

## **PM-500-2C**

# **TWO COLOR PYROMETER**

***NON-CONTACT, FOR ABSOLUTE ACCURATE  
TEMPERATURE MEASUREMENT***



### **FEATURES:**

- **MILL-DUTY, WATER-COOLED, POSITIVE-PRESSURE, AIR-PURGED HOUSING**
- **ACCURACY:  $\pm 0.5\%$  Tmeas +2°C)**
- **REPEATABILITY: 0.3% FULL SCALE**
- **RESPONSE TIME: 10 mSec.**
- **MULTIPLE TEMPERATURE RANGES**
- **24 VDC or 100 – 240 VAC, 50 Hz / 60 Hz**

### **APPLICATIONS:**

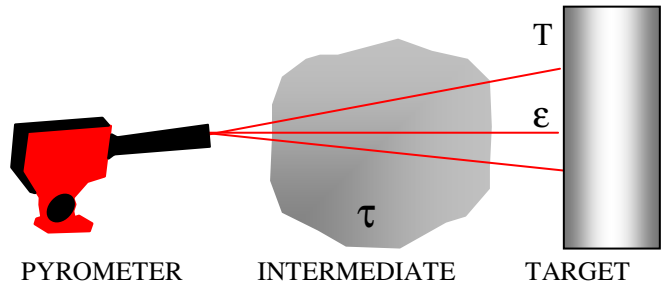
- **Detect Hot Coke on Conveyor Belt**
- **Temperature Measurement at Tap Hole**
- **Reheat Furnaces, Hot and Cold Rolling Mills**
- **Temperature Measurement on Shiny/Reflective Material**

**DESCRIPTION:**

**PYROMETER PRINCIPLE:**

This class of temperature measurement is based on the measurement of the infrared emission of the measured object. Two basic parameters influence the determination of the temperature from the infrared radiation: “ ε ” is the emissivity which depends on the material itself, the shape and roughness of its surface, and then wavelength “ λ ” at which the radiation is measured.

$$\frac{1}{T_b} = \frac{1}{T} - \frac{\lambda}{C_2} \ln(\epsilon(\lambda, T) \times \tau(\lambda))$$



**T<sub>b</sub>**: measured temperature

**T**: true temperature

**λ**: measured wavelength of the radiation

**C<sub>2</sub>**: thermodynamic constant

**ε**: emissivity

**τ**: transmission spectral of the environment between object and measuring apparatus

The PM-500-2C uses two-color measurement to provide superior accuracy in high temperature applications. The PM-500-2C pyrometer is ideal in situations where the target may be obstructed due to atmospheric smoke or other particulates, where the target is moving, or where the target is smaller than the field of view.

Bi-directional, RS-485 serial communications between the sensor and a personal computer in the control room enables remote setup, monitoring, calibration, and maintenance which is especially valuable for installation in hard to reach locations. Optional laser sighting and high-resolution optics provide a solution for either small targets or long sight-tubes.

The PM-500-2C is also available with fiber optic cable and optical head lens assembly (PM-500-2C-FO).

**SPECIFICATIONS:**

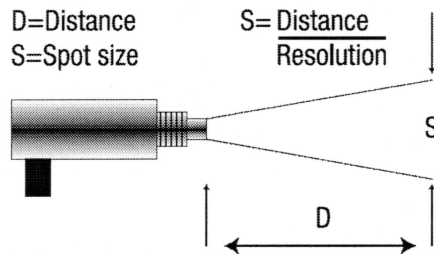
| SIGNALS        |   |
|----------------|---|
| OUTPUTS        | 4-20 mA, 500 ohms<br>Full duplex RS485 (non-multidrop)<br>Relay |
| ELECTRICAL     |   |
| POWER SUPPLY   | 100 to 240 VAC (50-60 Hz)<br>or 24 VDC                          |
| SHIELDED CABLE | 4 Meter, high-temperature                                       |

| MECHANICAL            |  |
|-----------------------|--|
| HOUSING               | Hermetically sealed cast metal housing rating: IP66 (NEMA 4 & NEMA 12)   |
| WATER / AIR COOLING   | Removable water / air-cooling jacket   |
| PROTECTIVE HOOD       | Hood with positive pressure air purge: 4-16 liters/min at 2 bars<br>(0.14 -0.56 ft3/min at 29 PSI)   |
| MOUNTING              | Fully Adjustable foot mount swivel stand   |
| OPERATING TEMPERATURE | 10°C to 65°C (50°F to 150°F)<br>Above 65°C (150°F) auxiliary cooling is required: 1-2 bars at 1-2 liters/min.<br>(14.5 - 29 PSI at 0.035 - 0.07 ft3/min) |

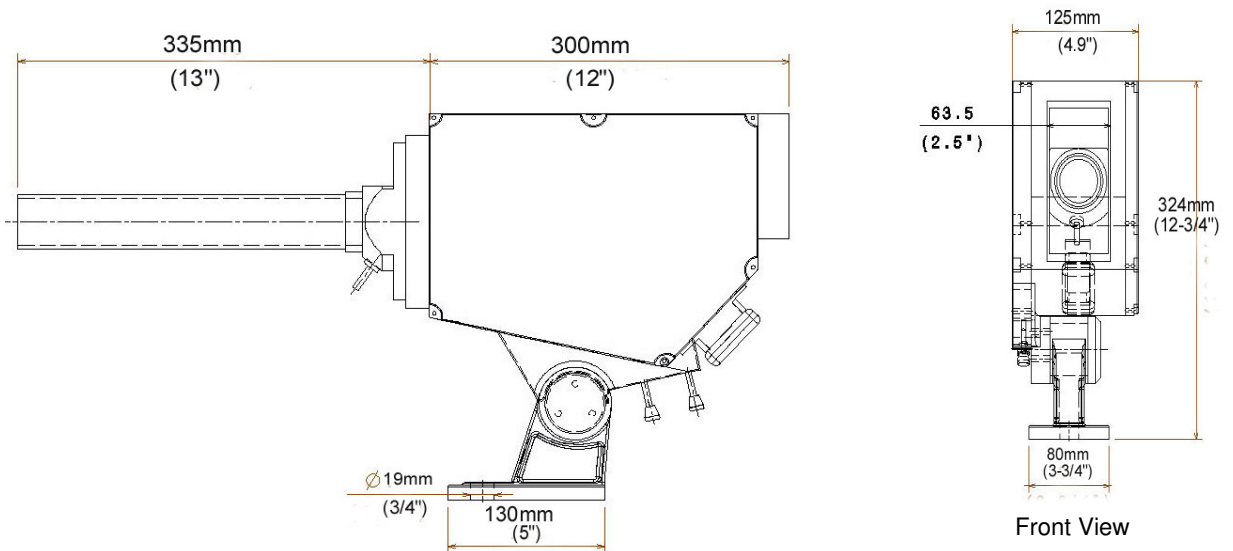
**MEASUREMENT:**

| <u>Temperature Range</u>           | <u>Optics</u> | <u>Minimum Spot Size Diameter</u> | <u>Spectral Response</u> | <u>Response Time</u> |
|------------------------------------|---------------|-----------------------------------|--------------------------|----------------------|
| 600° to 1400°C<br>1100° to 2550°F  | 44:1          | 14mm @600mm<br>0.5" @ 24"         | } 1µm Ratio              | 10 mSec              |
| 700° to 1800°C<br>1290° to 3270°F  | 82:1          | 7.3mm @ 600mm<br>0.29" @ 24"      |                          |                      |
| 1000° to 3000°C<br>1830° to 5430°F | 130:1         | 4.6mm @ 600mm<br>0.19" @ 24"      |                          |                      |

**OPTICS:**



**DIMENSIONS:**



**ORDERING INFORMATION:**

| <b>Model</b> | <b>Temperature Range</b>  | <b>Input Voltage</b>      |
|--------------|---|---------------------------|
| PM-500-2C    | - A 600° to 1400°C<br>- B 700° to 1800°C<br>- C 1000° to 3000°C | • 100-240 VAC<br>• 24V DC |

**OPTIONS:**

**PM-500-2C-FO**

The PM-500-2C-FO Fiber Optic Pyrometer consists of a rugged fiber optic cable with optical head assembly connected to the sensor housing. The Optical Head consists of a small stainless steel cylindrical housing capable of withstanding ambient temperatures up to 200°C. The fiber optic cable is protected by stainless steel metal armor.

| <b><u>PM-500-2C-FO Temperature Ranges</u></b> |                 | <b><u>Optics</u></b> | <b><u>Response Time</u></b> |
|---|-----------------|----------------------|-----------------------------|
| 500° to 1100°C                                | 932° to 2012°F  | 20:1                 | 10 mSec                     |
| 700° to 1500°C                                | 1292° to 2732°F | 40:1                 |                             |
| 1000° to 2500°C                               | 1832° to 4532°F | 65:1                 |                             |

**Fiber Cable Lengths:**

|           |          |
|-----------|----------|
| 1 Meter   | (3 ft.)  |
| 3 Meters  | (10 ft.) |
| 6 Meters  | (19 ft.) |
| 10 Meters | (32 ft.) |