

Temperature Sensing Cable | os4400



Description

The os4400s are two versions of a multipoint temperature sensing cable based on fiber Bragg grating (FBG) technology.

The os4400 Temperature Sensing Cable measures temperature with sub degree Celsius accuracy over a wide temperature range along discrete points on a rugged cable.

In side-by-side comparisons with conventional thermocouples, the os4400 is equally accurate, while providing for faster response, with no need for calibration, and no EMI noise. Also installation is less expensive and less cumbersome than wiring dozens of separate electronic gage networks.

Several os4400 cables can be multiplexed to cover hundreds of sensing points over kilometers of cable runs. Unlike some other distributed optical measurement techniques, the os4400, coupled with the proper interrogation instrument, provides NIST traceable temperature measurements and fast acquisitions from one to one thousand times per second.

The os4400 temperature sensing cable is qualified for use in harsh environments and delivers the many advantages inherent to all Fiber Bragg Grating (FBG) based sensors.

With each temperature sensing cable, Micron Optics provides the appropriate Sensor Information File listing calibration coefficients needed to convert wavelength information into temperature.

Micron Optics' ENLIGHT Sensing Analysis Software provides efficient templates for quickly importing the Sensor Information File to setup, calculate, record, display and transmit data. Installation, qualification and other sensor information is available at: http://www.micronoptics.com/support_downloads/Sensors/.

Key Features

- Lower cost and faster response time** than Raman and Brillouin systems
- Multiplexing of many sensors** on a single fiber makes cabling and installation simpler than electrical solutions.
- Customizable** sensor number and spacing.
- Armored fiber cable and rugged sensor package** integrated into a single assembly.
- Qualified** to same rigorous standards used for comparable electronic gages.
- Calibrated** for high absolute accuracy.
- High tensile strength** for long life in harsh environments
- Micron Optics'** patented micro opto-mechanical technology.
- Included in ENLIGHT's sensor templates** - allows for quick and easy optical to mechanical conversions.



Deployments

- 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).



Temperature Sensing Cable | os4400



Thermal Properties	os4410 Fast Response	os4420 Standard
Operating Temperature Range	-40 to 100°C	
Temperature Sensitivity	~10pm/°C (±1.7pm/°C)	
Update Rate, Response Time ²	200 ms, 7 seconds	200 ms, 53 seconds
Accuracy ³	0.6°C Short Term ⁵ , 1.0°C Long Term ⁴	
Physical Properties		
Maximum Sensors per Cable	39	
Distance Between Sensors	0.5 to 10 m - uniform spacing ±0.15m	
Cable Weight	54 g/m	
Cable Bend Radius	≥ 380 mm	
Cable Type ⁶	Rugged, sealed polymer jacket, IP69 water resistant to 50 m at 28° C	
Cable Tensile Strength	150N Installed (300N Maximum straight line pull during installation)	
Connectors	FC/APC optional. Also available with protection fittings.	

Notes

- ¹ Denotes Beta product. For more details see http://www.micronoptics.com/products/product_designations/.
- ² Update rate is a function of interrogator scan frequency. Response time is 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 120°C soak for 1,000 hours.
- ⁵ Maximum accuracy error ± 0.6°C with no averaging.
- ⁶ See http://www.micronoptics.com/support_downloads/Sensors/ for sensor drawings and installation details.

Ordering Information

os44aa-wwww-nn-ss-dd-Xxx-Yyy

aa	Model 10 Fast Response 20 Standard
nn	Number of Sensors 01 to 39
wwww	Wavelength of First Sensor (+/- 1 nm) Standard - 1512 to 1588 nm
ss	Sensor Wavelength Spacing 1 to 99 nm (2 nm standard)
Xxx	Length & Termination type, Cable 1 X 2 to 20 meters ± 0.25m UT Underterminated FC FC/APC Connector PF Protection Fitting
dd	Distance Between Sensors 0.5 to 10 m -uniform spacing ±0.15m
Yyy	Length & Termination type, Cable 2 Y 2 to 20 meters ± 0.25m UT Underterminated FC FC/APC Connector PF Protection Fitting
zz	Calibration 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

os4410-1512-39-02-6.0-5FC-000