

Model SP1200 Fiber Optic Single Point Temperature Probe

DavidsonSensors™ provide the safest, most reliable and cost-effective instrumentation for harsh industrial environments.

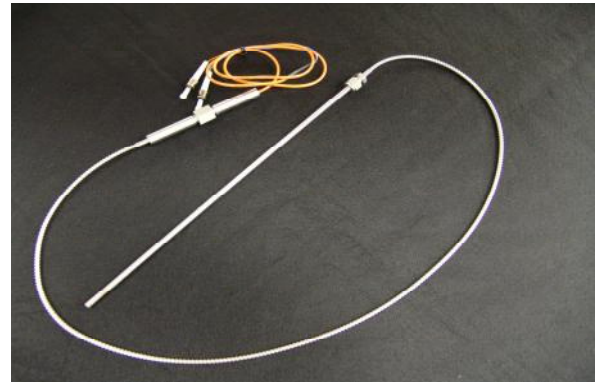
This product data sheet describes Model SP1200 single point temperature probe. The probe can be used in place of a conventional thermocouple for an integrated fiber optic sensing system.

Davidson fiber optic temperature sensing probes can be designed for any length up to 40 feet and as small as 0.050 inch in diameter.

Davidson quick response temperature sensor probes do not require the physical or safety protection of a thermowell and can be immersed directly into the process stream. Since the thermal mass of the thermowell is not present, the fiber optic temperature probe can detect changes in temperature in a small fraction of the time required for conventional thermocouples inside a thermowell.

Operating Temperature Ranges

550° F
1000° F



500° F Single Point Temperature Probe

Physical Specifications

Process Connections

Male NPT or Flange Connection

Wetted Materials

Stainless Steel 316

Performance Specifications

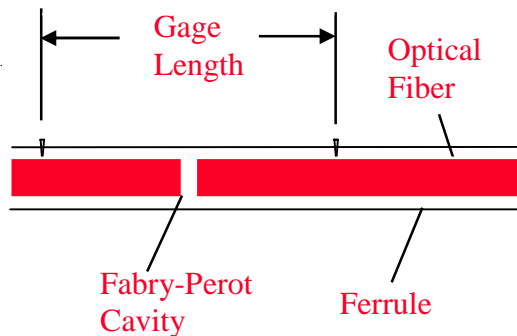
Accuracy

± 1° F over the Full Scale Range

Theory of Operation

Process temperature causes materials with different coefficients of thermal expansion to expand at different rates. In the fiber optic temperature sensor, this causes the Fabry-Perot sensing gap to move approximately 0.0005 inch over the full scale operating temperature. The change in the sensing gap is measured remotely by the fiber optic signal conditioner where the optical signal is converted into an electronic output signal in the appropriate engineering units.

Multiple temperature sensors can be packaged together in a long probe when temperature profile measurements are required.



Fiber Optic Temperature Sensor

Fiber Optic Sensing Advantages

Fiber optic sensing offers a number of advantages for measurement in harsh industrial environments. DavidsonSensors™ are intrinsically-safe, immune to electromagnetic interference, and suitable for continuous use at temperatures up to 1000°F.

Although fiber optic sensing systems can be used effectively even in benign environments, Davidson fiber optic sensing systems offer significant technical advantages when used in the following environments:

- Hot, Corrosive Environments
- Explosion Hazardous Areas
- High EMI Areas

Fiber optic sensing systems eliminate or mitigate many of the following common problems:

- Failure due to Lightning
- Problems due to Ground Potential
- Noise due to EMI/RFI

Testing and Calibration

Standard test and calibration includes the following:

Hydrostatic test is performed at 110% of rated pressure with de-ionized water at ambient room temperature.

Calibration is performed over the full range of operating pressure and temperature.

Documentation

Calibration data sheets will be provided for each transducer upon request.

Tagging

Stainless steel tags will be permanently attached to each transducer upon request.

Safety (Probe with Cable)

Intrinsically-safe and suitable for use in:

- Class I, Division 1, Groups B, C, and D
- Class II, Division 1, Groups E, F, and G
- Class III, Division 1

Other Applications

For information about other Davidson products, see

www.davidson-instruments.com

Guide to Configuring a Fiber Optic Sensing System

For information to assist you in planning a fiber optic sensing system, see

www.davidson-instruments.com

Ordering Data

Model Number	SP1200	
Temperature Range	5	550° F
	10	1000° F
Cable Jacket/Length (X is the length in feet)	N – 0 / 0	None
	A – X / 0	SS Armor
	B – X / 0	SS Braid
	C – X / 0	DX
	D – X ₁ / X ₂	SS Armor / DX
	E – X ₁ / X ₂	SS Braid / DX
Cable Temperature Rating	1	125° F
	6	550° F
	X	Other (Specify)
Cable Termination	P	None (pigtail)
	S	ST Connector
	R	Rugged
	X	Other Connector
Process Connection	M	Male NPT
	A	ANSI Flange

Overall Length	_____	Dimension A
See page 4 for Illustration	Z	Not Applicable
Transducer Diameter	_____	Dimension B
See page 4 for Illustration	Z	Not Applicable
Extended Length	_____	Dimension C
See page 4 for Illustration	Z	Not Applicable
Flange Diameter	_____	Dimension D
See page 4 for Illustration	Z	Not Applicable
NPT Thread Size	A	1/4 -18
	B	3/8 -18
	C	1/2 -14
	Z	Not Applicable
Flange Class	150	ANSI 150
	300	ANSI 300
	600	ANSI 600
	Z	Not Applicable
Other Specifications*	0	No
	1	Yes

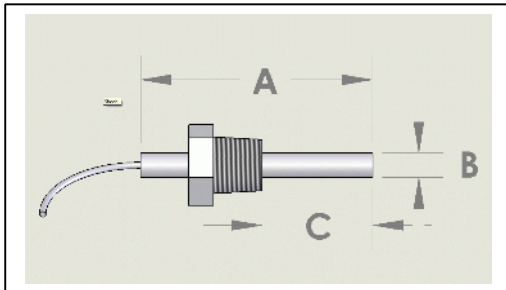
* Tagging, documentation, other instructions etc.

Ordering Data Worksheet

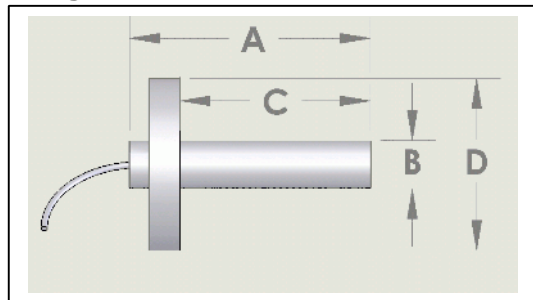
Place an X in any category that is not applicable

Unit Number	Model Number	Temperature Range	Cable Jacket / Length	Cable Temperature Rating	Cable Termination	Process Connection	Overall Length Dimension A	Transducer Diameter Dimension B	Extended Length Dimension C	Flange Diameter Dimension D	NPT Thread Size	Flange Class	Other Specifications
1	SP1200												
2	SP1200												
3	SP1200												
4	SP1200												
5	SP1200												
6	SP1200												

Process Connection Dimensions



Flanged Connection



U.S. Patent Pending

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