



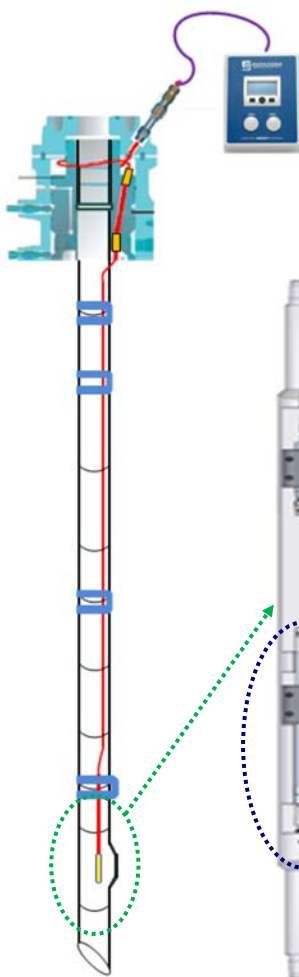
PERMANENT MONITORING SYSTEMS QUARTZ PDHG

Spartek Systems specializes in providing the oil and gas industry with high quality data to monitor well performance and diagnose potential problems. Spartek Systems can provide cost effective solutions for your Real Time Permanent Monitoring needs.

Product Overview

Spartek Systems' Quartz PDHG system provides the highest accuracy and resolution temperature and pressure measurements up to 180°C and 20,000 psi.

All accessories required for a complete system install are available: this includes a range of Tubing Encapsulated Cables, CCCP Cable Clamps, Wellhead Outlets, Gauge Mandrels, Armored Surface Cable and TEC Connectors, Splices and Splitters as required.



The surface acquisition unit (SAU) provides power and acts as a memory for the downhole gauges in permanent completions as well as providing the communications hub for SCADA or real-time transmission. The SAU links to the gauge downhole through the Tubing Encapsulated Cable (TEC) and the Wellhead Outlet (WHO). The SAU can be powered using rig power, solar or wind turbine type power supplies. The SAU can also be used to program and interrogate the downhole Permanent Pressure Gauges.

The "Full Body" Gauge Mandrel features an internal porting design allowing individual gauges to be ported to annulus or tubing as desired; materials rated for any sweet or sour down-hole environment and a burst /collapse pressure rating that meets or exceeds that of the tubing string. Single Gauge, Dual Gauge and By-Pass Gauge Mandrels are available in a range of materials and threads.

Spartek Systems Permanent Quartz Pressure Gauge uses a high-resolution digital quartz pressure transducer along with proprietary hybrid technology to digitize pressure and temperature data downhole and then transmit to the surface using a high-speed digital telemetry link. Along with a fully welded corrosive-resistant alloy (based on material selection) design and redundant pressure testable metal-to-metal cable head, the Permanent Quartz Pressure Gauge is ideally suited for long term data quality and reliability

Gauges connect to the Carrier using a Pressure Testable AUTO-CLAVE metal-to-metal seal connection.

The TEC cable connects to the gauge using a choice of "cable-heads" –sweet or sour, 1/4" or 1/8" – in addition, a range of pressure testable cable-heads are available when using 1/4" TEC cable.

Detailed specifications for our Quartz PDHG, TEC Cables and our range for Full Body Gauge Mandrels are detailed in the table below. These represent our "standard " range for this product offering.

Where this might not meet you specific needs we are able to design a bespoke solution for you on a build to order basis.

Providing Our Customers With "Best In Class" Technology

Email: sales@sparteksystems.com

<http://www.sparteksystems.com>

Specifications:

Downhole Gauge System						
Gauge			Cable			
Gauge Type	Quartz PDHG		Size	0.25 inch OD		
Diameter (OD)	0.75 inches		Wall Thickness	0.028 or 0.035 inch wall		
Length	27 inches		Conductor	16 AWG Stranded Copper		
Material	Inconel 718 - NACE		TEC Material	A825 or 316L		
Sample Rate	1 sample / sec (max)		Encapsulation	As required		
Pressure			Temperature			
Sensor Type	Quartz		Operating Range	25°C-180°C (77°F-356°F) ⁽¹⁾⁽²⁾		
Pressure Ranges	10k, 16k, 20k psi		Max (temporary)	200°C (392°F)		
Accuracy	0.02% Full-Scale		Accuracy	0.25°C		
Resolution	0.00006% Full-Scale		Resolution	<0.005°C		
Drift	< 0.02% FS / year					
Surface Acquisition Systems						
Indoor/Outdoor All Weather			Rack Mount			
Operating Temp	-40°C to 60°C (-40°F to 140°F)		Available on a build to order basis,			
Channels	1 Gauge per Line Card		Size (W x H X D)	19 x 1.75 x 12 inches		
Sample Rate	1 sample/sec		Weight	13 lbs.		
Memory	SD card up to 32 GBytes		Mounting	19 inch standard 1u rack mountable		
	Non Volatile		Power	110/240 AC @ 100 mA		
Communication	USB, RS485, Modbus TCP & RTU					
	Embedded Ethernet					
Size (W x H X D)	12 x 16 x 10 inches					
Weight	37 lbs.					
Mounting	Pole or Wall Mount					
Power	24 VDC, 15W (Wind/ Solar option)					
Display	4 x 24 Configurable with Keypad					
Desert Application	YES					
Area	Class 1, Div 2 (Optional)					
Ingress Protection	NEMA 4-4X-12 / IP-65					
Relative Humidity	0 to 95%					
Gauge Mandrel						
Tubing Size (inches)	Mandel OD (inches)	Mandel ID (inches)	Drift ID (inches)	Weight (lbs/ft)	Thread	Material Bursts & Collapse
2.375	3.875	1.953	1.901	4.6	Vam top	<u>Available Material:</u> 13 Cr L80 (80k psi yield) 4130 L80 (80k psi yield) Other materials available on a build to order basis. <u>Burst & Collapse:</u> meets or exceeds the rating of the tubing string
2.875	4.375	2.406	2.347	6.4	"	
3.500	5.125	2.938	2.867	9.2	"	
4.500	6.500	3.938	3.833	11.6	"	
2.375	4.000	1.953	1.901	4.7	EUE	
2.875	4.688	2.406	2.347	6.5	"	
3.500	5.438	2.938	2.867	9.3	"	
4.500	6.562	3.938	3.833	12.75	"	

Note:

- Accuracy specified is based on a typical calibration range of 25°C to 150°C. Quartz PDHG can be calibrated to customer requirements up to 180°C.
- Electronic aging accelerates with temperature reducing the Mean Time To Failure (MTTF). Estimated MTTF is 6 years at 150°C

Specifications subject to change without notice

For More Information, Pricing, and Technical Support Contact:



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