

### Factory Installed Smoke Detector Specification Sheet

For Factory installed smoke detectors on 2-20 ton Commercial Rooftop Units  
**APPLICABLE UNITS:** 4850FG, PM, PD 03-26  
 4850TC 04-30, 4850HC 04-20,  
 50TC0 04-24, 50HC0 04-12  
 4850FE, 50HE0 003-005  
 4850HJ, TM, TF 004-014  
 50HJ0, TFQ 004-012

**GENERAL DATA**  
 Type: TelAir 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 control, and other auxiliary functions. A remote test/reset 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 focuses an airstream chamber around the sensing electronics.

For installation using two detectors, the controller does not differentiate which detector signal an alarm or trouble condition. A rapid change in environmental conditions, such as smoke, causes the sensor to signal an alarm state and debris accumulated over time does not. When the sensor's ability to compensate for environmental changes has reached its limit (80% 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.

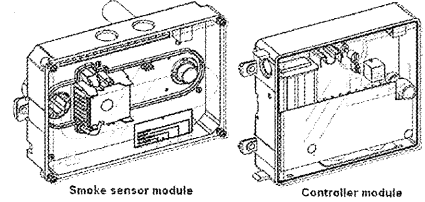


Fig. 1 - Controller and Detector (Sensor) Modules

### 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 drift-free sensitivity
- Operating environment:**
- Temperature: -20° to 158°F (-29° to 70° C)
  - Humidity: 16% to 93% RH, non-condensing
  - Magnet-activated test/reset sensor switches
  - Tool-less connection terminal access
  - Recessed momentary switch for testing and resetting the detector

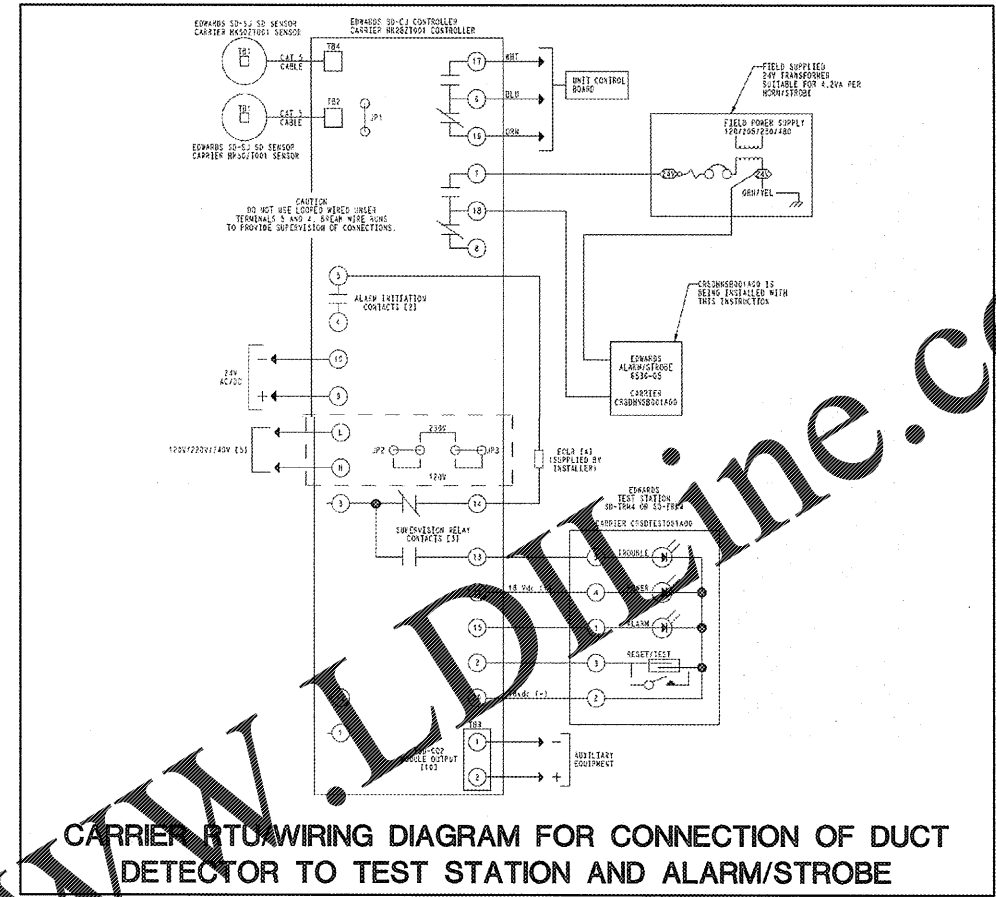
Table 1 - Controller Terminal Connections

Terminal Number	Name
1	ALM (E)
2	Reset
3	SUPV Contact COM
4	Alarm Contact COM
5	Alarm Contact NC
9	AUX1 Contact COM
10	AUX2 Contact COM
11	AUX3 Contact NC
12	24V AC/DC In (+)
13	NOISE
14	Multi-Shutdown
15	SUPV Contact NO
16	SUPV Contact NC
17	REM Alarm LED Out
18	AUX1 Contact NC
19	AUX2 Contact NO
20	AUX3 Contact COM
21	13 VDC Output (+)
22	19VDC Output (+)
TR1-4	Rel Units
TR5-7	Rel Unit
TR	AC Neutral
L	AC Live

- 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 AGW  
 All others: 14-22 AGW  
 Operating voltages: 20-29 VAC, 50/60 Hz  
 120 VAC, 50/60 Hz  
 220/240 VAC, 50/60 Hz

- Operating current:**  
 20-29VDC: 175 mA  
 24VAC: 500 mA at 50/60 Hz  
 120VAC: 100 mA, 50 Hz  
 75 mA at 60 Hz  
 220/240 VAC: 53 mA at 50 Hz  
 40 mA at 60 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  
 Form C  
 10A at 30 VDC
- Supervision (trouble) relay:**  
 Quantity: 1  
 Form C  
 2.0A at 30 VDC (resistive)

- Detector specifications:**
- Sensor: 8.70x5.40x1.90 in.
  - Smoke detection method: Photoelectric
  - Air velocity (min-max): 100 - 4,000 fpm
  - Pressure differential (min-max): 0.005 - 1.00 in
  - Sensitivity: 0.67 to 2.49 %/hour-squart
  - Wiring size: 14 to 22 AGW
  - Reset time: 2 second maximum
  - Power up time: 8 seconds max
  - Alarm least response time: 9 to 7 seconds
  - LED indicators: Red (Alarm)  
 Yellow (Trouble)  
 Yellow (Dirty)  
 Green (Power)



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

### CRSDTEST001A00 REMOTE TEST/RESET STATION SD-TRM4 FOR SMOKE DETECTORS COMMERCIAL ROOFTOP UNIT 2-27.5 TONS

#### Installation Instructions

**IMPORTANT:** Read these instructions completely before attempting to install the accessory Remote Magnetic 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 appropriate tools for brazing operations. Have fire extinguishers 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 (CEC) CSA C22.1.

Recognize safety information. This is the safety-alert symbol. When you see this symbol on the unit and its 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 severe personal injury or death. WARNING identifies 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. NOTICE is used to highlight suggestions which will result in improved installation, reliability, or operation.

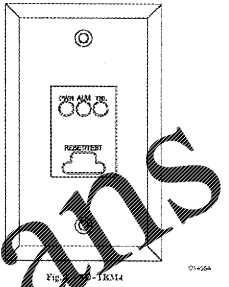
**WARNING**  
 Electrical Shock Hazard  
 Failure to follow the warning could result in personal injury or death. Before installing or servicing system, always turn off main power to system and install lockout tag. There may be more than one disconnect switch. Turn off accessory power unless it is applicable.

**CAUTION**  
 CUT HAZARD  
 Failure to follow this caution may result in personal injury. Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate clothing.

**WARNING**  
 PERSONAL INJURY AND ENVIRONMENTAL HAZARD  
 Failure to follow system instructions could result in personal injury or death. Before performing any service, always disconnect the power to the system and follow all safety instructions. Use all service parts and open all doors or panels. Use proper disposal methods for all refrigerant and other hazardous materials. Do not use any tools, including soldering irons, 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. NOTICE is used to highlight suggestions which will result in improved installation, reliability, or operation.

#### 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 magnetic to activate test and reset functions. (See Fig. 1.)



#### SPECIFICATIONS

Compatible Electrical Boxes	North American 1-gang box Standard 4-in square box, 1-1/2-in deep with 1-gang cover
LED Indicators	Alarm (red) Trouble (yellow) Power (green)
LED Type	Clear lens
Wiring Size	14 to 22 AWG
Flexibility Per Wire	10 Ω max
Current Requirements	Included in controller specifications
Compatible Detectors	SuperDuct™ Four-Wire Smoke Detectors
Operating Environment	
Temperature	-20° to 131°F (-2° to 55°C)
Humidity	93% RH, non-condensing
Storage Temperature	-20° to 60°C (-4° to 140°F)

#### REMOTE TEST/RESET STATION TESTS

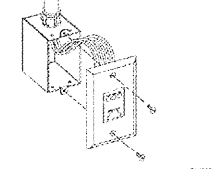
Test/reset station alarm test using the SuperDuct™ Four-Wire Smoke Detector. The test/reset station alarm test checks the detector's ability to initiate and indicate an alarm state.

**CAUTION**  
 ALARM SYSTEM ACTIVATION HAZARD  
 Failure to follow the instructions may result in unnecessary fire system activation and property loss. This test places the detector into the alarm state. Unless you are a trained technician, do not attempt an auxiliary test until you have consulted all auxiliary instructions on the controller before performing the test. If the detector is connected to a fire alarm system, consult the proper authorities before performing the test.

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

#### 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.

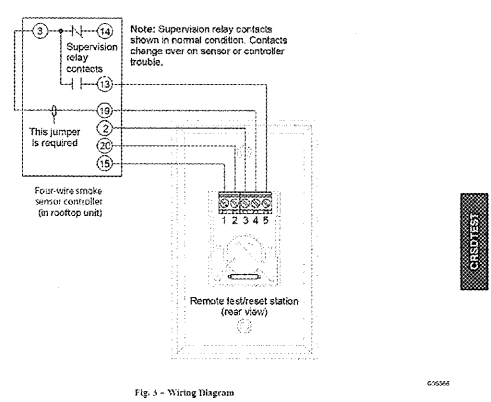


Fig. 3 - Wiring Diagram

#### 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 codes 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.

**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. Stored energy will dissipate before starting work or disassembly. High energy could be stored in the strobe circuit once it is energized.

The 6536-G5 horn/strobe (Figure 1) can be mounted on any single gang 2" x 4" 63 mm x 102 mm electrical box, double gang 4" x 4" (102 mm x 102 mm) electrical box, or standard 4" x 4" (102 mm x 102 mm) junction box with a plaster ring.

1. Install an appropriate electrical box using suitable hardware.

Table 1. Specifications	
Operating Voltage	24V 50/60 Hz 24V DC
Alarm Current	175 mA 125 mA

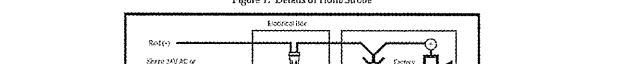
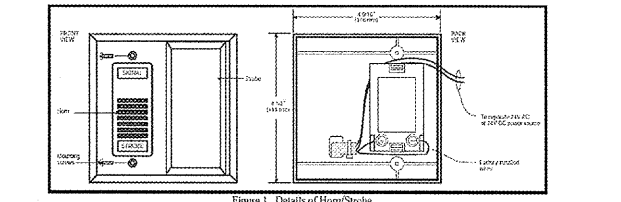


Figure 2 - Connecting the Horn and Strobe



**CRAIG A. SCHNEIDER, AIA**  
 ARCHITECT  
 1730 East Sunshine, Suite 417  
 Springfield, Missouri 65804  
 417.962.4558  
 Fax: 417.962.3265  
 e-mail: architect@esteryschneider.com

**PROJECT:**  
 NEW O'REILLY AUTO PARTS STORE  
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 CORPORATE OFFICES  
 233 SOUTH PATTERSON  
 SPRINGFIELD, MISSOURI 65802  
 (417) 882-2674 TELEPHONE

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