CI Series QuickStart Guide
Compact Infrared Sensor

Use this QuickStart Guide for quick and easy mechanical installation, electrical wiring, and operation of the CI Series sensor.

Mechanical Installation

The CI Series sensors consist of the following components:
- C1 sensor
- 2 mounting nuts
- 1m (3ft) cable

Mounting Preparation
The CI sensor must be securely mounted to a vibration-free, mechanically stable support, away from motors producing large step-load changes.

To prepare for sensor mounting:
- Select a mounting location that ensures the spot size is the same or smaller than the target.
- Cut a 19mm (.75in) hole in the panel.
- Determine if you need Raytek® air purge or air/water cooing accessories.

When operating the CI sensor in ambient temperatures exceeding 70°C (160°F), water cooling is required.

- If needed, attach accessories to the sensor.
- Have a 12-24 VDC 10mA power supply available.

Mounting the Sensor
To mount the sensor:
- Screw 1 nut onto the sensor until it is more than halfway from the lens.
- Insert the sensor into the panel hole and screw on the 2nd nut.
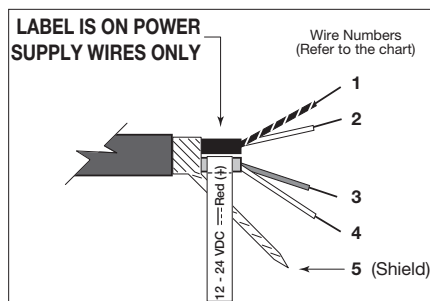- Aim sensor and tighten both nuts until sensor is secure.

Electrical Installation

There are three types of CI sensors. Each sensor (J Thermocouple, K Thermocouple, or the 10mV/°C Voltage) has a different wire color system. Use one of the following charts specific to your sensor as a wiring guide.

> **WARNING**
> **INCORRECT WIRING WILL CAUSE SEVERE AND PERMANENT DAMAGE TO THE SENSOR**

Wiring
There is a 4-wire, PVC cable attached to the sensor. The cable holds two pairs of wires and a bare shield (*ground*) wire.

LABEL IS ON POWER SUPPLY WIRES ONLY
Wire Numbers (Refer to the chart)
12 - 24 VDC ⎓ Red (+)
1
2
3
4
5 (Shield)

USE CHART SPECIFIC TO YOUR SENSOR FOR STANDARD OR HIGH TEMPERATURE CABLE WIRING

J-TYPE THERMOCOUPLE

STANDARD WIRING			
Label	Wire Number	Function	Wire Color
Output	1 2	Signal + *(Iron)* Signal – *(Constantan)*	White Red *(White Stripe)*
Power Supply	3 4	Power Supply + Power Supply –	Red *(Yellow Stripe)* Yellow
–	5	Shield Ground	Bare

HIGH TEMPERATURE CABLE WIRING			
Output	1 2	Signal + *(Iron)* Signal – *(Constantan)*	White Red *(White Stripe)*
Power Supply	3 4	Power Supply + Power Supply –	Red Yellow
–	5	Shield Ground	Bare

K-TYPE THERMOCOUPLE

STANDARD WIRING			
Label	Wire Number	Function	Wire Color
Output	1 2	Signal + *(Chromel)* Signal – *(Alumel)*	Yellow Red *(Yellow Stripe)*
Power Supply	3 4	Power Supply + Power Supply –	Red *(White Stripe)* White
–	5	Shield Ground	Bare

HIGH TEMPERATURE CABLE WIRING			
Output	1 2	Signal + *(Chromel)* Signal – *(Alumel)*	Yellow Red
Power Supply	3 4	Power Supply + Power Supply –	Red *(White Stripe)* White
–	5	Shield Ground	Bare

10mV/°C VOLTAGE

STANDARD WIRING			
Label	Wire Number	Function	Wire Color
Output	1 2	Signal + Signal –	White Green
Power Supply	3 4	Power Supply + Power Supply –	Red Black
–	5	Shield Ground	Bare

HIGH TEMPERATURE CABLE WIRING			
Output	1 2	Signal + Signal –	Red Yellow
Power Supply	3 4	Power Supply + Power Supply –	Red *(White Stripe)* White
–	5	Shield Ground	Bare

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Operation

To operate the system, follow the steps below.
- Turn on power supply.
- Turn on the meter, chart recorder, or controller.
- Read or monitor the temperature.

Warning
When using the air/water-cooled housing in a heated environment run coolant continuously.

Damage to the sensor and to the housing can occur if coolant is turned off.

Maintenance

It is important to keep the sensor lens clean at all times to ensure correct temperature measurement. If not using the air purge accessory, blow off loose particles with clean compressed air, then carefully wipe the surface with a moist cotton swab (water or water-based glass cleaner). **DO NOT use solvents.**

CI sensor lens
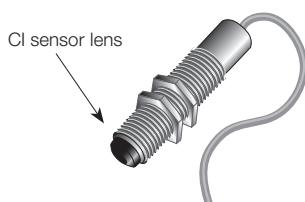
WARNING

INCORRECT WIRING WILL CAUSE SEVERE AND PERMANENT DAMAGE TO THE SENSOR.

Use the correct wiring chart to wire your sensor for standard or high temperature cable wiring

Troubleshooting

If your sensor is not performing as it should, use the table below to match the symptom to the probable cause and solution.

Symptom	Probable Cause	Solution
No Output	No power to sensor	Check power supply
Erroneous Temp	Incorrect wire connection	Check wire color codes and reconnect
Erroneous Temp	Faulty sensor cable	Verify cable continuity
Erroneous Temp	Field of view obstruction	Remove obstruction

Support

Our customer service representatives are always available to provide application assistance, calibration, repair, and solutions to specific questions or problems. Contact the Raytek Service Department before returning any equipment. In many cases, problems can be solved over the telephone.
For technical information refer to the CI Operator's Manual.

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