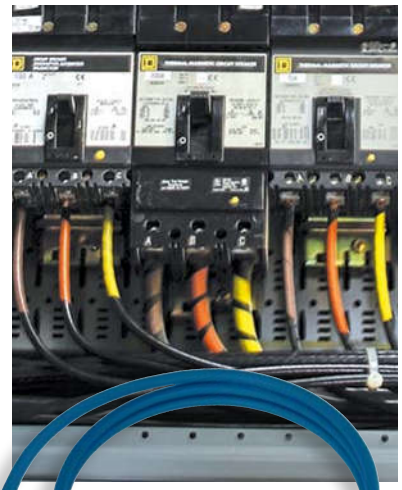


MI3

Noncontact Temperature Measurement for Industrial Applications









Safe Smart Versatile

Raytek®
Fluke Process Instruments

Fast Measurements

Infrared thermometers measure the energy radiated from an object, without touching it. This measurement technique is important in applications where contact would damage or alter the surface, such as a sheet of plastic film; or contaminate the product, such as food processing.

Unlike contact sensors, there is no delay while the infrared thermometer reaches the correct temperature. This makes it ideal for measuring moving or discrete processes. The result is fast, accurate noncontact temperature measurement and tighter control of your process.

Standard Features MI3

- Extended temperature range up to 1650 °C (3002 °F)
- Optical resolution up to 22:1
- Dedicated close focus lens for spot sizes down to 0.5 mm (0.02 in)
- Short response time down to 20 ms
- Industrial rugged cable: Silicone and Halogen free, resistant against oil, bases, and acids
- USB 2.0 interface as standard and selectable field busses
- Ambient temperatures up to 180 °C (356 °F) without the need for costly cooling

Process Software

More MI3 features are available with the USB or optional RS485 communications and the DataTemp® MultiDrop Software including remote control and monitoring of all sensor variables, an 8-position "recipe" table that can be easily interfaced to an external control system, and even external inputs for analog emissivity adjustment or reflected energy compensation.



Plot temperature values of multiple sensors simultaneously. High and low alarms are shown, making it easy to identify an out-of-range condition.

MI3 Series – Smart and Innovative

Most IR temperature sensors on the market transfer measurements from the sensing head to the electronics as interference-prone analog signals in a very sensitive µV range, the MI3 models allow calibrated, digital temperature output directly from each sensor head.

Models	
MI3*	**MI3100***
Temperature Range	
-40 to1650 °C (-40 to 3002 °F)	250 to 1800 °C (482 to 3272 °F)
Response Time	
20 ms 130 ms	10 ms
Optics	
22:1 10:1 2:1	100:1
Spectral Range	
5 µm 8-14 µm	1 µm 1.6 µm
Accuracy	
1 % or 1 °C (2 °F)	0.5 % + 2 °C
Outputs	
0-5/10 V 0/4-20 mA, J, K, R, S** Alarm, USB, RS485, Profibus, Modbus, Ethernet, Profinet Galvanically isolated analog outputs	0-5/10 V 0/4-20 mA, J, K, R, S** Alarm, USB, RS485, Profibus, Modbus, Ethernet, Profinet Galvanically isolated analog outputs

** Explosion proof sensing heads available (option)*
*** Thermocouple type*

MI3 – The World's Smallest Stand-alone Pyrometer

The Raytek® MI3 is a rugged, IP65 stainless steel miniature pyrometer with integrated electronics that can measure a wide range of temperatures. Just 14 mm (0.55 in) in diameter and 28 mm (1.1 in) long, the single piece OEM version is the smallest fully functional, stand-alone infrared temperature sensor for fixed installation on the market today. Designed for a wide range of applications, the sensor is housed in a rugged stainless steel enclosure to ensure long term performance, even in harsh industrial environments with ambient temperatures up to 180 °C (356 °F) without cooling. Cooling accessories not only add installation costs, they can leak and contaminate products, or condensation produced by cooling can obscure the sensor's field of view and interfere with measurement accuracy.



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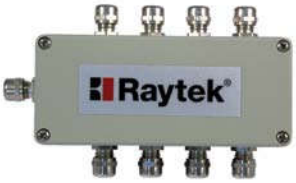
For use with standard industrial outputs, the MI3 sensor comes with the separate **communication box MI3COMM**, which provides all the functionality of the proven MI series sensors with numerous exciting new features.

The **multi-channel MI3MCOMM communication box** for multiple sensing head applications with USB interface as standard and a wide range of network communication interfaces is available in a convenient **DIN-rail mountable** package.



4 sensing heads can be directly connected to the MI3MCOMM box.



Multi-channel sensor interface box for connecting up to **8 individually addressable heads** to the communication box.

The **OEMMI3 version** of all MI3 sensor models allows direct digital connection to the host machine controller. No communication box is required. This is ideal for high volume OEM applications requiring MI3 performance with the best possible value and minimum installation costs.



MI3100
High Temperature Sensor

The MI3100 high temperature sensing head represents a further extension of performance and innovation in continuous noncontact temperature monitoring for specific OEM applications and high temperature manufacturing processes. The short wavelength sensor delivers more accurate measurements vs. long-wavelength units in case of emissivity changes (for example: metals, ceramics).

The MI3100 is a rugged, IP65 stainless steel sensing head to handle many applications in a wide temperature range.



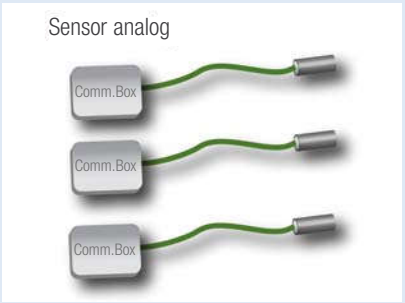
The compact MI3100 sensing head with integrated laser sighting.

Highlights: MI3 Series

- Lowest installation costs per measurement point due to multiple sensing head system design
- Self diagnostic features: break of a head wire, head internal temperature
- Plug & Play exchangeability for sensing heads (no heads parameter anymore; Raytek patent)
- Robust EMI immunity due to digital head-to-box communication
- No cable bending/moving effects, allowing continuous reliable measurement in moving installations (robotic arms, linear drives, chains, etc.)
- Optional network communication interfaces: RS485, Profibus, Modbus®, Ethernet, Profinet
- 64 MB data logger for communication boxes with Ethernet
- Optional 4 analog outputs with galvanic isolation
- OEM version allows direct digital communication with the host machine controller without the need for an additional communication box



Multiple sensing head design of the digital MI3 saves installation costs.



Conventional analog sensors require one box for one sensing head.

Highlights: MI3100

- Wide temperature range up to 1800 °C (3272 °F)
- Laser sighting
- 100:1 optical resolutions
- Spectral models 1 µm/1.6 µm
- Ambient temperatures to 120 °C (248 °F) without cooling

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MI3 Ex Proof Sensors



Explosive atmospheres at the workplace can be caused by flammable gases, mists or vapors, or by combustible dust. Explosions can cause loss of life and serious injuries, as well as significant damage. If you are working in this hazardous environment and need instruments with special certification, Raytek MI3 ATEX/IECEx certified sensors can be used safely to monitor the right temperature of your process. All standard MI3 and MI3100 heads can be ordered with optional ATEX/IECEx certification. Raytek MI3 ATEX/IECEx products provides you with a broad variety of sensors for your application.





Highlights: MI3 Ex-Proof

- ATEX and IECEx-proof for dust and gas atmospheres
- Same feature set as standard models
- Field exchangeability of all components without the need for re-calibration
- One Ex-proof power supply can be used with 2 sensing heads (saves installation cost)

Raytek Service Ensures Long Use

With over fifty years experience, Raytek knows infrared temperature measurement. Our application specialists are located around the world to help answer your technical questions. Each Compact product includes a two year warranty. In addition, maintenance, training, calibration, and other customized services are available to ensure that you receive the maximum benefits from your Raytek infrared noncontact thermometer. For more information on our solutions, contact your Raytek application specialist today!



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



Intrinsically safe infrared sensors for temperature measurement and monitoring in hazardous areas.



From paint curing to thermoforming, noncontact temperature measurement provides consistent product quality in the automotive industry.

The Worldwide Leader in Noncontact Temperature Measurement

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