

**Factory Installed Smoke Detector Specification Sheet**

For Factory installed smoke detectors on 2-28 ton Commercial Rooftop Units

**APPLICABLE UNITS:** 48/50/60, FM, PD 03-28  
48/50/60, 04-30, 48/50/60, 04-28,  
48/50/60, 04-24, 50/60/60, 04-12,  
48/50/60, 50/60/60, 05-06,  
48/50/60, TM, TF 004 614  
50/60/60, TFC 004-012

**GENERAL DATA**

Type: TeoFire 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). The 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 connections to fire alarm system, HVAC controls, 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 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 but does not deliver accumulated over time flow rate. 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 through the detector's sensing chamber through a sampling tube that extends into the HVAC duct and is directed back into the recirculation 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.

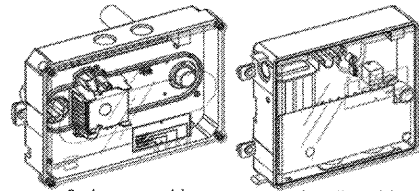


Fig. 1 - Controller and Detector (Sensor) Modules

**GUIDE SPECIFICATIONS**

**System Specifications:**

- System Type: Upgrade controller and detector modules
- Power: Four-Wire Controller and Detector
- Photoelectric Sensing
- Environmental compensation with differential sensing for reliable, stable, and drift-free accuracy
- Operating environment: Temperature: -20° to 158°F (-30° to 70° C) Humidity: 10% to 93% RH, non-condensing
- Magnet-activated test/reset station switches
- Tool-less connection terminal access
- Recessed emergency switch for testing and resetting the detector

Table 1 - Controller Terminal Connections

Terminal Number	Name
1	ALN (+)
2	Reset
3	SUPPLY Contact COM
4	Alarm Contact COM
5	Alarm Contact NO
6	AUX 1 Contact COM
7	AUX 2 Contact NO
8	AUX 2 Contact NC
9	AUX 1 Contact NO
10	24V AC/DC In (+)
11	NO Common
12	NO Switches
13	SUPPLY Contact NO
14	SUPPLY Contact NC
15	24V AC/DC In (-)
16	AUX 1 Contact NO
17	AUX 2 Contact NO
18	AUX 2 Contact COM
19	18 VDC Output (+)
20	18 VDC Output (-)
108-1	Not Used
108-2	Not Used
N	AC Neutral
L	AC Line

**Controller specifications:**

- 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 applications

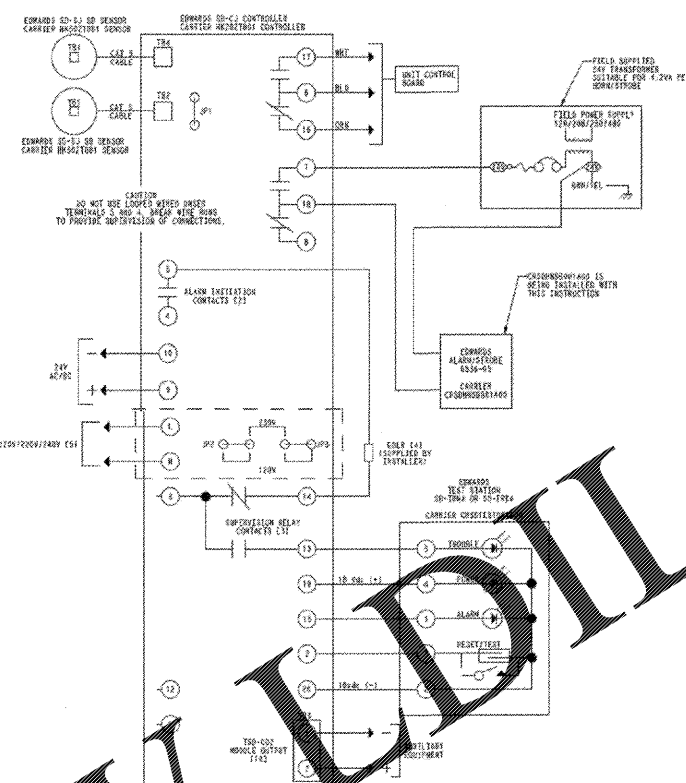
Wire Size: 12-22 AWG  
High voltage terminals: 24VAC  
All others: 20-23 VAC, 50/60 Hz  
Operating voltages: 120VAC, 50/60 Hz  
220/240 VAC, 50/60 Hz

Operating current: 175 mA  
20-25VDC: 500 mA at 50/60 Hz  
24VAC: 100 mA, 50 Hz  
120VAC: 75 mA at 60 Hz  
220/240 VAC: 40 mA at 60 Hz

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

Relays: Alarm initiation relay: 1 Form C, 2.5A at 30 VDC (resistive)  
Auxiliary relays: 2 Form C, 10A at 30 VDC  
Supervision (trouble) relay: 1 Form C, 2.5A at 30 VDC (resistive)

Detector specifications: Sensor: 8.7lb/5.4oz (247.5g)  
Smoke detection method: Photoelectric  
Air velocity (min-max): 100 - 4,000 ft/min  
Pressure differential (min-max): 0.005 - 1.00 in  
Sensitivity: 0.67 to 2.45 substrations  
Wiring size: 14 to 22 AWG  
Reset time: 2 seconds maximum  
Power up time: 3 seconds max  
Alarm lead response time: 3 to 7 seconds  
LED indicators: Red (Alarm)  
Yellow (Trouble)  
Green (Power)



**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 Magnetic Test/Reset Station.

**WARNING**

**ELECTRICAL SHOCK HAZARD**  
Failure to follow this warning could result in personal injury or death.  
Before installing or servicing system, always turn off main power to system and lockout tags. There may be more than one disconnect switch. Then cut secondary heater power circuits if applicable.

**CAUTION**

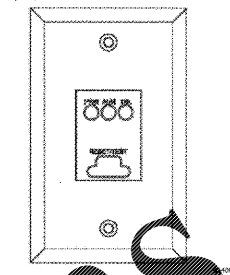
**CUT HAZARD**  
Failure to follow this caution may result in personal injury.  
Sharp metal parts may have sharp edges or burrs. Use care and wear appropriate clothing.

**WARNING**

**PERSONAL INJURY AND ENVIRONMENTAL HAZARD**  
Failure to relieve system pressure could result in personal injury or death.  
1. Relieve pressure by recovering all refrigerant before servicing any equipment, and before fielding any electrical or plumbing system.  
2. Follow manufacturer's instructions for safe practices which may result in injury or product and property damage. NOTE: High-voltage equipment which will result in serious injury, death, or property damage.

**GENERAL**

The SD-TRM4 Remote Test/Reset Station is used with the SuperDuct™ four-wire duct smoke detector. Each magnetic 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**

Dimensions	1 1/2" x 1 1/2" x 1 1/2" (38 mm x 38 mm x 38 mm)
Mounting	Standard 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	Color lens
Wire Size	14 to 22 AWG
Resistance to Vibration	10 G, rms
Current Requirements	Included in controller specifications
Compatible Detectors	SuperDuct™ Four-Wire Smoke Detectors
Operating Environment	Temperature: 30° to 133°F (0° to 55° C) Humidity: 10% RH, non-condensing Storage Temperature: -20° to 80°F (-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 system's ability to initiate and indicate an alarm condition.

**CAUTION**

**ALARM SYSTEM ACTIVATION HAZARD**  
Failure to follow this warning may result in emergency alarm activation and possible fire.  
This test places the duct detector into the alarm state. Unless part of test, disconnect all auxiliary equipment and controller before performing the test. If the test is to be connected to a fire alarm system, notify the proper authorities before performing the test.  
1. Hold magnet against the top edge of the sensor.  
2. Verify that the test/reset station's Alarm LED turns on.  
3. After the alarm test is completed using an SD-TRM4, reset the detector by holding the test magnet to the magnet arm for two seconds.  
4. 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.

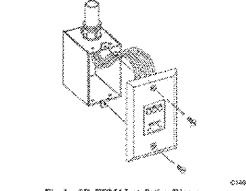


Fig. 2 - SD-TRM4 Installation Diagram

**WIRING**

Wiring the remote test/reset station to the four-wire controller is shown in Fig. 3.

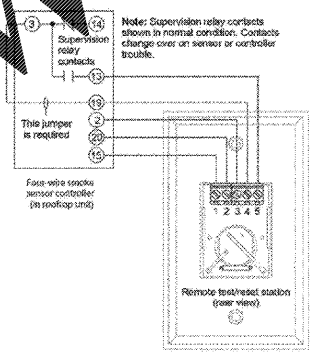


Fig. 3 - Wiring Diagram

**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 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.

1. Install in appropriate electrical box using suitable hardware.
2. Connect the three-wire leads and terminals (Figure 2). The horn and strobe are connected together in the factory.
3. Mount the horn/strobe onto the electrical box. Secure it using two screws (supplied).
4. Perform an operational test.

**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**  
To reduce the risk of shock, do not remove lens or tamper with unit when the circuit is energized. Disconnect power and allow five (5) minutes for stored energy to dissipate before starting work or disassembly. High energy could be stored in the strobe circuit once it is energized.

Table 3. Specifications		
Operating Voltage	24V 50/60 Hz	24V DC
Alarm Current	175 mA	125 mA

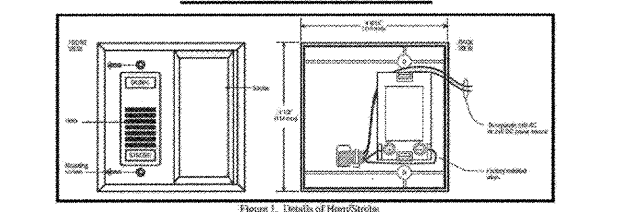


Figure 1. Details of Horn/Strobe

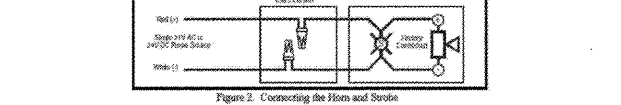


Figure 2. Connecting the Horn and Strobe

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**DUCT DETECTOR - TEST STATION - ALARM/STROBE**

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