



# Hipres<sup>®</sup> HP1000

High Pressure Transmitter



- Pressure ranges to 5,000 bar (72,500 psi)
- 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 4-20 mA 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 technology provides outstanding performance and gives excellent stability over a wide temperature range. The wetted parts and pressure diaphragm are machined from a single piece of titanium alloy meaning no weld joints and therefore high pressure integrity and overload capability. All titanium pressure port offers unbeatable corrosion resistance. With a design to meet demanding environments, this transmitter will consistently maintain accurate performance while sustaining high durability.

Using the industry standard autoclave process connection enables safe and reliable sealing to such high pressures. Available in pressure ranges from 0-400 bar to 0-5,000 bar and with electrical outputs of 0-100 mV, 0-5V dc, 0-10Vdc 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).

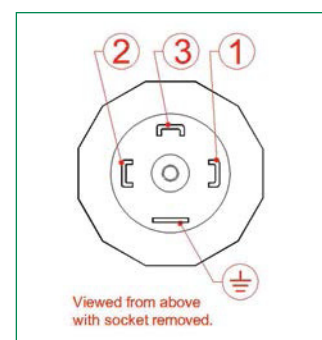
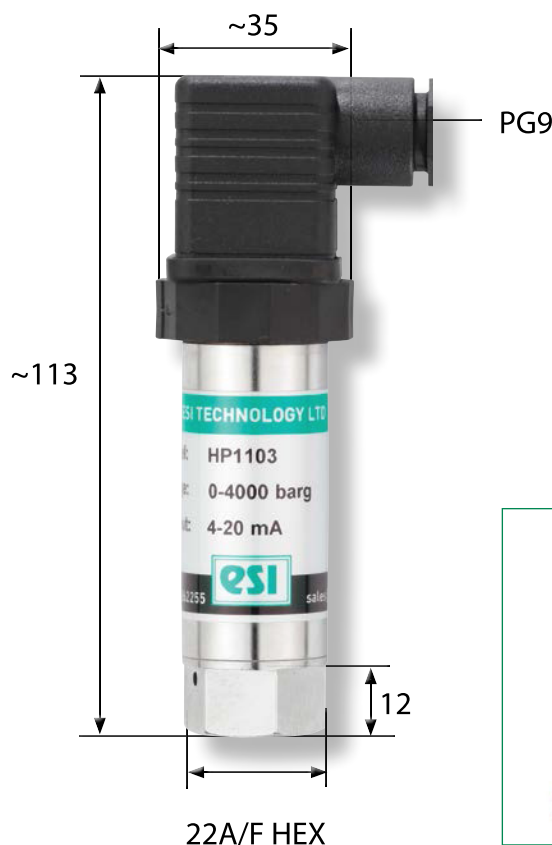
DNV GL rules for classification of ships, high speed & light craft and DNV GL offshore standards.

## Dimensions

(in mm)

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

ELECTRICAL CONNECTION (Vdc)	
Pin No.	4 wire 3 wire
1	-supply common
2	+supply +supply
3	+output +output
⏏	-output to case



### Technical Data

Type	HP1000/HP110	HP1xx1	HP1xx2	HP1003/HP1103
Sensor Technology:	Silicon-on-Sapphire (SoS)			
Output Signal:	10 mV/V (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 (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: $RL < [UB - 10 V] / 20 \text{ mA}$ (e.g. with supply voltage (UB) of 36 V, max. load (RL) is 1300 $\Omega$ ); 10 mV/V: n/a; 0 – 5 V: max. load $RL > 5 \text{ K}\Omega$ ; 0 – 10 V: max. load $RL > 10 \text{ K}\Omega$			
Accuracy NLHR:	$\leq \pm 0.25 \%$ of span BFSL (Optional higher accuracy version of $\leq \pm 0.1 \%$ of span BFSL available)			
Zero Offset and Span Tolerance:	$\pm 0.5 \%$ FS at room temperature (HP1000/HP1100: $\pm 1 \text{ mV}$ ); $\pm 5 \%$ 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:	$\pm 1.5 \%$ FS total error band for -20 °C to +70 °C. Typical thermal zero and span coefficients $\pm 0.015 \%$ FS/ °C			
ATEX/IECEX Approval Option (4-20 mA 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 $\mu\text{H}$ 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 Compatibility:	Emissions: EN61000-6-3; Immunity: EN61000-6-2; Certification: CE Marked			
Insulation Resistance:	$> 100 \text{ M}\Omega @ 50 \text{ VDC}$			
Response time 10-90 %:	1 mS			
Wetted Parts:	Titanium alloy machined from a single piece ( $\geq 1,000 \text{ bar}$ ); Titanium alloy and SAE 316 stainless steel ( $< 1,000 \text{ bar}$ )			
Pressure Media:	All fluids compatible with Titanium alloy ( $\geq 1,000 \text{ bar}$ ); All fluids compatible with Titanium alloy and SAE 316 stainless steel ( $< 1,000 \text{ bar}$ )			
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)			
Net. Weight (Kg):	0.2 Kg			

## Order Matrix

Output	Sensor Range	Wires	Type	Electrical Connection/ Options	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/Options						
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		
DNV GL Approval				M		
DNV GL Approval plus ATEX/IECEx certified				MEX		
Pressure Range in bar						
0-600 bar (0-8,700 psi)					600	
0-1000 bar (0-15,000 psi)					1000	
0-1,500 bar (0-20,000 psi)					1500	
0-2,000 bar (0-30,000 psi)					2000	
0-3,000 bar (0-43,000 psi)					3000	
0-4,000 bar (0-60,000 psi)					4000	
0-5,000 bar (0-72,500 psi)					5000	
Process Connection						
Autoclave F-250-C female						DE
M16 x 1.5 female cone seal						FK
Order Number Example		HP1100A1000DE				
For options not listed please contact the 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, traceable to national measurement standards.