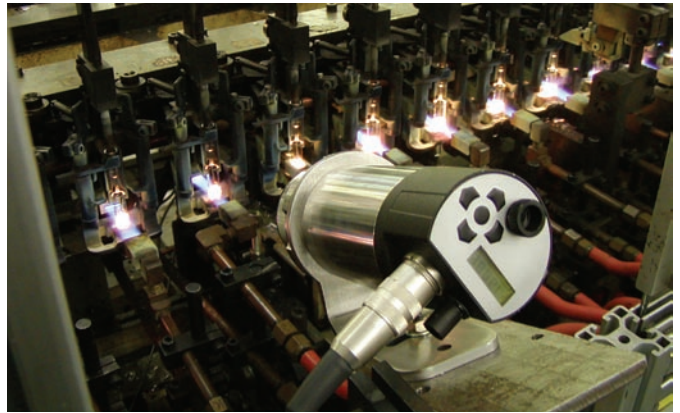
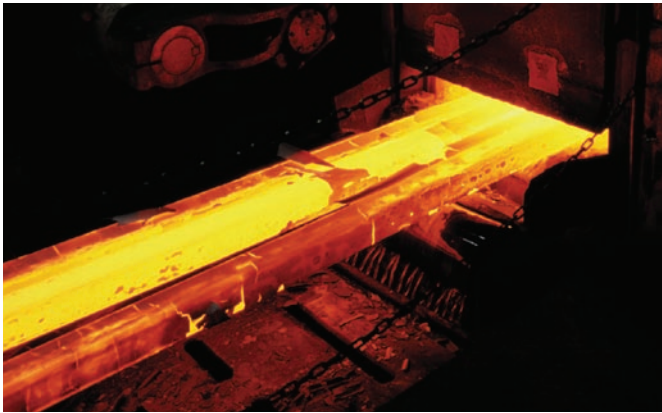


# Marathon

MM, MR, FA, FR



## Noncontact Temperature Measurement for Industrial Applications



## Marathon Series Highlights

- Broad temperature range from -40 °C to 3000 °C (-40 °F to 5432 °F)
- Superior optical resolution to 300:1
- Spot sizes down to 0.02mm
- Fast response times down to 2 ms
- Easy adjustment with variable focus optics
- Through-the-lens sighting, with optional laser aiming or video function
- Compact, rugged housings with IP65 (NEMA-4) rating
- Smart, two-way digital communications (RS485/232)
- Programmable relay output for control
- Simultaneous analog and digital outputs



Marathon MM Series with Video Function: Temperature measurement range of -40 °C to 3000 °C (-40 °F to 5432 °F), stainless steel housing, with high-resolution and variable focus optics.

### Marathon Series Thermometers for Demanding Applications

High-performance Marathon Series Thermometers provide a complete solution for noncontact, real-time temperature monitoring within a temperature range of -40 °C to 3000 °C (-40 °F to 5432 °F).

- One-color Infrared Thermometers
- Ratio Thermometers (Two-color Thermometers)
- Fiber-Optic Infrared Thermometers
- Configuration and Monitoring Software
- ThermoJacket and Accessories
- Field Calibration and Utilities Software

Marathon MM sensors provide integrated through-the-lens sighting, plus either laser or video-sighting for correct aiming and target location. The MM series is also available with simultaneous real-time video monitoring, with automated image recording and precision focusable optics. The thermometer incorporates an optional live video feed into its data acquisition and sensor programming software, allowing for active frame capture — a unique capability delivering valuable new process information at a price lower than competitive products.

MR/FR Marathon ratio thermometers provide fast, real-time monitoring for medium and high temperature applications. Ratio thermometers are used where the target is small, moving or obstructed, due to dust, smoke and other particulates in the atmosphere.

FA/FR Marathon fiber-optic thermometers allow measurement of targets that would be otherwise inaccessible because of space constraints or harsh environments. Separated by a flexible fiber-optic cable, the optical head may be positioned near the target with the rugged electronics housing installed remotely in a convenient location.

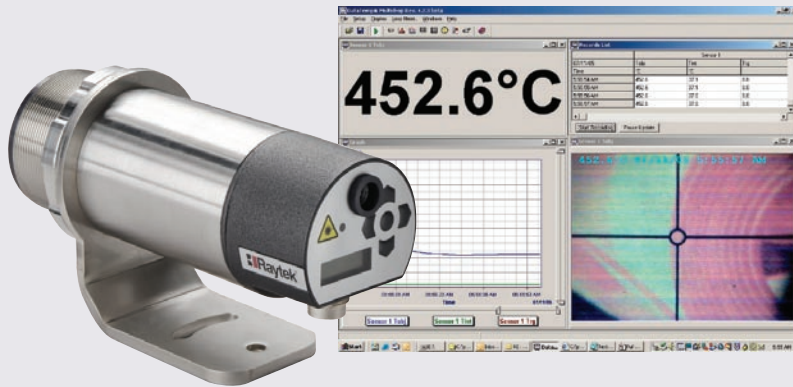


Marathon MR Ratio Thermometers

Model	Type	Temperature Range*	Spectral Response	Optical Resolution	Sighting
MMLT	One-Color Thermometer	-40°C to 800°C (-40°F to 1472°F)	8-14µm	>70:1	Through-the-lens, laser or video
MMG5	One-Color Thermometer	250°C to 2250°C (482°F to 4082°F)	5µm	>70:1	Through-the-lens, laser or video
MMMT	One-Color Thermometer	250°C to 1100°C (482°F to 2012°F)	3.9µm	>70:1	Through-the-lens, laser or video
MM3M	One-Color Thermometer	100°C to 600°C (212°F to 1112°F)	2.4µm	>70:1	Through-the-lens, laser or video
MM2M	One-Color Thermometer	300°C to 2250°C (572°F to 4082°F)	1.6µm	>300:1	Through-the-lens, laser or video
MM1M	One-Color Thermometer	450°C to 3000°C (842°F to 5432°F)	1µm	>300:1	Through-the-lens, laser or video
MR1	Ratio Thermometer	600°C to 3000°C (1112°F to 5432°F)	1µm	>130:1	Through-the-lens
FA1	Fiber-Optic Thermometer	475°C to 3000°C (887°F to 5432°F)	1µm	>100:1	Laser**
FA2	Fiber-Optic Thermometer	250°C to 1700°C (482°F to 3092°F)	1.6µm	>100:1	Laser**
FA1G	Fiber-Optic Thermometer	750°C to 1675°C (1382°F to 3042°F)	1µm	>100:1	
FR1	Fiber-Optic Thermometer	500°C to 2500°C (932°F to 4532°F)	1µm	>60:1	Laser**

\* Either one or up to three models cover the indicated temperature range \*\* Option

# DataTemp® Multidrop—Windows® Software for Remote Sensor Configuration and Process Monitoring



Plot the temperature values of a Marathon MM sensor with a video image. High and low alarms are shown, making it easy to identify out-of-range conditions. DataTemp Multidrop software makes it easy to remotely configure smart Marathon MM sensors from the safety of the control room.

## Video Function

For greatly improved remote monitoring, the Marathon MM sensor series provides an optional built-in video camera. The video signal can be sent to a surveillance monitor or imported directly into DataTemp Multidrop Software on a PC. The software's video function includes automatic image capture, which visually documents exactly when temperatures fall outside of specified limits and which products were affected.

## Easy Setup and Installation

Installation of Marathon Series thermometers is easy with the built-in user interface that displays the target temperature and allows adjustment of sensor parameters. Through-the-lens sighting or laser aiming help pinpoint the measurement target and variable-focus optics provide versatility for initial setup and continued operation.

Marathon support software makes it easy to configure or fine tune your sensor or a network of sensors remotely.

## ThermoJacket and Accessories



*The ThermoJacket protective enclosure enables use in ambient temperatures up to 315°C (599°F).*

Marathon sensors are supported by rugged accessories, like the ThermoJacket enclosure that provides environmental protection with integral water cooling and air purging. Marathon integrated sensors can be installed or removed while the ThermoJacket is in its mounted position. Additional accessories are available for customized installations.

Optional furnace wall mounting system allows fast, production-specified installation of the sensor heads. These accessories protect the mechanical components of the sensor and provide air

purging to keep the optics free of moisture and dust.

## Marathon Series Applications

The advanced electro-optical design of Marathon thermometers ensures high accuracy in difficult applications. Proprietary electronics enable user-selectable response times down to 2 ms. This high speed is coupled with superior optical resolution for small or distant targets. Finally, the entire electro-optical system has been optimized to yield excellent performance over a wide measurement and ambient temperature range.

### Applications:

- Metals processing
- Molten metal/forging
- Hot rolling mills
- Rod/wire mills
- Heat treating & annealing
- Induction heating
- Laser welding
- Lightbulb & halogen lamp production
- Paper production
- Thermoforming
- Glass melting
- Semiconductor furnaces
- Food industry
- Cement & lime kilns
- Refuse burning

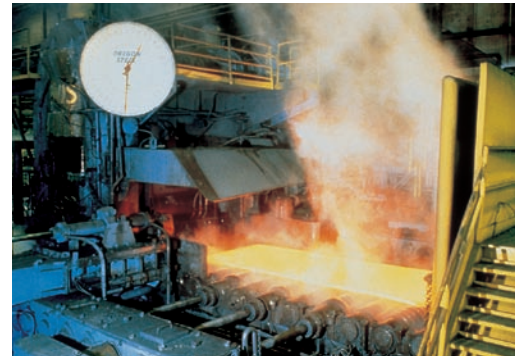


*Marathon FR and FA1G models are fiber-optic sensors, whose measurement heads withstand ambient temperatures up to 315°C (599°F) without cooling.*





Monitoring temperature of molten metal prior to and during pouring ensures correct metallurgical properties.



Accurately measuring temperature of slabs, billets, or blooms on a hot rolling mill ensures product uniformity.



From the molten state through to the cooling process, continuous temperature monitoring ensures that glass retains its properties as it travels through the manufacturing process.



Monitoring edge temperature and drying uniformity results in higher yields and reduced downtime during paper production.

## Raytek Corporation

Raytek designs, manufactures and markets a complete line of infrared (IR) noncontact temperature measurement instruments for industrial, maintenance and quality control applications ranging from  $-40$  to  $3000^{\circ}\text{C}$  ( $-40$  to  $5432^{\circ}\text{F}$ ) in temperature. Our thermometers can improve the quality of your products, increase productivity and reduce both factory downtime and maintenance costs. With a network of distributors and technical support in over sixty countries, and subsidiaries located in Europe and China, we are never far away. Contact us!

**The Worldwide Leader in Noncontact Temperature Measurement**

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