HISPEC© HI2000H

Hydrogen High Precision Pressure Transmitter

- Compatible for use within Hydrogen based environments
- High accuracy performance
- Silicon-on-Sapphire sensor technology for outstanding performance
- Tested to ISO 11114-2:2017 according to EC79/2009 and EU406/2010
- Pressure ranges to 1500 bar
- High thermal stability over wide operating temperature
- ATEX/IECEx option available (includes M1 for mining applications)

RoHS 2011/65/EU

Materials used in the manufacture of the Hydrogen range have been tested based on ISO 11114-2:2017 in accordance to the European Regulations EC 79/2009 and EU 406/2010 to determine an "embrittlement index" of the material when placed in a saturated environment over an extended period of time.

Results have provided a Pass rating to the compatibility of the specialist Titanium Alloy of the range against Hydrogen.

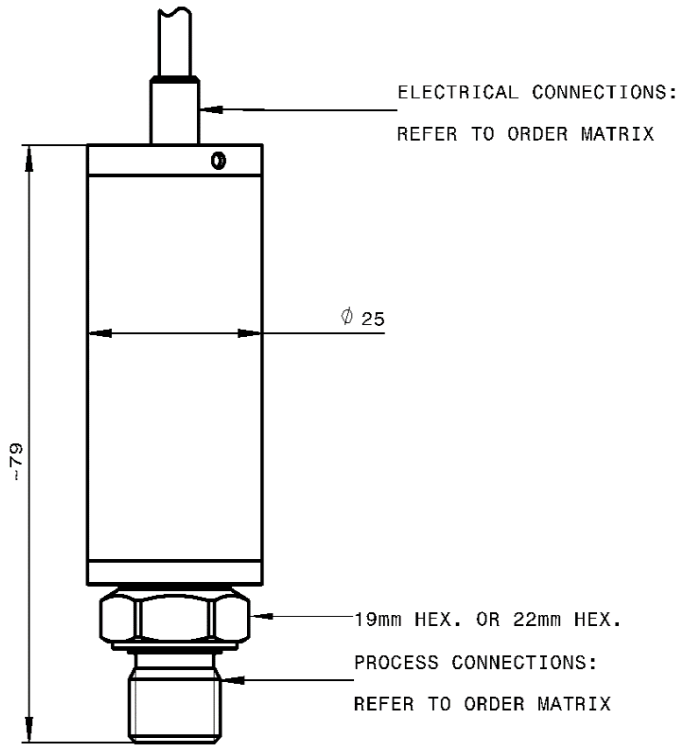
Hispec® HI2000H Hydrogen Compatible High Precision Pressure Transducer

Specifications

The HISPEC HI2000H series of Hydrogen compatible high precision pressure transducers with state-of-the-art SOS sensor technology offers an operating range up to 1500 bar at an accuracy rate of < ±0.1% of span. ATEX and IECEx approval and protection by intrinsic safety is optional and intended for installation and operation in zone 0, gas group IIC, temperature class T4 and zone 20 dust and M1 mining.

Typical applications include:
- Laboratory and Test
- Aerospace
- Hydrogen Applications

Dimensions (in mm)



Electrical Connections

Cable Outlet	
Wire Colour	**Designation**
Red	+supply
Green	+output
Yellow	-output
Blue	-supply

MIL-C-26482 Outlet	
Pin	**Designation**
A	+supply
B	+output
C	-output
D	-supply
E	N/C
F	N/C

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Hydrogen Compatibility and Silicon-on-Sapphire

The ESI hydrogen pressure transmitters are manufactured from a special titanium alloy for the measuring cell and a titanium block for the wetted parts. High pressure cells ranging from 1,000 bar are maufactured without seams, which aids in the avoidence of any weak points. This is especially important for the use with hydrogen due to the embrittling qualities of the media.

The combination of titanium sensing elements with SOS sensors has a long tradition at ESI, this material choice allows the construction of a long term stable sensor that has a high accuracy. The measurement ranges for this product are up to 1,500 bar, which makes this transmitter the preferred choice for use on hydrogen storage tanks and pipelines, but we also offer the same technology for low pressures and also in vacuum measurement applications.

Each Hydrogen approved unit also includes a certificate of conformity verifying Hydrogen compatibility.

The unique Silicon-on-Sapphire sensor technology provides outstanding performance and gives excellent stability overa 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.

Optional Approvals

Hazardous Area

ATEX and IECEx approval for explosion protection; flammable gases (zone 0), dusts (zone 20) and mining areas (group I M1).

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Technical Data

Type	HI2000/HI2010	HI2xx1/HI2xx4	HI2xx2/HI2xx5
Sensor Technology:	Silicon-on-Sapphire (SOS)		
Output Signal:	10 mV/V Typical (4 wire)	0-5 V (4 or 3 wire)	0-10 V (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 (Except for HI2000 & HI2010); 0-1 bar (Except for HI2000 & HI2010);** 0-10 bar; 0-25 bar; 0-100 bar; 0-250 bar; 0-400 bar; 0-600 bar; 0-1000 bar; 0-1500 bar (other ranges available)		
Standard Pressure Ranges (psi):	**0-30 in Hg (Except for HI2000 & HI2010); 0-15 psi (Except for HI2000 & HI2010);** 0-150 psi; 0-300 psi; 0-1500 psi; 0-3000 psi; 0-6000 psi; 0-10000 psi; 0-15000 psi; 0-20000psi (other ranges available)		
Overpressure Safety:	2x for ranges 1 bar to 600 bar; 1.5 for 1000 bar; 1.1x for 1500 bar range		
Load Driving Capacity:	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 Temperatures:	**Ambient:** -40 °C to +85 °C (-40 °F to +185 °F) **Media:** -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 (10 mV/V 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 = 74 nF Temperature Range = -20 °C to +70 °C Max. cable length = 45 m	n/a	n/a
Electromagnetic Compatibility:	Emissions: EN61000-6-4; Immunity: EN61000-6-2; Certification:UKCA and 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)		
Net Weight:	0.2 Kg		

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Order Matrix

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

Options	
No special options required	H
ATEX/IECEx certified (HI2000 & HI2010 only)	EXH

Pressure Range	
0-1 bar Vac (Amplified output only)	V001
0-1 bar (Amplified output only)	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
0-1000 bar	1000
0-1500 bar	1500

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

Order Number Example	HI2000H0600AB

For options not listed please contact the sales team

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