

Pressure/Temperature/Flow (PTF) Sensor



Description

The High-Resolution Pressure/Temperature/Flow rate (PTF) Tool is used to measure pressure, temperature, and flow in a wellbore. A silicone fluid buffer is used to isolate wellbore contaminants from direct contact with the pressure transducer bellows.

The tool sends five frequencies:

- Wellbore temperature
- Internal transducer temperature
- Pressure
- Flow rate up
- Flow rate down

The tool transmits data from the transducer (pressure and internal temperature) serially to a telemetry tool, which transfers data to a surface acquisition system, or to a memory adapter, which stores data within internal memory.

The frequency for temperature is generated on the temperature board and should be approximately 15kHz at room temperature. Flow frequency is generated from a magnetic hub in the head of a flowmeter attached to the bottom of the PTF tool. As these magnets pass sensors inside the PTF, two signals are generated that can be used to decode the direction of fluid flow past the tool. A flowmeter will generate 12 pulses per revolution on the output channels. Only one channel at a time will have an output on it for flow. This changes depending on the direction of fluid flow past tool.

All serial data and flow frequencies are generated on the high-resolution board, but the tool must be connected to a DataCan Services' Lee Specialties Telemetry or Memory Adapter Tool before the serial data will be transmitted.

Main Features

- Incorporates a quartz pressure sensor, temperature sensor, and bidirectional flow sensor
- Pressure sensor has built-in temperature compensation
- Bellows and buffer of silicone oil isolates sensors from wellbore fluids
- RTD resistor temperature sensor
- Flow rate sensor obtains rotational direction and speed from an attached spinner
- PTF is compatible with both fullbore and continuous spinners
- 0.02 psi (0.14 kPa) pressure resolution
- ± 3.2 psi (± 22 kPa) pressure accuracy (equal to 0.02%)
- 0.018°F (0.01°C) temperature resolution
- ± 1.6 °F (± 1 °C) temperature accuracy
- 0.36°F (0.2°C) temperature repeatability
- $\pm 2\%$ flow accuracy

Specifications

Specification	Details
OD	1.375 in (34.9 mm)
Length	27.2 in (690 mm)
Weight	7.8 lbs (3.5 kg)
Temperature Rating	350°F (177°C)
Temperature Resolution	0.018°F (0.01°C)
Temperature Accuracy	±1.6°F (±1°C)
Temperature Repeatability	0.36°F (0.2°C)
Pressure Rating	15,000 psi (103.5 MPa)
Pressure Resolution	0.02 psi (0.14 kPa)
Pressure Accuracy	±3.2 psi (±22 kPa) (equivalent to 0.02%)
Flow Resolution	0.083 rps
Flow Accuracy	±2%
18V Power Requirement (Memory String)	41mA
100V Power Requirement (Telemetry String)	9mA

Spare Parts

- Seal Kit: AM008RK0010
- Spring Pin: SP1/16SB050 (x2)
- Port Plug: PM008SB0029
- Socket Cap Screw 8-32x3/16": SCC8-32SB01875
- Socket Head Cap Screw 10-32x0.25": PE545UU0045
- Spacer O-Ring: PM008SA0015

Accessories

- PTF Fill Pump and Adapter: AM002UU0005

Part Number:

Standard Service: AM008WA0010

H2S Service: AM008WB0010