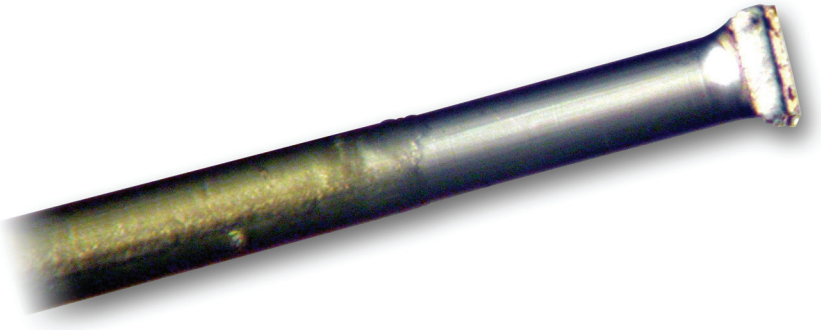
FOT-HERO Temperature Sensor



Key Features

- Low thermal mass
- Extremely fast response
- High resolution
- Microns scale size
- Immune to electromagnetic interferences (EMI)

Applications

- Electronic Explosive Device applications (EED)
- HERO Testing
- Temperature point measurement

The FOT-HERO is a fiber optic temperature sensor specifically designed for use in Electronic Explosive Device (EED) and HERO-type testing applications. It offers complete immunity to electromagnetic interference and does not emit disturbing signals for the EED circuitry.

Hazards of adverse interactions between the EME and the electrical initiators or initiating systems contained within ordnance systems are referred to as HERO or Hazards of Electromagnetic Radiation to Ordnance.

The FOT-HERO is a miniature fiber optic sensor that provides reliable, precise and consistent measurements. It has a fast response time of less than 1 millisecond and, when instrumented on an EED bridgewire, the sensor's response time is of 60 milliseconds for the energy-power ratio and 275 milliseconds for the temperature rise time.

The operating temperature of the FOT-HERO ranges from 0°C to 120°C (32°F to 248°F). It is thus possible to establish the current-temperature relationship and use it to predict the FIRE/NO FIRE conditions of an EED for multiple frequencies of an EMI range. When EED are exposed to particular EMI frequencies, the FOT-HERO sensor can provide accurate and reliable measurements of the bridgewire temperature that the system analyzes and translates into voltage readings.

The FOT-HERO is compatible with FISO's VELOCE-100 signal conditioner. The system is capable of acquiring data with a resolution of 0.03°C at 0.001 second average, with a fiber movement susceptibility of only 0.1°C peak to peak. Through the use of the VELOCE-100, which is based on cutting-edge interferometric technology, FISO's FOT-HERO fiber optic temperature sensor is capable of providing temperature measurements with a very high resolution.

The low thermal mass of the sensing element does not create a heat-sink effect when in contact with the bridgewire and offers a minimal disturbance to the test conditions.

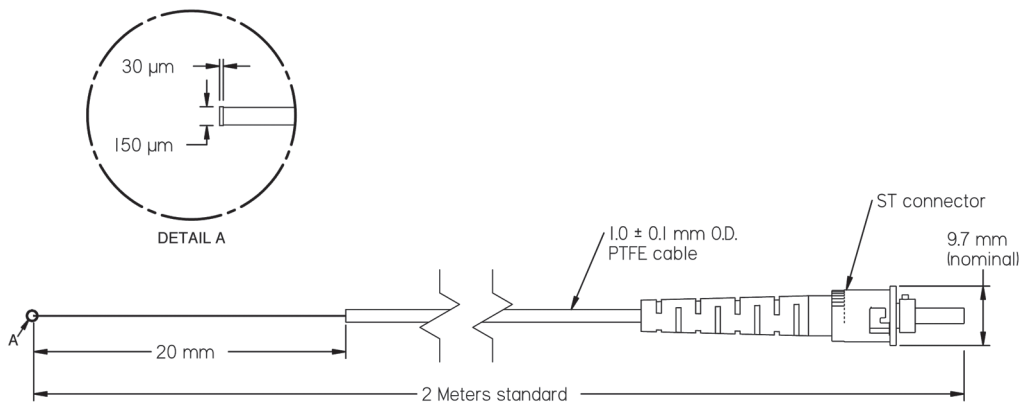
The sensor is a 100-microns multimode optical fiber. Furthermore, the system is compatible with FISO's optical feedthrough. The optical sensor is available bare or already installed on a MK1 squib. Installation service on custom squib is also available.

Specifications

Temperature range	0°C to 120°C (32°F to 248°F)
Resolution[1,2,3]	0.03°C at 0.001 second average
Response time[4,5]	<1 millisecond
Connector type	ST connector
Operating temperature	0°C to 120°C (32°F to 248°F)

1. The corresponding accuracy in milliamps is relative to the EED under test and has to be determined by an experimental test.
2. The resolution performance is related to the system averaging.
3. Veloce 100 signal conditioner dependent.
4. Based on MK1 squib, 60 milliseconds, defined as the ratio of the energy and power which produce the same peak output.
5. Based on MK1 squib, 275 milliseconds, defined as the rise time (10% to 90%) of the output.

FOT-HERO Dimensions



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