

Factory Installed Smoke Detector Specification Sheet

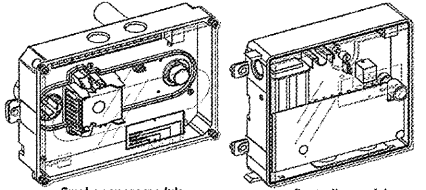
For Factory Installed smoke detectors on 2-28 ton Commercial Rooftop Units
APPLICABLE UNITS: 48/50PG, PM, PD 03-28
48/50TC 04-30, 48/50HC 04-28,
50/50C 04-24, 50/50D 04-12
49/50R, 50/50D 03-03
49/50H, TM, TF 04-014
50/50Q, TFG 04-012

GENERAL DATA
Type: TelAire SuperDuct, 4-wire Photoelectric Sensing detector and control module
The Carrier factory installed smoke detector system comprises a four-wire controller and one or two sensors (Return Air and/or Supply Air). Its primary function is to shut down the rooftop unit in order to prevent smoke from circulating throughout the building. It is not to be used as a life saving device. Factory installed smoke detectors require no additional sampling tubes to be field installed.

SYSTEM DESCRIPTION
Controller - The controller includes a controller housing, a printed circuit board, and an easily removable clear plastic cover for access to the multiple terminal connections and relay contacts for connection to fire alarm systems, HVAC controls, and other auxiliary functions. A remote test/reset/visual alarm station can be connected to the controller.

Detectors - The detector includes a plastic housing, a printed circuit board, a clear plastic cover, an exhaust tube, and a sampling tube. The exhaust tube and sampling tube are attached during factory installation. The sampling tube varies in length depending on the size of the rooftop unit. The clear plastic cover permits visual inspection without having to disassemble the sensor. The cover forms an airtight chamber around the sensing electronics.

For installations using two detectors, the controller does not differentiate which detector signals an alarm or trouble condition. A rapid change in environmental conditions, such as smoke, causes the sensor to signal an alarm state that dust and debris accumulated over time does not. When the sensor's ability to compensate for environmental changes has reached its limit (100% dirty), the sensor signals a trouble condition. Air is introduced to the duct smoke detector's sensing chamber through a sampling tube that extends into the HVAC duct and is directed back into the ventilation system through an exhaust tube. The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the sensor signals an alarm state and the controller automatically takes the appropriate action to shut down the unit via the factory installed wiring connections. Additional functions such as integration with a Building Alarm System, additional fans and blowers, notify the fire alarm control panel, etc. require field wiring and configuration.



Smoke sensor module Controller module
Fig. 1 - Controller and Detector (Sensor) Modules

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GUIDE SPECIFICATIONS

- System Specifications:**
- System Type: Separate controller and detector modules
 - Four Wire Controller and Detector
 - Photoelectric Sensing
 - Environmental compensation with differential sensing for reliable, stable, and dust-free sensitivity
 - Operating environment:
 - Temperature -30°F to 158°F (-29° to 70° C)
 - Humidity 10% to 93% RH, non-condensing
 - Magnet-activated test/reset sensor switches
 - Tool-less connection terminal access
 - Reset/retest/visual alarm station
 - Reset/retest/visual alarm station

Table 1 - Controller Terminal Connections

| Terminal Number | Connections | Name |
|-----------------|-------------------|----------------------------|
| 1 | AUX (-) | Neutral |
| 2 | SUPV Contact COM | Form C |
| 3 | SUPV Contact NO | 2.0A at 30 VDC (resistive) |
| 4 | Alarm Contact COM | Form C |
| 5 | Alarm Contact NO | 2.0A at 30 VDC (resistive) |
| 6 | AUX 1 Contact COM | Form C |
| 7 | AUX 1 Contact NO | 2.0A at 30 VDC (resistive) |
| 8 | AUX 2 Contact NC | Form C |
| 9 | 24V AGDC In (+) | 10 A at 250 VAC |
| 10 | 24V AGDC In (-) | Not Used |
| 11 | Not Used | Not Used |
| 12 | Multi-Shutdown | Not Used |
| 13 | SUPV Contact NO | Form C |
| 14 | SUPV Contact NC | 2.0A at 30 VDC (resistive) |
| 15 | REM Alarm LED Out | Form C |
| 16 | AUX 1 Contact NC | 2.0A at 30 VDC (resistive) |
| 17 | AUX 2 Contact COM | Form C |
| 18 | AUX 2 Contact NO | 2.0A at 30 VDC (resistive) |
| 19 | 15 VDC Output (+) | Form C |
| 20 | 15 VDC Output (-) | Form C |
| TR-1 | Not Used | Not Used |
| TR-2 | Not Used | Not Used |
| N | AC Neutral | |
| L | AC Line | |

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Controller specifications:
Controller shall include:

- One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel
- Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment
- One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station
- Capable of direct connection to two individual detector modules
- Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications

Wiring:
 High voltage terminals: 12-22 AWG
 All others: 14-22 AWG
 Operating voltages: 20-28 VAC, 60/60 Hz
 120 VAC, 50/60 Hz
 220/240 VAC, 50/60 Hz

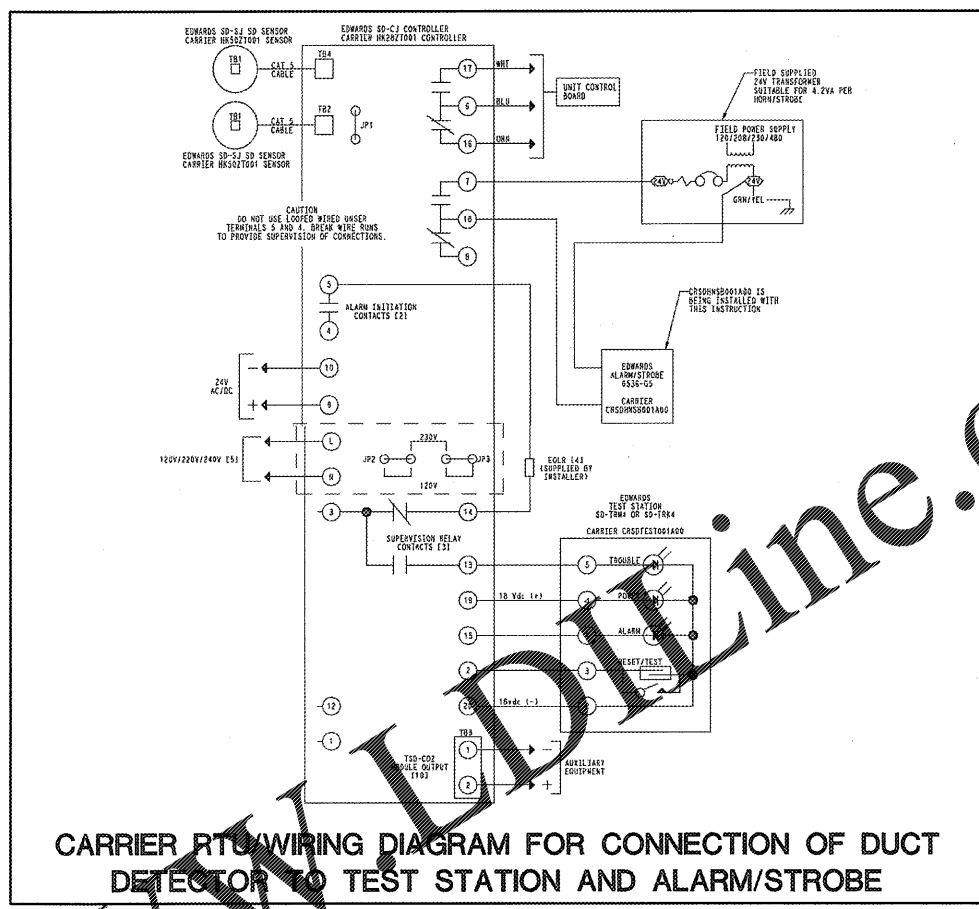
Operating current:
 20-28VDC: 175 mA
 24VAC: 500 mA at 50/60 Hz
 120VAC: 100 mA, 50 Hz
 220/240 VAC: 75 mA at 60 Hz
 53 mA at 50 Hz
 40 mA at 50 Hz

LED indicators:
 Red (Alarm)
 Yellow (Trouble)
 Green (Power)

Relays:
 Alarm initiation relay:
 Quantity: 1
 Style: Normally open
 Ratings: 2.0A at 30 VDC (resistive)
 Auxiliary relays:
 Quantity: 2
 Style: Form C
 Ratings: 10 A at 250 VAC
 Supervision (trouble) relay:
 Quantity: 1
 Style: Form C
 Ratings: 2.0A at 30 VDC (resistive)

Detector specifications:
 Sensor:
 8.70x5.45x1.90 in.
 Photoelectric
 Air velocity (min-max): 100 - 4,000 ft/min
 Pressure differential (min-max): 0.57 to 2.48 inches water column
 Sensitivity: 0.57 to 2.48 inches water column
 Wire size: 14 to 22 AWG
 Reset time: 2 second maximum
 Power on time: 8 seconds max
 Alarm test response time: 5 to 7 seconds
 LED indicators:
 Red (Alarm)
 Yellow (Trouble)
 Yellow (Dirty)
 Green (Power)

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CARRIER RTU WIRING DIAGRAM FOR CONNECTION OF DUCT DETECTOR TO TEST STATION AND ALARM/STROBE



Installation Instructions

IMPORTANT: Read these instructions completely before attempting to install the accessory Remote Test/Reset Station.

SAFETY CONSIDERATIONS
 Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified personnel should install, repair, or service this equipment. Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit and other safety precautions that may apply. Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use grounding cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes, the current editions of the National Electrical Code (NEC) NFPA 70, in Canada refer to the current editions of the Canadian electrical Code CSA C22.1.

Recognize safety information. This is the safety-alert symbol. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these 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 personal injury or death. WARNING signifies hazards which could result in personal injury or death. CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

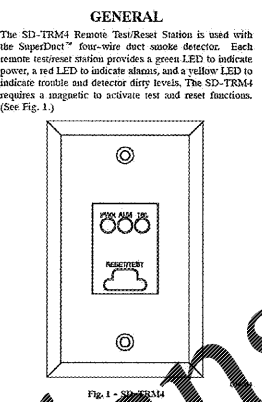


Fig. 1 - SD-TRM4

GENERAL
 The SD-TRM4 Remote Test/Reset Station is used with the SuperDuct™ four-wire duct smoke detector. Each remote test/reset station provides a green LED to indicate power, a red LED to indicate alarm, and a yellow LED to indicate trouble and detector dirty levels. The SD-TRM4 requires a magnetically activated test and reset functions. (See Fig. 1.)

REMOTE TEST/RESET STATION TESTS
CAUTION
ALARM SYSTEM ACTIVATION HAZARD
 Failure to follow this caution may result in an emergency alarm system activation and possible injury. This test places the duct detector into the alarm state. Unless part of the test, do not connect auxiliary equipment from the controller wires performing the test. If the duct detector is connected to a fire alarm system, notify the proper authorities before performing the test.

To perform the alarm test on SD-TRM4:
 1. Hold the test/reset to the target area for seven seconds.
 2. Verify that the test/reset station's Alarm LED turns on.
 3. After performing an alarm test using an SD-TRM4, reset the sensor by holding the test/reset to the target area for two seconds.
 4. Verify that the test/reset station's Alarm LED turns off.

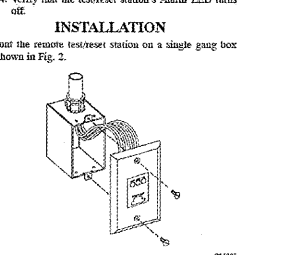


Fig. 2 - SD-TRM4 Installation Diagram

INSTALLATION
 Mount the remote test/reset station on a single gang box as shown in Fig. 2.

WIRING
 Wire the remote test/reset station to the four-wire controller as shown in Fig. 3.

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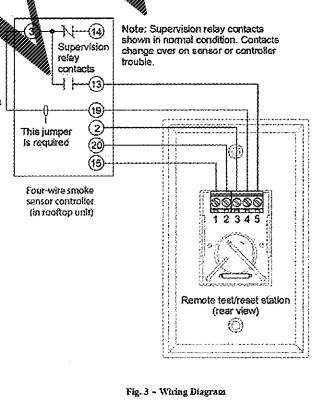


Fig. 3 - Wiring Diagram

EDWARDS SIGNALING PRODUCTS

Installation Instructions for the 6536-G5 Horn/Strobe

Description
 The 6536-G5 is an audible/visual signal UL listed for general purpose signaling applications.

Installation
 A qualified electrician familiar with National Electrical Code and local code requirements must install this product. Failure to follow the safety precautions in this instruction sheet could result in product or property damage, severe personal injury or death.

Maintenance
 Perform regular scheduled testing at least twice a year or more often as dictated by local authorities having jurisdiction.

WARNING
 To reduce the risk of shock, do not remove lens or tamper with unit when the circuit is energized. Do not connect AC power until installation is complete.

WARNING
 The 6536-G5 horn/strobe (Figure 1) can be mounted on any single gang 2" x 4" (51 mm x 102 mm) electrical box, double gang 4" x 4" (102 mm x 102 mm) junction box with a plaster ring.

Table 1. Specifications

| | 24V 50/60 Hz | 24V DC |
|-------------------|--------------|--------|
| Operating Voltage | 24V 50/60 Hz | 24V DC |
| Alarm Current | 175 mA | 125 mA |

Figure 1. Details of Horn/Strobe

Figure 2. Connecting the Horn and Strobe

Table 2. Connecting the Horn and Strobe

| Power Source | Terminal Connections |
|--------------------------------------|--|
| Single 24V AC or 24V DC Power Source | Red (+) to Terminal 1, White (-) to Terminal 2 |
| Factory Connected | Red (+) to Terminal 1, White (-) to Terminal 2 |

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DUCT DETECTOR - TEST STATION - ALARM/STROBE

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