

OR400T Precision, Single-Channel Optical Fiber Thermometer (OFT)

Cost-effective, precision temperature measurement in a compact form factor

Benefits

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

Features

- 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

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 offers a single-channel temperature measurement capability. The OR400T supports RS-232 and analog data interfaces at up to 20 readings per second. Because of its compact design, the OR400T can be easily integrated to meet the unique requirements of many process applications.

Improves Temperature Measurement Accuracy

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

- *Epi*
- *PECVD*
- *LPCVD*
- *PVD*
- *Metal etch*

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

Enhances Wafer-to-Wafer Uniformity

Thermocouple systems that require making physical contact with the substrate risk damaging the surface or making inaccurate measurements due to heat transfer effects.

The OR400T 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 optical fiber cables. 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 signal processing converts the light collected 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 offers single-channel temperature measurement capability in a compact form factor.

It 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 can be easily integrated to meet the unique requirements of your process application.

Specifications

Feature	Description
Primary Applications	PECVD, LPCVD, PVD, metal etch
Channel Configuration	Single-channel temperature measurement capability with selectable/fixed emissivity
Temperature Range(s)	50 to 3500°C
Filter Range	600 to 1600 nm
Read Rate	Up to 20 Hz temperature read rate
Accuracy	±1.5°C; NIST traceable
Resolution	0.001°C
Control/Repeatability	±0.1°C repeatability
Drift	< 0.2°C drift per year
Display	None; set up via RS 232
Data I/O	RS-232 @ up to 115 kB
Analog Output	0 to 10 V or 4 to 20 mA outputs
Power Requirements	AC: 90 to 263 VAC, 47 to 63 Hz DC: +24 VDC
Environmental	Operational: 5 to 40°C (41 to 104°F)
Physical Dimensions	3.3 cm (H) x 5.6 cm (W) x 19.6 cm (D) 1.3" (H) x 2.2" (W) x 7.7" (D)
Weight	0.73 pounds (0.33 kg)
Mounting	M3 X 0.5 threaded holes in optical block (consult manual for more information)
Power Supply Line Current	<0.7A@100VAC
Response sample	20 Hz
Stability	<0.2°C drift/year

For more information on the OR400T and OR4000E, visit:

www.advanced-energy.com/en/Sekidenko_OR4000_family.html

To view AE's comprehensive thermal instrumentation portfolio, visit:

www.advanced-energy.com/en/Thermal_Instrumentation.html

To view AE's complete product portfolio, visit:

www.advanced-energy.com/en/Products.html

Specifications are subject to change without notice.



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