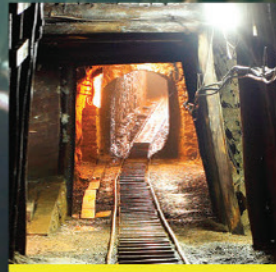
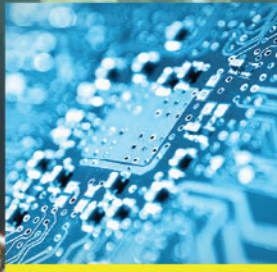




ESI Technology Ltd

## Intrinsically Safe Pressure Transducers and Transmitters





# 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.



### 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 MI)**.

Technical Marking:



II I G Ex ia IICT4 Ga  
II I D Ex ia IICT135°C Da  
I M I Ex ia I Ma

### Safety Description

Explosion protection for flammable gases (**Zone 0**), dusts (**Zone 20**) and mining areas (**Group I MI**) is by intrinsic safety alone ("ia") and the pressure transmitters have the following safety description (note the different Ci value for different models):

$U_i = 28V$   
 $I_i = 119mA$   
 $P_i = 0.65W$   
 $L_i = 0.1\mu H$

Applying standards: **ATEX** : EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007 ATEX, EN 50303:2000 Mining  
**IECEx** : IEC 60079-0:2011, IEC 60079-11:2011-6, IEC 60079-26:2006



## Standards

Our customers expect high performance from their ESI product. Achieving this requires flawless execution across the entire supply chain. From design and sourcing quality components through to shipment, our quality control and inspection procedures ensure that each and every unit that leaves our premises conforms to the highest standards. We operate to a Quality Management System approved to ISO 9001:2008 and ISO/IEC 80079-34:2011. We also conform to aerospace and military standards.



## Product Conditioning

At ESI we understand the difficulties faced by equipment manufacturers and the requirement to provide products that have been pre-conditioned to suit the working environment. We have developed comprehensive test facilities to enable us to offer Environmental Stress Screening (ESS) and Hyperbaric testing to 4000 metres depth.





## SOS Technology

### Silicon-on-Sapphire Sensor (SOS) Technology...The jewel in our crown.

Silicon-on-Sapphire sensor technology has redefined the performance capability of ESI products. Incorporating SOS into applications where EX approval is required offers a reliable and durable solution. The all titanium sensor construction offers high resistance to over pressure and dynamic pressure changes. This means that SOS sensors can operate safely in demanding high pressure environments ensuring peace of mind for the end user.

The outstanding elastic properties of the sapphire substrate provide the perfect platform on which to create a sensor with no measurable hysteresis and superb repeatability.

The measurement sensitive element consists of a silicon piezoresistive strain gauge microcircuit. The single crystal silicon forms a strong molecular bond to a sapphire substrate which is joined to a robust titanium alloy pressure diaphragm through a high temperature diffusion process. The excellent insulation properties of the sapphire protect allow the sensor to operate over a very wide temperature range without loss of performance.

In short this sensor offers unbeatable performance with high over pressures and excellent chemical compatibility. The range includes differential, submersible, high pressure, high accuracy, hygienic and rugged oil & gas transmitters.



### Customer Service

**Our objective is to create close working partnerships with our customers.**

Our dedicated sales team strive to understand your application by listening to what you tell us and carrying out our own research in order to advise you promptly and accurately on the ideal solution.



### Global

**A significant proportion of our sales are exports, so it is imperative that we have clear communication channels with the rest of the world.** The development and extension of our sales network shows a thriving enterprise and we now have more than 35 sales partners across 40 countries.





ESI Technology Ltd

# Product Range

## GENSPEC® GS4200 GENERAL PURPOSE PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-500mbar TO 0-1500bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.25\%$  FS TYPICAL MAX. BFSL
- ALL TITANIUM WETTED PARTS
- OUTSTANDING PERFORMANCE AND STABILITY
- WIDE OPERATING TEMPERATURE RANGE



## HISPEC® HI2000 HIGH SPECIFICATION PRESSURE TRANSDUCER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-500mbar TO 0-1500bar
- LOW VOLTAGE OUTPUT
- ACCURACY  $\pm 0.1\%$  FS TYPICAL MAX. BFSL
- ALL TITANIUM ALLOY WETTED PARTS
- HIGH SPECIFICATION



## HIPRES® HP1000 HIGH PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-400bar TO 0-4000bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.25\%$  FS TYPICAL MAX. BFSL
- INDUSTRY STANDARD HIGH PRESSURE FITTING
- ALL TITANIUM WETTED PARTS
- WIDE OPERATING TEMPERATURE



## PROTRAN® PR3100 STANDARD PRESSURE TRANSMITTER

- CERAMIC THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-1bar TO 0-600bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- STAINLESS STEEL AND CERAMIC WETTED PARTS
- ALTERNATIVE PROCESS THREADS AVAILABLE
- AVAILABLE IN GAUGE OR ABSOLUTE REFERENCE



## PROTRAN® PR3110 LOW PRESSURE TRANSMITTER

- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-100mbar TO 0-900mbar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- STAINLESS STEEL SENSOR AND HOUSING
- AVAILABLE IN GAUGE OR ABSOLUTE REFERENCE



## PROTRAN® PR3200 DIFFERENTIAL PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 500mbarDP TO 200barDP
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- TITANIUM AND STAINLESS STEEL WETTED PARTS
- WET/WET OPERATION
- UNI AND BI-DIRECTIONAL OPERATION
- HIGH PRESSURE DIFFERENTIAL RANGES AVAILABLE

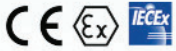




Our wide range of pressure transducers and transmitters incorporate the superior Silicon-on-Sapphire sensor technology to make one of the most advanced ranges available on the market.

### PROTRAN® PR3202 DIFFERENTIAL PRESSURE TRANSMITTER

- PIEZORESISTIVE SENSOR TECHNOLOGY
- DP PRESSURE RANGES 5mbar TO 1000mbar
- ULTRA LOW RANGES ON REQUEST
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- SUITABLE FOR USE WITH AIR AND NON CORROSIVE GAS
- R.F.I. SHIELDED



### PROTRAN® PR3400 SUBMERSIBLE DEPTH PRESSURE TRANSMITTER

- CERAMIC THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-5mWG TO 0-500mWG
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- ALL STAINLESS STEEL HOUSING
- NYLON OVER TUBE FOR TROUBLE FREE VENTING



### PROTRAN® PR3441 SUBMERSIBLE DEPTH PRESSURE TRANSMITTER

- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-1mWG
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- 316L STAINLESS STEEL CONSTRUCTION
- INTEGRAL TRANSIENT VOLTAGE PROTECTION
- HIGH STRENGTH MOULDED POLYURETHANE CABLE WITH VENT TUBE



### PROTRAN® PR3800 PRESSURE TRANSMITTER WITH BARRIER SEAL

- THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-200mbar TO 0-1000bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- 316L STAINLESS STEEL WETTED PARTS
- LARGE FLUSH FACE STAINLESS STEEL MEDIA DIAPHRAGM
- HYGIENIC MODELS FOR FOOD INDUSTRY



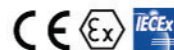
### PROTRAN® PR3850 FLUSH DIAPHRAGM PRESSURE TRANSMITTER

- THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-4bar TO 0-400bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- 316 STAINLESS STEEL WETTED PARTS
- ALL STAINLESS STEEL HOUSING
- INTEGRAL O-RING SEAL



### PROTRAN® PR3860 HIGH TEMPERATURE PRESSURE TRANSMITTER

- THICK FILM SENSOR TECHNOLOGY
- PRESSURE RANGES 0-10bar TO 0-400bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- UP TO 250°C MEDIA TEMPERATURE
- 1/2" BSP WITH FLUSH DIAPHRAGM
- 316L STAINLESS STEEL WETTED PARTS
- ALL STAINLESS STEEL HOUSING





To view our complete portfolio please visit [www.esi-tec.com](http://www.esi-tec.com)

### PROTRAN® PR3900

HAZARDOUS AREA PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-10bar TO 0-1500bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.30\%$  FS TYPICAL MAX. BFSL
- TITANIUM AND STAINLESS STEEL WETTED PARTS
- HIGH PROTECTION RATING FOR HAZARDOUS ENVIRONMENTS IP67
- NACE CORROSION RESISTANCE



### PROTRAN® PR3913

CONTROL VALVE PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-200bar TO 0-1000bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.25\%$  FS TYPICAL MAX. BFSL
- HYPERBARIC TEST CERTIFICATE
- SUBMERSION TO 3000 METRES



### PROTRAN® PR3920

SUBSEA D.P. TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- STANDARD SENSING RANGE 0-50barDP
- HIGH LINE PRESSURE
- 1200bar SECONDARY CONTAINMENT
- 3000metres SUBMERSIBLE DEPTH
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.25\%$  FS TYPICAL MAX. BFSL
- TITANIUM AND STAINLESS STEEL WETTED PARTS
- TITANIUM ALLOY DIAPHRAGM
- NACE CORROSION RESISTANCE



### PROTRAN® PR9000

PROCESS/INDUSTRIAL PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES UP TO 1500bar
- 4-20mA 2 WIRE OUTPUT
- ACCURACY  $\pm 0.2\%$  FS TYPICAL MAX. BFSL
- ALL STAINLESS STEEL HOUSING
- WETTED PARTS IN VARIOUS MATERIALS
- FULL RANGE OF BARRIER SEALS AND PROCESS FITTINGS
- ROBUST CONSTRUCTION



## 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 than will not cause ignition by either sparking or heating effects. It is therefore a low-energy signalling 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](mailto:sales@esi-tec.com)



## Hazardous Zone Classification



# Hazardous areas are classified into zones

(0, 1, 2 for gas-vapour-mist and 20, 21, 22 for dust)

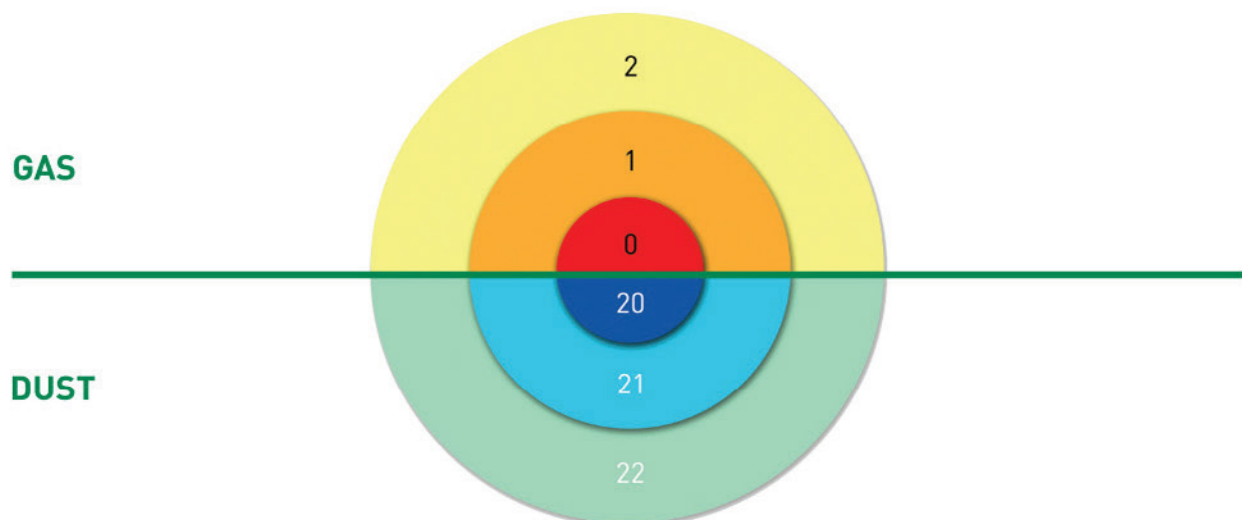
The zones are determined by the type of combustible material present, the length of time it is present, and the physical construction of the area where such material is present.

**Zone 0 or 20** 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** 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** 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.





# About us

For more than 25 years we have served our customers with consistent product development, engineered solutions and excellent technical and sales support.

Our primary focus is to provide an outstanding service to customers by offering an expansive product portfolio together with a wide scope of additional services.

Our dedicated manufacturing facility based in Wrexham, UK, provides complete control over production, and we have made considerable financial investment in product development to ensure that we are a modern business at the cutting edge of our industry.

- Aerospace
- Automotive
- Clean Rooms
- Defence
- Depth & Level
- Hydraulic
- OEM
- Oil, Gas & Subsea
- Process & Industrial
- Test Calibration



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