

ONYX-M SINGLE-CHANNEL OPTICAL TEMPERATURE PYROMETER

PRECISION TEMPERATURE MEASUREMENT
FOR DEMANDING INDUSTRIAL APPLICATIONS INCLUDING
GLASS, PLASTICS, AND SPECIALTY MATERIALS



The Onyx™-M is a single-channel, single-wavelength, non-contact infrared optical temperature pyrometer which measures infrared energy being emitted from an object and converts this into temperature. The Onyx-M can be configured in a variety of measurement wavelengths based on target material, required process temperature range, and working distances. Optional accessories include a water-cooling jacket, air-purge shower to protect against lens contamination, and specialized mounting accessories.

PRODUCT HIGHLIGHTS

- Provides precise temperature measurement, even under harsh operating conditions
- In addition to optical calibration, each pyrometer includes a separate ambient thermal calibration to ensure accurate temperature measurement over changing environmental conditions
- Integration to a PLC/PAC for closed-loop control of critical thermal processes
- Improve product quality by precisely controlling temperatures that affect critical material properties
- Increase product throughput by increasing heat ramping efficiency and dwell times
- Decrease energy costs by more efficiently using your energy (fuel or electricity) through closed-loop control
- Available proprietary PyroConnect™ software for pyrometer setup and commissioning, data collection, and data analysis

TYPICAL APPLICATIONS

- Thin film foils
- Plastics
- Glass (melt, float, bottle, lehr)
- Ultra-thin glass sheets
- Specialty glass
- Non-metallic surfaces organic/inorganic
- Measurement through a flame

AT A GLANCE

Standard Wavelengths

3.4, 3.9, 5.1, 7.9, 8 to 14 μm

Temperature Range

-30 to 2200°C (-22 to 3992°F)
based on selected wavelength

Emissivity

Fixed Emissivity Correction
Range = 0.05 to 1

Accuracy

$\pm 2^\circ\text{C}$ ($\pm 3.6^\circ\text{F}$) or $\pm 0.6\%$
of measured value, whichever
is greater

Working Distance

100 to 2200 mm (3.9 to 86.61 in)

GENERAL SPECIFICATIONS

Measurement			
Standard Wavelengths	3.4, 3.9, 5.1, 7.9, 8 to 14 μm		
Temperature Range	-30 to 2200°C (-22 to 3992°F) based on selected wavelength		
	Temperature/Spectral Ranges	Standard Configuration	Low Temperature Configuration
	3.4 μm	400 to 1800°C (752 to 3272°F)	250 to 1650°C (482 to 3002°F)
	3.9 μm	350 to 1800°C (662 to 3272°F)	200 to 1650°C (392 to 3002°F)
	5.1 μm	250 to 2200°C (482 to 3992°F)	150 to 1650°C (302 to 3002°F)
	7.9 μm	250 to 1650°C (482 to 3002°F)	150 to 1350°C (302 to 2462°F)
	8 to 14 μm	+30 to 1650°C (86 to 3002°F)	-30 to 1000°C (-22 to 1832°F)
Emissivity	0.05 to 1		
Response Time (t ₉₀)	Standard: 55 ms to 10 sec, Low Temperature: 205 ms to 10 sec		
Accuracy	±2°C (±3.6°F) or ±0.6% of measured value, whichever is greater		
Resolution	0.1°C (0.18°F)		
Repeatability	0.6°C or 0.3% of measured value, whichever is greater		
Working Distance	100 mm to 2200 m (3.9 to 86.61 in)		
Sighting	Laser or optical, any orientation		
Working Distance and Spot Size			
Configuration	Working Distance Range	Spot Size ¹	
Short	100 to 600 mm (3.9 to 23.6 in)	<20 mm (minimum: 5 mm @ 400 mm WD)	
Medium	200 to 1300 mm (7.9 to 51.2 in)	<26 mm (minimum: 11 mm @ 800 mm WD)	
Long	350 to 2200 mm (13.8 to 86.6 in)	<30 mm (minimum: 21 mm @ 1550 mm)	

Environmental	
Ambient Temperature	5 to 70°C (41 to 158°F)
Relative Humidity	20 to 85% (non-condensing)
Storage Temperature	-25 to 85°C (-13 to 185°F)
Protection Class	IP65

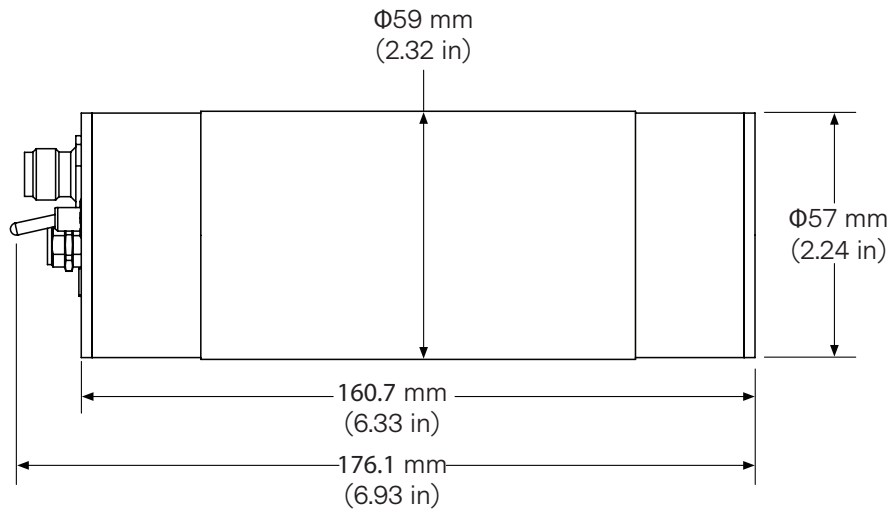
Electrical	
Power Supply	+24 VDC nominal, +15 to +28 VDC

Regulatory	
Certification	CE

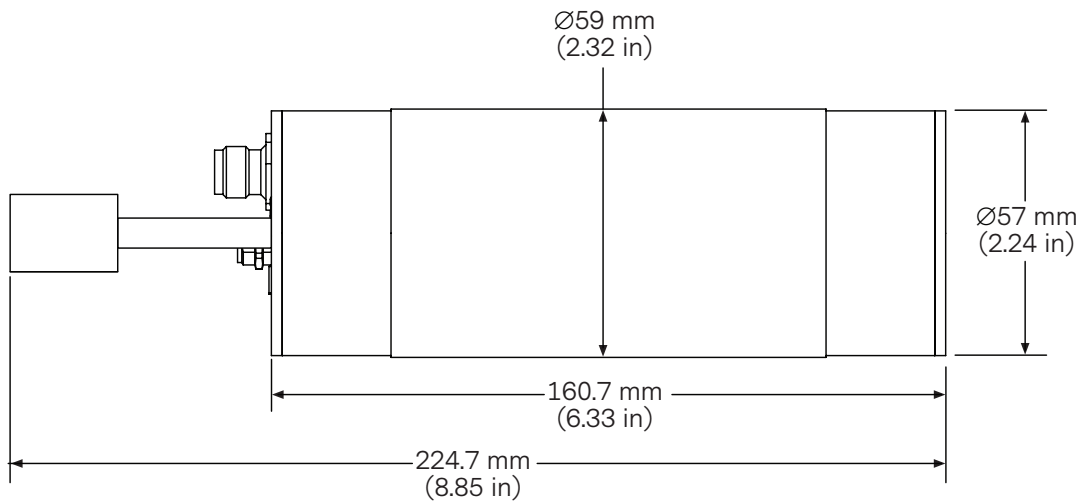
¹ Approximate and based on measurement wavelength. Please see product user manual for detailed information.

MECHANICAL SPECIFICATIONS

Physical	
Dimensions	59 mm (2.32 in) diameter x 176.1 mm (6.93 in)
Exterior Housing	Stainless steel
Operation Position	Any orientation



Unit with integrated laser sighting

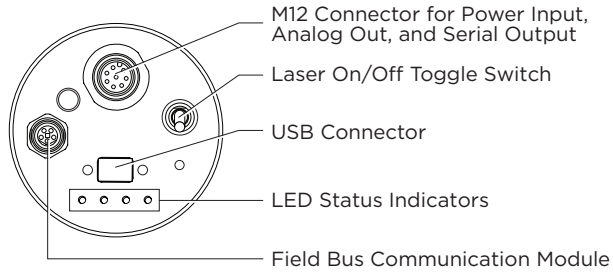


Unit with optical sighting

INTERFACE

USB Connection

The Onyx-M pyrometer features a USB connector for easy communication, setup, troubleshooting, and local data collection.



Communication	
Analog Out	0 to 10 V, 0 to 20 mA, or 4 to 20 mA
Digital Interfaces	Standard: RS-232, USB Available: Modbus® TCP, PROFIBUS®, Ethernet/IP®, PROFINET®
Detector Type	Single wavelength
Software	Available proprietary PyroConnect™ software for pyrometer setup and commissioning, data collection, and data analysis.

ORDERING INFORMATION

Optional Accessories	Water-cooling jacket	Enables continuous operation in temperatures up to 350°C (662°F)
	Air-purge collar	Enables consistent, accurate operation in contaminating environments by delivering a constant flow of air or purge gas across pyrometer lens
	Mounting accessory	90° and tilt-mount options available



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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.

PRECISION | POWER | PERFORMANCE

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