ONYX-MCE ACTIVE EMISSIVITY OPTICAL TEMPERATURE PYROMETERS

PRECISION TEMPERATURE MEASUREMENT FOR DEMANDING INDUSTRIAL APPLICATIONS

The Onyx™-MCE is a multi-channel, non-contact optical fiber temperature pyrometer with active emissivity. It measures infrared energy being emitted from an object and converts this into usable temperature. The system employs real-time emissivity measurement and precisely compensates for a material's change in emissivity during processing. The Onyx-MCE can be configured in a variety of measurement wavelengths and can be configured from one to two measurement channels using separate optical sensors.

PRODUCT HIGHLIGHTS

- Precise temperature measurement, even in harsh environment conditions enabling closed-loop process control
- In addition to optical calibration, each pyrometer includes a separate thermal calibration to ensure accurate temperature measurement over changing environmental conditions
- Active-emissivity measurement and compensation for materials with changing emissivity during processing
- Configurable wavelength based on material type with broad temperature range
- Both analog and digital communications with optional fieldbus protocols for closed-loop control
- Multi-channel measurement capabilities using remote optical sensors and fiber-optic cables
- Available proprietary PyroConnect™ software for pyrometer setup and commissioning, data collection, and data analysis

TYPICAL APPLICATIONS

- Quartz and sapphire — growth and annealing
- Steel — forging, finishing, and vessel monitoring
- Thin-film solar — glass, metals
- Non-ferrous metals — casting, forging, and extrusions
- Carbon fiber — production and annealing
- Technical ceramics — heat-treatment, sintering

AT A GLANCE

Standard Wavelengths

919 nm
temperature measurement
910 nm
active emissivity source

Temperature Range

530 to 1200°C (986 to 2192°F)
based on selected wavelengths

Emissivity

Active Emissivity Correction
Range = 0.0001 to 1

Accuracy

±1.5°C (±2.7°F)

Focus Range

100 mm to 3 m
(3.94 to 118.11 in)

GENERAL SPECIFICATIONS

Measurement	
Standard Wavelengths	919 nm temperature measurement, 910 nm active emissivity source
Temperature Range	530 to 1200°C (986 to 2192°F)
Emissivity	0.0001 to 1 using active emissivity compensation
Read Rate	Up to 2 kHz (temperature)
	Up to 500 Hz (real-time, emissivity-corrected temperature)
	Up to 250 Hz (emissivity, 2 channel)
Response Time	Up to 2 kHz, based on channel configuration
Accuracy	±1.5°C (±2.7°F)
Repeatability	±0.1°C (±0.18°F) (typical)
Resolution	Up to 0.001°C (0.0018°F)
Focus Range	100 mm to 3 m (3.94 to 118.11 in); for correct reflectance measurement and emissivity compensation, sensor must be installed 90 degrees orthogonal to the substrate surface.

Environmental	
Ambient Temperature (Main Unit)	0 to 45°C (32 to 113°F)
Ambient Temperature (Sensor)	0 to 80°C (32 to 176°F)
Relative Humidity	5 to 85% (non-condensing)
Storage Temperature	-25 to 85°C (-13 to 185°F)

Electrical	
Power Supply	+24 VDC nominal, +15 to +30 VDC

Regulatory	
Certification	CE

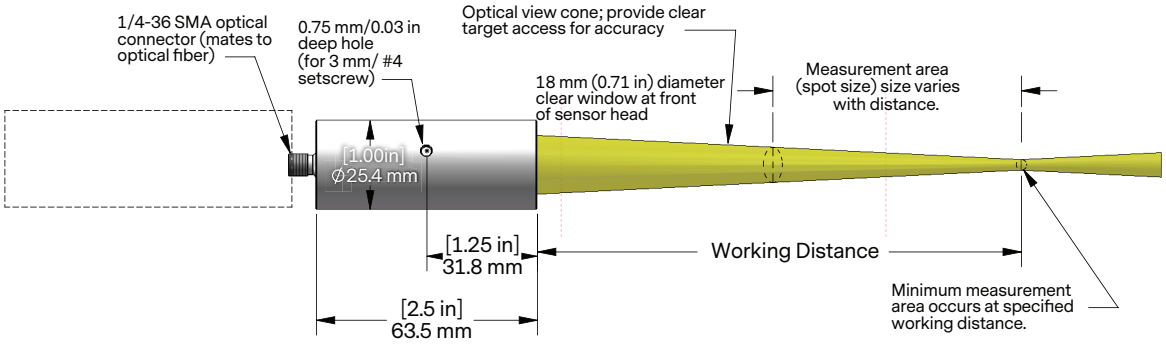
INTERFACE

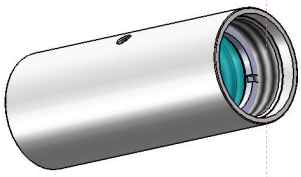
Communication	
Display	Internal, 4 x 20 LCD with keypad entry
Analog Out	0 to 10 V, 4 to 20 mA
Digital Interfaces	RS-232, Modbus®, Ethernet
Configurations/Channels	1 to 2 channels
Software	Available proprietary PyroConnect™ software for pyrometer setup and commissioning, data collection, and data analysis.

MECHANICAL SPECIFICATIONS

Physical	
Dimensions	219 x 152 x 89 mm (8.6 x 6 x 3.5 in)
Weight	2 kg (4.4 lb)

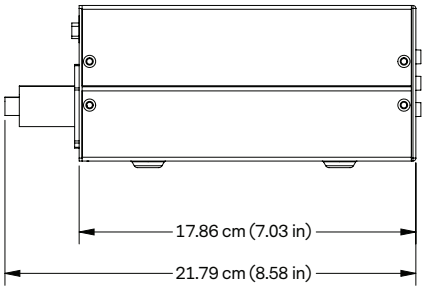
MECHANICAL SPECIFICATIONS (CONTINUED)

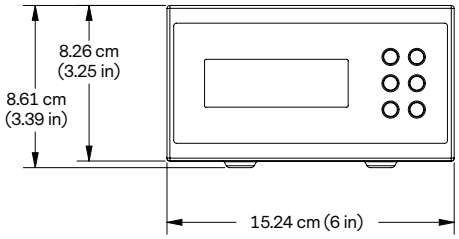


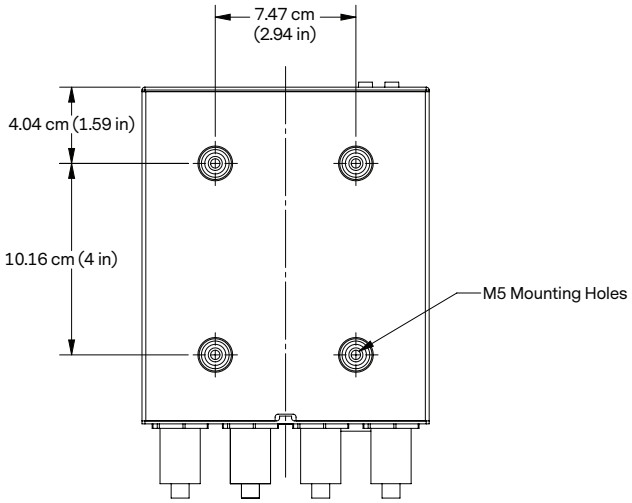


Fiber Appearance	Fiber Core Diameter (um)	Minimum Bend Radius (mm)/[in]
	600x7 bundle	100 [3.9]

Standard fiber length 3 m (9.8 ft)







For correct reflectance measurement and emissivity compensation, sensor must be installed 90 degrees orthogonal to the substrate surface.

Provide adequate space for minimum bend radius during sensor installation.

Ambient temperature of sensor assembly to be < 80°C (176°F).

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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