

C7130A,B Wall-Mount Air Temperature Sensors

INSTALLATION INSTRUCTIONS

APPLICATION

The C7130A,B Wall-Mount Air Temperature Sensors provide the input required by the R7380J,L, W7100, W7600, W7620, and Excel 500 Control Systems to sense air temperature in indoor spaces.

SPECIFICATIONS

IMPORTANT:

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. Also, this product is tested and calibrated under closely controlled conditions and some minor differences in performance can be expected if those conditions are changed.

Models:

C7130A Wall-mount Temperature Sensor: Intended for use as an indoor air sensor with the R7380J,L Indicating Controller, the W7100 Discharge Controller, the W7600 Direct Digital Controller, and the W7620 Direct Digital Controller.

C7130B Wall-mount Temperature Sensor: Intended for use as an indoor air sensor with the Excel 500 Controller.

Dimensions: See Fig. 1.

Mounting Arrangement: Two holes provided in base of device for mounting onto wall or horizontal 2 in. by 4 in. [51 by 102 mm] junction box.

Sensing Element:

C7130A: Platinum thick film element on a ceramic base.
C7130B: Platinum thin film element on a ceramic base.

Resistance/Temperature:

C7130A:

Nominal Resistance: 3484 ohms at 77° F [25° C].
Nominal Sensitivity: 4.8 ohms per degree F [8.6 ohms per degree C].

C7130B:

Nominal Resistance: 1097 ohms at 77° F [25° C].
Nominal Sensitivity: 2.1 ohms per degree F [3.9 ohms per degree C].

Maximum Ambient Temperature: 150°F [66°C].

Operating Temperature Range:

-40° F to 100° F [-40° C to +38° C].

Cable Length: Maximum 300 ft [91 m].

Accessories:

Shielded Cable: Optional for wiring to the controller at distances greater than 50 ft [15 m] to prevent possible electrical noise from causing erratic sensing.

4074CAV: 50 ft [15 m].

4074CAW: 100 ft [30.4 m].

4074CAY: 200 ft [61 m].

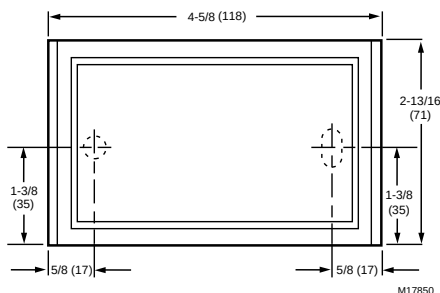


Fig. 1. C7130A,B Wall-Mount Temperature Sensor dimensions in in. [mm].



INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

IMPORTANT

All wiring must agree with applicable codes, ordinances and regulations.

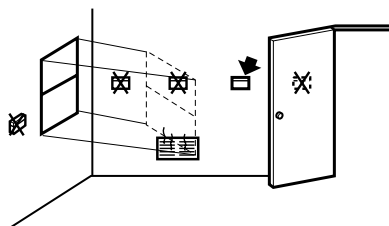
CAUTION

Electrical Shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.
Disconnect power supply before installation.

Mounting And Location

Mount the C7130 Wall-mount Temperature Sensor where the thermostat setting will not be subjected to tampering:

1. Choose a location for the sensor on an inside wall about 5 ft [1.5 m] above the floor. A horizontally mounted standard 2 in. by 4 in. [51 mm by 102 mm] junction box may also be used at the selected location for the C7130.
2. Place the sensor 300 ft [91 m] or less from the controller.
3. Make sure that there is good air circulation at average temperature at the chosen location. Avoid the following locations because they can introduce errors in sensor measurements (see Fig. 2):
 - Hot areas caused by:
 - Concealed pipes or ducts.
 - Drafts from fireplaces or other heat sources.
 - Convection or radiant heat from the sun or electrical equipment.
 - Cold areas caused by:
 - Concealed pipes or ducts.
 - Drafts from windows and doors.
 - Unheated areas on the other side of the wall location.
 - Dead air areas:
 - Behind doors, furniture, and curtains.
 - In corners and alcoves.
4. Mark the area on the wall where the C7130 Sensor or junction box will be mounted.



M9175

Fig. 2. C7130 mounting location.

Wiring



CAUTION

Erratic System Operation Hazard.
Failure to follow proper wiring practices can introduce disruptive electrical interference (noise).

Keep wiring at least one foot away from large inductive loads such as motors line starters, lighting ballasts, and large power distribution panels.

Shielded cable is required in installations where these guidelines cannot be met.

Ground shield only to grounded controller case.

IMPORTANT

1. All wiring must agree with applicable codes, ordinances and regulations.
2. Do not mount sensor in incorrect environment.
3. Wire according to the applicable controller instructions.
4. Avoid poor wiring connections.
5. Avoid intermittent or missing building earth ground.

Disconnect the power supply before connecting the wiring to prevent electrical shock or equipment damage. Wiring must comply with applicable codes, ordinances and regulations.

Wire the C7130 Sensor to the temperature controller using the procedure in the controller instructions. For an example of general wiring of the C7130, see Fig. 3.

Mount the C7130 to the wall or to the junction box.

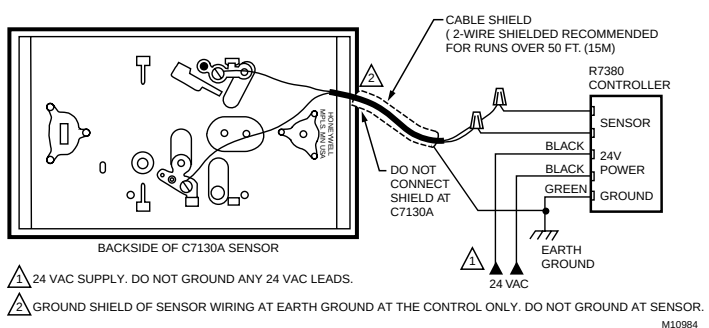


Fig. 3. General wiring hookup for C7130A sensor to R7380 Controller.

OPERATION AND CHECKOUT

Operation

The C7130 Wall-mount Temperature Sensor converts room temperature to a resistance that the controller can interpret. The C7130 Wall-mount Temperature Sensor has a positive temperature coefficient (PTC), which means that the resistance increases as the temperature increases. Fig. 4 shows how sensor resistance (for the C7130A) increases by 4.8 ohms per degree Fahrenheit [8.6 ohms per degree Celsius]. Since the curve shown in Fig. 4 is the same as the curve used by the C7100A and C7170A Sensors, these sensors are interchangeable.

Fig. 5 shows how sensor resistance varies with temperature for the C7130B by 2.1 ohms per degree Fahrenheit [3.85 ohms per degree Celsius].

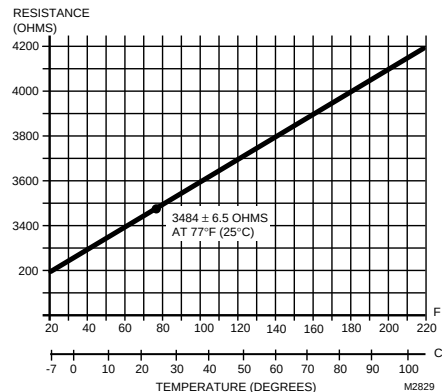


Fig. 4. C7130A Sensor resistance vs. temperature performance characteristics.

Checkout

Allow the C7130 Wall-mount Temperature Sensor to soak in the air moving through the room for a minimum of five minutes before taking a resistance measurement.

With an accurate thermometer ($\pm 1^\circ\text{ F}$ [0.5° C]) measure the temperature at the sensor location, allowing time for the thermometer to stabilize before reading. Use an ohmmeter to measure the resistance across the sensor wires. Then verify sensor accuracy with the temperature/resistance curve of Fig. 4 or Fig. 5 as applicable.

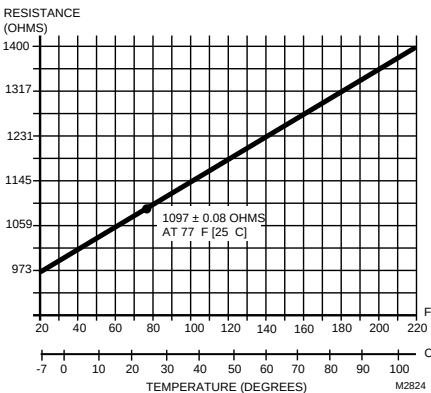


Fig. 5. C7130B resistance vs. temperature performance characteristics.

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