

HD-SC Temperature Sensors

Distributed Fiber Optic Temperature Sensors with Strain Compensation

High-definition strain-compensated (HD-SC) temperature sensors are low-profile, flexible sensors incorporating advanced strain compensation technology to deliver more accurate temperature data when surface-mounted or embedded.

When used with the ODiSI 6000 Series (with an Extended Length Remote Module), the HD-SC sensor measures temperature along the sensor with a spatial resolution, or gage pitch, of 1 cm, providing the high-density data needed for more precise characterization and control of thermal processes. Combined with its low profile and weight, the strain-compensating capability of the HD-SC sensor make it ideal for embedding into composite materials for thermal mapping during manufacturing or operation.

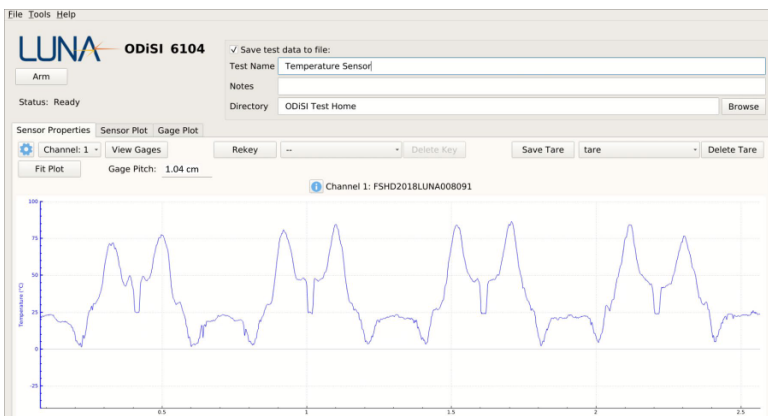
The strain that is applied to a fiber optic sensor during normal installation and operation of surface-mounted and embedded sensors can cause very significant measurement offsets in non-compensated temperature sensors. The HD-SC temperature sensor, on the other hand, compensates for the effects of strain and delivers more accurate and reliable temperature data.

KEY FEATURES

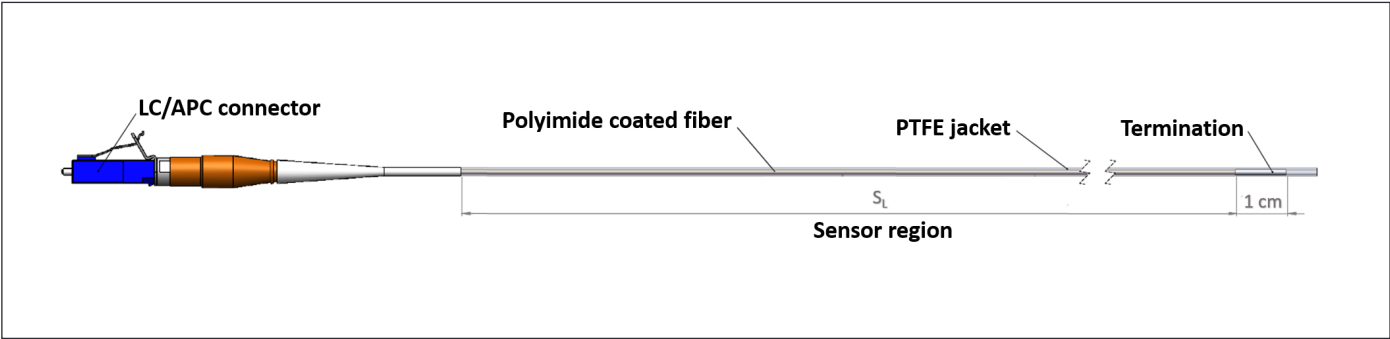
- Distributed temperature measurements along flexible fiber
- Strain compensation for higher accuracy temperature measurements in embedded and surface applications
- Flexible, polyimide coated sensing fiber housed in a PTFE tube
- Included sensor key enables plug-and-play operation with ODiSI system

APPLICATIONS

- High-resolution thermal profiling and mapping
- Precision process control
- In-situ monitoring of thermoplastic welding and bonding
- Thermal monitoring of battery and electrical components



Temperature profile data measured with a strain-compensated HD-SC sensor is displayed in the ODiSI software.



PERFORMANCE

PARAMETER	SPECIFICATIONS
Interrogator compatibility	ODiSI 6000/6100 with Extended Range Remote Module
Fiber type	Polyimide coated fiber
Fiber jacket	Polytetrafluoroethylene (PTFE) tube
Connector	High-temperature LC/APC
Sensor outer diameter	0.89 mm
Sensor bend radius	1 cm
Sensor termination	1 cm, 304 stainless steel
Sensor length	1, 2 or 5 m
Temperature measurement range	-40 to 200 °C
Temperature operating range for sensor connector	-60 to 150 °C
Gage pitch with ODiSI 6000 Series interrogator	1.04 cm (96 measurement points per meter)
Measurement uncertainty ²	0.9 °C

NOTES

- 1. Gage pitch is the distance between centerpoints of consecutive temperature measurement points.
- 2. Measurement uncertainty is equal to twice the standard deviation calculated from a set of 1000 measurements and includes effects of the ODiSI interrogator.
- 3. Measurement accuracy is the RMS error with the sensor subjected to up to 1800 µε of strain. Error includes effects of the ODiSI interrogator.

ORDERING

Part Number	Description
HD6SCT01LC220P	High-definition strain-compensated temperature sensor, 1 m sensor length; includes reference key files on USB
HD6SCT02LC220P	High-definition strain-compensated temperature sensor, 2 m sensor length; includes reference key files on USB
HD6SCT05LC220P	High-definition strain-compensated temperature sensor, 5 m sensor length; includes reference key files on USB

Note: HD6SCT sensors require Extended Range Remote Modules when used with ODiSI 6000/6100 interrogator systems.

