os4400 | Temperature Sensing Cable

The os4400 series temperature sensing cables provide absolute temperature measurements at several discrete points along a cable that is typically tens of meters long. All sensors are calibrated prior to installation into the cable using our standard calibration process providing accurate temperature data over the entire operating range of the cable. For your convenience an electronic copy of an ENLIGHT configuration file has been provided with this cable. This will allow you to load the config file into ENLIGHT and begin reading temperature immediately. Coefficients for the individual sensing points are also provided on the attached sheets.

Temperature Calculation

Temperature is obtained from the wavelength of each Fiber Bragg Grating sensor based on the following relationship:

Temperature (T in °C):

$$T = C_3(\lambda + \lambda_{OS})^3 + C_2(\lambda + \lambda_{OS})^2 + C_1(\lambda + \lambda_{OS}) + C_0$$

Where C_3 though C_0 are polynomial coefficients, λ is the current wavelength reading (nm) of the sensor and λ_{OS} is the wavelength offset for the sensor.

Temperature Sensitivity - ~10 pm/°C (@22°C)

For additional information about temperature sensors and calibration methods, see*:*

http://www.micronoptics.com/support_downloads/Sensors/

Installation Information

The os4400 temperature sensing cable may be used in a variety of applications for monitoring temperature, either indoor or outdoor depending on the type of cable jacket ordered. While the cable is sealed, it is not a hermetic seal and moisture could potentially penetrate through the joints in the wall.

When installing the os4400 temperature sensing cable, be careful to adhere to the following specifications:

- The minimum pulley diameter for pulling the cable around a bend shall be equal or greater than 760 mm (30 inches).
- The maximum tensile force (pulling force) on the cable shall be less than 110 Newtons (30 lbs).
- Do not pull on the 3mm diameter patch cord on the end of the cable. It is recommended that it be placed in a protective tube (must have a >10mm ID for the connector to fit into) and then secured to the cable.

Micron Optics Quality and Performance

Products displaying the "Micron Optics Tuned" logo include Micron Optics tunable technologies thus ensuring high quality and performance. Certified sensors have been tested and qualified for use with Micron Optics Sensing Instruments.

Qualification Statement

This sensor has been manufactured using procedures and materials documented under Micron Optics, Inc's ISO 9001:2008 qualification process.

Patent Certification


MICRON OPTICS, INC.
INTERNATIONAL CERTIFICATION FOR FIBER OPTIC SENSING

Micron Optics sensors and sensor interrogation instruments are covered under a US and International Patent Licensing Agreement between Micron Optics, Inc. and United Technologies Corporation. This license transfers to the users of Micron Optics sensor products and ensures that Micron Optics products are authorized for use in sensing applications. Certificates are available upon request.

Installation Information – cont'd.

When installing the cable always maintain tension on the cable to prevent it from unwinding from the reel as the memory in the cable tube will tend to cause it to unwind. Once this starts, the cable might tangle and be very difficult to install.

Be careful when handling the cable in an uncontrolled situation such as trying to bend the cable by hand at a sensing point. If this is needed for the installation, it is recommended to bend the cable tube by hand on either side of the sensor rather than bend the cable tube with the sensor in the middle of the bending area. Doing this will create a high probability of causing a kink in the cable damaging it. The cable tube (not including the sensor) can be safely bent to a 200 mm radius when bent around an object with that radius.

For additional information about the os4400 series temperature sensing cable, see*:*
http://www.micronoptics.com/support_downloads/Sensors/

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