Pressure Transmitters and Transducers

ESI Technology Ltd

The worldwide specialist for customised high precision pressure transmitters and transducers

For decades, ESI Technology with headquarters in Wrexham (UK) has served its customers with consistent product development, special engineered solutions and outstanding technical service and sales support.

In 2009 ESI Technology Ltd was acquired by SUCO. Since then ESI stands for Electronics, Sensors and Instruments. By forming part of a bigger organisation, yet keeping its own independence, ESI has gained the strength to expand its sales efforts and services world-wide.

ESI Technology has become one of the leading suppliers for specialised pressure sensors by offering bespoke solutions for specific applications.

With a dedicated manufacturing and engineering facility in Wrexham, ESI serves an extensive range of major industries such as Oil and Gas, Subsea, Aerospace, Marine, Process, Test and Calibration.

Being one of the key suppliers to these industries requires high performance, not only of its products, but also from design and sourcing through to shipment and customer service, ESI's Management System is approved to ISO 9001:2008 and ATEX, IECEx and DNV-GL approval is available on a wide range of products.

Throughout the product range, ESI uses a variety of state of the art sensor technologies to make each product a perfect fit to the desired application.

The jewel of ESI's sensor technologies is Silicon-on-Sapphire, which has redefined the performance capability of pressure monitoring products.

Additional services, such as tailoring of the existing product range to suit application requirements, product conditioning such as ESS (Environmental Stress Screening) and product documentation packaging, make ESI the perfect partner for customers who need a bespoke service.

With a wide sales network, ESI Technology is able to deliver its special services globally. If you can't find the suitable solution on the following pages, please do not hesitate to contact the ESI Technology sales team or one of its partners who are always close by.

We are looking forward to supporting you!

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S.05 High Pressure Transmitter

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Pressure Ranges:	From 0 – 600 bar up to 5,000 bar
Sensor Technology:	Silicon-on-Sapphire (SoS)
Accuracy:	≤ ±0.25 % of span BFSL
Output Signal:	10 mV/V or 0–5 V or 0–10 V or 4–20 mA
Wetted Parts:	All Titanium, machined from a single piece (≥1,000 bar)
Process Connection:	Autoclave F250-C female; M16 x 1.5 female
Options:	ATEX/IECEx (available only for 4–20 mA), includes mining areas (Group I M1) DNV-GL certified option
Types:	HP1000; HP1001; HP1002; HP1003; HP1011; HP1012; HP1100; HP1101; HP1102; HP1103; HP1111; HP1112

S.06 Low Pressure Transmitter

page 31

Pressure Ranges:	From 0–50 mbar up to 1,000 mbar
Sensor Technology:	Piezoresistive Silicon Sensor
Accuracy:	≤ ±0.5 % of span BFSL
Output Signal:	10 mV/V (typ.) or 0–5 V or 0–10 V or 4–20 mA
Wetted Parts:	SAE 316 stainless steel
Process Connection:	¼" BSP male (G ¼); ½" BSP male (G1/2); ¼" NPT male; ½" NPT male (others on request)
Types:	LP1000; LP1001; LP1011; LP1002; LP1012; LP1003;

S.07 High Precision Pressure Transducer

page 35

Pressure Ranges:	0–500 mbar to 1,500 bar
Sensor Technology:	Silicon-on-Sapphire (SoS)
Accuracy:	≤ ±0.1 % of span BFSL
Temperature Effects:	±1.0 % FS max. thermal error band over -20 °C to +70 °C
Output Signal:	10 mV/V (typ.) or 0–5 V or 0–10 V
Wetted Parts:	All Titanium Process Connection: ¼" BSP male (G ¼) or ¼" NPT male
Electrical Connection :	MIL-C-26482 6 pin Bayonet or 1 m PTFE cable
Options:	ATEX/IECEx (available only for mV output), includes mining areas (Group I M1)
Types:	HI2000; HI2001; HI2002 HI2010; HI2011; HI2012

Contents

S.12 Differential Pressure Transmitter

page 61

Pressure Ranges:	0–5 mbar up to 200 bar
Accuracy:	≤ ±0.3 % of span BFSL
Output Signal:	4 – 20 mA (other options on request)
Wetted Parts:	Suitable for liquids or gases
Options:	ATEX/IECEx (available only for 4–20 mA), includes mining areas (Group I M1)
Types:	PR3200; PR3202; PR3203; PR3204

S.13 Standard Industrial Pressure Transmitter

page 65

Pressure Ranges:	From Vac to 1,000 bar
Output Signal:	2 mV/V typical, 0-5 V, 0-10 V or 4-20 mA
Process Connection:	1/4" BSP (G1/4); 1/2" BSP male (G1/2) or 1/4" NPT Male (other options available)
Option:	ATEX/IECEx (available only for 4–20 mA), includes mining areas (Group I M1)
Types:	GS4000; GS4001; GS4011; GS4002; GS4012; GS4003; GS4100; GS4101; GS4111; GS4102; GS4112; GS4103; PR3101; PR3102; PR3103

S.14 Heavy Duty/ Wireless Pressure Transmitter

page 71

Pressure Ranges:	From Vac up to 1,500 bar
Sensor Technology:	Silicon-on-Sapphire (SoS)
Output Signal:	4-20 mA or radio transmission
Process Connection:	1/2" BSP male (G1/2); other options available
Options:	ATEX/IECEx (available only for 4–20 mA), includes mining areas (Group I M1) or Wireless UHF radio transmitter (non-ATEX/IECEx)
Types:	PR9000; PR9500; RX9500

S.15 Accessories

page 77

High Temperature Pressure Adapter
Plug-in Display
Panel Meter

Technical Explanation

for ESI Pressure Sensors

Technical Explanation

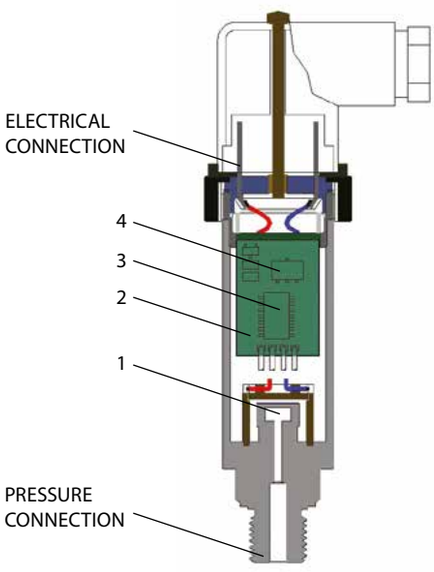
What is a pressure transmitter?

A pressure transmitter (also called pressure transducer or pressure converter) is a component used to convert a pneumatic or hydraulic pressure to an electrical (usually analogue and linear) output signal, such as a current or voltage.

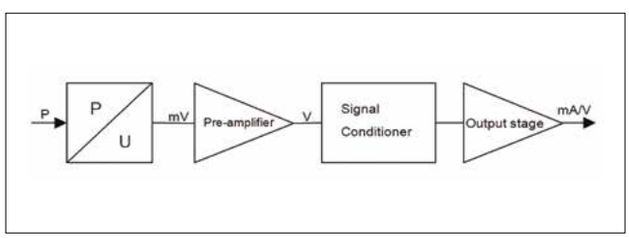
How does a pressure transmitter work?

The pressure measuring cell has a membrane (1) that is exposed to the pressure to be measured. Affixed on this membrane is a bridge circuit consisting of four ohmic resistors in the form of a Wheatstone bridge. The values of these resistors change proportionally to the pressure load present at the measuring cell or membrane. The bridge voltage of the measuring cell is amplified in the evaluation electronics (2) and a calibrated signal is established in the signal conditioner / microcontroller (3).

The downstream output stage (4) converts this signal to the output signal required (such as 4 - 20 mA, 0 – 5 V, or 0 – 10 V).



Block diagram



SoS technology

In the silicon-on-sapphire technology, the substrate of the thin film measuring cell is synthetic sapphire. This has excellent mechanical and temperature-stable properties, and prevents undesired parasitic effects, thereby having a positive effect on accuracy and stability. In conjunction with a titanium membrane, this results in a virtually unique coaction between the temperature coefficients of sapphire and titanium. This is because, unlike silicon and high-grade steel, they are more closely matched and so only require a low level of compensation overhead. This also has a favourable effect on long-term stability.

"Oil-filled" high-grade steel measuring cell (Isolated Piezoresistive)

IIn this measuring cell technology, the piezo-resistive measuring cell is packaged within a metallic housing filled with fluorine or silicone oil. This means the measuring cell is virtually free of external mechanical stresses. Fluorine oil has excellent characteristics as regards temperature and ageing behaviour, and is not flammable and so lends itself perfectly to deployment in oxygen applications. It is not recommended for food applications.

Ceramic measuring cell / thick film technology

Ceramic thick film pressure measuring cells are made up of a sintered ceramic body. The ceramic body sleeve already has the key geometries for the subsequent pressure range and thus, the pressure range required is established with grinding and lapping. The resistors are imprinted with thick film technology and interconnect to form a measuring bridge.

Bonded foil measuring cell

Bonded foil pressure measuring cells are based on the same principle as a strain gauge. Four foil gauges, made from constantan on a flexible polyimide backing, are bonded to a high-grade steel diaphragm in the form of a Wheatstone bridge circuit. The diaphragm flexes and strains in response to an applied pressure and causes an electrical resistance change in the strain gauges producing a sensitivity of 2 mV/V.

Piezoresistive silicon

The measuring cell consists of a piezoresistive silicon sensing element without a protective membrane. The cell is packaged in a plastic housing for direct mounting to a printed circuit board. It is suitable only for air and non-corrosive / non-ionising gases, and is typically used for very low pressure air differential pressure measurement.

Standard signals

Output signals 4 - 20 mA, 0 – 5 V and 0- 10 V in particular are established in the industry. Unamplified millivolt (mV) output signals are available for some variants. Also offered are transmitters with digital USB output or customer-specific output signals (such as 1 – 5 V).

Output configuration $_{V}$

The output configuration for a 4-20 mA signal is a 2 wire connection. For 0-5 V and 0-10 V signals, the configuration is either 3 wire or 4 wire connection depending on the model variant. All mV outputs are 4 wire

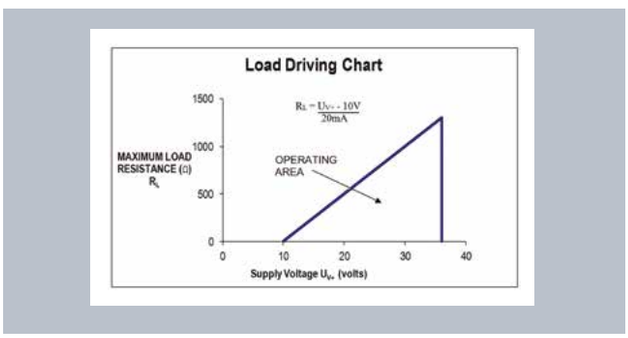
Load / apparent ohmic resistance for pressure transmitters

An appropriate ohmic load must be connected to guarantee perfect functioning of a pressure transmitter.
The load resistance for transmitters with a voltage output; 0 – 5 V should be at greater than 5 kΩ, and for 0-10 V should be greater than 10 kΩ For mV output the measuring instrument input impedance should be as high as possible to reduce loading errors and should be no lower than 1 MΩ

For transmitters with a current output (4 - 20 mA), the maximum load is calculated using the following formula:

$$R_L = \frac{U_{V+} - U_{V+(min)}}{20mA}$$

Where U_(v+) (UB) is the actual supply voltage and Uv+ (min) is the minimum supply voltage to be taken from the data sheet. For example with a supply voltage range 10 – 36 VDC and thus Uv+ (min) = 10 V, this gives the following operating range for example:

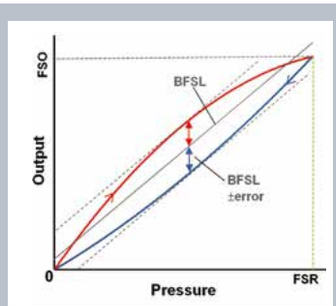


Operating/supply voltage

All pressure transmitters work with DC voltage and have no galvanic isolation. Within the thresholds specified in the relevant data sheet, the supply voltage may change without it having a bearing on the output signal. In order to guarantee the functionality of a transmitter, the supply voltage should not fall below the minimum operating voltage. The maximum operating voltage may not be exceeded to ensure the electronics are not damaged beyond repair.

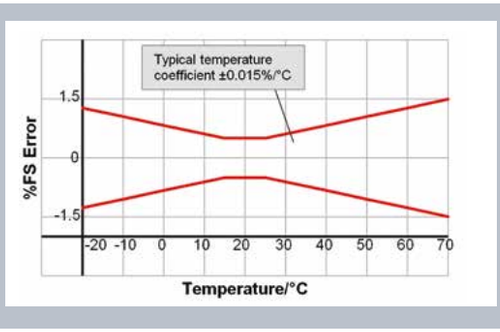
Accuracy

ESI defines accuracy as the combined error due Non-linearity, Hysteresis and Repeatability (NLHR), defined at room temperature and condition as new. The maximum deviation from an ideal characteristic curve is defined in accordance with Best Fit Straight Line (BFSL) method. Other factors that have a bearing on accuracy, such as zero and span tolerance and temperature error, are specified separately.



Temperature errors and ranges

The temperature (for both ambient and medium) generally has a significant bearing on the accuracy of a pressure transmitter. Pressure transmitters are temperature compensated over a particular range corresponding to the typical application. This means that temperature errors within this temperature range are minimised by means of circuitry design and algorithms. The temperature error is added to the accuracy and is shown in the total error band of the pressure transmitter, also called "butterfly graph". The maximum error is not defined outside the compensated temperature range but the transmitter will still function however. To prevent mechanical and electrical damage, pressure transmitters may not be deployed beyond the threshold temperature ranges specified in the data sheet.



Our Ex Certification

for ESI Pressure Sensors

Our Ex Certification

ESI has an extensive range of intrinsically safe transmitters, all ATEX and IECEx approved for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

II 1 G Ex ia IIC T4 Ga
II 1 D Ex ia IIIC T135°C Da
I M 1 Ex ia I Ma

Putting safety first in explosive environments…..

Our range of Ex certified pressure transmitters have both ATEX and IECEx approval.

ATEX is an EU Directive (94/9/EC) that ensures products are safe to use in explosive environments.

IECEx scheme certifies worldwide conformity to international standards and provides assurance that equipment for use in explosive atmospheres are manufactured and operated according to the highest International Standards of safety.

The most common protection method for process instrumentation is Intrinsic Safety (IS) and this is the protection method used in ESI transmitters. With these instruments the low voltage electronics is designed in such a way that it is incapable of releasing enough energy thermally or electrically to cause an ignition of flammable gases or liquids. To achieve this there are limitations set on levels of voltage, current, capacitance and inductance such that the available energy at a sparking device is below the minimum ignition energy of the potentially explosive atmosphere.

Intrinsic safety equipment must undergo Type Examination by an approved third party. It involves a detailed process of examination, testing and assessment of equipment confirming and demonstrating that the product is safe to use within potentially explosive atmospheres. The certification process must be undertaken by a Notified Body.

Hazardous Zone Classification

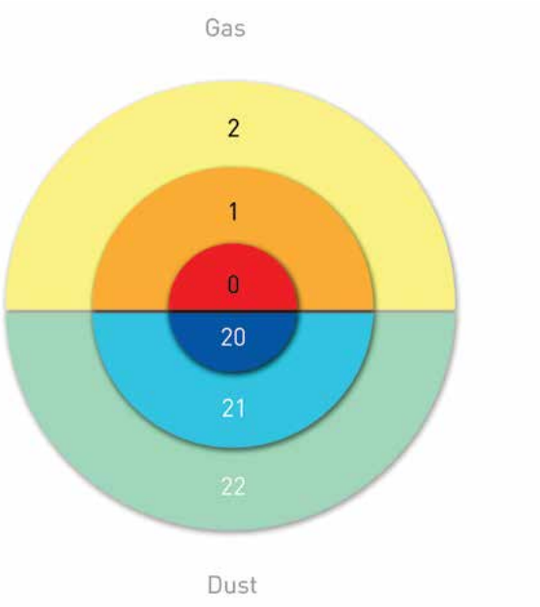
Hazardous areas are classified into zones (0, 1, 2 for gas-vapour-mist and 20, 21, 22 for dust)

The zones are determined by the type of combustible material present, the length of time it is present, and the physical construction of the area where such material is present.

Zone 0 or 20 locations are those areas where ignitable or flammable concentrations of combustible gases or dusts exist continuously or for long periods of time

Zone 1 or 21 locations are those areas where ignitable or flammable concentrations of combustible gases or dusts are likely to or frequently exist during normal operations

Zone 2 or 22 locations are those areas where ignitable or flammable concentrations of combustible gases or dusts are not likely to occur during normal operations or will exist for only a brief period of time.



Zone 0 and 20 require Category 1 marked equipment, Zone 1 and 21 require Category 1 or 2 marked equipment and Zone 2 and 22 require Category 1, 2, or 3 marked equipment. Zone 0 and 20 are the zones with the highest risk of an explosive atmosphere being present

Using an Intrinsically Safe Barrier

The essential concept behind intrinsic safety is the restriction of electrical energy to apparatus, and the interconnecting wiring exposed to the potentially explosive atmosphere, to a level that will not cause ignition by either sparking or heating effects. It is therefore a low-energy signaling technique that prevents explosions from occurring by ensuring that the energy transferred to a hazardous area is well below the energy required to initiate an explosion.

This is achieved by limiting the electrical energy transferred to a hazardous area through the use of an Intrinsic Safety Barrier situated in a safe area.

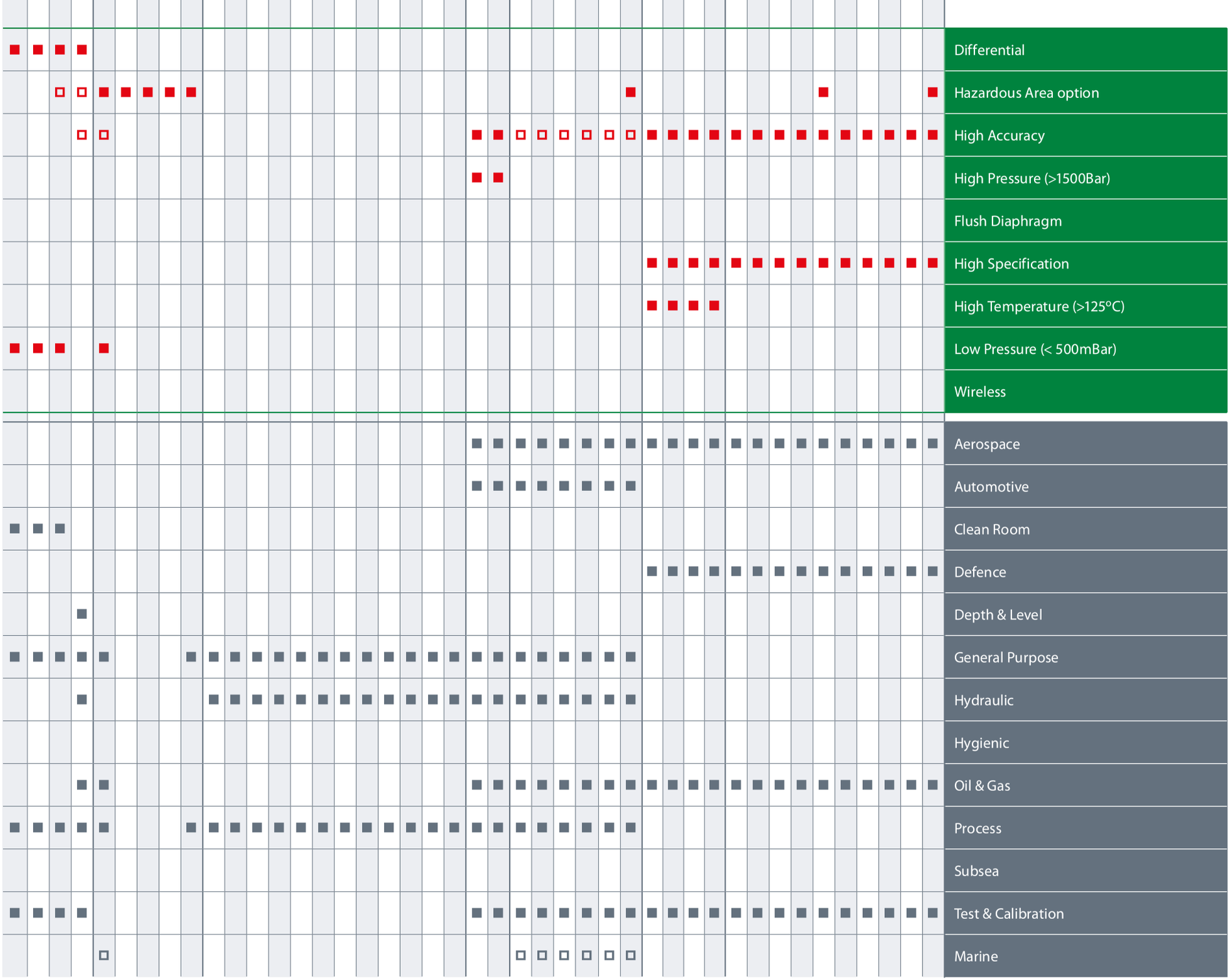
Intrinsic Safety Barriers provide both power and signal isolation. A safety barrier is used between the "safe area" and the "hazardous area" so that any fault that generates a high energy level would not get carried over to the hazardous area.

Contact the sales team for more information sales@esi-tec.com

Selection Matrix

■ Standard
□ Option

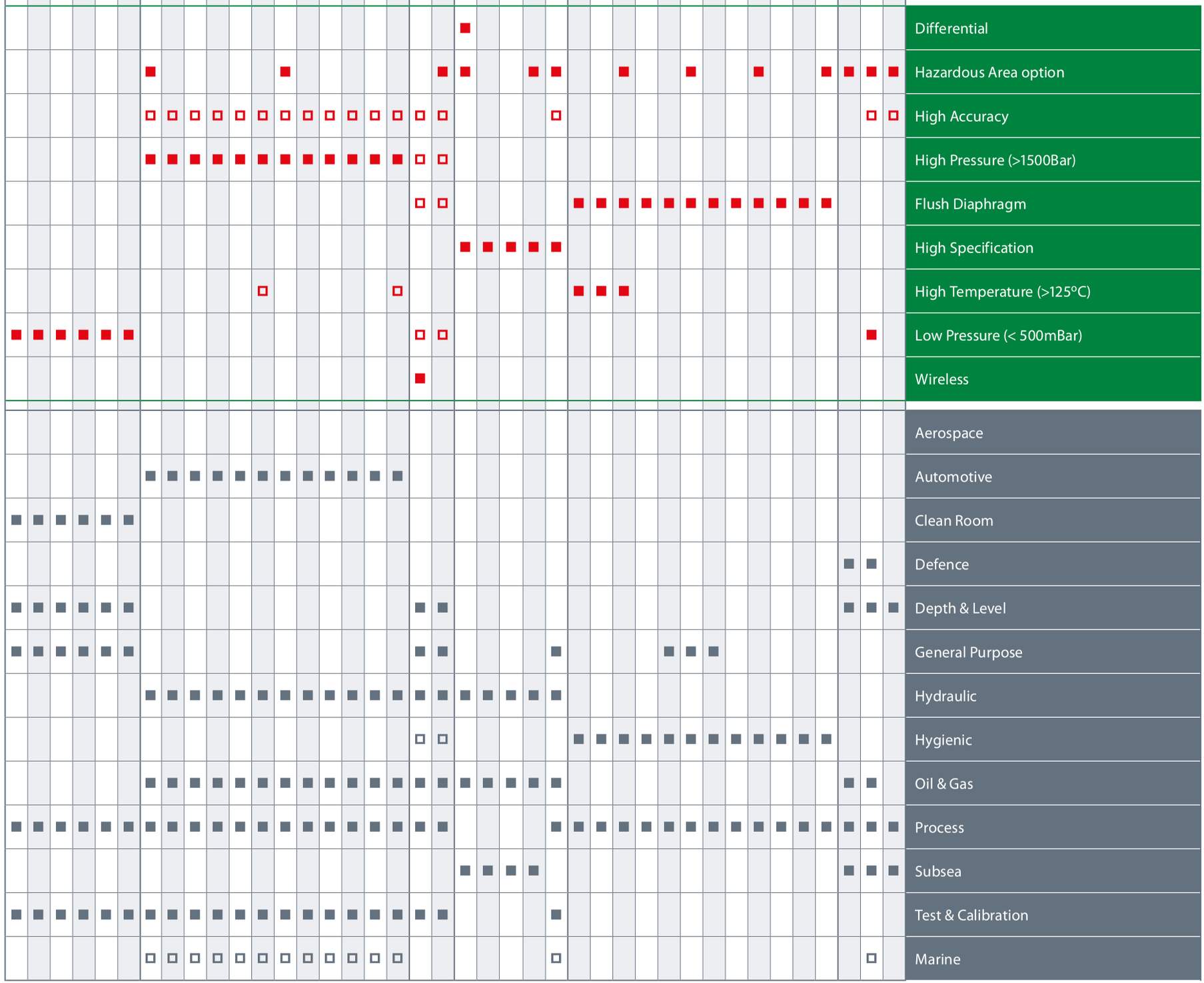
			Page Number	Output	No. of wires	Silicon-on-Sapphire	Bonded Foil Strain Gauge	Ceramic Thick Film	Isolated Piezoresistive Silicon	Piezoresistive Silicon
Hispec High Specification	**HI2000**	Pressure Transducer, cable outlet	37	10mV/V	4	■				
	HI2001	Pressure Transducer, cable outlet	37	0-5 V	4	■				
	HI2004	Pressure Transducer, cable outlet	37	0-5 V	3	■				
	HI2002	Pressure Transducer, cable outlet	37	0-10 V	4	■				
	HI2005	Pressure Transducer, cable outlet	37	0-10 V	3	■				
	HI2010	Pressure Transducer, MIL-C-26482	37	10mV/V	4	■				
	HI2011	Pressure Transducer, MIL-C-26482	37	0-5 V	4	■				
	HI2014	Pressure Transducer, MIL-C-26482	37	0-5 V	3	■				
	HI2012	Pressure Transducer, MIL-C-26482	37	0-10 V	4	■				
	HI2015	Pressure Transducer, MIL-C-26482	37	0-10 V	3	■				
Hispec High Temperature	**HI2200**	Transducer Unrationalised, Cable Outlet, max. 200°C	47	10-20mV/V	4	■				
	HI2210	Transducer Unrationalised, MIL-C-26482, max. 200°C	47	10-20mV/V	4	■				
	HI2300	Transducer Compensated, Cable Outlet, max. 200°C	47	10mV/V	4	■				
	HI2310	Transducer Compensated, MIL-C-26482, max. 200°C	47	10mV/V	4	■				
Genspec General Purpose	**GS4200**	Silicon-on-Sapphire, Pressure Transmitter	25	4-20mA	2	■				
	GS4201	Silicon-on-Sapphire, Pressure Transducer	25	10mV/V	4	■				
	GS4202	Silicon-on-Sapphire, Pressure Transducer	25	0-5 V	4	■				
	GS4212	Silicon-on-Sapphire, Pressure Transducer	25	0-5 V	3	■				
	GS4203	Silicon-on-Sapphire, Pressure Transducer	25	0-10 V	4	■				
	GS4213	Silicon-on-Sapphire, Pressure Transducer	25	0-10 V	3	■				
USB	**GS4200-USB**	Digital Pressure Transducer USB Interface	21	USB	n/a	■				
	GD4200-USB	Dynamic Digital Pressure Transducer USB Interface	21	USB	n/a	■				
Genspec Standard Industrial	**GS4000**	Pressure Transducer, Micro DIN connector	67	2mV/V	4		■			
	GS4001	Pressure Transducer, Micro DIN connector	67	0-5 V	4		■			
	GS4011	Pressure Transducer, Micro DIN connector	67	0-5 V	3		■			
	GS4002	Pressure Transducer, Micro DIN connector	67	0-10 V	4		■			
	GS4012	Pressure Transducer, Micro DIN connector	67	0-10 V	3		■			
	GS4003	Pressure Transmitter, Micro DIN connector	67	4-20mA	2		■			
	GS4100	Pressure Transducer, Micro DIN connector	67	2mV/V	4			■		
	GS4101	Pressure Transducer, Micro DIN connector	67	0-5 V	4			■		
	GS4111	Pressure Transducer, Micro DIN connector	67	0-5 V	3			■		
	GS4102	Pressure Transducer, Micro DIN connector	67	0-10 V	4			■		
	GS4112	Pressure Transducer, Micro DIN connector	67	0-10 V	3			■		
	GS4103	Pressure Transmitter, Micro DIN connector	67	4-20mA	2			■		
Protran Process	**PR3100**	Standard Industrial Pressure Transmitter	69	4-20mA	2		■	■		
	PR3101	Standard Industrial Pressure Transducer	69	2mV/V	4		■	■		
	PR3102	Standard Industrial Pressure Transducer	69	0-5 V	4		■	■		
	PR3103	Standard Industrial Pressure Transducer	69	0-10 V	4		■	■		
	PR3110EX	ATEX/IECEx Certified Low Pressure Transmitter	43	4-20mA	2				■	
Protran Differential	**PR3200**	Silicon-on-Sapphire, Liquid Pressure Transmitter	63	4-20mA	2	■				
	PR3202	Air/Non-corrosive Gas Pressure Transmitter	63	4-20mA	2					■
	PR3203	Air/Non-corrosive Gas Pressure Transducer	63	0-5 V	3					■
	PR3204	Air/Non-corrosive Gas Pressure Transducer	63	0-10 V	3					■


Differential
Hazardous Area option
High Accuracy
High Pressure (>1500Bar)
Flush Diaphragm
High Specification
High Temperature (>125°C)
Low Pressure (< 500mBar)
Wireless
Aerospace
Automotive
Clean Room
Defence
Depth & Level
General Purpose
Hydraulic
Hygienic
Oil & Gas
Process
Subsea
Test & Calibration
Marine

Selection Matrix

■■■ Standard
□□□ Option

			Page Number	Output	No. of wires	Silicon-on-Sapphire	Bonded Foil Strain Gauge	Ceramic Thick Film	Isolated Piezoresistive Silicon	Piezoresistive Silicon
Protran Submersible Depth/Level	**PR3420**	Pressure Transmitter, Sludge Platform	53	4-20 mA	2				■	
	PR3441	Pressure Transmitter, Pu Vented Cable	53	4-20 mA	2				■	
	PR3442	Slimline Pressure Transmitter, 16 mm diameter	53	4-20 mA	2				■	
Protran Flush Diaphragm	**PR3800**	Pressure Transmitter Pipe Clamp	57	4-20mA	2			■		
	PR3801	Pressure Transducer Pipe Clamp	57	0-5 V	4			■		
	PR3802	Pressure Transducer Pipe Clamp	57	0-10 V	4			■		
	PR3820	Pressure Transmitter DIN11851 / SMS / RJT	57	4-20mA	2			■		
	PR3821	Pressure Transducer DIN11851 / SMS / RJT	57	0-5 V	4			■		
	PR3822	Pressure Transducer DIN11851 / SMS / RJT	57	0-10 V	4			■		
	PR3850	Pressure Transmitter 1/2" BSP (G1/2)	59	4-20mA	2			■		
	PR3851	Pressure Transducer 1/2" BSP (G1/2)	59	0-5 V	4			■		
	PR3852	Pressure Transducer 1/2" BSP (G1/2)	59	0-10 V	4			■		
	PR3860	High Temperature Pressure Transmitter 1/2" BSP (G1/2)	49/59	4-20mA	2			■		
	PR3861	High Temperature Pressure Transducer 1/2" BSP (G1/2)	49/59	0-5 V	4			■		
	PR3862	High Temperature Pressure Transducer 1/2" BSP (G1/2)	49/59	0-10 V	4			■		
Protran Oil & Gas	**PR3900**	Hazardous Area Pressure Transmitter	41	4-20mA	2	■				
	PR3913	Control Valve Pressure Transmitter	17	4-20mA	2	■				
	PR3914	Subsea Pressure Transmitter	17	4-20mA	2	■				
	PR3915	Subsea Dual Redundant Pressure Transmitter	17	4-20mA	2	■				
	PR3920	Subsea DP Control Valve Pressure Transmitter	17	4-20mA	2	■				
Protran Heavy Duty	**PR9000**	Process Pressure Transmitter	73	4-20mA	2	■				
	PR9500	Wireless Pressure Transmitter	74	4-20mA	2	■				
Hipres High Pressure	**HP1000**	Silicon-on-Sapphire Transducer to 2,000 bar	29	10 mV/V	4	■				
	HP1001	Silicon-on-Sapphire Transducer to 2,000 bar	29	0-5 V	4	■				
	HP1011	Silicon-on-Sapphire Transducer to 2,000 bar	29	0-5 V	3	■				
	HP1002	Silicon-on-Sapphire Transducer to 2,000 bar	29	0-10 V	4	■				
	HP1012	Silicon-on-Sapphire Transducer to 2,000 bar	29	0-10 V	3	■				
	HP1003	Silicon-on-Sapphire Transducer to 2,000 bar	29	4-20mA	2	■				
	HP1100	Silicon-on-Sapphire Transducer to 5,000 bar	29	10mV/V	4	■				
	HP1101	Silicon-on-Sapphire Transducer to 5,000 bar	29	0-5 V	4	■				
	HP1111	Silicon-on-Sapphire Transducer to 5,000 bar	29	0-5 V	3	■				
	HP1102	Silicon-on-Sapphire Transducer to 5,000 bar	29	0-10 V	4	■				
	HP1112	Silicon-on-Sapphire Transducer to 5,000 bar	29	0-10 V	3	■				
	HP1103	Silicon-on-Sapphire Transducer to 5,000 bar	29	4-20mA	2	■				
Lopres Low Pressure	**LP1000**	Air and Liquid Transducer	33	10mV/V	4				■	
	LP1001	Air and Liquid Transducer	33	0-5 V	4				■	
	LP1011	Air and Liquid Transducer	33	0-5 V	3				■	
	LP1002	Air and Liquid Transducer	33	0-10 V	4				■	
	LP1012	Air and Liquid Transducer	33	0-10 V	3				■	
	LP1003	Air and Liquid Transducer	33	4-20mA	2				■	


Differential
Hazardous Area option
High Accuracy
High Pressure (>1500Bar)
Flush Diaphragm
High Specification
High Temperature (>125°C)
Low Pressure (< 500mBar)
Wireless
Aerospace
Automotive
Clean Room
Defence
Depth & Level
General Purpose
Hydraulic
Hygienic
Oil & Gas
Process
Subsea
Test & Calibration
Marine

S.01

Special Solutions

- Application specific design solutions
- Customised housing design
- Choice of output signals and pressure ranges
- Specialised process connections
- Various electrical connector options
- Special housing materials

From Conception to Completion… The custom design service from ESI.

Whatever your application may be, there are times when your requirements are not straightforward and you need a tailor made pressure measurement solution to your unique specifications.

ESI Technology specialise in the design and manufacture of pressure transducers and transmitters for a wide range of industries.

In addition to the standard range of instruments, a team of qualified engineers, with extensive experience in electronic, software and mechanical instrumentation offer a complete design service using the latest technologies. The team are able to analyse and interpret customers' specific requirements and create a product that meets, and often exceeds, the exact needs of the application in order to eradicate any compromise from the customer.

The ability to design bespoke solutions, often just minor adjustments to standard products, is a major benefit to customers in certain applications. In addition, ESI have the capabilities to take on major design projects and, using extensive in-house pressure and environmental test equipment, create prototype sensors complete with qualification and first article test reports.

Sensor technology, output signals, pressure ranges, electrical connections and specialised process connections can be adapted to customer requirements. Stringent quality control and inspection is exercised at every stage of the manufacturing process to ensure our customers complete satisfaction with the end product, backed up with technical advice and support. Customer focus and high quality is maintained, regardless of whether the project is small, mid or high volume.

S.02

Oil, Gas & Subsea


PR3914


PR3915


PR3913


PR3920

- Dual Redundant pressure sensors and electronics
- Hyperbaric testing to 3,300 metres depth
- Environmental Stress Screening (ESS)
- Specialised process connections
- Extended service life
- Range of housing materials
- Comprehensive documentation package and certification

Oil, Gas & Subsea

Oil, gas & subsea applications have become a speciality of ESI. The ability to meet exacting requirements for these markets can be illustrated by the evolution of the field proven oil & gas and subsea product range which includes dual redundant and subsea differential designs.

Pressure measurement plays an important role in the oil & gas industry. With the necessity to find oil in less accessible places, the systems utilised in exploration become more complex and the use of pressure transducers and transmitters is increasing. New and more challenging applications require specifically designed solutions to cope with higher static pressures, aggressive processes and environmental conditions. One of our particular areas of expertise is in deep-water subsea applications where we provide specialist transmitters, often for control valve operation and for immersion up to 6,000 metres with an expected service life of 25 years.

Pressure port threads, output signals, pressure ranges, electrical connections and wetted parts can be tailored to adapt to the harsh and unforgiving environments synonymous with the oil, gas and subsea industries. At the heart of the design is ESI's unique Silicon-on-Sapphire sensor technology; a sensor not only with high sensitivity and stability, but also rugged and resilient against high overload pressures and transients.

Optional ATEX and IECEx approved versions of this product range are available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

Product Conditioning

Pre-conditioning and testing is fundamental to the success of our oil, gas and subsea range. Our investment in hyperbaric test facilities means that each and every unit we supply has already been subjected to 3,300 metres of submersion before leaving the factory and the customer can rest assured that there is no concern about leakage or integrity when deploying these pressure transmitters in deep water subsea applications.

Investment in vibration test equipment and automated thermal chambers means that transmitters can be environmentally screened at ESI before shipment, confirming that the units are fit and reliable for a long service life on the seabed. This is a major benefit to the customer as the cost of valve retrieval from a subsea process is extreme.

This investment and commitment means that every customer receives a material requirement package with each transmitter confirming calibration, accuracy, material conformity, hyperbaric test and ESS test certificates

Documentation Support

The provision of documentation to support products is usually beyond the scope of most quality systems, but we have adapted our procedures to offer full and comprehensive document support including certificates of conformity, calibration certificates and material certificates for traceability. Document packages have become a standard requirement in the competitive oil and gas market and ESI are ready to support any new requirements that arise.

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S.03

Genspec Standard GS4200-USB and **Genspec** *DYNAMIC* GD4200-USB

Digital Pressure Transducer

- Sample rate software selection up to 1,000 Hz
- Silicon-on-Sapphire pressure sensor technology
- Choice of pressure ranges from vacuum to 5,000 bar
- Accuracy (NLHR) ±0.15% of span BFSL
- ESI-USB© downloadable software with auto update
- Measure & record up to 16 pressure inputs together
- Create customised test certificate
- Automatic temperature compensation
- Support for easy integration with applications created by C#, VB, Labview and Excel VBA (api dll library)
- 2m lead & carry case included

DESCRIPTION

The GS4200-USB and GD4200-USB Digital Pressure Transducer have been designed to measure, analyse and record pressure directly on your computer without the need for costly I/O interface boards. The user can measure up to 16 pressure inputs simultaneously and easily create customised test certificates.

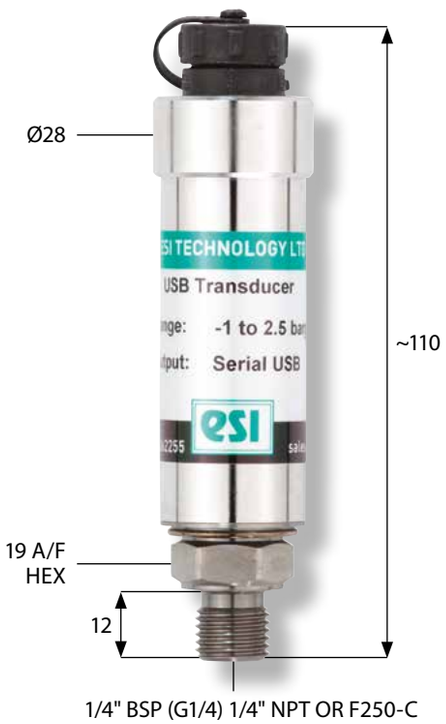
The transducer is powered by the computer's USB port, data is then presented on the PC via the ESI-USB© configurable Windows Interface software. It has instant connection with auto-detection, and will configure automatically with your desktop, laptop or Windows tablet via USB protocol.

The GD4200-USB sample rate enables dynamic pressures to be measured with up to 21 bit resolution at user selectable speeds up to 1,000 Hz. For real-time analysis, data transferred to the PC is achieved without loss of accuracy or bandwidth. This pressure transducer is USB 2.0 compatible, the ESI-USB© interface configuration and analysis software is compatible exclusively with Windows© 7 (32bit & 64bit), 8, 8.1 and 10. 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/ PDF.

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. Nine pressure ranges have been carefully selected to enable the user to cover any pressure that the application requires, from vacuum up to 5,000 bar, via the use of the ESI-USB© digitally self scaling software.

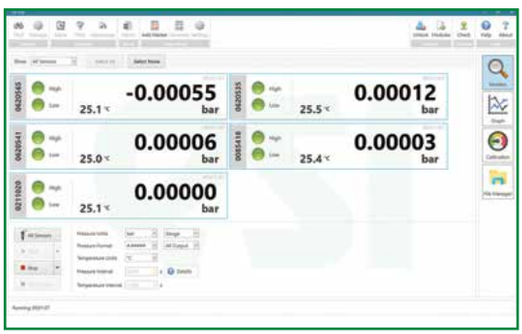
Each unit requires free download of the ESI-USB© software and is supplied with 2m USB lead, rated to IP68, and a convenient carry case.

DIMENSIONS (in mm)



ESI-USB Software

GRAPH SCREEN



MONITOR SCREEN

Genspec Standard GS4200-USB and Genspec DYNAMIC GD4200-USB

Digital Pressure Transducer

TECHNICAL DATA

Type:	GS4200-USB	GD4200-USB
Sensor Technology:	Silicon-on-Sapphire (SoS)	
Output signal:	USB 2.0 compatible	
Supply Voltage:	5 VDC via USB bus	
Pressure Reference:	Gauge (default); Absolute reference input by user	
Standard Pressure Ranges:	-1 to 2.5 bar; 0 - 16 bar; 0 - 100 bar; 0 - 400 bar; 0 - 1,000 bar; 0 - 1,500 bar; 0 - 2,000 bar; 0 - 4,000 bar	-1 to 2.5 bar; 0 - 16 bar; 0 - 100 bar; 0 - 400 bar; 0 - 1,000 bar; 0 - 1,500 bar; 0 - 2,000 bar; 0 - 4,000 bar, 0 - 5,000 bar
Standard Pressure Ranges (other):	User selectable for psi and other measurement units	
Overpressure Safety:	2x up to 400 bar; 1.5x for 1,000 bar; 1.1x for 1,500 bar; 1.5x for 2,000 bar; 1.25x for 4,000 bar	2x up to 400 bar; 1.5x for 1,000 bar; 1.1x for 1,500 bar; 1.5x for 2,000 bar; 1.25x for 4,000 bar; 1.2x for 5,000 bar;
Accuracy NLHR:	≤ ±0.15 % of span BFSL	
Sample Rate:	User selectable to 5 readings per second (5Hz); resolution [3] 21 bits	User selectable to 1,000 samples per second (1,000 Hz) Resolution: 21 bits for ≤5 Hz; 16 bits for >5 - 1,000 Hz
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)	
Operating Media Temperature:	-50 °C to +125 °C (-58 °F to +257 °F)	
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice	
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.015 %FS/ °C	±1.5 %FS total error band for -10 °C to +80 °C. Typical thermal zero and span coefficients ±0.015 %FS/ °C
Electromagnetic Compatibility:	EN61326-1, EN61326-2-3 (Laboratory equipment)	
Wetted Parts:	Titanium alloy	
Pressure Media:	All fluids compatible with titanium alloy	
Pressure Connection:	1/4" BSP male (G1/4); 1/4" NPT 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.	
Software compatibility:	Windows 7, Windows 8, Windows 8.1 and Windows 10	

ORDER MATRIX

Output Wires	Type	Electrical Connector	Pressure Range	Process Connection
Standard (20 Hz)	GS4200-USB			
Dynamic (1,000 Hz)	GD4200-USB			

Electrical Connection / Option

Mating to USB mini B socket	–

Pressure Range in bar

-1 to 2.5 bar	02.5
0-16 bar	0016
0-100 bar	0100
0-400 bar	0400
0-1,000 bar	1000
0-1,500 bar	1500
0-2,000 bar	2000
0-4,000 bar	4000
0-5,000 bar (Dynamic only)	5000

Process Connection

1/4" BSP male (G1/4)	AB
1/4" NPT male	AM
Autoclave F-250-C female (for pressures above 1500bar)	DE

Order Number Example GD4200-USB1500AB

For options not listed please contact sales team.

GS4200-USB

GD4200-USB

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.

S.04

Genspec GS4200

General Purpose Pressure Transmitter

- Silicon-on-Sapphire sensor technology for outstanding performance
- Pressure ranges to 1,500 bar
- Unblemished track record of reliability
- Excellent corrosion resistance
- High strength titanium pressure port
- High resistance to overpressure and pressure transients
- ATEX/IECEx option available (includes M1 for mining applications)
- DNV GL certification available

DESCRIPTION

The GENSPEC GS4200 pressure transmitter is designed to meet the operational requirements of demanding pressure measurement applications where good quality, quick delivery and value for money are of the highest priority.

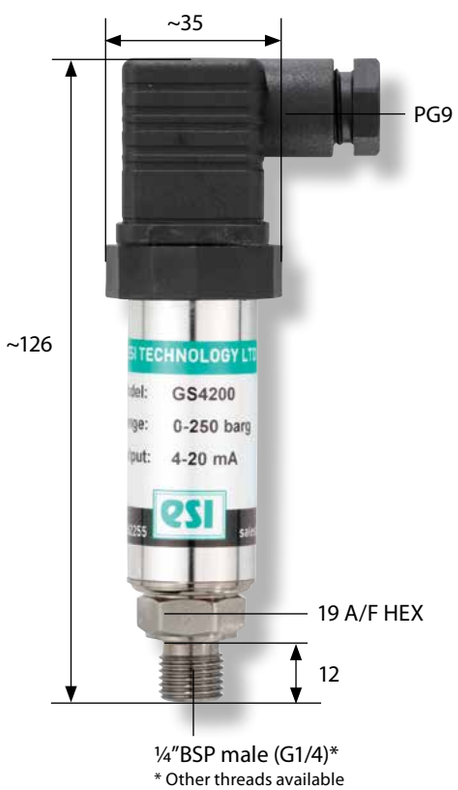
The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. Standard accuracy is ± 0.25% with a typical over pressure limit of twice the rated pressure range, this together with a selection of outputs and easy access for re-calibration affirm the excellent design. All models are supplied with integral 1/4" BSP or alternative pressure connections. The all titanium alloy wetted parts offer unbeatable corrosion resistance. Versions are also available offering IP67 sealing for installations requiring high levels of environmental protection.

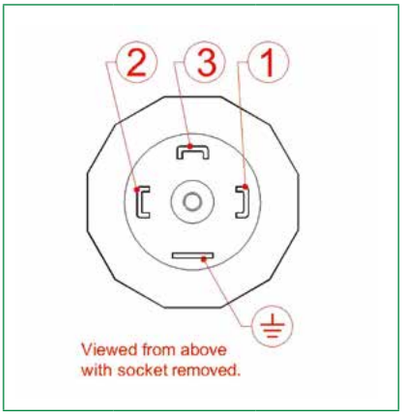
Applications for the GS4200 include the continuous monitoring of hydraulic systems with oil, gas, water and other process liquids, industrial, medical and aerospace industries. Also ideal for the measurement and control of pressure in refrigeration, pneumatic, compressor, HVAC and engine monitoring systems.

An optional ATEX and IECEx approved version of this product is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DNV GL rules for classification of ships, high speed & light craft and DNV GL offshore standards.

DIMENSIONS (in mm)





ELECTRICAL CONNECTION (mA)

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

ELECTRICAL CONNECTION (V)

Pin. No.	4 wire	3 wire
1	- supply	common
2	+ supply	+ supply
3	+ output	+ output
⏚	- output	to case

Genspec GS4200

General Purpose Pressure Transmitter

TECHNICAL DATA

Type:	GS4200	GS4201	GS4202/GS4212	GS4203/GS4213
Sensor Technology	Silicon-on-Sapphire (SoS)			
Output signal:	4 - 20 mA (2 wire)	0 - 10 mV/V (4 wire)	0 - 5 V (4 or 3 wire)	0 -10 V (4 or 3 wire)
Supply Voltage:	10 - 36 VDC	10 VDC (5 - 15V)	13 - 30 VDC	13 - 30 VDC
Pressure Reference:	Gauge			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V (amplified versions)			
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-0.5 bar; 0-1 bar; 0-2.5 bar; 0-6 bar; 0-10 bar; 0-16 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-400 bar; 0-600 bar; 0-1,000 bar; 0-1,500 bar (other ranges available)			
Standard Pressure Ranges (psi):	0-30 in Hg; 0-7.5 psi; 0-15 psi; 0-30 psi; 0-100 psi; 0-150 psi; 0-200 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-6,000 psi; 0-8,700 psi; 0-15,000 psi; 0-20,000 psi (other ranges available)			
Overpressure Safety:	4x for 0.5 bar range; 2x for ranges -1 bar to 600 bar; 1.5x for 1,000 bar range; 1.1x for 1,500 bar range			
Load Driving Capability:	4-20 mA: RL < [UB - 10 V] / 20 mA (e.g. with supply voltage (UB) of 36 V, max. load (RL) is 1300 Ω) 10 mV/V: n/a; 0-5 V: max. load RL > 5 KΩ; 0-10 V: max. load RL > 10 KΩ			
Accuracy NLHR:	≤ ±0.25 % of span BFSL (Optional higher accuracy version of ≤ ±0.1 % of span BFSL available)			
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature (GS4201: ±1 mV); ±5 %FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only			
Operating Ambient Temperature:	-40 °C to +85 °C (-40 °F to +185 °F)			
Operating Media Temperature:	-50 °C to +125 °C (-58 °F to +257 °F)			
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.015 %FS /°C			
ATEX/IECEx Approval (4-20 mA 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 1 M1)	n/a	n/a	n/a
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Ci = 74 nF Temperature Range = -20 °C to +70 °C Max. cable length = 45 m	n/a	n/a	n/a
DNV GL Approval Class:	Temperature: D; Humidity: B; Vibration: B; EMC: B; Enclosure: C (contact sales for more information)			
Electromagnetic Capability:	Emissions: EN61000-6-3; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	Titanium alloy (1/4" BSP male (G1/4) and 1/4" NPT male thread); other thread options typically Titanium alloy/316L stainless steel			
Pressure Media:	All fluids compatible with Titanium alloy (1/4" BSP male (G1/4) and 1/4" NPT male); other threads typically Titanium alloy/316L stainless steel			
Pressure Connection:	1/4" BSP male (G1/4); 1/4" NPT male; 1/4" BSP male (G1/2); 1/2" NPT male and 1/4" BSP female (others options available)			
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)			

ORDER MATRIX

Output	Wires	Type
4-20 mA	2	GS4200
10 mV/V	4	GS4201
0-5 V	4	GS4202
	3	GS4212
0-10 V	4	GS4203
	3	GS4213

Electrical Connection / Option

	Electrical Connector
DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

	Pressure Range
0-1 bar Vac	V001
0-0.5 bar	00.5
0-1 bar	0001
0- 2.5 bar	02.5
0-6 bar	0006
0-10 bar	0010
0- 16 bar	0016
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-400 bar	0400
0-600 bar	0600
0-1000 bar	1000
0-1,500 bar	1500

Process Connection

	Process Connection
1/4" BSP male (G1/4)	AB
1/2" BSP male (G1/2)	AC
1/4" NPT male	AM
1/2" NPT male	AN

Order Number Example GS4200B1500AB

For options not listed please contact sales team.

GS4200

S.05

Hipres HP1000 Series

High Pressure Transmitter

- Pressure ranges to 5,000bar
- High pressure integrity for safe use due to unique sensor design.
- Pressure diaphragm and process connection is machined from one piece of Titanium with no seals or welds.
- High resistance to overpressure and pressure transients
- Silicon-on-Sapphire (SoS) sensor technology for outstanding performance and reliability
- ATEX/IECEx option available (includes M1 for mining applications) for 4-20mA versions
- DNV GL Certification available

DESCRIPTION

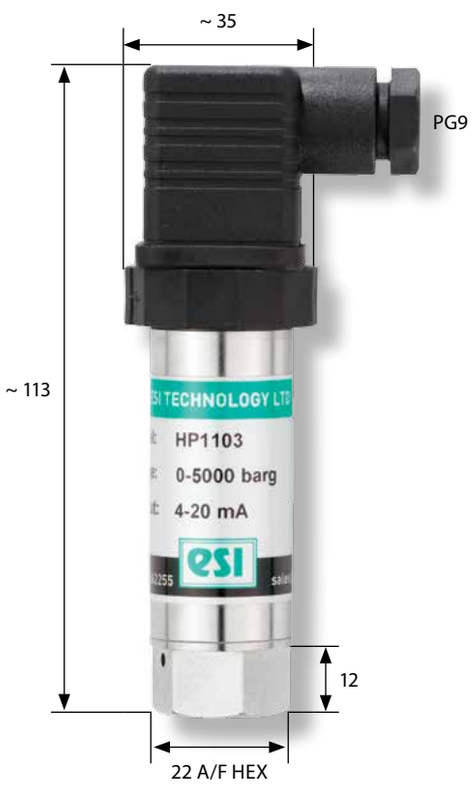
The HP1000 series extends the Silicon-on-Sapphire pressure sensor technology into very high pressure applications, with operating ranges up to 5,000 bar and still maintaining an extremely high performance level.

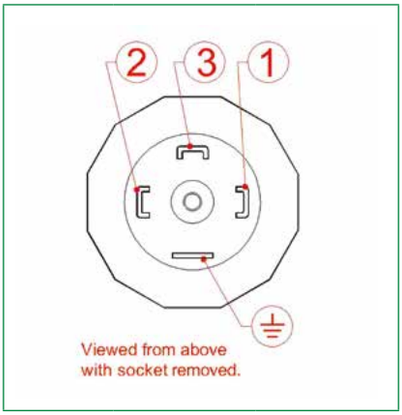
The unique Silicon-on-Sapphire sensor provides outstanding performance and gives excellent stability over a wide temperature range. The wetted parts and diaphragm are machined from a single piece of titanium alloy which means no weld joints and therefore high pressure integrity and overload capacity. Available in pressure ranges from 0-600 bar to 0-5,000 bar and with electrical outputs of 0-10 mV/V, 0-5 V, 0-10 V and 4-20 mA. Applications include aerospace, laboratory and test, oil and gas monitoring equipment and general industrial.

An optional ATEX and IECEx approved version of this product is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DNV GL rules for classification of ships, high speed & light craft and DNV GL offshore standards.

DIMENSIONS (in mm)





ELECTRICAL CONNECTION (mA)

Pin. No.	2 wire
1	+ supply
2	4-20 mA signal
3	N\C
⏚	to case

ELECTRICAL CONNECTION (V)

Pin. No.	4 wire	3 wire
1	- supply	common
2	+ supply	+ supply
3	+ output	+ output
⏚	- output	to case

Hipres HP1000 Series

High Pressure Transmitter

TECHNICAL DATA

Type:	HP1000/HP1100	HP1xx1	HP1xx2	HP1003/HP1103
Sensor Technology:	Silicon-on-Sapphire (SoS)			
Output signal:	10 mV/V (4 wire)	0-5 V (3 or 4 wire)	0-10 V (3 or 4 wire)	4-20 mA (2 wire)
Supply Voltage:	10 VDC (5-15V)	13-30 VDC	13-30 VDC	10-36 VDC
Pressure Reference:	Gauge			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V (amplified versions)			
Standard Pressure Ranges (bar):	HP10xx: 0 - 600 bar; 0 - 700 bar; 0 - 1,000 bar; 0 - 1,500 bar; 0-2,000 bar. HP11xx: 0 - 2,500 bar; 0 - 4,000 bar; 0 - 5,000 bar (other ranges available)			
Standard Pressure Ranges (psi):	0-10,000 psi; 0-15,000 psi; 0-20,000 psi; 0-30,000 psi; 0-40,000 psi; 0-60,000 psi; 0-72,000 psi (other ranges available)			
Overpressure Safety:	1.5x for ranges 0 - 600 bar to 0 - 3,000 bar; 1.25x for 4,000 bar; 1.2x for 5,000 bar			
Load Driving Capability:	4 - 20 mA: RL < [UB - 10 V] / 20 mA (e.g. with supply voltage (UB) of 36 V, max. load (RL) is 1300 Ω); 10 mV/V: n/a; 0 - 5 V: max. load RL > 5 KΩ; 0 - 10 V: max. load RL > 10 KΩ			
Accuracy NLHR:	≤ ±0.25 % of span BFSL (Optional higher accuracy version of ≤ ±0.1 % of span BFSL available)			
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature (HP1000/HP1100: ±1 mV); ±5 %FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only			
Operating Ambient Temperature:	-40 °C to +85 °C (-40 °F to +185 °F)			
Operating Media Temperature:	-50 °C to +125 °C (-58 °F to +257 °F)			
Storage Temperature:	5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.015 %FS/ °C			
ATEX/IECEx Approval Option (4-20mA version only):	n/a	n/a	n/a	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 1 M1)
ATEX/IECEx Safety Values:	n/a	n/a	n/a	Ui = 28 V; Ii = 119 mA; Pi = 0.65 W; Li = 0.1 µH; Ci = 74 nF; Temperature Range = -20 °C to +70 °C Max. cable length = 45 m
DNV GL Approval Class:	Temperature: D; Humidity: B; Vibration: B; EMC: B; Enclosure: C (contact sales for more information)			
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	Titanium alloy machined from a single piece (≥1,000 bar); Titanium alloy and SAE 316 stainless steel (<1,000 bar)			
Pressure Media:	All fluids compatible with Titanium alloy (≥1,000 bar); All fluids compatible with Titanium alloy and SAE 316 stainless steel (<1,000 bar)			
Pressure Connection:	F250-C Autoclave fitting; thread type 9/16-18UNF-2B female or M16 x 1.5 female cone seal			
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)			

ORDER MATRIX

Output		Wires	Type	Electrical Connector	Pressure Range	Process Connection
10 mV/V	Model to 2,000 bar (incl. 30,000 psi)	4	HP1000			
	Model above 2,000 bar	4	HP1100			
0-5 V	Model to 2,000 bar (incl. 30,000 psi)	4	HP1001			
	Model above 2,000 bar	4	HP1101			
	Model to 2,000 bar (incl. 30,000 psi)	3	HP1011			
	Model above 2,000 bar	3	HP1111			
0-10 V	Model to 2,000 bar (incl. 30,000 psi)	4	HP1002			
	Model above 2,000 bar	4	HP1102			
	Model to 2,000 bar (incl. 30,000 psi)	3	HP1012			
	Model above 2,000 bar	3	HP1112			
4-20 mA	Model to 2,000 bar (incl. 30,000 psi)	2	HP1003			
	Model above 2,000 bar	2	HP1103			

Electrical Connection / Option

DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

0-600 bar	600
0-1,000 bar	1000
0-1,500 bar	1500
0-2,000 bar	2000
0-3,000 bar	3000
0-4,000 bar	4000
0-5,000 bar	5000

Process Connection

Autoclave F-250-C female	DE
M16 x 1.5 female cone seal	FK

Order Number Example HP1000A1000DE

For options not listed please 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.

HP1103

S.06

Lopres LP1000 Series

Low Pressure Transmitter

- Piezoresistive sensor technology for high performance
- Low pressure measurement from 50 mbar
- Robust stainless steel construction for durability
- Low hysteresis and excellent long term stability
- Wide operating temperature
- On-site zero and span adjustment

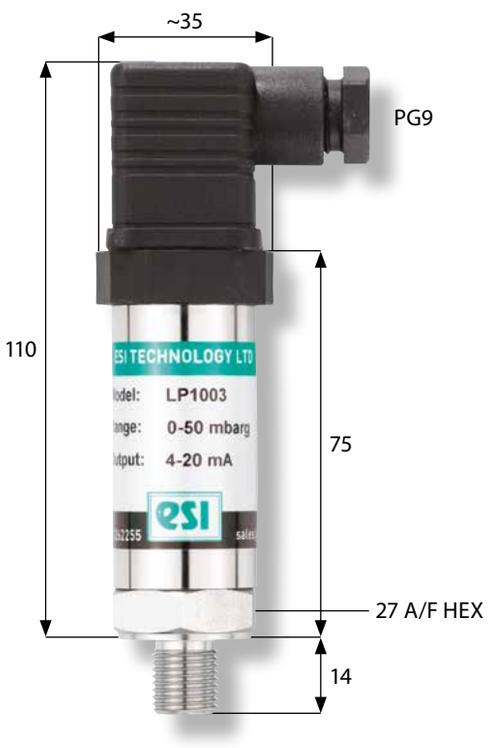
DESCRIPTION

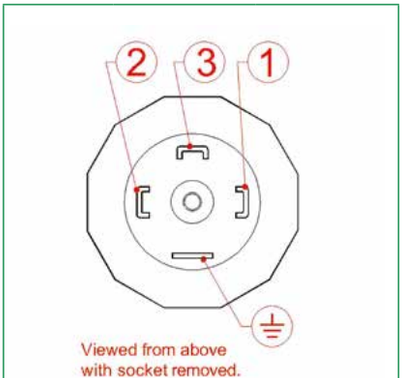
LP1000 series transmitters are designed for very low-pressure applications, with operating ranges down to 0-50 mbar whilst still maintaining high performance. The advanced sensor design provides very low hysteresis and excellent long-term stability not normally achievable when measuring very low pressure.

The LP1000 is suitable for use with most liquids in pressure ranges 0-100 mbar or above. For pressure ranges below 100 mbar, LP1000 can be used with 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 0-50 mbar to 0-1,000 mbar and with electrical outputs of 0-100 mV, 0-5 V, 0-10 V and 4-20 mA.

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

DIMENSIONS (in mm)





ELECTRICAL CONNECTION (mA)

Pin. No.	2 wire
1	+ supply
2	4-20 mA signal
3	N/C
⏚	to case

ELECTRICAL CONNECTION (V)

Pin. No.	4 wire	3 wire
1	- supply	common
2	+ supply	+ supply
3	+ output	+ output
⏚	- output	to case

CE

Lopres LP1000 Series

Low Pressure Transmitter

TECHNICAL DATA

Type:	LP1000	LP10x1	LP10x2	LP1003
Sensor Technology:	Piezoresistive Silicon or Isolated Piezoresistive Silicon			
Output signal:	10 mV/V typical (4 wire)	0-5 V (4 or 3 wire)	0-10 V (4 or 3 wire)	4-20 mA (2 wire)
Supply Voltage:	10 VDC	13-30 VDC	13-30 VDC	10-36 VDC
Pressure Reference:	Gauge or Absolute (limited ranges)			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V (amplified versions)			
Standard Pressure Ranges (bar):	0-50 mbar; 0-100 mbar; 0-250 mbar; 0-500 mbar; 0-1,000 mbar (other ranges available); Absolute ranges from 0-500 mbar			
Standard Pressure Ranges (psi):	0-0.75 psi; 0-1.5 psi; 0-3 psi; 0-4 psi; 0-5 psi; 0-6 psi; 0-7.5 psi; 0-10 psi; 0-15 psi (other ranges available)			
Overpressure Safety:	4x for ranges 50 mbar to 250 mbar; 3x for ranges 500 mbar to 1,000 mbar			
Load Driving Capability:	4-20 mA: RL < [UB - 13 V] / 20 mA; (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω; 10 mV/V: n/a; 0-5 V: max. load RL > 5 KΩ; 0-10 V: max. load RL > 10 KΩ			
Accuracy NLHR:	≤ ±0.5 % of span BFSL			
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature (LP1000: ±1 mV); ±5 %FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only			
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±3.0 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.05 %FS/ °C			
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	≥100mbar: SAE 316 stainless steel and Nitrile NBR O-ring; <100mbar: SAE 316 stainless steel, Nitrile NBR O-ring, silicon diaphragm, glass filled polyamide			
Pressure Media:	≥100mbar: All fluids compatible with SAE 316 stainless steel and Nitrile NBR; <100mbar: Non-corrosive, non-ionic fluids, air & dry gases			
Pressure Connection:	1/4" BSP male (G1/4); 1/4" NPT male; 1/4" BSP male (G1/2); 1/2" NPT male (other options available)			
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)			

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
10 mV/V	4	LP1000			
0-5 V	4	LP1001			
	3	LP1011			
0-10 V	4	LP1002			
	3	LP1012			
4-20 mA	2	LP1003			

Electrical Connection / Option

DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C

Pressure Range in bar

0-50 mbar (Gauge only)	0050
0-100 mbar (Gauge only)	0100
0-250 mbar (Gauge only)	0250
0-500 mbar	0500
0-500 mbar Absolute	500A

Process Connection

1/4" BSP male (G1/4)	AB
1/2" BSP male (G1/2)	AC
1/4" NPT male	AM
1/2" NPT male	AN

Order Number Example LP1003–0050AC

For options not listed please contact sales team.

LP1003

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.

S.07

Hispec HI2000 Series

High Precision Pressure Transducer

- High accuracy and performance
- Silicon-on-Sapphire sensor technology for outstanding stability
- Pressure ranges to 1,500 bar
- Titanium wetted parts for excellent chemical compatibility
- High thermal stability over wide operating temperature
- ATEX/IECEx option available
  (includes M1 for mining applications)
- TEDS version on request

DESCRIPTION

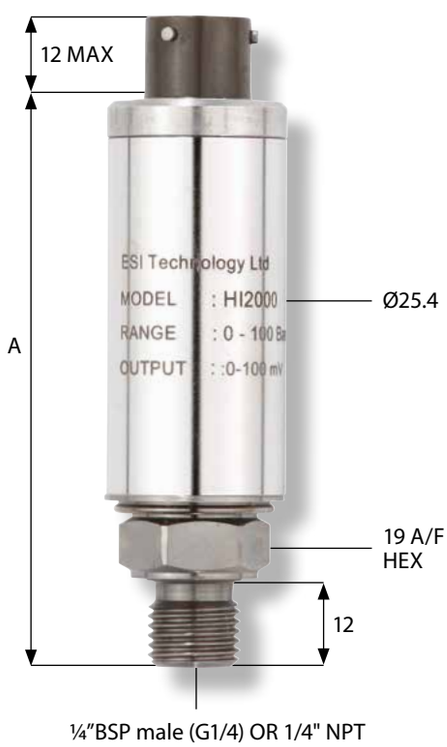
The HISPEC HI2000 series of pressure transducers, with Silicon-on-Sapphire sensor technology, offer high levels of accuracy and performance

The unique Silicon-on-Sapphire sensor provides outstanding stability and accuracy over a wide temperature range. The wetted parts and diaphragm are machined from a single piece of titanium alloy which provides excellent chemical compatibility. Applications include aerospace, laboratory and test, oil and gas monitoring equipment (down-hole) and subsea. Available in pressure ranges from 0-500 mbar to 0-1,500 bar and with electrical outputs of 10 mV/V, 0-5 V and 0-10 V.

An optional ATEX and IECEx approved version of this product with mV/V output is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

A TEDS (Transducer Electronic Data Sheet) version is available. A TEDS contains the critical information needed by an instrument or measurement system to identify, characterize, interface, and properly use the signal from an analog sensor. IEEE 1451.4 defines the method of encoding TEDS information for a broad range of senor types and applications.

DIMENSIONS (in mm)



ELECTRICAL CONNECTION MIL-C-26482

Pin.	Designation
A	+supply
B	+output
C	-output
D	-supply
E	N/C
F	N/C

ELECTRICAL CONNECTION CABLE OUTLET

WIRE COLOUR	Designation
RED	+supply
GREEN	+output
YELLOW	-output
BLUE	-supply

	Dim. A
HI2000	80
HI2001/2	95
HI2010	80
HI2011/12	95

Hispec HI2000 Series

High Precision Pressure Transducer

TECHNICAL DATA

Type:	HI2000/HI2010	HI2xx1/ HI2xx4	HI2xx2/ HI2xx5
Sensor Technology:	Silicon-on-Sapphire (SoS)		
Output signal:	10 mV/V (4 wire)	0 - 5V (4 or 3 wire)	0 - 10V (4 or 3 wire)
Supply Voltage:	10 VDC (5-15V)	13-30 VDC	13-30 VDC
Pressure Reference:	Gauge		
Protection of Supply Voltage:	n/a	Protected against supply voltage reversal up to 50 V (amplified versions)	
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-1 bar; 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-400 bar; 0-600 bar; 0-1,000 bar; 0-1,500 bar (other ranges available)		
Standard Pressure Ranges (psi):	0-30 in Hg; 0-15 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-6,000 psi; 0-10,000 psi; 0-15,000 psi; 0-20,000 psi (other ranges available)		
Overpressure Safety:	4x for 0.5 bar range; 2 x for ranges 1 bar to 600 bar; 1.5x for 1,000 bar range; 1.1x for 1,500 bar range		
Load Driving Capability:	10 mV/V: n/a; 0-5 V: max. load RL > 5 KΩ; 0-10 V: max. load RL > 10 KΩ		
Accuracy NLHR:	≤ ±0.1 % of span BFSL		
Zero Offset and Span Tolerance:	±0.5% FS at room temperature (HI2000/HI2010: ±1 mV)		
Operating Ambient Temperature:	-40 °C to +85 °C (-40 °F to +185 °F)		
Operating Media Temperature:	-50 °C to +125 °C (-58 °F to +257 °F)		
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice		
Temperature Effects:	±1.0 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.005 %FS/ °C		
ATEX/IECEx Approval Option (mV 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 1 M1)	n/a	n/a
ATEX/IECEx Safety Values:	Ui = 28 V; Ii = 119 mA Pi = 0.65 W ; Li = 0.1 µH Ci = 0; Temperature Range = -20 °C to +70 °C Max. cable length = 50 m	n/a	n/a
TEDS:	IEEE 1451.4 Sensor TEDS (contact sales for more information)		
Electromagnetic Capability:	Emissions: EN61000-6-4 Immunity: EN61000-6-2 Certification: CE Marked		
Insulation Resistance:	> 100 MΩ @ 50 VDC		
Response time 10-90 %:	1 mS		
Wetted Parts:	Titanium alloy		
Pressure Media:	All fluids compatible with Titanium alloy		
Pressure Connection:	1/4" BSP male (G1/4) or 1/4" NPT male (others options available)		
Electrical Connection:	HI200x: PTFE insulated flying lead, conductor size 7/0.1 mm. HI201x: MIL-C-26482 6 pin bayonet connector (Accessory not included: mating connector type MS3116F10-6S).		

ORDER MATRIX

Output		Wires	Type	Electrical Connector	Pressure Range	Process Connection
10 mV/V	Cable outlet 1m PTFE	4	HI2000			
0-5 V		4	HI2001			
		3	HI2004			
0-10 V		4	HI2002			
		3	HI2005			
10 mV/V	MIL-C-26482 6 pin bayonet	4	HI2010			
0-5 V		4	HI2011			
		3	HI2014			
0-10 V		4	HI2012			
		3	HI2015			

Electrical Connection / Option

No special option required	–
ATEX/ IECEx certified (HI2000 & HI2010 only)	EX

Pressure Range in bar

0-1 barVac	V001
0-1 bar	0001
0-10 bar	0010
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-400 bar	0400
0-600 bar	0600
0-1,000 bar	1000
0-1,500 bar	1500

Process Connection

1/4" BSP male (G1/4)	AB
1/4" NPT male	AM

Order Number Example HI2000EX0020AB

For options not listed please contact sales team.

HI2000

HI2010

S.08

Protran PR3900 and **Protran** PR3110EX

Intrinsically Safe Pressure Transmitter

- ATEX and IECEx certified
- Designed for operation in zone 0, zone 20 and M1 mining
- Wide choice of low and high pressure ranges
- NACE corrosion resistant materials
- Rugged, weatherproof design option
- DNV GL certification available

DESCRIPTION

Our PR3900 and PR3110EX are made exclusively for hazardous areas intended for installation and operation in zone 0, gas group IIC, temperature class T4 and zone 20 dust and M1 mining. Both have ATEX and IECEx approval and protection is by intrinsic safety when used with a safety or isolation barrier.

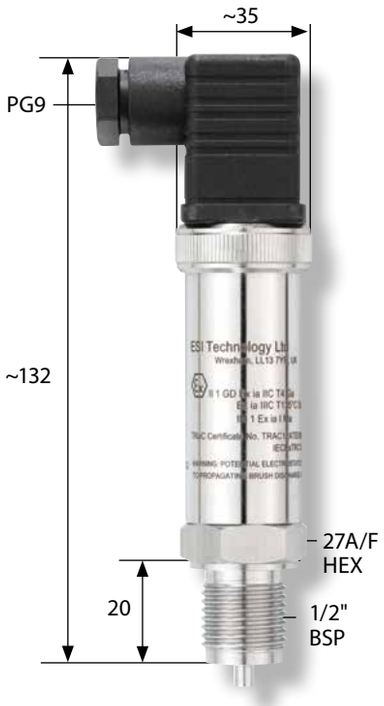
The PR3900 provides a stable and accurate intrinsically safe two wire output signal of 4-20mA. Pressure ranges available from 0-10 bar to 0-1,500 bar. The unique Silicon-on-Sapphire sensor provides outstanding performance, stability and accuracy over a wide temperature range and provides excellent chemical compatibility. Electrical connection is via a strong and durable polyurethane cable with integral vent tube for effective gauge venting to atmosphere. Various process connections are available. Applications include any above ground explosive / hazardous environment installations, oil and gas industries and volatile chemical processing and storage.

The PR3110EX pressure transmitter is designed to meet the requirements of the majority of hazardous 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. Electrical connection is via a detachable DIN connector allowing easy access to zero and span adjustment. Standard pressure connection is 1/2" BSP, but other options are available. Pressure ranges are available from 0-100 mbar to 0-900 mbar. Suitable for use with low pressure fluid and gas applications. DNV GL rules for classification of ships, high speed & light craft and DNV GL offshore standards.

DIMENSIONS (in mm)

Model shown PR3900

DIMENSIONS (in mm)



Model shown PR3110EX

Protran PR3900

Hazardous Area Pressure Transmitter

TECHNICAL DATA

Type:	PR3900
Sensor Technology:	Silicon-on-Sapphire (SoS)
Output signal:	4 - 20 mA (2 wire)
Supply Voltage:	10 - 36 VDC
Pressure Reference:	Gauge
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V
Standard Pressure Ranges (bar):	0-10 bar; 0-25 bar; 0-60 bar; 0-100 bar; 0-250 bar; 0-600 bar; 0-1,000 bar; 0-1,500 bar (other options available)
Standard Pressure Ranges (psi):	0-150 psi; 0-300 psi; 0-1,000 psi; 0-1,500 psi; 0-3,000 psi; 0-8,700 psi; 0-15,000 psi; 0-20,000 psi (other options available)
Overpressure Safety:	2x for ranges up to 600 bar; 1.5x for 1000 bar; 1.1x for 1,500 bar
Load Driving Capability:	4 - 20 mA: RL < [UB - 10 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1300 Ω)
Accuracy NLHR:	≤ ±0.3 % of span BFSL (optional higher accuracy version of ≤ ±0.15 % of span BFSL)
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.015 %FS/ °C
ATEX/IECEx 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 1 M1)
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Ci = 74 nF Temperature Range = -20 °C to +70 °C Max. cable length = 45 m
DNV GL Approval Class:	Temperature: D; Humidity: B; Vibration: B; EMC: B; Enclosure: C (contact sales for more information)
Ingress Protection:	Fully welded housing. Rated IP67 when correctly installed to conduit connection.
Electromagnetic Compatibility:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked
Insulation Resistance:	> 100 MΩ @ 50 VDC
Response time 10-90 %:	1 mS
Wetted Parts:	SAE 316 stainless steel with titanium alloy measurement cell
Pressure Media:	All fluids compatible with SAE 316 stainless steel and titanium alloy
Pressure Connection:	1/4" NPT female standard (other options available)
Electrical Connection:	1m polyurethane cable with integral screen, Kevlar strain cord and vent tube. Conductor size 7/0.20 mm (24 AWG)

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	2	PR3900			

Electrical Connection / Option

1m submersible polyurethane cable with integral screen	–

Pressure Range in bar

0-10 bar	0010
0-25 bar	0025
0-60 bar	0060
0-100 bar	0100
0-250 bar	0250
0-600 bar	0600
0-1,000 bar	1000
0-1,500 bar	1500

Process Connection

1/4" NPT female	AS
1/4" BSP male (G1/4)	AB
1/4" NPT male	AM
1/2" BSP male (G1/2)	AC
1/2" NPT male	AN

Order Number Example PR3900–1000AS

For options not listed please contact sales team.

PR3900

Protran PR3110EX

Intrinsically Safe Pressure Transmitter

TECHNICAL DATA

Type:	PR3110EX
Sensor Technology:	Isolated Piezoresistive Silicon
Output signal:	4 - 20 mA (2 wire)
Supply Voltage:	13 - 36 VDC
Pressure Reference:	Gauge or Absolute ranges from 500mbar
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V
Standard Pressure Ranges (bar):	0-100 mbar, 0-200 mbar, 0 -250 mbar; 0-300 mbar; 0- 400 mbar, 0-500 mbar, 0-600 mbar, 0-750 mbar, 0-900 mbar (other ranges available)
Standard Pressure Ranges (psi):	0-1.5 psi; 0-3 psi; 0-4 psi: 0-7.5 psi; 0-15 psi (other ranges available)
Overpressure Safety:	6x for 100 mbar range; 3x for ranges 200 mbar to 900 mbar
Load Driving Capability:	4 - 20 mA: $R_L < [U_B - 13\ V] / 20\ mA$ (e.g. with supply voltage (U_B) of 36V, max. load (R_L) is 1150Ω)
Accuracy NLHR:	≤ ±0.3 % of span BFSL
Zero Offset and Span Tolerance:	±0.5%FS at room temperature; ±5 %FS (approx.) adjustment with easy access trimming potentiometers
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice
Temperature Effects:	±2 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.03 %FS/ °C
ATEX/IECEx Approval Option (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 1 M1)
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65W Li = 0.1 µH Ci = 74 nF Temperature Range = -20 °C to +70 °C Max. cable length = 45 m
DNV GL Approval Class:	Temperature: D; Humidity: B; Vibration: B; EMC: B; Enclosure: C (contact sales for more information)
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked
Insulation Resistance:	> 100 MΩ @ 50 VDC
Response time 10-90 %:	1 mS
Wetted Parts:	SAE 316 stainless steel and nitrile (NBR) seal
Pressure Media:	All fluids compatible with SAE 316 stainless steel and nitrile (NBR).
Pressure Connection:	1/4" BSP male (G1/4); 1/4" NPT male; 1/4" BSP male (G1/2); 1/2" NPT male (other options available)
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA, ATEX/ IECEx certified	2	PR3110EX			

Electrical Connection / Option

ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

0-100 mbar	00.1
0-200 mbar	00.2
0-250 mbar	0.25
0-300 mbar	00.3
0-400 mbar	00.4
0-500 mbar	00.5
0- 500 bar Absolute	0.5A
0-600 mbar	00.6
0-750 mbar	0.75
0-900 mbar	00.9
0- 900 mbar Absolute	0.9A

Process Connection

1/4" BSP male (G1/4)	AB
1/4" NPT male	AM
1/2" BSP male (G1/2)	AC
1/2" NPT male	AN

Order Number Example PR3110EX0.9AAC

For options not listed please contact sales team.

PR3110EX

S.09

Hispec HI2200/2300 Series and **Protran** PR3860

High Temperature Transmitter

- High operating temperatures of up to 250 °C
- High ambient temperatures of up to 200 °C
- Pressure ranges to 1,500 bar
- Temperature compensated option
- Good chemical compatibility for a range of applications
- ATEX/IECEx option available
  (includes M1 for mining applications)

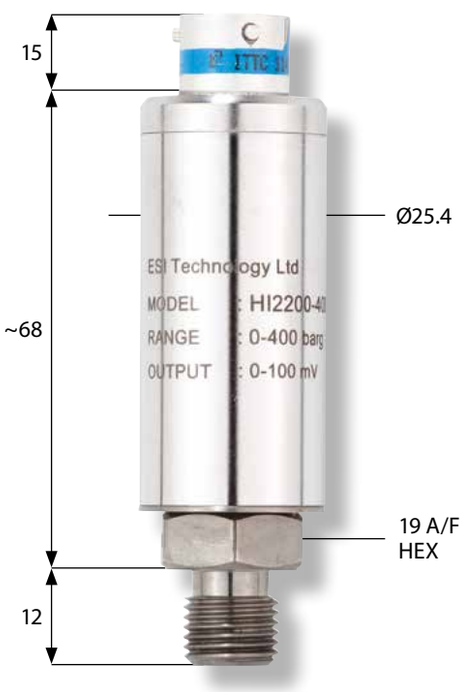
DESCRIPTION

Our high temperature pressure transducers and transmitters are designed to operate at constant media and ambient temperatures of up to 250 ºC, at pressure ranges of up to 1,500 bar.

The HI2200/HI2300 model takes advantage of the advanced Silicon-on-Sapphire sensors' outstanding insulation properties which allows the sensor to operate over a very wide temperature range without loss of performance. The HI2200/ HI2300 offers compensated and un-compensated output options and not only does it perform effectively at high media temperatures, but can also be used in environments where there are elevated ambient temperatures of up to 200 °C- Inside a furnace or thermal chamber for example.

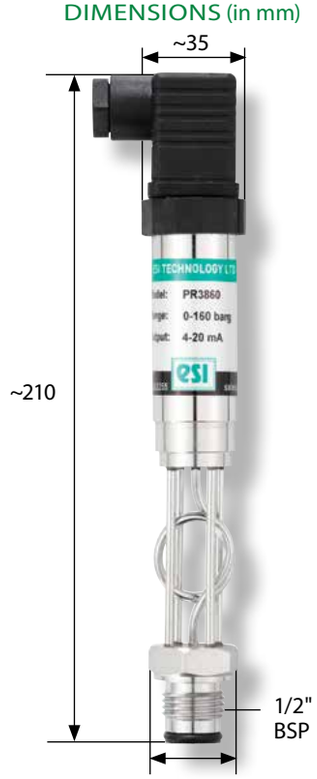
The PR3860 high temperature pressure transmitter has been designed to meet the requirements of the majority of industrial pressure measurement applications where a hygienic flush diaphragm connection is required. Robustly constructed from stainless steel, the PR3860 pressure transmitter permits accurate pressure measurement at elevated temperatures up to 250 ºC. The flush membrane can be easily cleaned for long term reliability and performance. An optional weldable boss is available to ensure flush-face installation of the transmitter to tanks and pipe-work. An optional ATEX and IECEx approved version is available.

DIMENSIONS (in mm)



Model shown HI2200

DIMENSIONS (in mm)



Model shown PR3860

Hispec HI2200/2300 Series

High Temperature Transmitter

TECHNICAL DATA

Type:	HI2200/HI2210	HI2300/HI2310
Sensor Technology:	Silicon-on-Sapphire (SoS)	
Output signal:	10-20 mV/V (Un-rationalised and un-compensated)	10 mV/V (Rationalised and compensated)
Supply Voltage:	10 VDC (5-15 V)	
Pressure Reference:	Gauge	
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-1 bar; 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-700 bar; 0-1,500 bar (other ranges available)	
Standard Pressure Ranges (psi):	0-30 in Hg; 0-15 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-10,000 psi; 0-20,000 psi (other ranges available)	
Overpressure Safety:	2x for ranges 1 bar Vac to 600 bar; 1.5x for 1,000 bar range; 1.1x for 1,500 bar range	
Load Driving Capability:	n/a	
Accuracy NLHR:	≤ ±0.1 % of span BFSL	
Zero Offset and Span Tolerance:	Zero offset: ±1 mV/V Span Tolerance: 10-20 mV/V	Zero offset: ±1 mV Span Tolerance: ±1% FS
Operating Ambient Temperature:	-40 °C to +200 °C (-40 °F to +392 °F)	
Operating Media Temperature:	-50 °C to +200 °C (-58 °F to +392 °F)	
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice	
Temperature Effects:	Typical thermal zero and span coefficients compensated ±0.05% FS/ °C	±2.0% FS Total error band -40°C to +150°C, typical thermal zero and span coefficients ±0.005% FS/ °C
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked	
Insulation Resistance:	> 100 MΩ @ 50 VDC	
Response time 10-90 %:	1 mS	
Wetted Parts:	Titanium alloy	
Pressure Media:	All fluids compatible with Titanium alloy	
Pressure Connection:	1/4" BSP male (G1/4) or 1/4" NPT male (others options available)	
Electrical Connection:	HI2x00: PTFE insulated flying lead, conductor size 7/0.1 mm. HI2x10: MIL-C-26482 6 pin bayonet connector (Accessory not included: mating connector type MS3116F10-6S).	

ORDER MATRIX

Output		Wires	Type	Electrical Connector	Pressure Range	Process Connection
10-20 mV/V	1m PTFE insulated flying lead	4	HI2200			
	MIL-C-26482 6 pin bayonet	4	HI2210			
10 mV/V	1m PTFE insulated flying lead	4	HI2300			
	MIL-C-26482 6 pin bayonet	4	HI2310			

Electrical Connection / Option

1m PTFE insulated flying lead (HI2200, HI2300)	–
MIL-C-26482 6 pin bayonet (HI2210, HI2310)	–

Pressure Range in bar

0-1 barVac	V001
0-1 bar	0001
0-10 bar	0010
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-700 bar	0700
0-1,500 bar	1500

Process Connection

1/4" BSP male (G1/4)	AB
1/4" NPT male	AM

Order Number Example HI2200–0400AB

For options not listed please contact sales team.

HI2200

Protran PR3860

High Temperature Transmitter

TECHNICAL DATA

Type:	PR3860	PR3861	PR3862
Sensor Technology:	Bonded Foil Strain Gauge		
Output signal:	4 - 20 mA (2 wire)	0 - 5 V (4 wire)	0 - 10 V (4 wire)
Supply Voltage:	13 - 36 VDC	13 - 30 VDC	13 - 30 VDC
Pressure Reference:	Gauge		
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V		
Standard Pressure Ranges (bar):	0-10 bar; 0-25 bar; 0-60 bar; 0-100 bar; 0-250 bar; 0-400 bar (other options available)		
Standard Pressure Ranges (psi):	0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-6,000 psi (other options available)		
Overpressure Safety:	1.5x all ranges		
Load Driving Capability:	4 - 20 mA: RL < [UB - 13 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω) 0 - 5 V: max load RL > 5 KΩ 0 - 10 V: max load RL > 10 KΩ		
Accuracy NLHR:	≤ ±0.3 % of span BFSL		
Zero Offset and Span Tolerance:	±1.0 %FS at room temperature; ±5 %FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only		
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)		
Operating Media Temperature:	,0 °C to +205 °C (+32 °F to 185°F) with standard o-ring ; 0 °C to +250 °C (+32 °F to +482 °F) with optional o-ring (sensor and electronics thermally insulated from media temperature)		
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice		
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/IECEx 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 1 M1)	n/a	n/a
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Ci = 62 nF Temperature Range = -20 °C to +70 °C Max. cable length = 105 m	n/a	n/a
Electromagnetic Compatibility:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked		
Insulation Resistance:	> 100 MΩ @ 50 VDC		
Wetted Parts:	SAE 316L stainless steel		
Pressure Media:	All fluids compatible with SAE 316L stainless steel		
Pressure Connection:	1/2" BSP male (G1/2) with standard integral viton (FKM) o-ring seal and flush SAE 316L stainless steel diaphragm. O-ring seal is for service temperature up to max. 205 °C. An alternative o-ring material can be provided for service up to 250 °C (charged accessory)		
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)		

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	2	PR3860			
0-5 V	4	PR3861			
0-10 V	4	PR3862			

Electrical Connection / Option

DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

0-10 bar	0010
0-25 bar	0025
0-60 bar	0060
0-100 bar	0100
0-250 bar	0250
0-400 bar	0400

Process Connection

1/2" BSP flush diaphragm male	BA

(* Optional 250°C rated o-ring available on request.)

Order Number Example PR3860–0400BA

For options not listed please contact sales team.

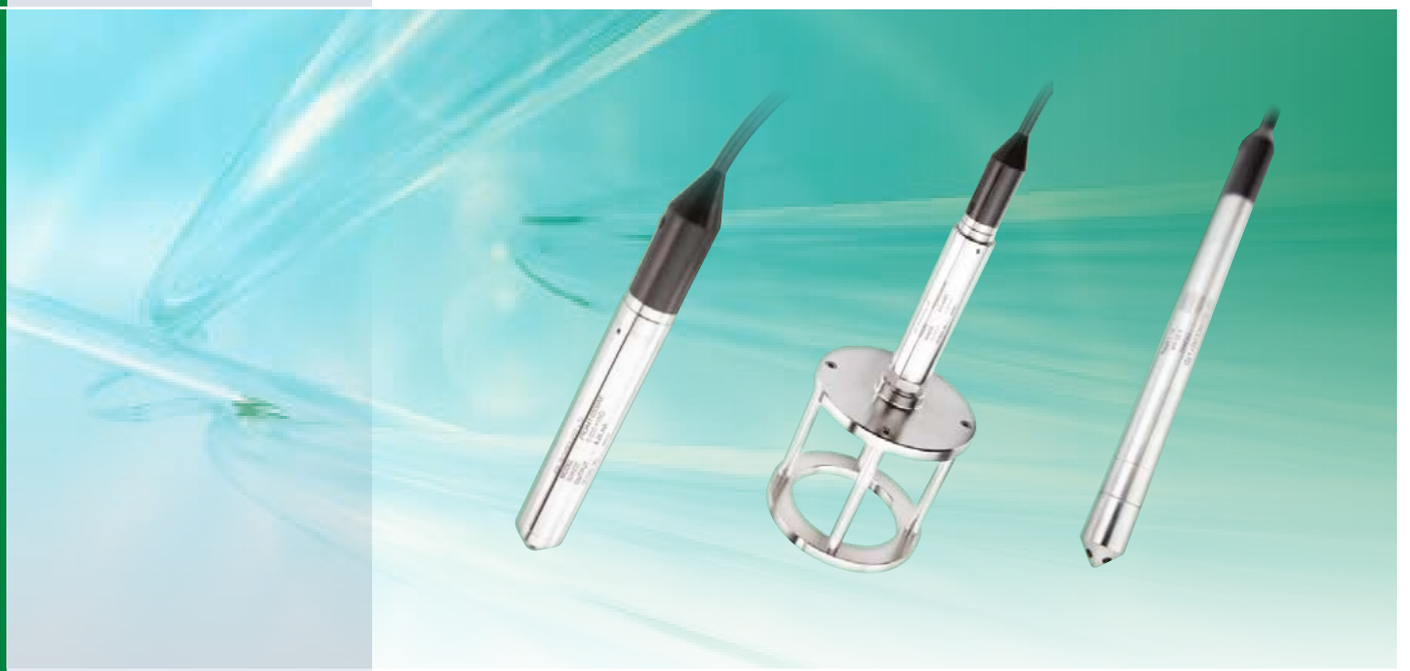
PR3860

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.

S.10

Protran PR3441/PR3420/PR3442

Submersible Depth/Level Pressure Transmitter



- Piezoresistive sensor technology for excellent stability and repeatability
- Robust stainless steel construction
- Pressure ranges available from 1 mWG
- High strength, moulded cable for protection against ingress
- Ultra slim option for borehole applications
- Sludge Platform option to raise sensor above sediment level
- ATEX/IECEx option available (includes M1 for mining applications)
- DNV GL certification available

DESCRIPTION

The submersible range of pressure transmitters has been designed for the accurate measurement of the depth and level of liquids in many applications. Standard output signal is 4-20 mA, and electrical connection is via a high strength moulded cable with integral tube for trouble-free venting to the surface atmosphere.

The PR3441 transmitter has a 25 mm diameter, suitable for depth and level measurement in boreholes, while the PR3442 model has a slim-line 16mm diameter suitable for boreholes from 19 mm wide. Applications include borehole level and reservoir level monitoring, water mains pressure, power level and outlet pressure measurement on submersible pumps.

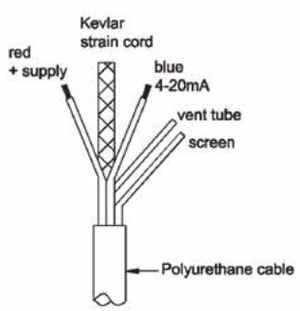
The PR3420 submersible depth and level transmitter has been designed for accurate level measurement where sediment is present. The integral sludge platform ensures that the sensing element is elevated above the sediment level.

An optional ATEX and IECEx approved version of this product is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DNV GL rules for classification of ships, high speed & light craft and DNV GL offshore standards (PR3441 only).

DIMENSIONS (in mm)

Model shown PR3441



polyurethane cable termination

ELECTRICAL CONNECTION

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

Protran PR3441/PR3420/PR3442

Submersible Depth/Level Pressure Transmitter

TECHNICAL DATA

Type:	PR3441	PR3420	PR3442
Sensor Technology:	Isolated Piezoresistive Silicon		
Output signal:	4-20 mA (2 wire) Other options on request		4-20 mA (2 wire)
Supply Voltage:	13 -36 VDC	13 -36 VDC	13 -36 VDC
Pressure Reference:	Vented Gauge		
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V		
Lightening Protection:	On Request		
Standard Pressure Ranges (mWG):	0-1 mWG; 0-10 mWG; 0-20 mWG; 0-50 mWG; 0-100 mWG; 0-250 mWG; 0-500 mWG (other options available)		0 - 30 mWG; 0 - 50 mWG; 0 - 80 mWG; 0 - 100 mWG; 0 - 150 mWG; 0 - 250 mWG; 0 - 500 mWG (other options available)
Standard Pressure Ranges (psi):	0-3 psi; 0-5 psi; 0-7.5 psi; 0-10 psi; 0-15 psi; 0-30 psi; 0-50 psi; 0-100 psi; 0-200 psi; 0-300 psi (other options available)		0-50 psi; 0-75 psi; 0-100 psi; 0-150 psi; 0-200 psi; 0-300 psi; 0-750 psi (other options available)
Overpressure Safety:	2x all ranges		
Load Driving Capability:	4 - 20 mA: RL < [UB - 13 V] / 20 mA; (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω; 10 mV/V: n/a; 0 - 5 V: max. load RL > 5 KΩ; 0 - 10 V: max. load RL > 10 KΩ		4-20 mA: RL < [UB - 13 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω)
Accuracy NLHR:	≤ ±0.3 % of span BFSL		
Zero Offset and Span Tolerance:	±0.5% FS at room temperature		
Operating Ambient Temperature:	-20 °C - +60 °C (-4 °F to +140 °F)		
Operating Media Temperature:	Media must not freeze around the sensor		
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice		
Temperature Effects:	±2.0% FS total error band for -20 °C - +60 °C. Typical thermal zero and span coefficients +/0.03%FS/°C		
ATEX/IECEx Approval Option:	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 1 M1)		
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Temperature Range = -20 °C to +70 °C Max. cable length = 105 m		
DNV GL Approval Class (PR3441 only):	Temperature: D; Humidity: B; Vibration: B; EMC: B; Enclosure: D (contact sales for more information)		
Electromagnetic Compatibility:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked		
Insulation Resistance:	> 100 MΩ @ 50 VDC		
Wetted Parts:	AE 316L stainless steel housing and diaphragm, polyurethane cable and nitrile (NBR) o-ring seal	303 or 316L stainless steel housing and diaphragm, polyurethane cable and nitrile (NBR) o-ring seal	SAE 316L stainless steel housing & diaphragm and polyurethane cable
Pressure Media:	All fluids compatible with SAE 316L stainless steel, polyurethane and nitrile (NBR)	All fluids compatible with 303/316L stainless steel and Nitrile	All fluids compatible with SAE 316L stainless steel and polyurethane
Pressure Connection:	tainless steel nose cone with radial pressure inlets or 1/4" BSP male (G1/4)	Sludge Platform	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 7/0.20 mm (24 AWG), resistance 8.9 Ω / 100 m (x2)		

ORDER MATRIX

Output		Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	With sludge platform	2	PR3420			
	25mm diameter	2	PR3441			
	16mm diameterr	2	PR3442			

Electrical Connection / Option	
No special option required	–
ATEX/ IECEx certified (PR3420 and PR3441 only)	EX

Pressure Range in mWG (Metres Water Gauge)	
0-1 mWG (PR3420 and PR3441 only)	0001
0-5 mWG (PR3420 and PR3441 only)	0005
0-10 mWG (PR3420 and PR3441 only)	0010
0-50 mWG	0050
0-100 mWG	0100
0-250 mWG	0250
0-500 mWG	0500

Process Connection	
Protective nose cone (PR3441 and PR3442 only)	AX
1/4" BSP (PR3441 only)	AB
Sludge platform	AY

Cable

Cable length is specified by adding a 3 digit numeric code as a suffix to the part number.
Example -010 = 10 metres.
Max cable lenght 500 meters

Order Number Example PR3441–0010AX-010

For options not listed please contact sales team.

PR3441

PR3420

PR3442

S.11

Protran PR3800/PR3820/ PR3850/PR3860

Flush Diaphragm Pressure Transmitter

- Easy clean flush membrane to prevent clogging
- Thick film sensor technology for long service life
- Pressure ranges to 400 bar
- Range of sanitary grade pressure fittings
- Up to 250 °C media temperature option
- Models available with integral O-ring seal option to ensure flush pressure seal
- ATEX/IECEx option available (includes M1 for mining applications)

DESCRIPTION

The range of flush diaphragm pressure transmitters have been designed to meet the requirements of the majority of industrial pressure measurement applications where a hygienic flush diaphragm or remote barrier seal 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. The range offers a stable and accurate output signal of 4-20 mA with options for 0-5 V and 0-10 V.

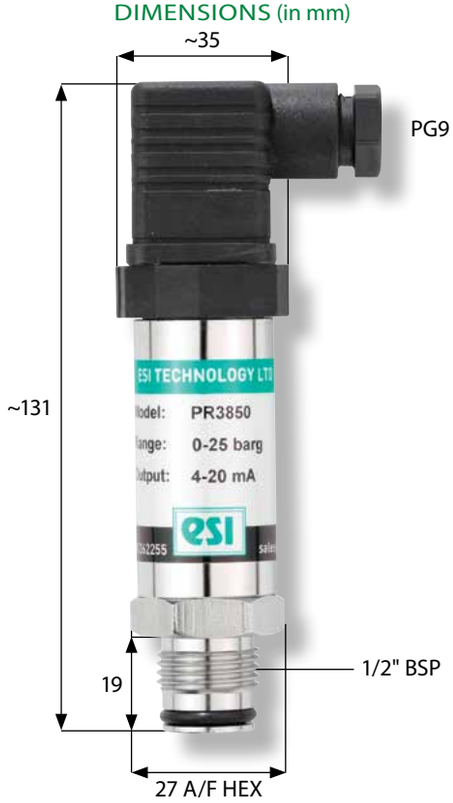
Typical applications include food processing, pharmaceutical, petrochemical, waste water and slurry handling. In these installations the process media may corrode the sensing diaphragm or clog the narrow pressure inlet on a standard transmitter. The flush membrane can be easily cleaned for long term reliability and outstanding performance.

For hygienic applications the PR3800 and PR3850 series 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.

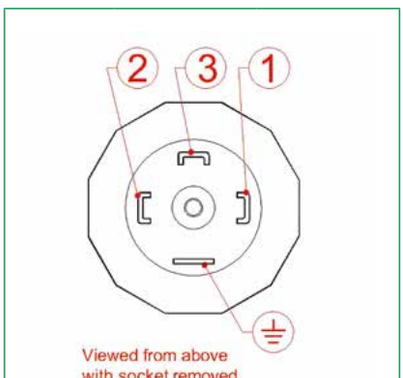
For food processing, pharmaceutical and petrochemical applications the PR3860 is suitable for use at media temperature up to 250 °C. Pressure ranges available from 0-200 mbar to 0-400 bar.

An optional ATEX and IECEx approved versions of this range are available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DIMENSIONS (in mm)



Model shown PR3850



ELECTRICAL CONNECTION (mA)

Pin. No.	2 wire
1	+ supply
2	4-20 mA signal
3	N/C
⏚	to case

ELECTRICAL CONNECTION (V)

Pin. No.	4 wire	3 wire
1	- supply	common
2	+ supply	+ supply
3	+ output	+ output
⏚	- output	to case

Protran PR3800/PR3820

Flush Diaphragm Pressure Transmitter

TECHNICAL DATA

Type:	PR3800	PR3801	PR3802	PR3820	PR3821	PR3822
Sensor Technology:	Ceramic Thick Film or Isolated Piezoresistive Silicon					
Output signal:	4-20 mA (2 wire)	0-5 V (4 wire)	0-10 V (4 wire)	4-20 mA (2 wire)	0-5 V (4 wire)	0-10 V (4 wire)
Supply Voltage:	13 to 36 VDC	13-30 VDC	13-30 VDC	13 to 36 VDC	13-30 VDC	13-30 VDC
Pressure Reference:	Gauge					
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V					
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-200mbar, 0-1 bar; 0-2.5 bar; 0-6 bar; 0-10 bar; 0-16 bar; 0-25 bar; 0-40 bar (other options available)					
Standard Pressure Ranges (psi):	0-30 in Hg; 0-1.5psi; 0-15 psi; 0-30 psi; 0-100psi; 0-150 psi; 0-200 psi; 0-300 psi; 0-600 psi (other options available)					
Overpressure Safety:	1.5x for all ranges					
Load Driving Capability:	4-20 mA: $R_L < [U_B - 13\ V] / 20\ mA$ (e.g. with supply voltage (U_B) of 36V, max. load (R_L) is 1150 Ω)					
Accuracy NLHR:	≤ ±0.3 % of span BFSL					
Zero Offset and Span Tolerance:	±1.0% FS at room temperature; ±5% FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only					
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)					
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)					
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice					
Temperature Effects:	±2.5% FS total error band for -20°C - +70°C. Typical thermal zero and span coefficients ±0.04% FS/ °C					
ATEX/IECEx Approval Option (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 1 M1)					
ATEX/IECEx Safety Values:	Ui = 28 V, Ii = 119 mA, Pi = 0.65 W, Li = 0.1 µH, Ci = 62 nF, Temperature Range = -20°C - +70°C, Max. cable length = 105 m					
Electromagnetic Capability:	Emissions: EN61000-6-4 Immunity: EN61000-6-2 Certification: CE Marked					
Insulation Resistance:	> 100 MΩ @ 50 VDC					
Response time 10-90 %:	Ranges < 6 bar 1mS; Ranges ≥ 6 bar 10 mS					
Wetted Parts:	Ranges <6 bar: SAE 316 stainless steel and nitrile (NBR); Ranges ≥ 6 bar: SAE 316L stainless steel					
Pressure Media:	Ranges <6 bar: all fluids compatible with SAE 316L stainless steel and nitrile (NBR); Ranges ≥ 6 bar: all fluids compatible with SAE 316L stainless steel					
Pressure Connection:	Pipe clamp (Tri-clover) 1.5" 316L Stainless steel (Other options available)			DIN 11851 female 316L Stainless steel (Other options available)		
	Ranges ≥0-6 bar; Flush diaphragm SAE 316L stainless steel hygienic diaphragm seal; Ranges <6 bar: Semi-flush SAE 316L diaphragm seal					
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)					

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	2	PR3800			
	2	PR3820			
0-5 V	4	PR3801			
	4	PR3821			
0-10 V	4	PR3802			
	4	PR3822			

Electrical Connection / Option

DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

0-1 bar vac	V001
0-1 bar	0001
0-2.5 bar	02.5
0-10 bar	0010
0-16 bar	0016
0-25 bar	0025
0-40 bar	0040

Process Connection

Pipe clamp (Tri-clover) 1.5" 316L Stainless steel (PR3800 only)	BG
Pipe clamp (Tri-clover) 2" 316L Stainless steel (PR3800 only)	BH
RJT 38mm female 316L Stainless steel (PR3820 only)	BJ
DIN11851 female 32mm Stainless steel (PR3820 only)	BR
SMS 40mm female 316 Stainless steel (PR3820 only)	BV

Order Number Example PR3800–0010BG

For options not listed please contact sales team.

PR3800

Protran PR3850/PR3860

Flush Diaphragm Pressure Transmitter

TECHNICAL DATA

Type:	PR3850	PR3851	PR3852	PR3860	PR3861	PR3862
Sensor Technology:	Ceramic Thick Film					
Output signal:	4-20 mA (2 wire)	0-5 V (4 wire)	0-10 V (4 wire)	4-20 mA (2 wire)	0-5 V (4 wire)	0-10 V (4 wire)
Supply Voltage:	13 to 36 VDC	13-30 VDC	13-30 VDC	13 to 36 VDC	13-30 VDC	13-30 VDC
Pressure Reference:	Gauge					
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V					
Standard Pressure Ranges (bar):	0 - 4 bar; 0 - 10 bar; 0 - 25 bar; 0 - 100 bar; 0 - 250 bar; 0 - 400 bar (other options available)			0 - 10 bar; 0 - 25 bar; 0 - 60 bar; 0 - 100 bar; 0 - 250 bar; 0 - 400 bar (other options available)		
Standard Pressure Ranges (psi):	0-60 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-6,000 psi (other options available)			0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-6,000 psi (other options available)		
Overpressure Safety:	1.5x for all ranges					
Load Driving Capability:	4-20 mA: $R_L < [U_B - 13\ V] / 20\ mA$ (e.g. with supply voltage (U_B) of 36V, max. load (R_L) is 1150 Ω)					
Accuracy NLHR:	≤ ±0.3 % of span BFSL					
Zero Offset and Span Tolerance:	±1.0% FS at room temperature; ±5% FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only					
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)					
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			0 °C to +205 °C (+32 °F to 185°F) with standard o-ring ; 0 °C to +250 °C (+32 °F to +482 °F) with optional o-ring (sensor and electronics thermally insulated from media temperature)		
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice					
Temperature Effects:	±2.5% FS total error band for -20 °C - +70 °C. Typical thermal zero and span coefficients ±0.04% FS/ °C					
ATEX/IECEx Approval Option (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 1 M1)					
ATEX/IECEx Safety Values:	Ui = 28 V, Ii = 119 mA, Pi = 0.65 W, Li = 0.1 µH, Ci = 62 nF, Temperature Range = -20°C - +70°C, Max. cable length = 105 m					
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked					
Insulation Resistance:	> 100 MΩ @ 50 VDC					
Response time 10-90 %:	10 mS					
Wetted Parts:	SAE 316L stainless steel					
Pressure Media:	All fluids compatible with SAE 316L stainless steel					
Pressure Connection:	1/2" BSP male (G1/2) with standard integral Viton o-ring seal and flush SAE 316L stainless steel diaphragm.					
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)					

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	2	PR3850			
	2	PR3860			
0-5 V	4	PR3851			
	4	PR3861			
0-10 V	4	PR3852			
	4	PR3862			

Electrical Connection / Option

DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar

0-4 bar (PR385x only)	0004
0-10 bar	0010
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-400 bar	0400

Process Connection

1/2" BSP male with flush membrane	BA
1" BSP male with flush membrane (PR385x only)	BC

* Optional 250ºC rated o-ring available on request (PR3860)

Order Number Example PR3860–0250BA

For options not listed please contact sales team.

PR3850

PR3860

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S.12

Protran PR3200/PR3202

Differential Pressure Transmitter

- Wide range of pressure ranges from ultra-low to 200 barDP
- SoS Sensor Technology for higher pressures
- WET/WET or DRY/DRY operation
- Available for gauge reference or bi-directional measurement
- Durable designs for industrial and commercial installations
- R.F.I. shielded for protection against electromagnetic radiation
- ATEX/IECEx option available (includes M1 for mining applications)

DESCRIPTION

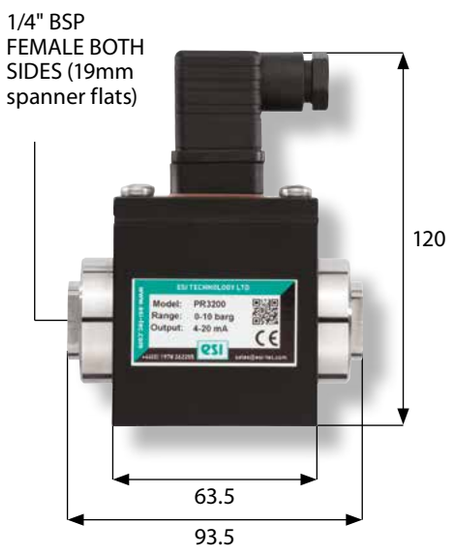
Differential pressure measurement has a wide number of applications from measuring a few millibar in clean-rooms up hundreds of bar in subsea environments. ESI Technology has a range of differential pressure transmitters with pressure ranges available from 0-5 mbar to 0-200 bar in DP, gauge reference or bi-directional.

The PR3200 differential pressure transmitter uses two titanium alloy Silicon-on-Sapphire 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. 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.

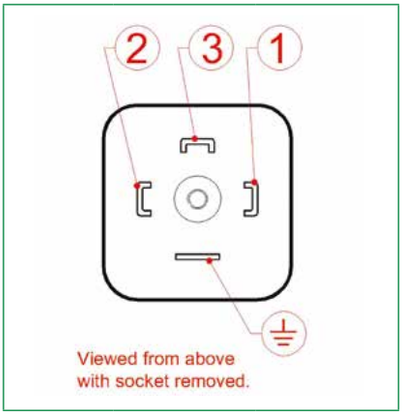
The PR3202 air differential pressure transmitter provides an accurate solution for low pressure sensing, and is fully temperature compensated for unrivalled stability at very low pressures. Housed in an RFI shielded wall mountable box for EMC protection, the PR3202 combines precise measurement with the robustness and flexibility for industrial and commercial installations. An optional heavy-duty aluminium die-cast housing is available for the harshest environments.

Optional ATEX and IECEx approved versions are available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DIMENSIONS (in mm)



Model shown PR3200



ELECTRICAL CONNECTION (mA)

Pin. No.	2 wire
1	+ supply
2	4-20 mA signal
3	N/C
⏚	to case

Protran PR3200/PR3202

Differential Pressure Transmitter

TECHNICAL DATA

Type:	PR3200	PR3202	PR3203	PR3204
Sensor Technology:	Silicon-on-Sapphire (SoS)	Piezoresistive Silicon		
Output signal:	4-20 mA (2 wire)	4-20 mA (2 wire)	0-5 V (3 wire)	0-10 V (3 wire)
Supply Voltage:	10-36 VDC	10-36 VDC	13-30 VDC	13-30 VDC
Pressure Reference:	Differential			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V			
Standard Pressure Ranges (bar):	0-0.5 bar; 0-1 bar; 0-10 bar; 0-20 bar; 0-40 bar; 0-100 bar; 0-200 bar (other options available)	0-5 mbar; 0-10 mbar; 0-20 mbar; 0-50 mbar; 0-100 mbar; 0-250 mbar; 0-500 mbar; 0-1,000 mbar (other options available)		
Standard Pressure Ranges (psi):	0-15 psi; 0-150 psi; 0-750 psi; 0-1,500 psi; 0-3,000 psi (other ranges available)	0-2 inH2O; 0-4 inH2O; 0-8 inH2O; 0-10 inH2O; 0-12 inH2O; 0-20 inH2O; 0-1 psi; 0-1.5 psi; 0-3 psi; 0-4 psi; 0-7.5 psi; 0-15 psi (other options avialable)		
Overpressure Safety:	1.5x maximum static line pressure for all ranges	25 mbar max. for ranges 0-5 mbar to 0-10 mbar; 200 mbar max. for ranges 0-20 mbar to 0-100 mbar; 1,200 mbar max. for ranges 0-150 mbar to 0-1,000 mbar		
Common Mode (Static line pressure)	2.5 bar for 0-0.5 bar range; 4 bar for 0-1 bar range; 40 bar for 0-10 bar range; 60 bar for 0-20 bar range; 160 bar for 0-40 bar range; 400 bar for 0-100 bar range; 600 bar for 0-200 bar range	375 mbar equal to both ports for ranges 0-5 to 0-10 mbar; 2 bar max. equal to both ports for ranges 0-20 mbar to 0-1,000 mbar		
Load Driving Capability:	4-20mA: $R_L < [U_B - 10\ V] / 20\ mA$ (e.g. with supply voltage (U_B) of 36V, max. load (R_L) is 1300 Ω)	4-20 mA: $R_L < [U_B - 13\ V] / 20\ mA$ (e.g. with supply voltage (U_B) of 36 V, max. load (R_L) is 1150 Ω)		
Accuracy NLHR:	≤ ±0.3 % of span BFSL (Optional higher accuracy version of ≤ ±0.1 % of span BFSL available)	≤ ±0.3 % of span BFSL		
Zero Offset and Span Tolerance:	±1.0% FS at room temperature ±5% FS (approx.) adjustment with easy access trimming potentiometers			
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)	-20 °C - +70 °C (-4 °F to +158 °F)		
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)	-20 °C - +70 °C (-4 °F to +158 °F)		
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±3.0% FS total error band for -20 °C - +70 °C. Typical thermal zero and span coefficients ±0.05% FS/ °C	±2.0% FS total error band for -20 °C - +70 °C. Typical thermal zero and span coefficients ±0.04% FS/ °C		
ATEX/IECEx 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 1 M1)		N/A	
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA, Pi = 0.65 W Li = 0.1 µH, Ci = 74 nF Temperature Range = -20 °C - +70 °C Max. cable length = 45 m		N/A	
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	SAE 304 stainless steel and titanium alloy	Nickel plated brass, silicone tubing, silicon diaphragm, glass filled polyamide		
Pressure Media:	All fluids compatible with SAE 304 stainless steel and titanium alloy	Non-corrosive, non-ionic fluids, such as air, dry gases		
Pressure Connection:	1/4"BSP female (other options available)	4 mm I.D. hose (other options available)		
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650), a screw terminal connector rated IP65 with PG9 cable entry (other options available)	Screw terminals for conductor sizes 0.2-2 mm2 are located beneath the enclosure lid. Cable entry is via IP66 cable gland with compression seal for cable sizes 4-8 mm (optional M20 conduit available)		

ORDER MATRIX

Output	Wires	Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA	2	PR3200			
	2	PR3202			
0-5 V	3	PR3203			
0-10 V	3	PR3204			

Electrical Connection / Option

DIN EN175301 plug and socket (PR3200 only)	–
PG7 cable gland (PR3202 only)	–
ATEX/ IECEx certified	EX

Pressure Range in bar

0-5 mbar (PR3202, PR3203, PR3204 only)	0005
0-50 mbar (PR3202, PR3203, PR3204 only)	0050
0-100 mbar (PR3202, PR3203, PR3204 only)	0100
0-500 mbar (PR3202, PR3203, PR3204)	0500
0-500 mbar (PR3200)	00.5
0-1 bar	0001
0-10 bar (PR3200 only)	0010
0-50 bar (PR3200 only)	0050
0-100 bar (PR3200 only)	0100
0-200 bar (PR3200 only)	0200

Process Connection

1/4" BSP female (PR3200 only)	AR
1/4" NPT female (PR3200 only)	AS
4.8mm tube connection (push-on stem) (PR3202, PR3203, PR3204 only)	AW
1/4" BSP male (PR3202, PR3203, PR3204 only)	AB

Order Number Example PR3200EX0200AR

For options not listed please contact sales team.

PR3200

PR3202

S.13

Genspec GS4000 and **Protran** PR3100

Standard Pressure Transmitter

- Suitable for the majority of industrial applications
- Pressure ranges available from 0-500 mbar to 0-700 bar
- Reliable pressure measurement
- Long service life
- Robust yet compact designs
- ATEX/IECEx option available, including M1 for mining applications (PR3100 only).

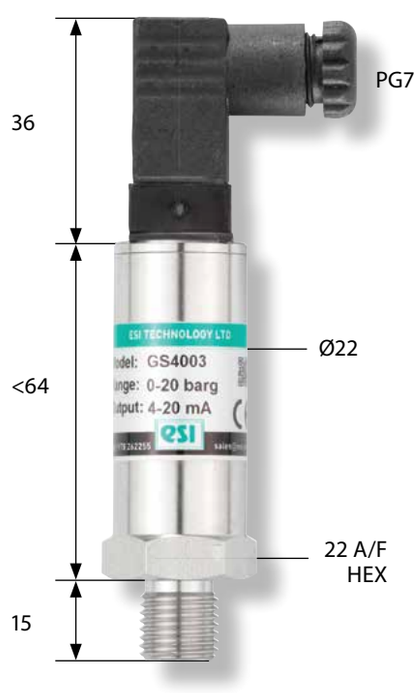
DESCRIPTION

Our standard industrial pressure transmitters are designed to cover the majority of industrial applications.

The Genspec GS4000 series is designed for applications where economical price and reliable pressure measurement is required. Incorporating bonded thick film strain gauge technology with 17/4PH stainless steel diaphragm for ranges above 20 bar, and a ceramic diaphragm for lower ranges, the GS4000 series of transmitters and transducers offer a robust yet compact design ideal for use in OEM applications.

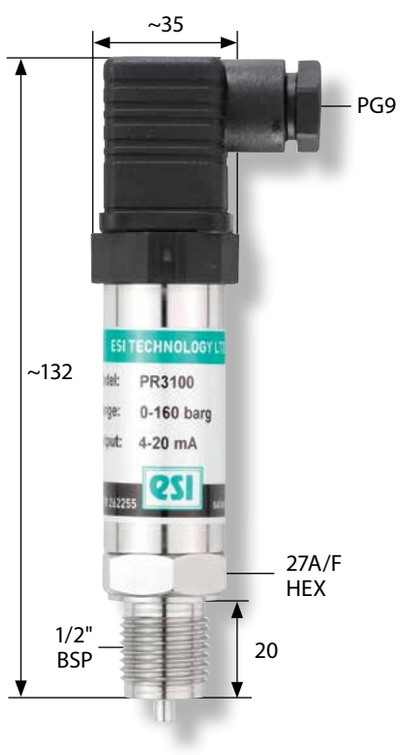
The PR3100 series is robustly constructed from stainless steel incorporating thick film, ceramic and bonded strain gauge technology offering excellent stability and accuracy over a long service life. PR3100 is available in corrosion resistant materials on request. Pressure ranges are available from 0-1 bar to 0-600 bar. An optional ATEX and IECEx approved versions of the PR3100 is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

DIMENSIONS (in mm)



Model shown GS4003

DIMENSIONS (in mm)



Model shown PR3100

Genspec GS4000 Series

Standard Pressure Transmitter

TECHNICAL DATA

Type:	GS4000/GS4100	GS4xx1	GS4xx2	GS4003/GS4103
Sensor Technology	Ceramic Thick Film or Bonded Foil Strain Gauge			
Output signal:	2 mV/V typical (4 wire)	0 - 5 V (3 or 4 wire)	0 - 10 V (3 or 4 wire)	4 - 20 mA (2 wire)
Supply Voltage:	10 VDC (5 - 15 V)	13 - 30 VDC	13 - 30 VDC	13 - 36 VDC
Pressure Reference:	Gauge (up to 700 bar) or Absolute (up to 25 bar)			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V (amplified versions)			
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-0.5 bar; 0-1 bar; 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-700 bar (other ranges available)			
Standard Pressure Ranges (psi):	0-30 in Hg; 0-7.5 psi; 0-15 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-10,000 psi (other ranges available)			
Overpressure Safety:	1.6x from ranges -1 bar to 20 bar; 2x for ranges 25 bar to 250 bar; 1.5 for ranges 400 bar (6,000 psi) to 700 bar (10,000 psi)			
Load Driving Capability:	4-20 mA: RL < [UB - 13 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω); 2 mV/V: n/a; 0-5 V: max. load RL > 5 KΩ; 0-10 V: max. load RL > 10 KΩ			
Accuracy NLHR:	≤ ±0.4 % of span BFSL			
Zero Offset and Span Tolerance:	±1.0 %FS at room temperature (GS4000/GS4100: ±0.2 mV)			
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±2% FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.03 %FS/°C			
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	SAE 303 stainless steel, alumina and nitrile (NBR) seal for ranges up to 20 bar, and 17/4PH and SAE 303 stainless steel for ranges above 20 bar			
Pressure Media:	All fluids compatible with SAE 303 stainless steel, alumina and nitrile (NBR) seal for ranges up to 20 bar, and 17/4PH stainless steel for ranges above 20 bar			
Pressure Connection:	1/4" BSP male (G1/4) or 1/4" NPT male (others options available)			
Electrical Connection:	Mating micro DIN socket EN175301-803 Form C (ex DIN43650), a screw terminal connector rated IP65 (other options available)			

ORDER MATRIX

Output		Wires	Type
2mV/V	Model above 20 bar	4	GS4000
0-5Vdc		4	GS4001
		3	GS4011
0-10Vdc		4	GS4002
		3	GS4012
4-20mA		2	GS4003
2mV/V	Model up to 20 bar	4	GS4100
0-5Vdc		4	GS4101
		3	GS4111
0-10Vdc		4	GS4102
		3	GS4112
4-20mA		2	GS4103

Electrical Connection / Option

	Electrical Connector
DIN plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C

Pressure Range in bar

	Pressure Range
0-1 bar Vac	V001
0-0.5 bar	0.05
0-1 bar	0001
0-10 bar	0010
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-700 bar	0700

Process Connection

	Process Connection
1/4" BSP male (G1/4)	AB
1/4" NPT Male	AM

Order Number Example GS4003–V001AB

For options not listed please contact sales team.

GS4003

Protran PR3100 Series

Standard Pressure Transmitter

TECHNICAL DATA

Type:	PR3100	PR3101	PR3102	PR3103
Sensor Technology:	Thick Film or Bonded Foil Strain Gauge			
Output signal:	4 - 20 mA (2 wire)	2 mV/V typical (4 wire)	0 - 5 V (4 wire)	0 - 10 V (4 wire)
Supply Voltage:	13 - 36 VDC	10 VDC (5 - 15V)	13 - 30 VDC	13 - 30 VDC
Pressure Reference:	Gauge or Absolute			
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V (amplified versions)			
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-2.5 bar; 0-10 bar; 0-100 bar; 0-250 bar; 0-600 bar; 0-1,000 bar (other ranges available)			
Standard Pressure Ranges (psi):	0-30 in Hg; 0-30 psi; 0-150 psi; 0-1,500 psi; 0-3,000 psi; 0-10,000 psi; 0-15,000 psi (other ranges available)			
Overpressure Safety:	2x for ranges 1 bar to 400 bar; 1.5x for 600 bar range; 1.2x 1,000 bar range			
Load Driving Capability:	4-20 mA: RL < [UB - 13 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω); 2mV/V: n/a; 0-5 V: max load RL > 5 KΩ; 0-10 V: max load RL > 10 KΩ			
Accuracy NLHR:	≤ ±0.3 % of span BFSL			
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature (PR3101: ±0.2 mV); 5 %FS (approx.) adjustment with easy access trimming potentiometers on amplified versions only			
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185 °F)			
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice			
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.015 %FS/ °C			
ATEX/IECEx 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 1 M1)	n/a	n/a	n/a
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Ci = 74 nF Temperature Range = -20*C to +70*C Max. cable length = 45 m	n/a	n/a	n/a
Electromagnetic Capability:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	> 100 MΩ @ 50 VDC			
Response time 10-90 %:	1 mS			
Wetted Parts:	SAE 316 stainless steel, alumina and nitrile (NBR) seal for ranges up to 20 bar, and 17/4PH and SAE 316 stainless steel for ranges above 20 bar			
Pressure Media:	All fluids compatible with SAE 316 stainless steel, alumina and nitrile (NBR) seal for ranges up to 20 bar, and 17/4PH stainless steel for ranges above 20 bar			
Pressure Connection:	1/4" BSP male (G1/4); 1/4" NPT male; 1/4" BSP male (G1/2); 1/2" NPT male (other options available)			
Electrical Connection:	Mating socket EN175301-803 Form A (ex DIN43650) rated IP65 with PG9 cable entry (other options available)			

ORDER MATRIX

Output	Wires	Type
4-20 mA	2	PR3100
2 mV/V	4	PR3101
0-5 V	4	PR3102
0-10 V	4	PR3103

Electrical Connection / Option	Electrical Connector
DIN EN175301 plug and socket	–
Cable outlet 1m screened	A
M12 connector	B
Cable outlet 1m screened IP67 protection	C
ATEX/ IECEx certified with DIN EN175301 plug and socket	EX

Pressure Range in bar	Pressure Range
0-1 bar Vac	V001
0-2.5 bar	02.5
0-10 bar	0010
0-100 bar	0100
0-250 bar	0250
0-600 bar	0600
0-1,000 bar	1000

Process Connection	Process Connection
1/4" BSP male (G1/4)	AB
1/4" NPT male	AM
1/2" BSP male (G1/2)	AC
1/2" NPT male	AN

Order Number Example PR3100–0100AC

For options not listed please contact sales team.

PR3100

S.14

Protran PR9000 and **Protran** PR9500

Heavy Duty and Wireless Pressure Transmitter

- Silicon-on-Sapphire sensor technology for outstanding performance and reliability
- Pressure ranges up to 1,500 bar
- All stainless steel, robust construction for harsh environments
- Wireless version with receiver for lower installation cost and maintenance
- Wetted parts in various materials
- ATEX/IECEx option available, including M1 for mining applications (PR9000 only)

DESCRIPTION

Developed for use in pressure applications that involve measurement of media in harsh environments, the PR9000 and wireless PR9500 are designed with robust stainless steel housing construction and Silicon-on-Sapphire strain gauge technology, together with a custom design amplifier offering excellent stability and accuracy over a long service life.

The PR9000 has easily accessible screw terminal connections and the conveniently positioned zero/span potentiometers 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 ranges are from vacuum to 1,500 bar. An optional ATEX and IECEx approved versions of the PR9000 is available for explosion protection for flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

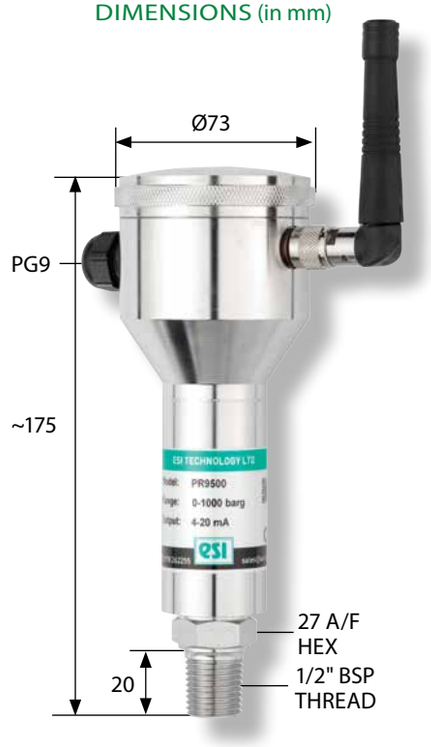
The PR9500 wireless pressure transmitter, used in conjunction with the RX9500 receiver, provides a wireless solution for safe operation in tough industrial and process applications eliminating the need for hard wiring. The transmitter can be situated in inaccessible areas, allowing the operator to monitor at safe distances on site.

No hard wiring means lower installation cost and maintenance. The PR9500 transmitter operates by sending data signals by radio telemetry to a RX9500 receiver which provides a 4-20 mA output signal. Powered by an internal battery or 8-30 Vdc supply, the transmitter is capable of sending data signals at distances of up to 200 metres. Pressure ranges are from vacuum to 1,500 bar.

DIMENSIONS (in mm)

Model shown PR900

DIMENSIONS (in mm)



Model shown PR9500

Protran PR9000

Heavy Duty and Wireless Pressure Transmitter

TECHNICAL DATA

Type:	PR9000
Sensor Technology:	Silicon-on-Sapphire (>1 bar)/ Isolated Piezoresistive Silicon (≤1 bar)
Output signal:	4 - 20 mA (2 wire)
Supply Voltage:	13 - 36 VDC
Pressure Reference:	Gauge
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-500 mbar; 0-1 bar; 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-700 bar; 0-1,500 bar (Other options available)
Standard Pressure Ranges (psi):	0-30 in Hg; 0-7.5 psi; 0-15 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-10,000 psi; 0-20,000 psi (other options available)
Overpressure Safety:	2x for ranges 1 bar to 600 bar; 1.5x for 1000 bar range; 1.1x for 1,500 bar range
Load Driving Capability:	4-20 mA: RL < [UB - 13 V] / 20 mA (e.g. with supply voltage (UB) of 36V, max. load (RL) is 1150 Ω)
Accuracy NLHR:	≤ ±0.2 % of span BFSL
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature ±5 %FS (approx.) adjustment with easy access trimming potentiometers
Operating Ambient Temperature:	-20 °C to +85 °C (-4 °F to +185°F)
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185°F)
Storage Temperature:	+5 °C to +40 °C (+41 °F to +104°F) Recommended Best Practice
Temperature Effects:	±1.5 %FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients ±0.02 %FS/ °C
ATEX/IECEx Approval Option:	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 1 M1)
ATEX/IECEx Safety Values:	Ui = 28 V Ii = 119 mA Pi = 0.65 W Li = 0.1 µH Ci = 66 nF Temperature Range = -20 °C to +70 °C Max. cable length = 85 m
Electromagnetic Compatibility:	Emissions: EN61000-6-4 Immunity: EN61000-6-2 Certification: CE Marked
Insulation Resistance:	> 100 MΩ @ 50 VDC
Response time 10-90 %:	1 mS
Wetted Parts:	SAE 316 stainless steel and titanium alloy
Pressure Media:	All fluids compatible with SAE 316 stainless steel and titanium alloy
Pressure Connection:	1/2" BSP male (G1/2); 1/2" NPT male (other options available)
Electrical Connection:	Screw terminals for conductor sizes 0.2 - 2.0 mm2 are located beneath the screw lid. Cable entry to head is through an IP68 cable gland with compression seal for cable sizes 4 - 8 mm. Optional M20 Conduit fitting is available.

Protran Wireless PR9500

Wireless Pressure Transmitter

TECHNICAL DATA

Type:	PR9500
Sensor Technology	Silicon-on-Sapphire (>1 bar)/ Isolated Piezoresistive Silicon (≤1 bar)
Output signal:	Radio transmission
Power Supply:	Replaceable 3.2 Vdc (1/2AA) Lithium Thionyl Chloride battery or 8 - 30 Vdc supply
Pressure Reference:	Gauge
Protection of Supply Voltage:	Protected against supply voltage reversal up to 50 V
Standard Pressure Ranges (bar):	0-1 bar Vac; 0-500 mbar; 0-1 bar; 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-700 bar; 0-1500 bar (Other options available)
Standard Pressure Ranges (psi):	0-30 in Hg; 0-7.5 psi; 0-15 psi; 0-150 psi; 0-300 psi; 0-1,500 psi; 0-3,000 psi; 0-10,000 psi; 0-20,000 psi (other options available)
Overpressure Safety:	2x for ranges 1 bar to 600 bar; 1.5x for 1000 bar range; 1.1x for 1500 bar range
UHF Radio Transmitter:	Low power (license free), transmission frequency 433.92 MHz
Wireless Receiver:	RX9500 radio receiver station (contact sales team for more information)
Transmission Range:	Point-to-point radio transmission up to 200m line-of-sight
Data Transmission Rate:	Serial radio packet at 4800/9600 baud (up to 4 samples per second)
Resolution:	> ±0.05 %FS (12 bit ADC)
Load Driving Capability:	n/a
Accuracy NLHR:	≤ ±0.3 % of span BFSL
Zero Offset and Span Tolerance:	±0.5 %FS at room temperature; ±5 %FS (approx.) adjustment with easy access trimming potentiometers
Operating Ambient Temperature:	-10 °C to +55 °C (+14 °F to +131 °F)
Operating Media Temperature:	-20 °C to +85 °C (-4 °F to +185°F)
Storage Temperature:	+5 °C to +40 °C (recommended best practice)
Temperature Effects:	±1.5 %FS total error band for -10 °C to +55 °C. Typical thermal zero and span coefficients ±0.02 %FS/ °C
Electromagnetic Compatibility:	ETSI EN 301 489; Certification: CE Marked
Radio Type Approvals:	ETSI EN 300 220
Insulation Resistance:	> 100 MΩ @ 50 VDC
Wetted Parts:	SAE 316 stainless steel and titanium alloy
Pressure Media:	All fluids compatible with SAE 316 stainless steel and titanium alloy
Pressure Connection:	1/4" BSP male (G1/2); 1/2" NPT male (other options available)
Electrical Connection:	Screw terminals for conductor sizes 0.2 - 2.0 mm2 are located beneath the screw lid. Cable entry to head is through an IP68 cable gland with compression seal for cable sizes 4 - 8 mm. Optional M20 Conduit fitting is available.

Protran RX9500

Radio Receiver

TECHNICAL DATA

Type:	RX9500
Radio Type:	FM Receiver
Sensitivity:	-107 dBm (range of 200m line of sight)
Identification Address:	8 bit, 256 selectable combinations
Communication Watch-dog:	128 seconds before alarm output is activated
Alarm Output:	Open drain switch, max. current 250 mA
Analogue Output:	4-20 mA (2 wire)
Output Compliance:	8.5 Vdc
Resolution:	> ±0.05 %FS (12 bit ADC)
Power Requirements:	110/240 V, 50-60 Hz or 10.5-30 VDC
Current Requirements:	32 mADC
Housing:	High impact polycarbonate, rated to IP65
Dimensions:	200 x 120 x 75 mm
Weight:	~ 1 Kg
Operating Temperature:	-10 °C to +55 °C (+14 °F to 131 °F)
Storage Temperature:	-20 °C to +65 °C (-4 °F to +149 °F)
Antenna:	1/4 wave helical in plastic moulding
RF Connector:	External BNC
Cable Entry:	IP65 nylon cable gland for cable diameter 4 - 8 mm
Electrical Connections:	Screw terminal plug & socket. Wire size from 0.5 - 1.5 mm2

ORDER MATRIX

Output		Type	Electrical Connector	Pressure Range	Process Connection
4-20 mA (2 wire)	Standard	PR9000			
Radio Transmission	Wireless	PR9500			
Radio Receiver to be used with PR9500 Wireless Transmitter		RX9500			

Electrical Connection / Option

Cable gland IP68	–
M20 Conduit	M
ATEX/ IECEx certified with DIN EN175301 plug and socket (PR9000 only)	EX

Pressure Range in bar

0-1 bar Vac	V001
0-0.5 bar	00.5
0-1 bar	0001
0-10 bar	0010
0-25 bar	0025
0-100 bar	0100
0-250 bar	0250
0-700 bar	0700
0-1,500 bar	1500

Process Connection

1/2" BSP male (G1/2)	AC
1/2" NPT male	AN

Order Number Example PR9000EX1000AC

For options not listed please contact sales team.

PR9000

PR9500

S.15

Accessories PM8005/6 | ADHT | PM1000

- Panel Meter
- High temperature pressure adapter
- Plug-in display

DESCRIPTION

The ESI product range includes high quality accessories in order to grant users the optimal installation solution in all applications

ADHT

The ADHT Cooling Coil Adapter 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 adapter will reduce the temperature of the media 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 400 bar max. Constructed entirely from 316L stainless steel, and available with ¼" BSP male process connection as standard. It offers a simple yet effective solution to high temperature applications when used with ESI pressure sensors.

PM1000

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. Model PM1001 offers an integral open-drain switch output.

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

PM8005/ PM8006

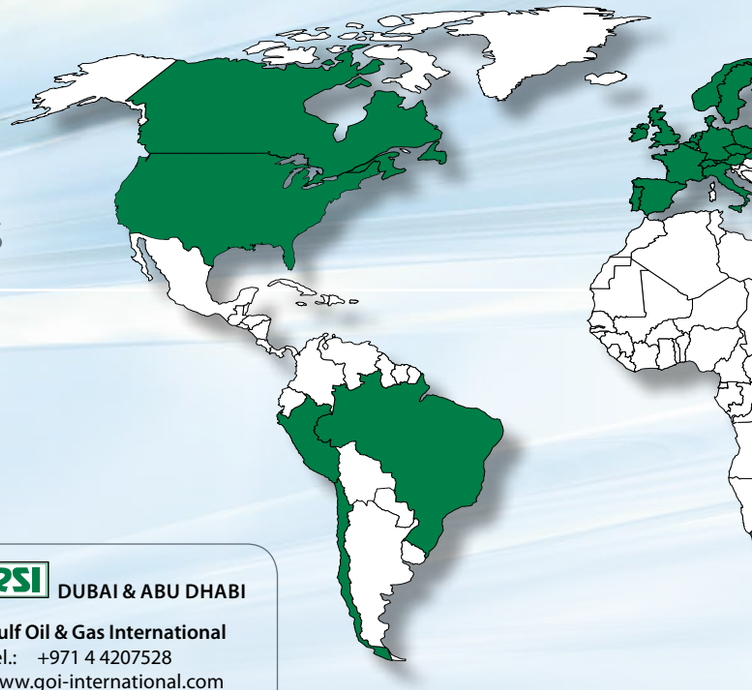
The PM8005/6 Series digital panel meters are easy to set up and commission, whilst offering extremely high precision and long term reliability.
A menu-free calibration system is employed with this panel meter design. This makes calibration and set-up of operating parameters very straightforward and radically simplifies this process compared with the usual menu arrangement used on most digital meters.

PM1000

PM8005/8006

ADHT

ESI wordwide:
International sales partners



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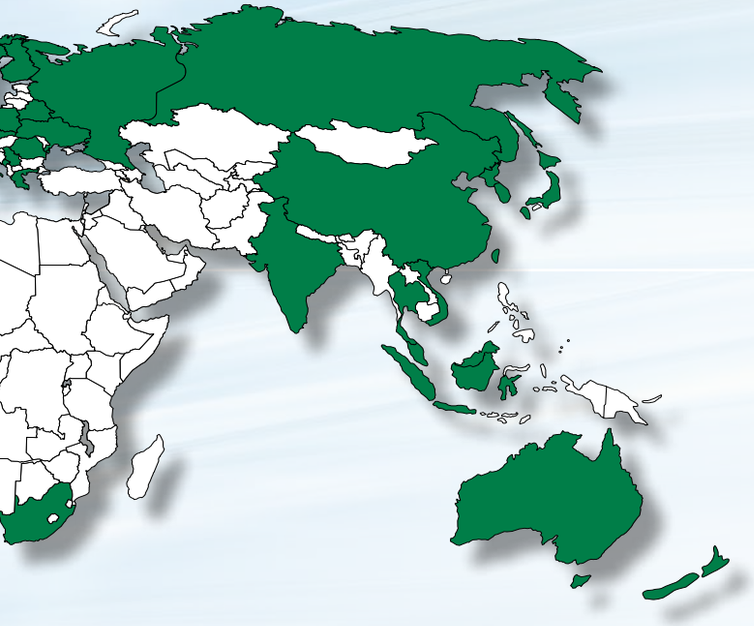

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Publisher ESI Technology,
Sensor House, Wrexham
Technology Park, Wrexham LL13 7YP

2. Edition, October 2017
No of prints 1000pcs
Part No: ESI-2017-18