PROTRAN© PR3930/40

Subsea Pressure Transmitter With with RS-485 Interface (Proprietary or Modbus RTU Protocol)

- Suitable for ROV and deep sea test equipment
- Silicon-on-Sapphire sensor technology for outstanding performance
- Submersible to 6,000 meters sea level
- Hyperbaric testing and Environmental Stress Screening (ESS Testing)
- RS-485/Modbus communication up to 1200m
- Selectable baud rate
- Resistant to interference from noise

RoHS 2011/65/EU

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 over wide temperature ranges.

Protran© PR3930/40 RS-485 Subsea Pressure Transmitter

Specifications

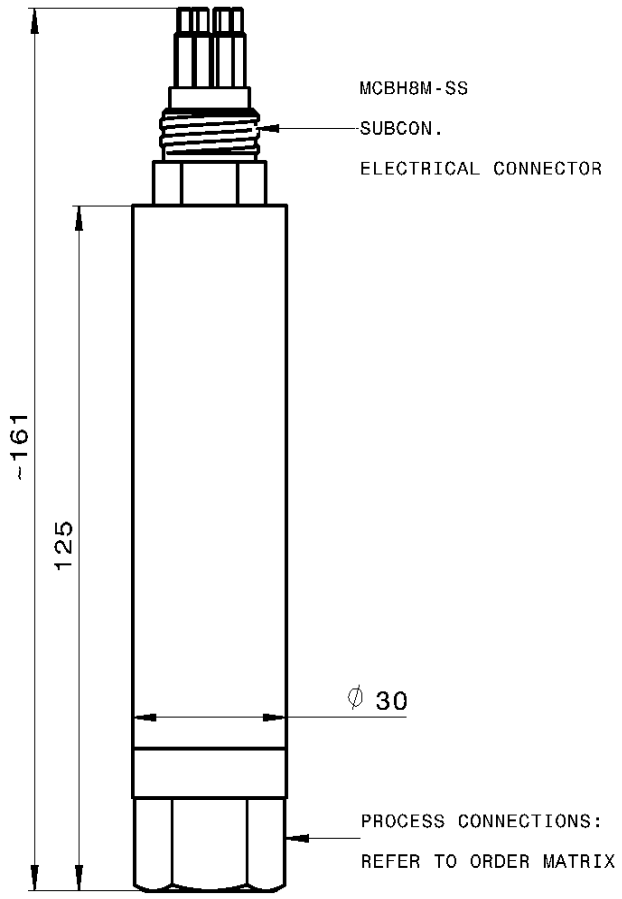
The PROTRAN© PR3930/PR3940 series subsea pressure transmitters have been designed to meet the demanding requirements of pressure measurement at deep levels of immersion, especially in oil industry applications and for ROV use. They can be configured to suit a multitude of applications and with proprietary RS-485 interface or Modbus RTU, each sensor can be allocated a unique device address and connected in series to other sensors and devices on the same communications link. It is also compatible with ESI-USB software.

Housed in a fully welded body, this product will provide a durable solution for long-term accurate pressure measurement even when permanently situated in extreme depth sub-sea environments. All versions utilise ESI's outstanding Silicon-on-Sapphire sensor featuring all titanium wetted parts for excellent media compatibility and long-term reliable performance. Providing a half-duplex digital RS-485 output signal and 0-5 V analog output, or Modbus RTU output signal and 0-5V analogue output, the PR3930/PR3940 provides high stability and repeatability for pressure ranges up to 1,500 bar.

Digital accuracy is 0.15%, with an exceptional overpressure limit.

Intended for permanent immersion the products can withstand external pressures of up to 6,000 metres depth. Units can be supplied with hyperbaric test certificates to 3,000 metres water submersion. The standard electrical connection is via an 8 pin Subconn MCBH8M connector (6 pin option available). Other subsea connections are available.

Dimensions (in mm)



Electrical Connection

Table 1

Pin No	Designation
1	RS485(B)
2	RS485(A)
3	Case Ground
4	Common Ground
5	DC Power IN
6	Analog Output
7	N/C
8	N/C

ESI Technology Limited
Sensor House, Wrexham LL13 7YP

+44(0)1978 262255
sales@esi-tec.com | esi-tec.com

Protran© PR3930/40 RS485 Subsea Pressure Transmitter

Technical Data

Type	PR3930	PR3940
Sensor Technology	Silicon-on-Sapphire (SoS)	
Output Signal (Digital):	Proprietary RS-485 Protocol	Modbus RTU
Digital Signal Baud Rate:	9600, 14400, 19200, 28800, 57600, 115200, 230400	
Output Signal (Analogue):	0-5V analogue output, 16bit	
Sample Rate:	5Hz (max-digital), 1KHz (max-analog)	
Zero Output:	0V	
Full Scale Output:	5V	
Calibration Output:	5Hz (max-digital), 1KHz (max-analog)	
Zero Adjustment Range:	Available	
Span Adjustment Range:	Available	
Supply Voltage:	6-36VDC	
Pressure Reference:	Sealed Gauge	
Protection of Supply Voltage:	Supply: up 36V, Analog Output: 0.3V to 5.3V, Digital Output +15KV ESD	
Standard Pressure Ranges (bar):	0-100bar; 0-250 bar; 0-400 bar; 0-600 bar; 0-1000 bar; 0-1500 bar (other ranges available)	
Standard Pressure Ranges (psi):	0-1500psi; 0-3000psi; 0-6000psi; 0-8700psi; 0-15000psi; 0-20000psi (other ranges available)	
Overpressure Saftey:	See table 2	
Accuracy NLHR:	digital ±0.15% of span BFSL, analog: ±0.25% of span BFSL	
Zero Offset & Span Tolerance:	±0.6%FS	
Operating Ambient Temperature:	-40°C to 60°C (-40°F to +140°F)	
Operating Media Temperature:	-40°C to 60°C (-40°F to +140°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 +60°C. Typical thermal zero & span coefficients +0.015%FS/°C	
Electromagnetic Compatibility:	Emissions: BS EN61000-6-3, Immunity: BS EN61000-6-2, Certification: CE/UKCA Marked	
Response time 10-90%	(1000/update rate) + 1ms, <17ms	
Bus Addressing:	User Programmable	
Wetted Parts:	AISI 316L stainless steel housing with titanium alloy measurement cell	
Pressure Media	All fluids compatible with AISL 316L stainless steel titanium alloy	
Pressure Connection:	1/4" BSP male (G1/4); 1/2" BSP male (G1/2); 1/4" BSP female (other options available)	
Electrical Connection:	8 pin Subconn MCBH8M connector, see table 1 (6 pin option available)	
Net. Weight (Kg):	<0.5kg	

Table 2

Pressure Range	Proof Pressure	Burst Pressure
0-100...0-400	200%	300%
0-600	200%	300%
0-1000	150%	200%
0-1500	110%	150%

ESI Technology Limited
Sensor House, Wrexham LL13 7YP
+44(0)1978 262255
sales@esi-tec.com | esi-tec.com

Protran© PR3930/40 RS-485 Subsea Pressure Transmitter

Order Matrix

Output	Type	Electrical Connection	Pressure Range	Process Connection
RS485	PR3930			
Modbus	PR3940			

Electrical Connection/Options	
MCBH08M-SS	-

Pressure Range in bar (sealed gauge)	
0-10 bar	0010
0-16 bar	0016
0-25 bar	0025
0-60 bar	0060
0-100 bar	0100
0-160 bar	0160
0-250 bar	0250
0-400 bar	0400
0-800 bar	0600
0-1000 bar	1000
0-1500 bar	1500

Process Connection	
1/4" BSP Male (G1/4)	AB
1/2" BSP Male (G1/2)	AC
1/4" BSP female	AR

Order Number Example	PR3930-0010AR

For options not listed please contact the sales team

ESI Technology Limited
Sensor House, Wrexham LL13 7YP

+44(0)1978 262255
sales@esi-tec.com | esi-tec.com