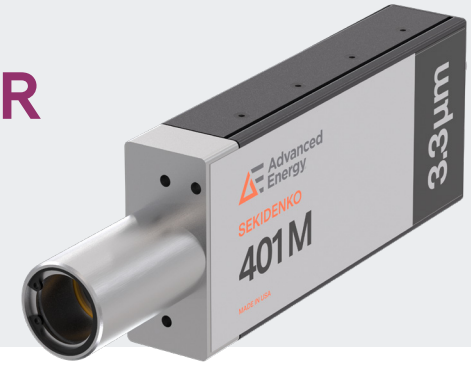
SEKIDENKO 401M — HIGH-SPEED PRECISION OPTICAL IR PYROMETER

MID-WAVE MEASUREMENT WAVELENGTHS PRECISION TEMPERATURE MEASUREMENT FOR THIN-FILM SOLAR, GLASS, AND ADVANCED SEMICONDUCTOR PROCESSES



Advanced Energy®'s 401M optical pyrometer extends the flexibility of the Sekidenko product family into the mid-IR space, with wavelengths from 1.7 and 6 µm. The 401M offers highspeed, single-channel temperature measurement, supports EtherCAT, USB, serial and analog data interfaces. Because of its compact design, the 401M can be easily integrated to meet the unique requirements of many process applications.

PRODUCT HIGHLIGHTS

- Improved substrate uniformity (process control)
- Integrated measurement (optics integrated into pyrometer)
- High-speed, solid-state detectors (up to 1000 Hz)
- Configurable filter, detector, and optical delivery system
- In-situ measurement of advanced semiconductor processes

AT A GLANCE

Temperature Range

50 to 1300°C (122 to 2372°F)

Spectral Range

1.7 to 6 µm

Read Rate

Up to 1 kHz

Accuracy

±3°C (3.3 µm), ±5°C (5.2 µm)

Resolution

0.01°C

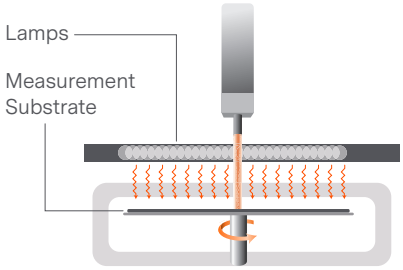
Interfaces

EtherCAT (RJ45), USB (Type-C), Serial (RJ45), Analog Output (RJ45)

ADVANCED MEASUREMENT FOR ADVANCED SEMICONDUCTOR APPLICATIONS

The 401M optical pyrometer is an ideal single-point measurement tool for semiconductor applications that require longer wavelengths, such as measurement of quartz within a vacuum chamber. It can be installed on the exterior of a process chamber, observing the process through a viewport, for non-contact measurement.

It also provides an alternative to thermocouple-based measurements where a non-contact measurement is preferred, in-situ temperature measurement and immunity from RF noise. Because of its compact design, the 401M optical pyrometer can be easily integrated into your system to meet the unique needs of many advanced processes.



Measurement in Lamp Heated Reactor

SPECIFICATIONS

Description	Specification
Channel Configuration	Single-channel temperature measurement capability
Temperature Range[1]	50 to 1300°C
Measurement Wavelengths[2]	1.7 to 6 µm
Read Rate	Up to 1000 Hz
Accuracy[3]	±3°C (3.3 µm), ±5°C (5.2 µm)
Resolution	0.01°C
Control/Repeatability	±0.1°C typical
Data Logging	Function available in AE PyroConnect GUI
Serial	RS-232/485, 1 x RJ45
EtherCAT	2 x RJ45
USB	1 x type C
Analog Output	0 to 10 V, 4 to 20 mA, 1 x RJ45
Power Requirements	AC: 90 to 264 VAC, 3-pole AC inlet
	External AC to +24 VDC power supply (accessory)
Power Supply Line Current	< 0.7 A at 100 VAC
DC Input Voltage	24 VDC, 1 x M8 A-Code 15 to 40°C (59 to 104°F)
Power Indicator	LED
Operating Temperature	15 to 40°C (59 to 104°F)
Operating Humidity	20 to 80% relative humidity (non-condensing)
Physical Dimensions	Excluding Optics: 180 mm (l) x 70 mm (w) 31 mm (h)
	Including Standard Optics: 237 mm (l) x 70 mm (w) 31 mm (h)
Weight	0.5 kg (1.1 lb)
Chassis-EMI Ground	Tapped hole in chassis (M3)

1 Temperature range is wavelength dependent, please contact AE Applications engineering for configuration support.
2 Filter transmission customizable, please contact AE Applications engineering for configuration support.
3 Accuracy range is wavelength dependent, please contact AE Applications engineering for additional details.

SPECIFICATIONS

Description	Specification
Mounting	2 x 8-32 (SAE) threaded holes (see product manual for additional detail)
Mounting Alignment	2 x alignment pin receptacles (see product manual for additional detail)
Clearance (Rear)	50 mm required for rear clearance of electrical cables
Mounting Orientation	The unit will function when operated in any orientation
Outer Package Materials	Powder coated aluminum, anodized aluminum

INTERFACES

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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For international contact information,
visit advancedenergy.com.

powersales@aei.com (Sales Support)
productsupport.ep@aei.com (Technical Support)
+1 888 412 7832

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