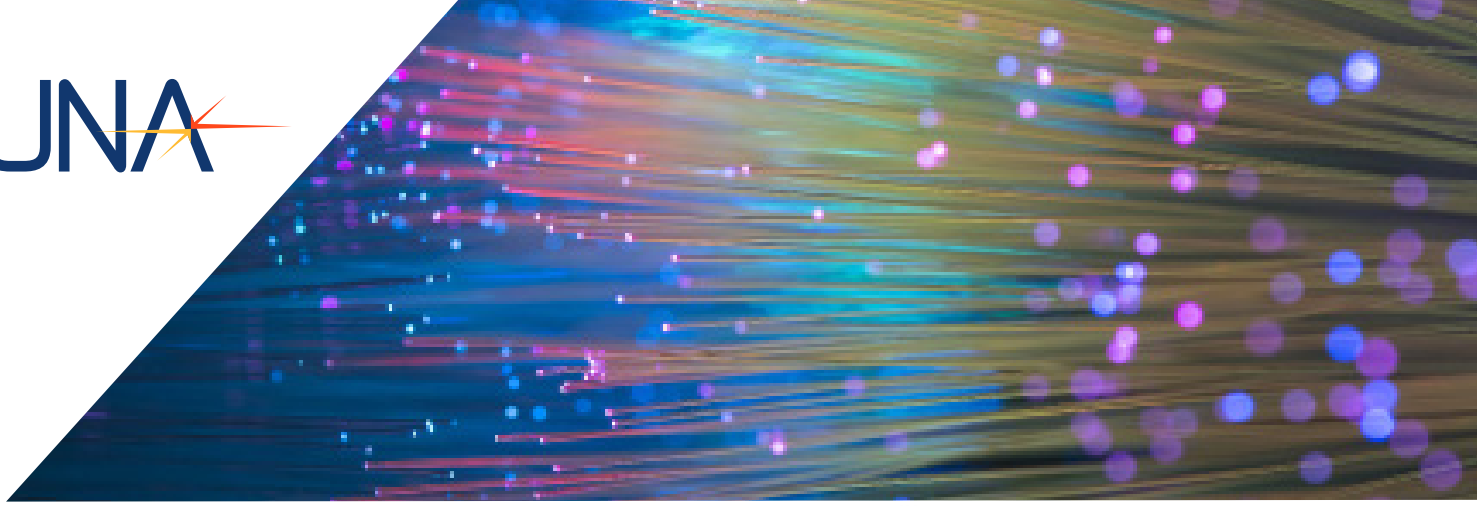

os4200

Temperature Probe

The os4200 Temperature Probes are sealed, stainless steel tubes that are designed to make handling easy and sensor installation fast and repeatable. It is based on fiber Bragg grating (FBG) technology. and since there are no epoxies holding the fiber to the tube, long term stability is ensured by design.

In side by side comparisons with conventional thermocouples, the os4200 is equally sensitive and accurate, while providing sub-second response time, wider operating range, no calibration, and no EMI noise. The os4200 Temperature Probe is qualified for use in harsh environments and delivers the many advantages inherent to all FBG based sensors.

This sensor can be used alone or in series at the end of an FBG sensor array. Installation and cabling for such arrays is much less expensive and cumbersome than comparable electronic gage networks. Options include packages that operate like conventional thermocouples with armored cables and protected connectors, and small probes that provide the user with both installation flexibility and sub-second response time.

With each sensor, Micron Optics provides a Sensor Information Sheet listing the calibration coefficients needed to convert wavelength information into temperature. Micron Optics' ENLIGHT Sensing Software provides a utility to calculate and then record, display, and transmit data for large networks of sensors.

The os4200s are three versions of a stainless steel temperature probe based on fiber Bragg grating (FBG) technology.

Key Features

Fast response time

Qualified to same rigorous standards used for comparable electronic gages.

Fast, simple, repeatable installation.

Armored fiber cable weldable package and rugged sensor package.

Connector protection fittings available for harsh environments.

Several package options for field applications.

Calibrated for high absolute accuracy.

Capable of measuring from -70 to +275 degrees C.

Micron Optics' patented micro opto-mechanical technology.

Included in ENLIGHT's sensor templates - allows for quick and easy optical to mechanical conversions.

Applications

Structures (bridges, dams, tunnels, mines, buildings, oil platforms)

Energy (wind turbines, oil wells, pipelines, nuclear reactors, generators)

Transportation (railways, trains, roadways, specialty vehicles, cranes)

Marine vessels (hull, deck, cargo containers)

Aerospace (airframes, composite structures, wind tunnels, static and dynamic tests)

Properties

Thermal Properties	os4210	os 4230	os4280
Operating Temperature Range	-40 to 120°C, -70 to 275°C available		
Temperature Sensitivity	~10pm/ºC (±1.7pm/ ºC)		
Cable Temperature Range	-40 to 250° C (FC/APC Connectors: -40 to 80°C)		
Response Time	0.3 Seconds	1.5 Seconds	8.5 Seconds
Standard Calibration[2] (Included)	1.0°C Long Term Accuracy[4] 0.6°C Short-Term Accuracy, Typical[4]		
Premium Calibration[3] (Optional)	0.5°C Long Term Accuracy[4] 0.2°C Short-Term Accuracy, Typical[4]		
Physical Properties			
Probe (Diameter x Length)	1.07 x 27.1 mm	4.76 x 142.9 mm	6.35 x 137.9 mm
Weight (Including Cable)	1.3 g	30g	411 g
Housing Material	302 Stainless Steel	316 Probe w/ Armored Cable	316 Probe w/Aluminum Thermocouple Head
Cable Length	1 m (± 10 cm), each end		
Fiber Type	SMF28-Compatible		
Cable Bend Radius	≥ 17 mm		
Cable Type	0.9 mm Fiberglass Braid	3mm Armored Cable	
FC/ACP Connector	Optional	Both Connector and Protection Fittings Optional	
Fastening Methods[2]	Insertion or Bond	3/16" Compression Fitting	1/4" Compression Fitting
Optical Properties			
Peak Reflectivity (Rmax)	> 70%		
FWHM (- 3 dB point)	0.25 nm (± .05 nm)		
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)		

Ordering Information

os42aa-wwww-1xx-y-zz

z
Mode
- 10 Sensor Probe
- 30 Ruggetized Metallic Probe
- 80 Ruggetized Probe Thermocouple Head

wwww
Wavelengths for (+/- 1nm)
Standard - 1460 to 1620 nm in 4 nm intervals

xx
Termination type
- 1xx Cable 1, Length & Connector
- 1 1 m Standard, Cable Length
- UT Unterminated
- FC FC/APC Connector
- PF FC/ACP Connector with Protection Fitting

y
Callibration Method
- S Standard
- P Premium

zz
Callibration Range
- SR Standard Range, -40 to 120°C
- HR High Range, 20 to 275°C
- ER Extended Range , -70 to 275°C

Ordering Information Example

os4230-1560-1FC-S-SR

Notes

1 Beta product.

2 Time to reach 63% of total temperature drop in water (100°C).

3 Absolute accuracy of sensor is dependent on capability of interrogation instrument.

4 Based on 275°C soak for 1,100 hours.

5 Four (4) thermal cycles from min to max temperature. Max. accuracy error ±0.4°C without data averaging.

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Specifications subject to change without notice.