



ELECTRONIC MEMORY RECORDERS

Sapphire Pressure / Temperature Gauge

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 well information.

Product Overview

The SS2100 Pressure/Temperature gauge combines an external fast response platinum wire resistive temperature device (RTD) with Spartek Systems' proprietary high resolution sapphire pressure sensor.

Pressure and temperature are fundamental measurements that are required for both reservoir characterization and wellbore diagnostics. A standard pressure gauge will normally have an internal temperature sensor to automatically compensate the pressure transducer for temperature effects. This sensor will typically provide accurate temperature data, however, the temperature response time is too slow for most applications.

As seen in the graph below, the external RTD has a response time ten times faster than the internal temperature sensor found on most gauges. This is primarily due to the amount of mass surrounding the internal sensor.

Utilizing a proprietary sapphire pressure sensor, a fast response external RTD, and the latest in low power data acquisition technology, the SS2100 is ideally suited for both long term monitoring, and wellbore diagnostics applications (cement tops, tubing leaks, channeling, and gas lift valves). The low power electronics and large memory capacity allow the user to collect up to 666,666 data sets (pressure, internal temperature, and external temperature) with a single C cell battery. Depending on sample rates, this could represent surveys from 3 months to 1 year. This performance has been achieved without sacrificing sampling speed or resolution.

Spartek Systems provides all the necessary tools and software to use this technology for both stationary monitoring applications and continuous depth based logging.

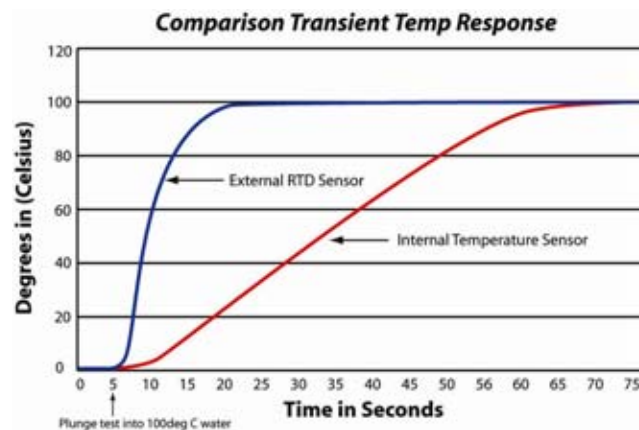


Primary Features

- ▶ Fast Temperature Response
- ▶ High Resolution Pressure Sensor
- ▶ Long Battery Life (single "C" cell)
- ▶ 1 sec sampling rate
- ▶ USB / RS232 Data Retrieval
- ▶ Large Memory Capacity (666,666 Data Sets)
- ▶ Easy Setup and Programming
- ▶ Rugged and Reliable
- ▶ Windows 7/Vista/XP/NT/2000

Applications

- ▶ Well Testing
- ▶ Monitor Well Performance
- ▶ Completion Diagnostics
- ▶ Well Stimulation
- ▶ Reservoir Characterization
- ▶ Gradient Surveys



SPARTEK SYSTEMS

Providing Our Customers With "Best In Class" Technology

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Specifications:

MODEL	SS2100		
Pressure Sensor Type Range(s) (psi) Accuracy ^{1,2} Resolution Drift Temperature ³	Sapphire 750, 1.5k, 3k, 6k, 10k, 15k 0.3 psi or 0.05% Full-Scale 0.0003% Full-Scale < 0.03% Full-Scale / year 170°C / 338°F	Temperature Sensor Type Range Accuracy Resolution Drift	External RTD Class one -20°C to 170°C / -4°F to 338°F 1.0°C / 1.8°F 0.001°C / 0.0018°F < 1.0°C / 1.8°F per year
Power Requirements Voltage (min) Current (Sleep) Current (Sample)	3 V 0.10 mA 4.50 mA	Data Acquisition Channels Fastest sample rate Memory Capacity Options	Pressure Pressure Sensor Temperature External Temperature Time 1 sample/second 666,666 samples 1,333,333 samples Pressure Trigger
Housing Material Diameter Length	17-4 PH / Inconel 718-NACE 1.25 inch [31.75 mm] (Varies with configuration) Contact your Spartek Representative with your requirements.	Software Compatibility	Windows 7/Vista/XP/NT/2000
Surface Read Out	Yes	Communications	RS232 / USB

Notes:

1. Accuracy is larger of the two stated values. This includes the combined effects of hysteresis, repeatability, and the corrected linearity over the calibrated temperature range.
2. Pressure accuracy for the lower pressure transducers are based on the following calibrated temperature ranges: 750 psi (0 to 80°C), 1500 psi (0 to 100°C), and 3000 psi (0 to 120°C). All other transducers are based on maximum operating temperature specified. Consult your Spartek representative for specifications at other calibrated temperature ranges.
3. Operating Temperature Range for the equipment is stated from 0°C to max temperature. Actual calibrated temperature range can vary based on customer requirements.

Specifications subject to change without notice

For More Information, Pricing, and Technical Support Contact:



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