

ONYX-S2C TWO-COLOR RATIO OPTICAL TEMPERATURE PYROMETERS

PRECISION TEMPERATURE MEASUREMENT
FOR DEMANDING INDUSTRIAL APPLICATIONS

The Onyx™-S2C is a two-color ratio non-contact infrared optical temperature pyrometer which measures infrared energy being emitted from an object at two complementary wavelengths and converts these into usable temperature. The Onyx-S2C can be configured in a variety of measurement wavelengths based on a 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 mounting accessories.



AT A GLANCE

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
- Two-color ratio measurement for changing emissivity or view path obstruction conditions
- IP65 industrial protection for harsh environmental conditions
- Both analog and digital communications with optional fieldbus protocols for closed
- 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 extrusion
- Carbon fiber — production and annealing
- Technical ceramics — heat-treatment, sintering

Standard Wavelengths

Two-color, 970/1070 nm

Temperature Range

600 to 1600°C (1112 to 2912°F)
based on selected wavelength

Emissivity

Fixed Emissivity Correction
Range = 0.05 to 1

Accuracy

Accuracy: $\pm 4^{\circ}\text{C}$ ($\pm 7.2^{\circ}\text{F}$)
or $\pm 0.4\%$ of measured value,
whichever is greater

Focus Range

100 mm to 3 m
(3.94 to 118.11 in)

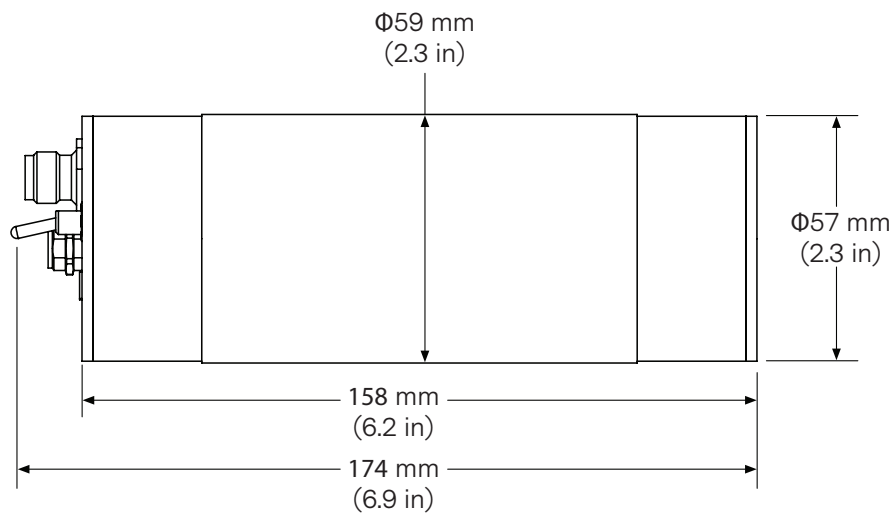
GENERAL SPECIFICATIONS

Measurement		
Standard Wavelengths	970/1070 nm	
Measurement Mode	Two-color ratio or single-wavelength, selectable	
Temperature Range	600 to 1600°C (1112 to 2912°F), configurable based on selected wavelength	
Emissivity	0.05 to 1	
Emissivity Slope (Two Color)	0.8 to 1.2	
Response Time	1 msec to 10 sec	
Accuracy	±4°C (±7.2°F) or ±0.4% of measured value, whichever is greater	
Resolution	0.1°C (0.18°F)	
Repeatability	< ±0.2°C (±0.36°F) or ±0.1% of reading (typical)	
Focus Range	100 mm to 3 m (3.94 to 118.11 in)	
Sighting	Laser or optical, any orientation	
Working Distance and Spot Size		
Configuration	Working Distance Range	Spot Size ¹
Short	0.1 to 0.6 m (3.9 to 23.6 in)	4 to 9 mm (0.16 to 0.35 in)
Medium	0.5 to 1.3 m (19.7 to 51.2 in)	10.5 to 23 mm (0.41 to 0.91 in)
Long	1 to 3 m (39.4 to 9 ft 10 in)	12.5 to 29 mm (0.49 to 1.14 in)
Specialized Small Spot Size	0.1 to 1 m (3.9 to 39.4 in)	6 to 9.5 mm (0.24 to 0.37 in)
Electrical		
Power Supply	+24 VDC nominal, +15 to +30 VDC	
Environmental		
Ambient Temperature	0 to 70°C (32 to 158°F)	
Relative Humidity	5 to 85% (non-condensing)	
Storage Temperature	-25 to 85°C (-13 to 185°F)	
Protection Class	IP65	
Regulatory		
Certification	CE	

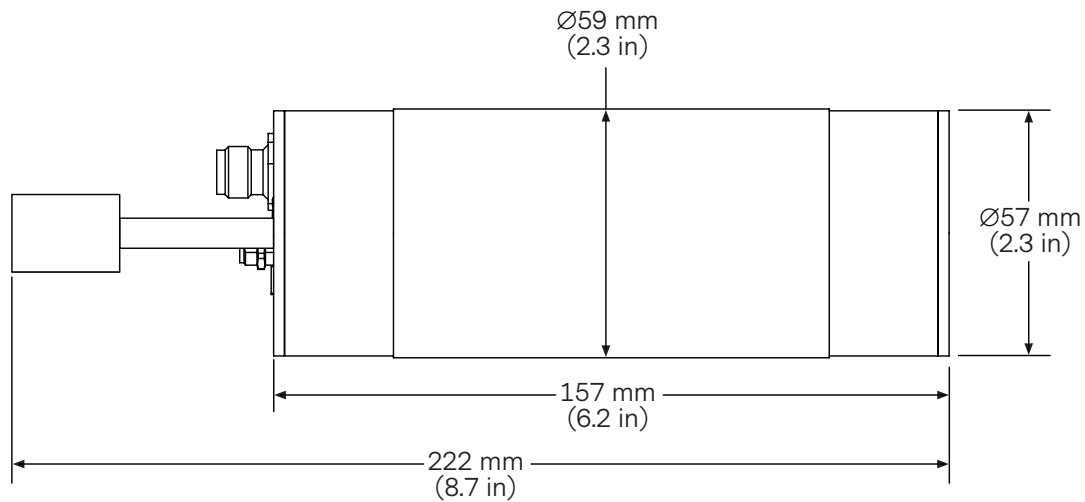
1. Approximate and based on measurement wavelength. Please see product user manual for detailed information.

MECHANICAL SPECIFICATIONS

Physical	
Dimensions	59 mm (2.3 in) diameter x 158 mm (6.2 in) length
Exterior Housing	Stainless steel
Operation Position	Any orientation



Unit with integrated laser sighting

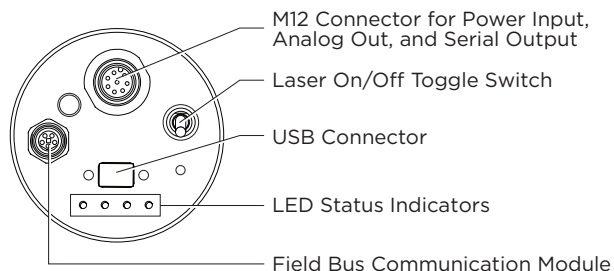


Unit with optical sighting

INTERFACE

USB Connection

The Onyx-S2C 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/RS-485, USB Available: Modbus® TCP, PROFIBUS®, Ethernet/IP®, DeviceNet™, PROFINET®, Modbus® RTU, EtherCAT®
Detector Type	Dual wavelength (two-color ratio)
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 250°C (482°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



For international contact information,
visit advanced-energy.com.

sales.support@aei.com
+1.970.221.0108

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

Specifications are subject to change without notice. ©2018 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy®, AE®, PyroConnect™, and Onyx™ are U.S. trademarks of Advanced Energy Industries, Inc. Modbus® is a trademark of Schneider Electric U.S.A., Inc. PROFINET® and PROFINET® are trademarks of Profibus and Profnet International (PI). DeviceNet™ and EtherNet/IP® are trademarks of ODVA, Inc. EtherCAT® is a trademark of Beckhoff Automation. Windows® is a trademark of the Microsoft Corporation.

