



# Hispec<sup>®</sup> HI2000

High Precision Pressure Transducer



- High accuracy and performance
- Silicon-on-Sapphire sensor technology for outstanding stability
- Pressure ranges to 1,500 bar (0-7.5psi to 0-20,000psi)
- Titanium wetted parts for excellent chemical compatibility
- High thermal stability over wide operating temperature
- ATEX/IECEX option available (includes M1 for mining applications)





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### Description

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

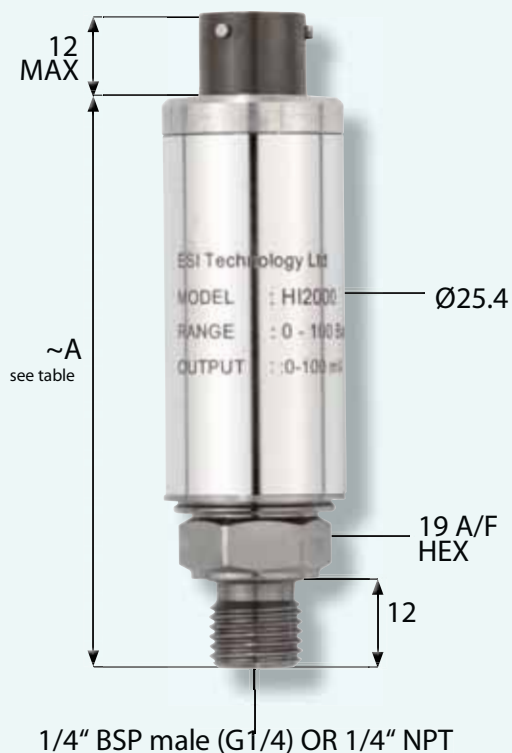
The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability over a wide temperature range. The advanced sensor design consists of a piezoresistive silicon strain gauge circuit, which is epitaxially grown onto the surface of a sapphire diaphragm to form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

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 sensor types and applications.

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 dc and 0-10Vdc.

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).

### Dimensions (in mm)



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

| ELECTRICAL CONNECTION<br>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 |        |



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### 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 IICT4 Ga (zone 0)<br>Ex II 1 D Ex ia IICT135 °C Da (zone 20)<br>Ex I M 1 Ex ia I Ma (group 1 M1)   | n/a   | n/a                   |
| ATEX/IECEx Safety Values:                     | Ui = 28 V; li = 119 mA<br>Pi = 0.65 W; Li = 0.1 μH<br>Ci = 0;<br>Temperature Range = -20 °C to +70 °C<br>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<br>Immunity: EN61000-6-2<br>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). |   |                       |



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## 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<br>6 pin bayonet | 4     | HI2010 |                      |                |                    |      |  |  |
| 0-5 V  |                              | 4     | HI2011 |                      |                |                    |      |  |  |
|  |                              | 3     | HI2014 |                      |                |                    |      |  |  |
| 0-10 V                                       |                              | 4     | HI2012 |                      |                |                    |      |  |  |
|  |                              | 3     | HI2015 |                      |                |                    |      |  |  |
| <b>Electrical Connection / Option</b>        |                              |       |        |                      |                |                    |      |  |  |
| No special option required                   |                              |       |        |                      |                |                    | -    |  |  |
| ATEX/ IECEx certified (HI2000 & HI2010 only) |                              |       |        |                      |                |                    | EX   |  |  |
| <b>Pressure Range in bar</b>                 |                              |       |        |                      |                |                    |      |  |  |
| 0-1 barVac                                   |                              |       |        |                      |                |                    | V001 |  |  |
| 0-1 bar (0-15 psi)                           |                              |       |        |                      | 0001           |                    |      |  |  |
| 0-10 bar (0-150 psi)                         |                              |       |        |                      | 0010           |                    |      |  |  |
| 0-25 bar (0-300 psi)                         |                              |       |        |                      | 0025           |                    |      |  |  |
| 0-100 bar (0-1,500 psi)                      |                              |       |        |                      | 0100           |                    |      |  |  |
| 0-250 bar (0-3,000 psi)                      |                              |       |        |                      | 0250           |                    |      |  |  |
| 0-400 bar (0-6,000 psi)                      |                              |       |        |                      | 0400           |                    |      |  |  |
| 0-600 bar (0-8,700 psi)                      |                              |       |        |                      | 0600           |                    |      |  |  |
| 0-1,000 bar (0-15,000 psi)                   |                              |       |        |                      | 1000           |                    |      |  |  |
| 0-1,500 bar (0-20,000 psi)                   |                              |       |        |                      | 1500           |                    |      |  |  |
| <b>Process Connection</b>                    |                              |       |        |                      |                |                    |      |  |  |
| 1/4" BSP male (G1/4)                         |                              |       |        |                      |                | AB                 |      |  |  |
| 1/4" NPT male                                |                              |       |        |                      |                | AM                 |      |  |  |

### Order Number Example

HI2000EX0020AB

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.



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