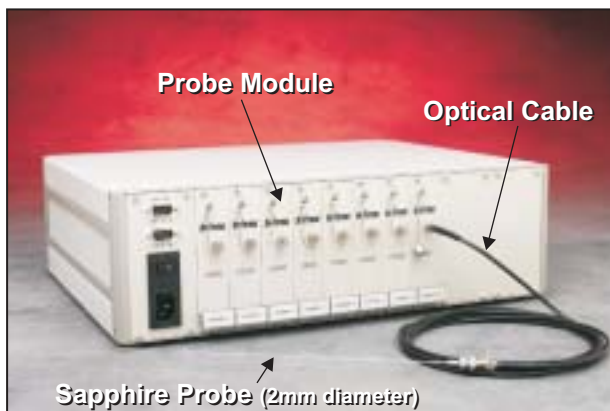


## HIGH TEMPERATURE FIBER OPTIC THERMOMETER Lumitherm® 2000



### FEATURES & BENEFITS

- Ranges: 350°-1200°C (660°-2200°F)  
450°-1600°C (840°-2900°F)
- High Resolution: 0.1°C
- Emissivity Correction: T Dependence Corrected to 2<sup>nd</sup> Order
- Reliable in Harsh Environments
- Up to 12 Probe Channels
- Real-Time Process Monitoring
- Wide Selection of Probes
- Factory Calibration Service
- Flexible Fiber Optic Cable up to 30m

The LumiTherm® 2000 fiberoptic thermometer is a multi-channel temperature measurement system, with a choice of modules for different temperature ranges.

Each LumiTherm 2000 channel consists of a Sapphire probe, a flexible fiberoptic cable, and an optoelectronic plug-in module. The probes are composed of high temperature materials and are designed for non-contact sensing. These probes collect light in a manner similar to traditional radiometers, but can be placed in very close proximity to their targets, thereby eliminating problems with viewing orientation and intervening media.

The light collected by the probe is then coupled into a fiberoptic telemetry cable, and thereby delivered to the optoelectronic module. This module contains the sensing optics and processing electronics which translate the collected thermal flux into an accurate temperature reading.

The LumiTherm 2000's unique measuring technique utilizes smaller fiber, which provides a better signal with less attenuation. Inaccuracies due to light attenuation caused by fiber bending, aging, and misalignment are minimized by the LumiTherm 2000's specially-designed optical system.

The signal processing in the LumiTherm 2000 allows for high sensitivity. A high resolution analog-to-digital converter and advanced digital signal processing help to enable very precise temperature measurements. The mainframe chassis supplies regulated system power to each of the modules and provides a common interface. Data from all channels is formatted for output through a choice of RS-232 ports, via an analog DC voltage tap, or through a 4 to 20 mA current loop. Onboard firmware allows for quick-start operation of the LumiTherm 2000 using any PC and a dumb terminal program compatible with the computer's RS-232 serial port.

The LumiTherm 2000 is a superior temperature measurement solution for hostile environments where corrosive chemicals or high electromagnetic interference (EMI) exist, or where electrical sparks from non-optical systems may present an ignition hazard. The small-diameter probe allows temperature monitoring with minimal disruption to operating equipment and can be fit easily into many existing systems. Rapid response time allows real-time feedback and control.

If your application demands accurate, fast, and reliable non-contact measurements, the LumiTherm 2000 is a ready solution.

# TYPICAL APPLICATIONS

## Oil Field Service Industry

- Oil/gas exploration
- Pipeline monitoring

## Semiconductor Processing and Manufacturing

- Monitor wafers in-situ during etching, ion implantation and annealing
- In-situ epitaxial monitoring
- Direct backside wafer temperature measurement during rapid thermal processing (RTP), CVD, PVD, and PE-CVD deposition

Improved monitoring and control in environments hostile to other sensors - increased process efficiency and greater yield.

## Materials Processing

- Optical materials and glasses
- Steel, refractory and specialty metals
- Ceramics, cement
- Chemicals, petrochemicals, and corrosives
- Plastics, rubber, and paper manufacture
- Vacuum processing, casting, forging, welding, and sintering

## Power Generation

- Monitor temperatures in combustion zones
- Monitor steam or gas turbine engines
- Electrically safe - electronics are separated from hazardous environments by inert optical fiber

# SPECIFICATIONS

## Temperature

Accuracy: 1.0°C (NIST traceable)  
 Repeatability: 1.0°C  
 Resolution: 0.1°C  
 Emissivity: Temperature correctable to 2nd order,  $\varepsilon(t) = \varepsilon_0 + \varepsilon_1 t + \varepsilon_2 t^2$   
 Measured Band: 0.9µm  
 Sapphire Sensors: Various lengths to 300mm (12") x 2mm diameter  
 Flexible Optical Cables: Various lengths to 30m  
 Sampling Rate: 40 Hz/channel  
 Output: 4-20 mA, 0-10 V, RS-232

## Environmental

Operating Temperature: 15°C to 35°C  
 Storage Temperature: -40°C to 85°C  
 Input Voltage: 110 VAC or 220 VAC (±10%, 48-62 Hz)  
 Power Consumption: 35 W

# ORDERING INFORMATION

<b>LT2000</b>	-	<b>P</b>	-	<b>X</b>	-	<b>XX</b>	-	<b>X</b>
<i>Lumitherm 2000 Thermometer</i>		Type Plug-In Unit		Temperature Range M = 350° to 1200°C H = 450° to 1600°C		Probe Length 20 = 20 cm length *Other lengths available by quote.		Cable Length 3 = 3 m length *Other lengths available by quote.
<b>LT2000</b>	-	<b>CH</b>	-	<b>X</b>	-	<b>XX</b>		
<i>Lumitherm 2000 Thermometer</i>		Type Chassis		Line Voltage 1 = 110 VAC 2 = 220 VAC		Number of Channels 01 = 1 Channel 02 = 2 Channels 03 = 3 Channels 04 = 4 Channels 05 - 12 (19" chassis only)		
<b>LT2000</b>	-			<b>XX</b>				
<i>Lumitherm 2000 Thermometer</i>				Type TC = Transport Case CK = Cleaning Kit (Extra connector)				



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IPITEK reserves the right to modify product specifications without prior notification.