

PPS71 Quartz Geothermal Tools - Memory / SRO

The **PPS71 Quartz Geothermal Tools** are designed for extreme, high temperature downhole conditions. The robust electronics combined with vacuum flask technology allow these products to perform at 350 °C (662 °F) continuously, for four hours. The tool measures pressure, temperature, casing collar location, flow profile and gamma ray, and can be configured as either a memory tool or surface read out tool surface read out tool (SRO) tool. The measurements are done with a superior quartz transducer, a fast response resistance temperature detector (RTD), either a continuous or fullbore spinner flowmeter, magnetic CCL and sensitive gamma ray crystal. By combining the downhole measurements with PPS's DepthWatcher (PPS36), a depth versus time recorder, customers have the capability to create synchronized profile logs which have many applications for the end user such as monitoring radioactive tracers in injected fluids, interpreting lithology, estimating shale volume and correlating cores with logged depth.



Pressure Measurement

Sensor Type	Quartz
Pressure Range	5K psi 10K psi 18K psi 25K psi
Accuracy	± 0.02%
Resolution	<0.01

Temperature Measurement

Sensor Type	RTD (Pt1000; 4-wire)
Temperature Range	300 °C (572 °F) 350 °C (662 °F)
Accuracy	± 0.5 °C
Resolution	0.01 °C

Flow Measurement

Sensor Type	Reed switch/magnetic
Flow Rate Range	5 – 7,000 RPM
Accuracy (≥ 20 RPS)	± 0.5 revolution
Accuracy (≤ 20 RPS)	± 0.25 revolution
Resolution (≥ 20 RPS)	0.5 RPS
Resolution (≤ 20 RPS)	0.1 RPS

Gamma Measurement

Sensor Type	Crystal, NaI (scintillation type)
Sensitivity	Typically 1.7 CPS/API

Features:

- Operating temperatures up to 350 degrees Celsius
- Fast response RTD temperature sensor
- Continuous or full-bore spinners are available
- Operates in either memory or surface read out mode
- Surface read out mode using e-line is compatible with the Warrior or PPS SRO acquisition system
- Can be combined with PPS36 DepthWatcher if depth measurement is needed



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Environmental

Temperature Rating—Standard Housing	177 °C (350 °F) with standard housing
Temperature Rating—Flask Housing	300 °C (572 °F) OD 1.56" 350 °C (662 °F) OD 1.75"
Downhole Time (OD 1.75")	4 hours at 350 °C (662 °F) 6 hours at 300 °C (572 °F) 8 hours at 250 °C (482 °F) 10 hours at 200 °C (392 °F)
Downhole Time (OD 1.56")	4 hours at 300 °C (572 °F) 5.5 hours at 250 °C (482 °F) 7.5 hours at 200 °C (392 °F)

Memory Tool Specifications

Sampling Rate	0.1 s – 1.8 hrs/per sample
Data Sets	Time / Pressure / Temperature / Flow / CCL / Gamma
Memory Capacity	2,000,000 data Sets
Communication Interface	USB
Communication Rate	115,200 bits/s
Operation Voltage	5.5 – 7.2 VDC
Battery	165 °C (329 °F) Two C size Li-battery (5 A hr/7.2 V)
Connector	Lemo 4 pin with locker

Surface SRO Interface

Data Transmission Rate	9,600 bits per second via standard electrical cable
Data Transmission Distance	Up to 7,000 meters via standard electrical cable
Compatibility	Warrior 8 and up
Communication Port	USB 2.0 to PC
Power Input	100 - 240 VAC
Surface Unit Power Output	+60 VDC
Working Temperature	-40 °C (-40 °F) to 85 °C (185 °F)
Humidity	90%
Condensation	No
Material	Aluminum
Connectors	1 AC Power, 1 DC Power, 1 USB Port and 1 Gauge Interface
Dimensions—inches	7.75 (196 mm) x 4 (101 mm) x 3.25 (82 mm)
Interface	USB 2.0

Mechanical and Materials

Service	Sour Services
Outside Diameter—inches	1.56 (39 mm) Memory Only 1.75 (44 mm)
Overall Length Memory Tool—inches	87.4 (2,220 mm) 1.75" OD tool with 2.125" OD spinner 87 (2,210 mm) 1.75" OD tool with 1.69" OD spinner 75.4 (1,915 mm) 1.56" OD tool with 1.44" OD spinner
Overall Length SRO Tool—inches	111.9 (2,842 mm) with 2.125" OD spinner 111.5 (2,832 mm) with 1.69" OD spinner
Housing Material	Inconel 718 Monel K500



SRO Transmitter

PPS71 Quartz Tool with Flask



SRO Surface Box



PPS36 DepthWatcher

