Pyrolaser®

THE ULTIMATE TEMPERATURE MEASUREMENT INSTRUMENT

PORTABLE AUTOMATIC EMISSIVITY CORRECTING IR THERMOMETER

INFRARED TEMPERATURE ACCURACY TO ±3°C

Traceable to NIST Standards

APPLICATIONS

The Pyrolaser® automatic emissivity correcting IR thermometer is used for many industrial and laboratory applications. This includes temperature measurement in refractories, ovens, furnaces and vacuum chambers. Virtually anywhere accurate portable IR temperature measurements are required.

- Petroleum Furnace Tube Temperatures
- Production Steel Annealing Furnaces
- Production Copper Furnaces
- Induction Heating
- Ceramic & Graphite Production
- Refractory Temperature Measurement
- Forging
- Research & Development
- Quality Control
- Temperature Accuracy Applications

FEATURES

- Automatically Corrects For Emissivity
- Accuracy After Emissivity Correction: ±5°F (±3°C)
- 1ms Data Acquisition Rate
- Standard Temperature Ranges:
  1100°F - 2730°F (600°C - 1500°C)
- Extended Temperature Ranges:
  1300°F - 3600°F (700°C - 2000°C)
  1450°F - 4500°F (790°C - 2500°C)
  1550°F - 5400°F (860°C - 3000°C)
- Internal Data Notebook & PC Interface
- Analog & Digital Outputs

DESCRIPTION

The portable Pyrolaser® uses the latest pulsed laser technology to measure precisely the true target temperature. While all infrared instruments measure a target radiance temperature, the Pyrolaser® determines dynamically the emissivity value of a target resulting in unmatched temperature accuracy to ±3°C. With Pyrolaser®, laboratory precision temperature measurements can be obtained in a portable easy to use instrument.

The Pyrolaser® incorporates an electronic microprocessor control unit, LCD digital display, membrane keypad, power supply, and temperature output connections and precision glass optics. The Pyrolaser® can be operated from the instrument's keypad or remotely from a PC. The Pyrolaser's® microprocessor control measures radiance, emissivity, and reflective radiance values at an extremely fast 1ms data acquisition rate.

OPERATION

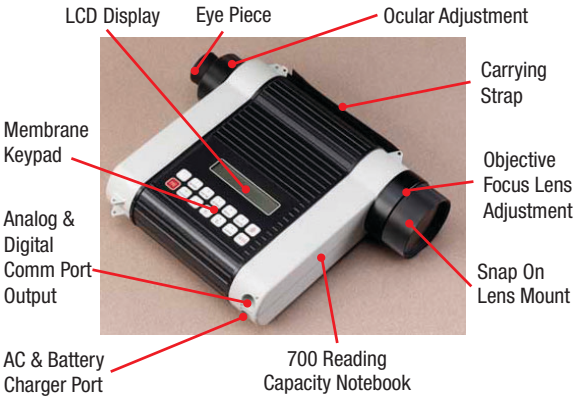
The Pyrolaser® reads the radiance emitted from a hot target. The Pyrolaser® then fires its pulse laser at the target. The reflected energy from the laser is then collected by the Pyrolaser®. Extraneous radiance from other sources (Tx) "wall shine readings" (Optional) can be collected should the application require. The Pyrolaser's® microprocessor control processes all the data collected (radiance, laser return & wall shine) and displays the results on the Pyrolaser's® LCD display. Displayed data includes uncorrected temperature (Tu), emissivity value (E) and emissivity corrected temperature (Tt), accurate to ±3°C.

PRECISION PYRO PYROMETERS

The Pyrometer Instrument Company, Inc. • 92 North Main Street, Bldg 18D • Windsor, NJ 08561 • USA
Telephone: (609) 443-5522 • Fax: (609) 443-5590 • e-mail: sales@pyrometer.com
Visit Our Website: www.pyrometer.com

Pyrolaser®

Pyrolaser® Specifications



TECHNOLOGY

The Pyrolaser® incorporates the passive characteristics of conventional infrared pyrometers along with an active reflectometer technique to determine the target emissivity. A low-powered pulsed GaAS laser is fired at the target measuring zone via a dedicated optical path (Laser Channel) and both the laser return signal and infrared signal are detected via a secondary optical path (Radiance Channel); the laser signal being (AC) on top of the (DC) target signal. Having monitored the laser outgoing energy and knowing the geometry involved (including target distance), the Pyrolaser® can determine the reflectivity and thus the emissivity of the target measuring zone. The wave band of the collected target radiance is limited to a narrow (10-50nm) band centered in the laser wavelength typically 905nm depending on the specific instrument or application.

More information about the Pyrolaser's® unique technology is available at PYRO's website:
www.pyrometer.com

Pyrolaser® comes complete with:

- Standard Temperature Range
- Cast Aluminum Housing
- Keypad
- Digital Display
- Electronics
- Operating Software
- Output: One Analog 0-5Vdc or 0-20mA
- Output: Digital RS232
- Target Distance: 2-10 meters Std.
- Target Spot Size: 1/200 of Target Distance
- Carrying Case
- PC Communication Cables (9 or 25 pin)
- Analog Output Cable (Banana Plug)
- Tripod Mounting Plate
- Lens Cap
- Battery Charger
- Instruction Manual
- Statement of Calibration

PYRO'S AUTHORIZED REPRESENTATIVE

Selectable Readout:	°F, °C
Standard Temperature Range:	1112°F - 2730°F (600°C - 1500°C)
Optional Extended Temperature Ranges:	1292°F - 3632°F (700°C - 2000°C) 1482°F - 4532°F (790°C - 2500°C) 1562°F - 5432°F (850°C - 3000°C)
Calibration Ranges:	(4) Ranges Available
Accuracy:	±5°F (3°C)
Resolution:	1°F (1°C)
Repeatability:	±1°F (1°C)
Effective Wavelength:	0.905 µm ±0.015
Bandwidth:	0.055 µm
Automatic Emissivity Measuring Range:	0.01 - 1.0 (Increments 0.01)
Acquisition Time:	1ms - 2000ms Selectable
LED Display in Viewfinder:	4 Digit Corrected Temperature (Tt)
LCD Display 40 Digit Readout of:	Target Emissivity Value (E) Uncorrected Temperature (Tu) Emissivity Corrected Temperature (Tt)
Standard Target Distance:	2-10 meters
Target Size:	1/200 of Target Distance
Visual Field of View:	7°
IR Field of View:	0.333° (1mm @ 20cm; 0.04" @8")
Sample Rate:	1, 2, 4, 8, 21, 23, 37 Readings/sec Selectable
Maximum Equipment Operating Temperatures:	32°F - 125°F (0°C - 50°C)
Display Output:	LCD 3.5" x 0.75" Target Emissivity Target Uncorrected Temperature Target Emissivity Corrected Temperature
Instrument Enclosure:	Cast Aluminum
Auxiliary Output:	Single Analog Output: 0-5vdc or 0-20mA Single Digital Output: RS232C
Power Supply:	(3) x 9v Rechargeable Ni Cad Batteries 115v/60Hz or 230v/50Hz Changer 2 Hours Operating Time with Batteries Unlimited Operating Time with Charger
Dimensions:	12.5" x 8.0" x 3.0" (318mm x 211mm x 74mm)
Weight Including Batteries:	7 lbs. (3.5kg)

Optional Snap-On Lenses For Additional Target Size and Distances

Calibration Range	Lens Type	Target Size		Target Distance	
Select Up To Four Ranges/Lenses		Min.	Max.	Min.	Max.
Temperature Range: 600°C - 1500°C					
A	Standard Lens	0.39" (1.0cm)	1.96" (5.0cm)	6.56' (2m)	32.8' (10m)
B	0.8m	0.157" (4.0mm)	2.16" (5.5cm)	31.4" (80cm)	43.2" (110cm)
C	0.4m	0.78" (2.0mm)	0.98" (2.5mm)	15.7" ((40cm)	17.68" (45cm)
D	0.2m	.039" (1.0mm)	0.04" (1.1mm)	7.8" (20cm)	8.6" (22cm)
Temperature Range: 700°C - 2000°C					
E	Std. & Filter	0.39" (1.0cm)	0.70" (1.8cm)	6.56' (2m)	11.8' (3.6m)
F	0.8m + Filter	0.157" (4.0mm)	2.16" (5.5cm)	31.4" (80cm)	43.2" (110cm)
G	0.4m + Filter	0.78" (2.0mm)	0.08" (2.25mm)	15.7" ((40cm)	17.68" (45cm)
H	0.2m + Filter	.039" (1.0mm)	.043" (1.1mm)	7.8" (20cm)	8.6" (22cm)
Temperature Range: 790°C - 2500°C					
I	0.8m + Filter	0.157" (4.0mm)	2.16" (5.5cm)	31.4" (80cm)	43.2" (110cm)
J	0.4m + Filter	0.78" (2.0mm)	0.08" (2.25mm)	15.7" ((40cm)	17.68" (45cm)
K	0.2m + Filter	.039" (1.0mm)	.043" (1.1mm)	7.8" (20cm)	8.6" (22cm)
Temperature Range: 850°C - 3000°C					
L	0.8m + Filter	0.157" (4.0mm)	2.16" (5.5cm)	31.4" (80cm)	43.2" (110cm)
M	0.4m + Filter	0.78" (2.0mm)	0.08" (2.25mm)	15.7" ((40cm)	17.68" (45cm)
N	0.2m + Filter	.039" (1.0mm)	.043" (1.1mm)	7.8" (20cm)	8.6" (22cm)

Pyrolaser® will store any four calibration ranges. Analog output is fixed to maximum temperature range.

Pyrometer Instrument Company reserves the right to modify, change or improve specifications without notice.