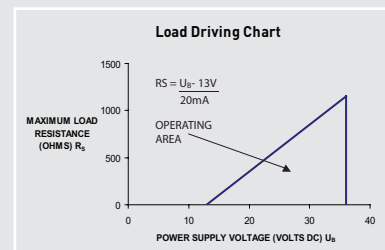
Minimum supply to transmitter circuit is 13Vdc. Voltage drop in connecting lead due to cable resistance must be considered. See load driving capability chart below.

### 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:  $-20^{\circ}\text{C}$  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  $-20^{\circ}$  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 7/0.20mm<sup>2</sup>(24awg), resistance 8.9ohms/100metre (x2).







# Protran® PR3800

SERIES PRESSURE TRANSMITTER  
WITH BARRIER SEAL



## DESCRIPTION

The PR3800 series offer a range pressure transmitters with integrated or remote barrier seals for applications where direct media contact must be prevented.

In these installations the process media may corrode the sensing diaphragm or clog the narrow pressure inlet on a standard transmitter. For hygienic application the seal provides a sanitary grade pressure fitting. Seals are available in a variety of forms and materials for a wide range of applications and can be directly attached to the proposed connection or remotely via stainless steel capillary. Please contact our sales department for information on our full range of process connections.

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  
0-200mbar TO 0-1000bar
- 4-20mA TWO WIRE OUTPUT
- ACCURACY 0.30% NLHR
- OPTIONAL ATEX APPROVED  
VERSION (4-20mA ONLY)
- REMOTE CAPILLARY SENSING  
MODELS
- LARGE FLUSH FACE  
STAINLESS STEEL MEDIA  
DIAPHRAGM
- HYGIENIC MODELS FOR FOOD  
INDUSTRY



## PRESSURE RANGES

0 - 1bar vac through to 0 - 1000bar , see table below for list of all standard pressure ranges.

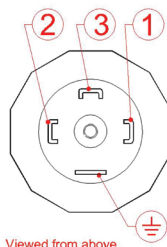
Range (bar)	Order Code	Range (bar)	Order Code
0-1 Vac	V001	0-25	0025
0-0.2	00.2	0-40	0040
0-0.5	00.5	0-60	0060
0-1	0001	0-100	0100
0-2.5	02.5	0-160	0160
0-4	0004	0-250	0250
0-6	0006	0-400	0400
0-10	0010	0-600	0600
0-16	0016	0-1000	1000

## DIMENSIONS (in mm)



### ELECTRICAL CONNECTION

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

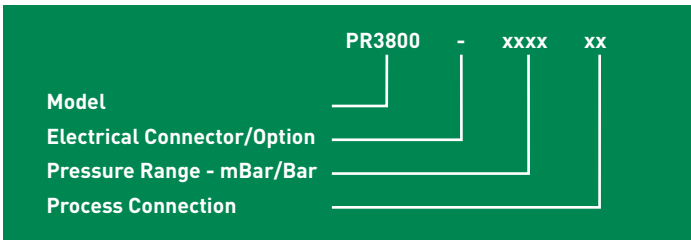


Viewed from above with socket removed.

### ELECTRICAL CONNECTION

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

### Order Code

-

EX

### PROCESS CONNECTION

Pipe Clamp (Tri-clover) 1.5" 316L S/Steel PR3800

Pipe Clamp (Tri-clover) 2" 316L S/Steel PR3800

RJT 38mm female 316L S/St PR3820

DIN11851 female 32mm 316L S/St PR3820

SMS 40mm female 316L S/St PR3820

Homogeniser High Pressure 316L S/St PR3840

### Order Code

BG

BH

BJ

BR

BV

BZ

### EXAMPLE

Output signal 4-20mA

DIN 43650 plug and socket

Pressure range 0-10barg

Pressure connection 1.5" Pipe Clamp flush diaphragm

### Order Code

PR3800

-

0010

BG

Correct Part Number

For options not listed contact sales team

PR3800-0010BG

## SPECIFICATION

### PRESSURE REFERENCE

Gauge

### OVERPRESSURE

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

1.5x ranges 0-200mbar to 400bar

1.2x ranges 0-600bar to 1000bar

### OUTPUT SIGNAL

4-20 mA (2 wire configuration) as standard. Optional outputs available are:

0-5 Vdc (4 wire),

0-10 Vdc (4 wire)

### ZERO OFFSET AND SPAN TOLERANCE

$\pm 0.16$ mA

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

### SUPPLY VOLTAGE

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

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)

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

### PRESSURE MEDIA

All fluids compatible with 316L stainless steel.

### OPERATING TEMPERATURE RANGE

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

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

### TEMPERATURE EFFECTS

$\pm 2.5\%$ FS total error band for  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

Typical thermal zero and span coefficients  $\pm 0.04\%$ 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 $^{\circ}\text{C}$  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 =  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

Max. cable length = 105m

### ELECTROMAGNETIC COMPATABILITY

Emissions: EN61000-6-4

Immunity: EN61000-6-2

### PRESSURE CONNECTION

Please contact our sales department for information on our full range of process connections.

### ELECTRICAL CONNECTION

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

Option: flying lead with optional cable length

**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.





# Protran® PR3850

FLUSH DIAPHRAGM PRESSURE TRANSMITTER



- 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

## 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).



## PRESSURE RANGES

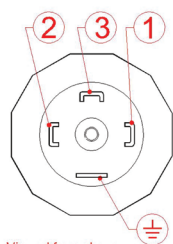
0 - 4bar through to 0 - 400bar, see table below for list of all standard pressure ranges.

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)



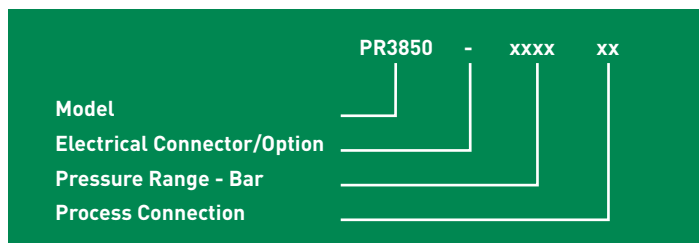
ELECTRICAL CONNECTION (mA)	
Pin No.	2 wire
1	+supply
2	4-20mA signal
3	not fitted to case
⊕	



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

## 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

## 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  $\pm 0.5\%$ 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

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

### SUPPLY VOLTAGE

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

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

### PRESSURE MEDIA

All fluids compatible with 316 stainless steel.

### OPERATING TEMPERATURE RANGE

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

### TEMPERATURE EFFECTS

$\pm 2.5\%$ FS total error band for  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .  
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 IIIC T135 $^{\circ}\text{C}$  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 =  $-20^{\circ}\text{C}$  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 integral Nitrile seal and flush 316L diaphragm.

### ELECTRICAL CONNECTION

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

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# 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).

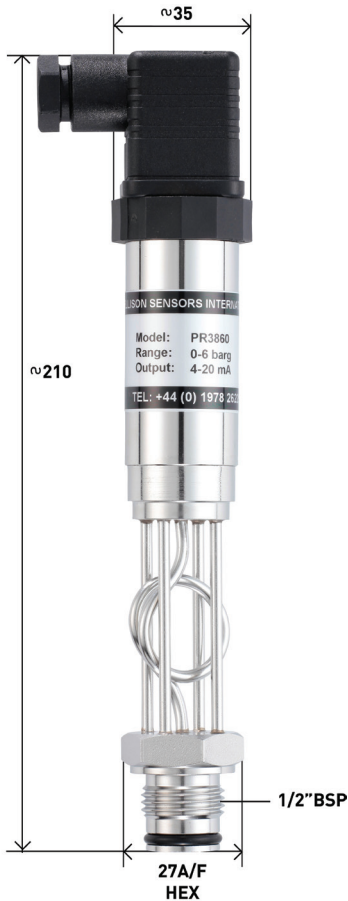


## PRESSURE RANGES

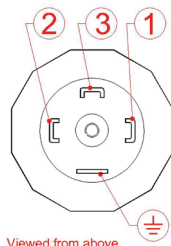
0 - 10bar through to 0 - 400bar see table below for list of all standard pressure ranges.

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)

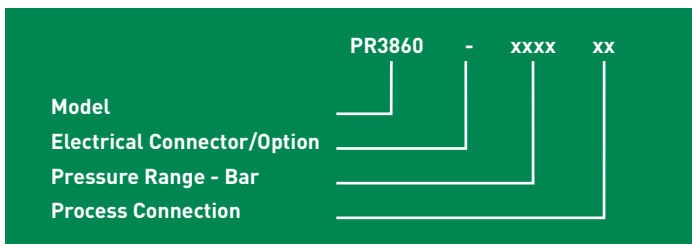


ELECTRICAL CONNECTION (mA)	
Pin No.	2 wire
1	+supply
2	4-20mA signal
3	not fitted to case
	⊥



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

$\pm 0.16$  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



## 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.

- 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

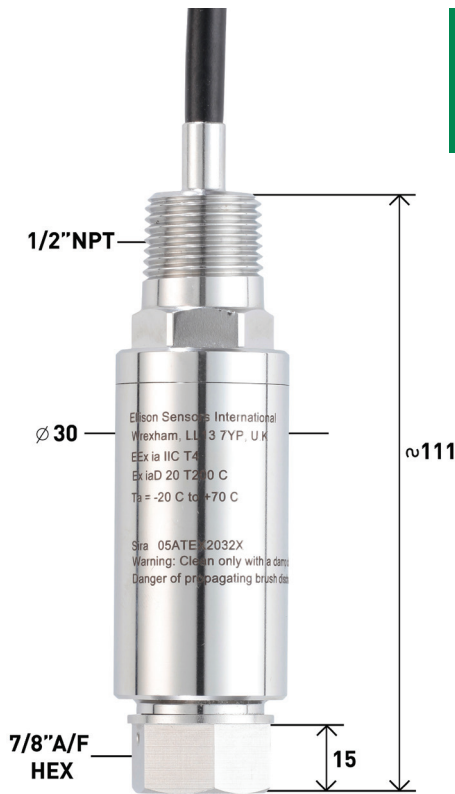


## PRESSURE RANGES

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

## 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:  $-40^\circ$  to  $+85^\circ C$   
 Media:  $-50^\circ$  to  $+125^\circ C$   
 Storage:  $5^\circ$  to  $40^\circ C$

### TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for  $-20^\circ$  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

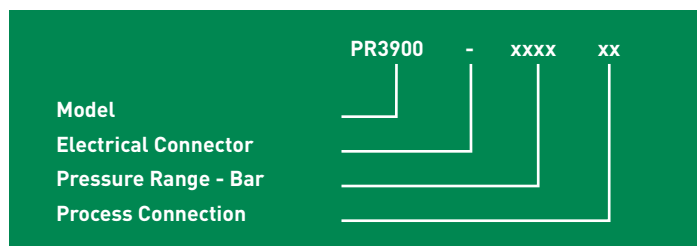
Fully welded housing, IP67 when correctly installed to conduit connection.

### 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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## 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







# 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

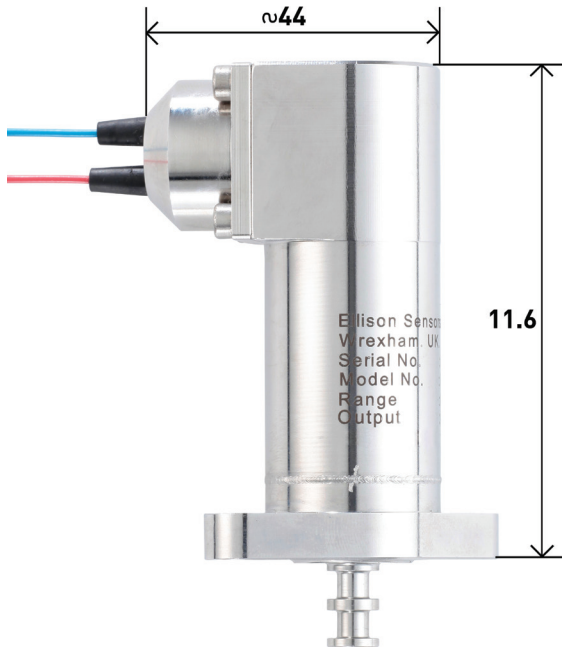


## PRESSURE RANGES

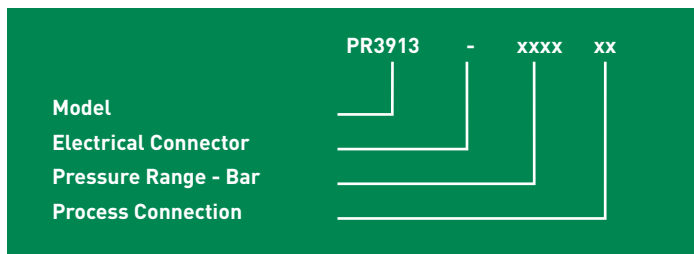
Typical ranges from 0-200bar to 0-1000bar. Contact the sales office for further information.

## 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

$\pm 0.10$ 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:  $-20^\circ\text{C}$  to  $+40^\circ\text{C}$   
Storage:  $5^\circ\text{C}$  to  $+40^\circ\text{C}$

### TEMPERATURE EFFECTS

$\pm 0.015\%$ fs total error band for  $-20^\circ$  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 =  $-20^\circ\text{C}$  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.

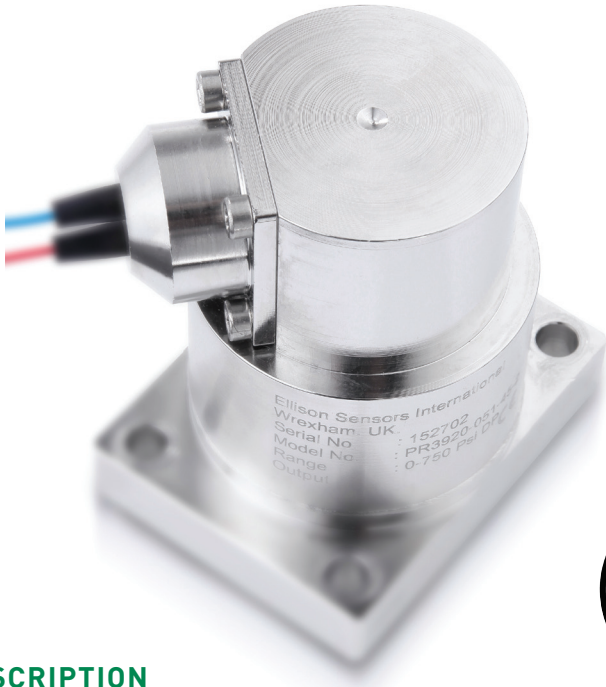
### ELECTRICAL CONNECTION

Cable outlet or Subsea connector options available



# Protran® PR3920

SUBSEA D.P. TRANSMITTER



## DESCRIPTION

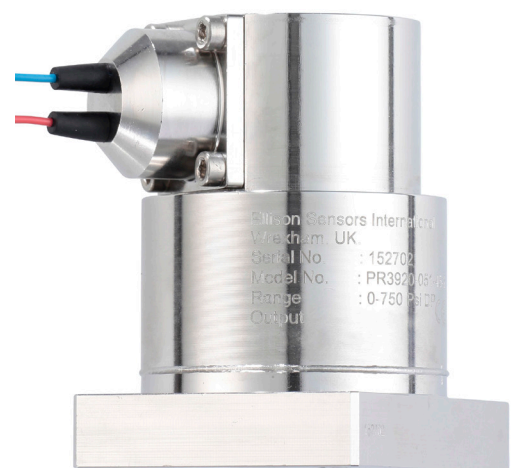
The PR3920 differential pressure transmitter provides very accurate low pressure wet-wet differential pressure measurement on extremely high line pressure sources. Designed for permanent installation in very demanding subsea applications the housing is completely sealed to resist 300 bar external pressure. 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

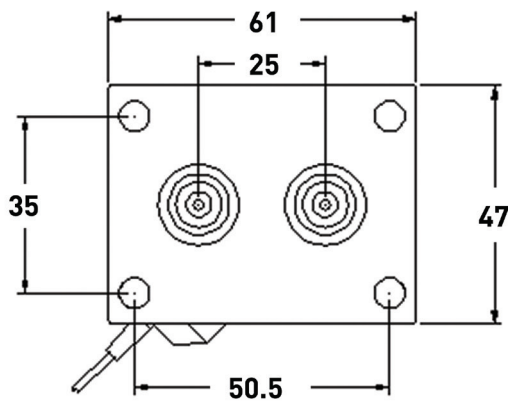
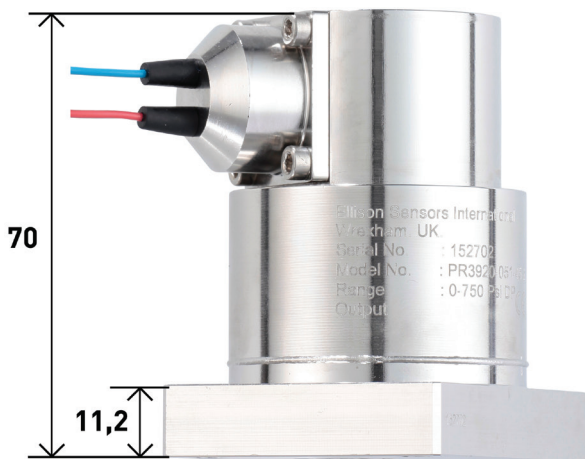


## PRESSURE RANGES

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)



**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

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  $\pm 0.20$ mA

### SPAN TOLERANCE

16mA.  $\pm 0.20$ 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:  $-10^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Storage:  $5^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$

### TEMPERATURE EFFECTS

$\pm 1.5\%$ FS total error band for  $-10^{\circ}$  to  $+70^{\circ}\text{C}$   
Typical thermal zero and span coefficients  $\pm 0.02\%$ 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 = 74Nf  
Temperature range =  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
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)

