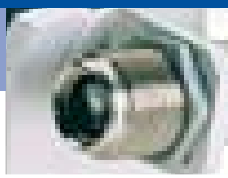
English



Infrared Sensors for Industrial Automation

Noncontact Temperature Measurement for Process Control and Monitoring Applications

Raytek®

A Fluke Company

Noncontact Temperature Measurement:
For impressive benefits and measurable results

Infrared (IR) thermometry measures energy that is naturally emitted from all objects, without actually touching them. This allows quick, safe measurement of the temperature of objects that are moving, extremely hot, or difficult to reach. Where a contact instrument could alter the temperature, damage, or contaminate the product, a noncontact thermometer safely allows accurate product temperature measurement.

These sensors are also used in applications where the high temperature of the target could damage or destroy a contact temperature sensor.

Raytek process sensors provide accurate, reliable temperature monitoring for demanding industrial processes.

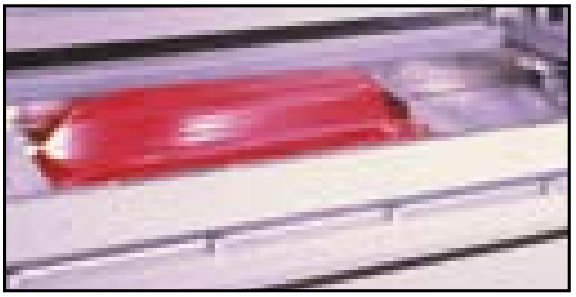
By decreasing down-time and waste, and improving process efficiency and output, our products ensure immediate and substantial savings in time and money.

Things to consider when selecting an infrared temperature sensor

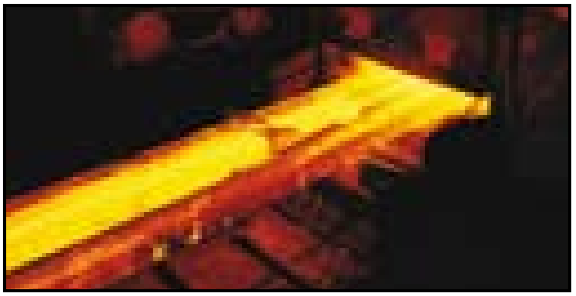
- What is the temperature range of the target?
- What is the size of the target?
- How close to the target can the instrument be installed?
- Does the target fill the field-of-view?
- What is the target material?
- How fast is the target or process moving?
- Will you be measuring discrete objects or a continuous process?
- What is the ambient operating temperature?
- Are the ambient conditions contaminated (dust, smoke, steam)?
- Do you want to connect to existing control equipment?
- Do you need to keep records for audit or quality programs?

Applications for IR Measurement

During coating processes, the MP50 linescanner produces a temperature profile of the fusion areas of the melt curtain, and detects defects caused by improper viscosity or impurities.



The MP50 linescanner profiles a thermoformed plastic sheet to ensure proper and uniform temperature distribution.



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

Plastic Processing

Raytek has temperature measurement solutions for every aspect of the plastic manufacturing process – from the melt to packaging, from raw material to finished goods.

- Blown film Extrusion
- Cast Film Extrusion
- Biaxially-oriented Film Extrusion
- Sheet Extrusion
- Extrusion Coating
- Laminating and Embossing
- Thermoforming
- Vacuum Forming

Steel Processing and Manufacturing

Raytek provides temperature measurement solutions for every step in the steel making process, from coke ovens and blast furnaces to annealing and coating mills, as well as forging, casting and heat treating processes.

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

The advanced signal processing capabilities of TX smart sensors ensure accurate temperature measurement for glass bottles and other discrete processes.

Additional Application Areas

- Non-ferrous Metals
- Petrochemical
- Textiles
- Semiconductors
- Utilities & Electrical
- Printing, Paper & Converting

- Continuous Casting
- Reheating
- Rolling Mills
- Rod/Wire Mills
- Stove Dome
- Blast Furnace
- Coke Ovens

Primary and Secondary Glass Manufacturing

Raytek noncontact infrared sensors for glass applications are designed for real time monitoring and control of nearly every aspect of glass processing.

- Melt Furnace
- Glass Fiber
- Automobile & Safety Glass
- Molds & Plungers
- Lamps, Bulbs & Tubes
- Flat Glass
- Bottles, Containers, Special Glass

Process Imaging Series

Linescanning

Raytek process imaging systems, designed to provide thermal imaging and analysis for accurate and reliable monitoring and industrial process control.

MP

Linescanner provides continuous temperature measurement and imaging of rotating, indexing or web-based processes; System software with OPC interface; Remote Monitoring

Spectral Response

1.0 µm	5.0 µm
1.6 µm	3-5 µm
3.43 µm	7,9 µm
3.9 µm	

Temperature Range

20 ...1200°C

CS200—Cement/Lime Kilns

Accurate detection and monitoring of hot spots prevents costly kiln damage & extends production runs on rotating kiln shells primarily used in cement and lime production.

TIP450—Wallboard

Wallboard thermal mapping improves board quality, productivity, fuel efficiency and rework by allowing the user to accurately balance the dryer and quickly detect defects.

TF100—Thermoforming

Thermal mapping of the plastic sheet improves efficiency and quality of the thermoforming process by accelerating product changeover and reducing scrap.

GS100/110—Glass Processing

Product quality is improved through rapid defect detection in glass annealing/tempering applications by thermal inspection of conventional and low-E glass sheets.

ES100/EC100—Plastic Extrusion

Edge-to-edge thermal mapping in continuous processes, such as plastic extrusion and laminating or flat glass manufacturing, detects defects and improves quality.

SS100—Synchronised System for Soft-roll Calendering

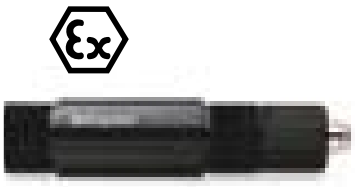
For rapidly rotating targets such as soft calendar rolls in paper-making and automotive tire testing the scanner is synchronized with the target to provide 100% coverage.

Marathon Series

Metals Production - Casting, Forging & Extrusion, Rod/Wire Mills, Induction Heating, Heat Treating, Welding, Molten Glass, Thermoforming, Paper Production, Food Manufacture, Lightbulb & Halogen Lamp Production, Semiconductor

MR	MM	FR	FA
Ratio measurement can be used for targets obscured by dust or steam; System software; Dirty lens alarm	High-performance pyrometer with video sighting; variable focus; broad temperature range; high optical resolution; System software	Robust fibre-optic two-colour pyrometer for harshest environments; System software; Field calibration software	Single colour fibre-optic sensing head provides an economical solution to the toughest applications; System software; Field calibration software
Spectral Response			
1 µm Ratio	1 µm 1.6 µm 2.3 µm	3.9 µm 5 µm 8-14 µm	1 µm Ratio	1.0 µm 1.6 µm
Temperature Range			
600 ... 3000°C	-40 ... 3000°C	500 ... 2500°C	250 ... 3000°C

Compact Series			XR Series
Ovens, Drying, Laminating, Coating, Paint Drying, Curing, Machinery Monitoring, Street Paving			Heating, Forming, Thermoforming, Calendering, Embossing, Sealing, Converting, Bonding, Plastic Extrusion
			
CI	**MI**	**GP**	**XR**
Compact stainless steel sensors; Thermocouple replacement	Miniature sensor for automated processes (also as OEM module); Ambient temperature up to 180°C (without cooling)	1/8th DIN panel meter; provides multiple outputs and digital display; Optional sensor with laser sighting	Pyrometers with User-defined Analog Output; Optional with laser sighting; Field calibration software
Spectral Response			
7–18 µm	8–14 µm	8–14 µm	3.9 µm 5.0 µm 7.9 µm 8 -14 µm
Temperature Range			
0 ... 500°C	-40 ... 600°C	-18 ... 538°C	-40 ... 1650°C

Thermalert Series	Handheld	Protective Housing
Heating, Thermoforming, Calendering, Embossing, Converting, Plastic Extrusion, Molding, Bonding	Production of Metals, Glass, Thin Film Plastics; Heat Treatment; Energy Inspection; Power Distribution	
		**TJ** Sensor head protection (XR, TX, MR. MM) for extreme industrial conditions Ambient Temperature up to 315°C
TX	**3i**	**Blackbody**
2-wire sensor with digital communication; ATEX-certified	Portable pyrometers for specialty applications Sighting: Single, Dual or Crossed Laser, Scope, Scope with Single Laser	
		BB Instrument Verification and Calibration
Spectral Response		Designed specifically for use with infrared instruments, the Blackbody has the highest possible emissivity consistent with aperture size, and target configuration, and exhibits uniformity and accuracy.
2.2 µm 3.9 µm 5.0 µm / 7.9 µm 8–14 µm	1.0 µm 1.6 µm 5 µm / 7.9 µm 8–14 µm	
Temperature Range		
-18 ... 2000°C	-30 ... 3000°C	Ambient to 300°C

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