

Advanced Energy's OR400T optical fiber thermometer (OFT) extends the flexibility of the OFT product family with a cost-competitive, non-contact solution for several high-volume semiconductor applications, including PECVD, LPCVD, PVD, and metal etch. The OR400T model offers a single-channel temperature measurement capability and supports RS-232 and analog data interfaces at up to 20 readings per second. Because of its compact design, the OR400T OFT can be easily integrated to meet the unique requirements of many process applications.

## Features

- › Improves temperature measurement accuracy
- › Enhances wafer-to-wafer uniformity
- › Provides a cost-competitive alternative to thermocouple-based measurements
- › Increases productivity, yield, and throughput

## Benefits

- › Compact, single-channel design
- › In-situ, non-contact temperature measurement
- › Supports RS-232 and analog data interfaces at up to 20 temperature readings per second
- › Improved low-temperature performance



### IMPROVES TEMPERATURE MEASUREMENT ACCURACY

Advanced Energy's OR400T optical fiber thermometer (OFT) delivers accurate, non-contact temperature measurements in a compact form factor. AE's OR400T OFT is ideally suited for several high-volume semiconductor applications, including:

- › Epi
- › PECVD
- › LPCVD
- › PVD
- › MOCVD

Like all of AE's OFTs, the OR400T model provides extended-range, low-temperature measurements through improved optical signal gathering.

### ENHANCES WAFER-TO-WAFER UNIFORMITY

Traditional thermocouple measurement is unsuitable for many applications where making physical contact with the substrate will cause damage and inaccuracy due to heat transfer effects. The OR400T OFT measures direct wafer temperature in situ—without contacting the wafer—for enhanced wafer-to-wafer uniformity and improved accuracy in temperature readings.

Each OFT system consists of a controller, an optical sensor, and an optical fiber. The use of a fiber optic cable allows for remote positioning of the controller away from RF and other sources of EMI. The sensor detects emitted near-infrared (NIR) light from the target, typically a substrate. A fiber optic cable then transmits the NIR light from the sensor to the controller, where the light collected is converted to a temperature reading.

Each sensor is custom-designed to meet the functional and mechanical requirements of your unique application. The results: higher repeatability and increased yield.

## PROVIDES A COST-COMPETITIVE ALTERNATIVE TO THERMOCOUPLES

The OR400T model offers single-channel temperature measurement capability in a compact form factor. The OR400T OFT provides a cost-competitive alternative to thermocouple-based measurements with the added benefit of non-contact, in-situ temperature measurement and immunity from RF noise. Because of its compact design, the OR400T OFT can be easily integrated to meet the unique requirements of your process application.

## SPECIFICATIONS

FEATURES	OR400T
<b>Description</b>	Cost-effective, precision temperature measurement
<b>Channel Configuration</b>	Single-channel temperature measurement capability with selectable/fixed emissivity
<b>Temperature Range(s)</b>	50 to 3500°C
<b>Filter Range</b>	600 to 1600 nm
<b>Read Rate</b>	Up to 20 Hz temperature read rate
<b>Accuracy</b>	±1.5°C
<b>Resolution</b>	0.001°C
<b>Control/Repeatability</b>	±0.1°C typical
<b>Display</b>	None; set up via RS-232
<b>Data I/O</b>	RS-232 @ up to 115 KB
<b>Analog Output</b>	0 to 10 V or 4 to 20 mA outputs
<b>Power Requirements</b>	AC: 90 to 263 VAC; 47 to 63 Hz DC: +24 VDC
<b>Environmental</b>	Operational: 10 to 40°C (50 to 104°F)
<b>Physical Dimensions</b>	55.7 mm (H) x 31.8 mm (W) x 195.2 mm (D) 2.2" (H) x 1.3" (W) x 7.7" (D)
<b>Weight</b>	0.73 lb (0.33 kg)
<b>Mounting</b>	M3 X 0.5 threaded holes in optical block (consult manual for more information)
<b>Power Supply Line Current</b>	<0.7 A @ 100 VAC

## DIMENSIONAL DRAWINGS

