33CS
Outside Air Sensor (OAS)

Installation Instructions

Part Number 920089

IMPORTANT: Read entire instructions before starting the installation.

SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage sensor.

Recognize safety information. This is the safety alert symbol ⚠. When the safety alert symbol is present on equipment or in the instruction manual, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies a hazard which could result in personal injury or death. CAUTION is used to identify unsafe practices which would result in minor personal injury or property damage.

GENERAL

The Outside Air Sensor (OAS) measures outdoor air temperature when configured in a 33CS VVT® (Variable Volume and Temperature) or TEMP system. The sensor measures temperature with a range of 0° to 150 F.

A local communication network must have only one OAS.

INSTALLATION

Step 1 — Sensor Location — The sensor should be mounted:

- on the north side of the building
- out of direct sunlight
- protected from rain and snow as best as possible

Good locations would be under an eave of a roof, under an overhang of a building, or under the rain hood of an outdoor HVAC (Heating, Ventilation, or Air Conditioning) unit. See Fig. 1.

OUTDOOR WALL INSTALLATION — Cut a 1 x 2½-in. mounting hole in the wall. Attach the mounting plate to the wall. Ensure that the gasket provided with the mounting plate is in place. If the OAS is mounted on a rough surface, it is recommended that a bead of silicon rubber be used around the entire edge of the mounting plate.

Optional Outdoor Surface-Mount Electrical Box — Drill a ¼-in. hole in the wall. Attach the Surface-Mount Electrical box. Make certain the gasket provided with the OAS mounting plate is in place when attaching the OAS to the electrical box.

Flush Mount Electrical Box — Ensure that the electrical box has been installed properly so that when the OAS mounting plate is attached, the gasket seals properly. If the seal is in question, it is recommended that a bead of silicon rubber be installed around the entire edge of the mounting plate.

OUTDOOR AIR HOOD INSTALLATION − An optional outdoor surface-mount electrical box should be used for mounting. Mount the sensor under the hood or in the outdoor air intake section. Make sure sensor is out of direct sunlight.

⚠ CAUTION

Do not drill into any areas of unit where damage to coil or electrical component could result.

NOTE: Do not run sensor wiring through unit dampers or inlet guide vanes.

Step 2 — Wiring Requirements — The OAS wiring has the following requirements:

1. All system wiring must be in compliance with all applicable local and national codes.
2. All control, communication bus, and sensor wiring should be color coded in conformance with Carrier recommendations.
3. All wiring should be 2-conductor, 18- to 22-gage, shielded wire. The maximum distance between the OAS to the zone damper or relay pack for 18-gage wire is 1000 ft. The maximum distance between the OAS to the zone damper or relay pack for 22-gage wire is 500 ft.
4. Connect one end of the wire shield to the chassis ground. Do not connect shield at sensor side. Cut and tape shield at other end of sensor wire.

⚠ CAUTION

Do not ground the shielded wire in more than one location. If the shield is grounded in two or more locations, an electrical charge may form around the wire and disrupt communication.

NOTE: Each unused connector plug wire should be individually capped with a wire nut. Do not leave bare exposed wires.

When the OAS is interfaced with a TEMP system controller or a Monitor thermostat in Monitor-Only mode, the OAS is wired through the single-zone relay pack (33CSUCE-06). The BLACK wire is connected to terminal 13 of the relay pack. The RED wire is connected to terminal 16 of the relay pack. See Fig. 2.

When the OAS is interfaced to a VVT monitor thermostat, the OAS is wired through the printed circuit board in the zone damper actuator. See Fig. 3 and 4. A wire harness cable (part no. CEAS230043-01) is required.

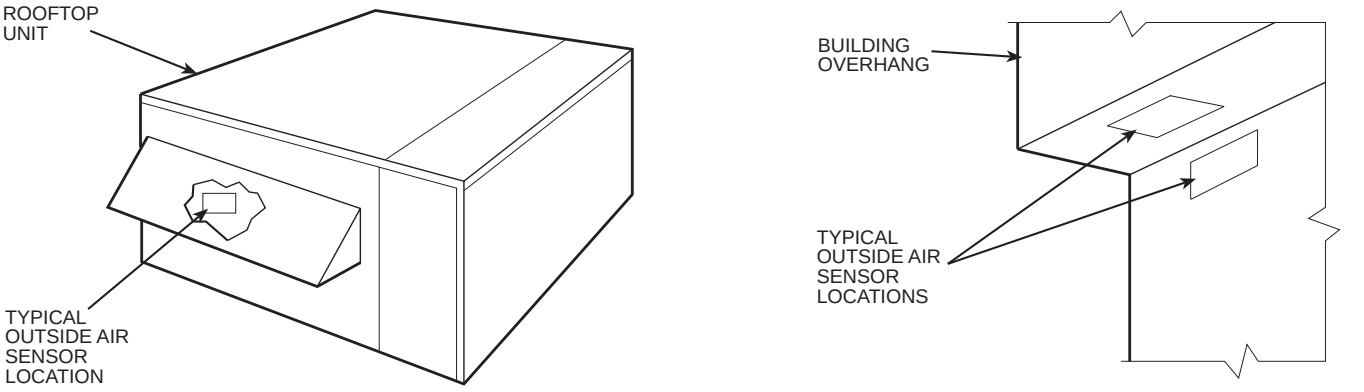

Fig. 1 — Typical Outside Air Sensor Installations

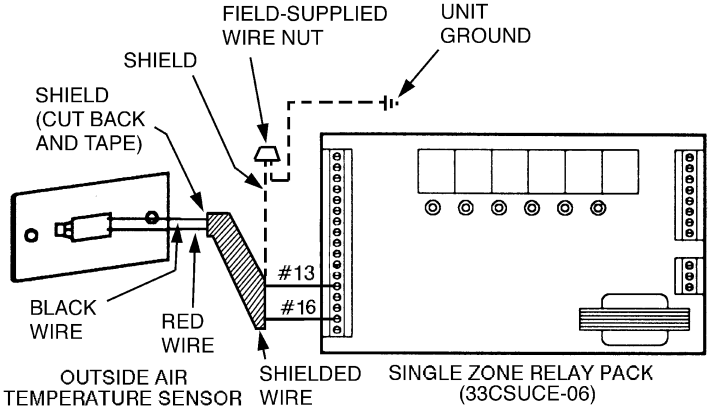

Fig. 2 — Outside-Air Sensor Wiring (Monitor Only and TEMP System Configuration)

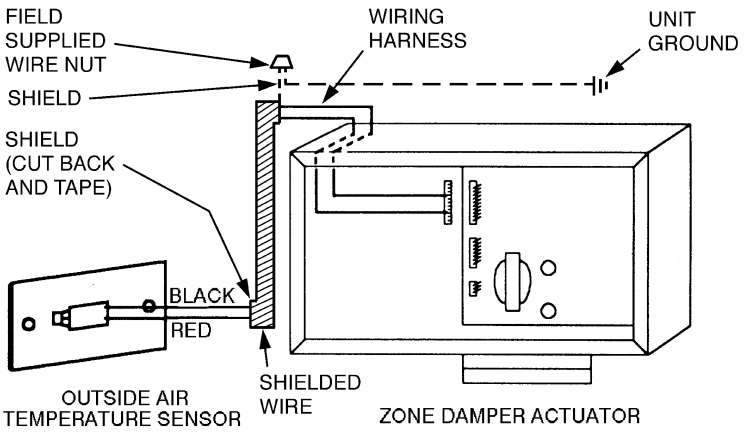

Fig. 3 — Outside-Air Sensor Wiring (VVT® Monitor Configuration)

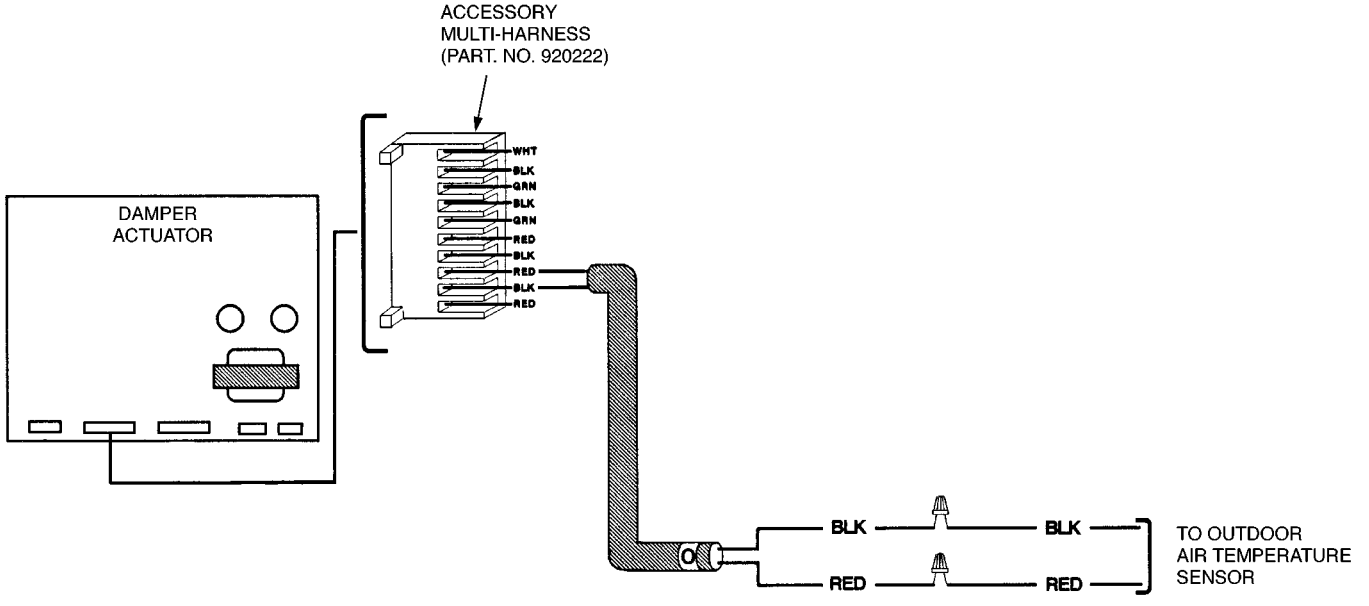

Fig. 4 — Outdoor Air Sensor Damper Board Wiring

Step 3 — Configure the Unit Controller — When the Outside Air Sensor option is set to ON, the TEMP system unitary controller thermostat or VVT® monitor thermostat will measure outside-air temperature and broadcast the temperature infomation on the network.

When the Outside Air Sensor option is set to OFF, the TEMP system unitary controller thermostat or VVT monitor thermostat can receive outside-air temperature which has been broadcast from another device on the network.

NOTE: A local communication network can only have one outdoor air sensor.

To configure the Outside Air Sensor option, configure category 5, option 8 on the thermostat. The option can be toggled ON or OFF. The default value is OFF.

Step 4 — Calibrate the Sensor — To calibrate the OAS, configure category 5, option 9 on the thermostat. Obtain an accurate correct temperature reading with a thermometer near the sensor. The range of possible temperatures is 0° to 150 F. Raise or lower the OAS temperature reading until it matches the reading from the thermometer.