Noncontact Temperature Measurement for Industrial Applications & OEMs
CM Highlights

- Scaleable 0-5 V, type J or K output
- Wide -20°C to 500°C (-4°F to 932°F) temperature range
- Rugged IP 65 (NEMA-4) stainless steel housing
- Rugged 13:1 optics at 90% energy
- 150 mSec (95%) response time
- Alarm output
- Sensor status/self diagnostic indicator LED
- RS232 digital communications for sensor set-up and monitoring
- Adjustable signal processing
- DataTemp® Multidrop software compatible
- Accessories for air purging and lens protection

The Raytek® CM sensor provides the advantages of infrared temperature measurement in a powerful, compact, integrated sensor. Designed for easy integration, the CM sensor can easily replace traditional contact probes with a J-type or K-type thermocouple output, or with a user scaleable 0-5 volt output, if your application is susceptible to noise.

The CM sensor is designed to measure target temperatures ranging from -20°C to 500°C (-4°F to 932°F). The CM’s onboard electronics are protected by a rugged IP 65 (NEMA-4) stainless steel housing, allowing the sensor to function in ambient temperatures to 70°C (160°F) without cooling.

Although small in size, the CM is loaded with advanced features. An RS232 digital interface allows the user to configure all programmable sensor variables with the powerful DataTemp Multidrop software included with each sensor. These include a 24 volt DC alarm output triggered by target temperature or head ambient temperature, peak hold, valley hold or variable averaging signal processing, adjustable target emissivity settings and adjustable window transmissivity setting. The built-in sensor health LED provides a convenient on-line indicator of the sensor’s operating status and aids in troubleshooting initial sensor set up.

Compact. Powerful. Easy to install. Affordable. The Raytek CM sensor is the ideal solution for both OEM and end-user applications.

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Measurement Specifications

Temperature Range
-20°C to 500°C (-4°F to 932°F)

Accuracy (mV)
± 1.5% of reading or ± 2°C, whichever is greater

Accuracy (t/c)
± 1.5% of reading or ± 4°C, whichever is greater

Spectral Response
8 to 14 microns

System Repeatability
± 0.5% of reading or ± 2°C, whichever is greater

Temperature Resolution
0.1°C

Response Time (95%)
150 mSec

Emissivity
0.10 to 1.10 (adjustable)

Transmissivity
0.10 to 1.00 (adjustable)

Signal Processing
Peak hold, valley hold, variable averaging

Self diagnostics/sensor status
Normal operation, alarm, out of range, unstable, sensor fault

Bore-Sight tolerance
3° @ focal point

Accuracy from -20 to 0°C is ±3.5°C

Accuracy and resolution specifications are valid for ambient temperature 23°C ± 5°C, e = 1.0 calibration geometry

Accuracy measured on the 0-5 VDC output or RS232 for t/c models is ± 1.5% of reading or ± 2°C, whichever is greater

Typical values measured at focal distance

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Nominal Optical Specifications

D:S=13:1 at focal point

Far field D:S=9:1

D:S is the optical resolution expressed as a ratio of the distance to the target spot divided by the diameter of the spot.

Nominal spot size based on 90% energy.
**Electrical Specifications**

- **Analog Outputs**: Model specific Type J, Type K or scaleable 0-5V voltage output
- **Cable Length**: 1m (3.3 ft) standard, 3m (9.8 ft) cables optional
- **Thermocouple Output Impedance**: 100 ohms
- **Voltage Output Minimum Load Impedance**: 50K ohms
- **Power Supply**: 12–24 VDC ±20% @ 10mA
- **Digital Output**: Two-way RS232 digital output
- **Alarm Output**: Transistor, 24VDC ±20% <20mA

Digital output and alarm output share a common wire. User selects either alarm output or RS232 communication via Datatemp Multidrop software.

**Sensor Specifications**

- **Environmental Rating**: IP 65 (NEMA-4)
- **Ambient Temperature Range**: 0°C to 70°C (32°F to 160°F)
- **Cable Temperature Range**: -30°C to 105°C (-22°F to 220°F)
- **Storage Temperature**: -20°C to 85°C (-4°F to 185°F)
- **Relative Humidity**: 10 to 95%, non-condensing
- **Shock**: IEC 68-2-27 (MIL STD 810D) 50 g’s, 11 mSec, any axis
- **Vibration**: IEC 68-2-27 (MIL STD 810D) 3 g’s, any axis, 11–200 Hz
- **Weight**: 1m cable model: 145 g (5.1 oz)

**Sensor Dimensions**

Each CM sensor includes two mounting nuts, 1m (3.3ft.) of cable, and a quick start guide. 3m (9.8ft) cables are also available.

- **Adjustable or fixed mounting bracket for sensing head (XXXCIADJB or XXXCIACFB)**
- **Air purge jacket to keep lens or right angle mirror clean (XXXCMAP or XXXCMAPM for metric version)**
- **Protective lens covering (XXXCMACPW or XXXCMACPWM)**
- **Right angle mirror to ease installation into tight locations (XXXCMACRA or XXXCMACRAM)**
## Accessory Dimensions

### Air purge collar
- **Dimensions**: 19 (.76) x 21 (83) mm
- **Thread**: 3/4-16 UNF-2B

### Right angle mirror
- **Dimensions**: 38 (1.5) x 38 (1.5) mm

### Adjustable Mounting Bracket
- **Dimensions**: 2X 90°, 2X 45°

### Fixed Mounting Bracket
- **Dimensions**: 2X 90°, 2X 45°, Full R
- **Housing thread**: Standard 0.75-16 UNF
- **Housing thread**: 18 MX1 Metric

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### Typical Model Number
- **Model**: RAYCMLTV3

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