



# CASED HOLE LOGGING HTHP - Production Logging Instrumentation

Spartek Systems specializes in providing the oil and gas industry with high quality data to monitor well performance and diagnose potential problems. Founded in 1994, Spartek Systems leads the industry in providing cost effective solutions for acquiring reliable production data.

## Product Overview

The HTHP Production Logging System is based on the industry proven SS8000 series Production Logging System. All temperature sensitive component are packaged in a high pressure thermal heat shield. This special pressure housing provides both an improved pressure rating, 20,000 psi and protects the electronics and key sensors from temperatures up to 300°C for 6 hours (350°C for shorter durations). The system can be configured for memory or SRO operations.

For memory operations, the sensor electronics section(s) is connected to the memory module which includes a separate thermal housing for the battery pack. This provides two key benefits; the batteries are not subject to any electronic heat dissipation and it isolates the electronics from any damage related to venting of the lithium cells.

For SRO operations, the sensor electronics section(s) is connected to the Telemetry module. The Telemetry tool's bi-directional, high-speed, digital communications allows the operator to log, record and view downhole data from all sensors in real-time over conventional, single conductor wireline.

The following sensors are available:

- ▶ Accelerometer
- ▶ Gamma Ray
- ▶ Casing Collar Locator
- ▶ Quartz and Sapphire (piezo-resistive) Pressure
- ▶ Fast Response Temperature
- ▶ Fluid Dielectric (Capacitance)
- ▶ Acoustic Fluid Density
- ▶ Fullbore Folding Flowmeter
- ▶ Caged Flowmeter

The Fluid ID module which includes the Capacitance and Acoustic Density sensors are limited to approximately 220°C as the sensors are exposed to the full wellbore temperatures.

The HPHT production Logging Systems is fully compatible with SparWorks and the Warrior Logging System.



## Applications

- ▶ Hostile Environment Production Monitoring
- ▶ Monitor well efficiency
- ▶ Production Diagnostics
- ▶ Analyze production profile by zone
- ▶ Monitor well stimulations
- ▶ Well mechanical integrity analysis
- ▶ Time lapse logging
- ▶ Well treatment verification
- ▶ Analyze injection profile by zone

## SPARTEK SYSTEMS

Providing Our Customers With "Best In Class" Technology

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Specifications:

Operating Specifications				
<b>Pressure Rating</b>	20,000 psi (max)	<b>Temperature Range</b>	-40°F to 572°F [-40°C to 300°C]	
<b>Housing Material</b>	Inconel 718* (sour)	<b>Dimensions</b>	1.689" OD	
<b>Power Requirements</b>		<b>HTHP Controllers</b>	4.65 ft 6.48 ft 4.96 ft	
<b>Memory Controller</b> Voltage Current (max)	10.0 - 11.7 V (3 C cell pack) 200 mA	Memory Controller SRO Controller (Telemetry) Memory Controller Sapphire PTS <sup>(1)</sup>		
<b>SRO Controller</b> Voltage Current (max)	125 V - 175V @ Cable head 100 mA	<b>HTHP Sensor Electronic Modules</b> Quartz PT-CCL-GR-Spinner Fluid ID (Cap, AC Den) - Spinner <sup>(2)</sup>	6.54 ft 5.63 ft	
<b>Memory Ctl Sapphire PTS</b> Voltage Current (max)	6 - 7.8 V (2 AA cell Pack) 20 mA	<b>HTHP Flowmeters</b> Caged Flowmeter Full Bore Flowmeter	1.09 ft 2.25 ft	
<b>Communications</b>	USB	<b>HTHP Centralizers</b> InLine Roller Centralizers E-Line Roller Centralizer	2.67 ft 2.55 ft	
<b>Data Acquisition</b> <u>Memory PLT</u> Memory Size Sample Rate Logging Time  <u>SRO PLT</u> Sample Rate	128 Mb (16 Mb) 1, 2, 5, or 10 samples/sec Standard PLT (8 sensors) at 1 sec sample for 135 hours  10 samples/sec	(1) Controller supports ONLY external Spinner Flowmeter. 16 Mbyte memory/ AA Battery (2) Capacitance and Acoustic Density limited to 220°C		
Performance Specifications				
<b>Spinner</b> Range Operating Diameter Resolution Accuracy Threshold In Line Caged Fullbore	+/- 200 rps 1.81" minimum Caged Spinner 0.083 rps +/- 2%  8 ft/min (oil flow) 4 ft/min (oil flow) 2 ft/min (oil flow)	<b>Pressure</b> Range Resolution Accuracy	<u>Sapphire</u> 20,000 psi 0.003% F.S. 0.05% F.S.	<u>Quartz</u> 20,000 psi 0.00006% F.S. 0.024% F.S.
		<b>Acoustic Density</b> Sensor Range Resolution Accuracy	Vibrating Element 0 - 2 g/cc 0.01 g/cc 0.03 g/cc	
<b>Temperature</b> Range Resolution Accuracy	-40°C to 300°C 0.01°C +/- 1°C	<b>Fluid Capacitance</b> Resolution WHI Accuracy	0.1% 2% (range 0% - 30%) 5% (range 30% - 60%)	
<b>Gamma Ray</b> Detector Type Range	Scintillation 0 - 10,000 API	<b>Casing Collar Locator</b> Detector Type	Electromagnetic	
<b>Accelerometer</b> Range Resolution Accuracy	+/- 2 g 0.01 g +/- 0.1 g	<b>Roller Centralizer</b> Range	1.4 to 8.2 inches	

Specifications subject to change without notice

For More Information, Pricing, and Technical Support Contact:



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