

Factory Installed Smoke Detector Specification Sheet

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

APPLICABLE UNITS: 4850PQ, P8, PD 03-29
4850TC 04-30, 4850HC 04-20,
50TC 04-04, 50HC 04-12
4850HE, 50HE 03-09-09
4850HL, TM, TF 004 014
58HLQ, TFO 004-012

GENERAL DATA

Type: TeMA SuperDuct, 4-wire Photoelectric Sensing detector and control module.
The Carrier factory installed smoke detector system comprises a four-wire controller and set of non-recessed (Retro) Air and/or Supply Air. The primary function is to shut down the rooftop unit in order to prevent smoke flow, circulating throughout the building. It is not to be used as a fire alarm 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 station can be connected to the controller.

Detector - 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 using factory installed. The sampling tube varies in length depending on the size of the rooftop unit. The clear plastic cover permits visual inspection without having to disconnect the sensor. The cover fits on an airtight flange 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 detain accumulated over time dust. When the sensor's ability to compensate for environmental changes has reached its limit (100% alert), the sensor signals a trouble condition. An air filter should be in the duct smoke detector's sensing chamber through a sampling tube that extends into the HVAC duct and is drawn 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 sensing electronics. Additional functions such as emergency reset, faulting, Alarm System, additional fans and blowers, verify the fire alarm control panel, etc. require field wiring and configuration.

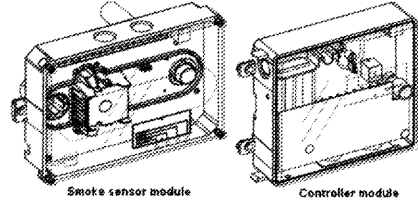


Fig. 1 - Controller and Detector (Sensor) Modules



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 150°F (-29° to 70° C)
 - Humidity: 10% to 95% RH, non-condensing
- Magnet actuated test/reset station uses:
 - 7-wire connection terminal station
 - Recessed emergency switch for testing and resetting the detector

Table 1 - Controller Terminal Connections

Terminal Number	Connections	Name
1	AUX 1	
2	Reset	
3	SMV Contact COM	Alarm Control COM
4	SMV Contact NO	Alarm Control COM
5	Alarm Contact NO	
6	AUX 1 Contact COM	
7	AUX 2 Contact NO	
8	AUX 2 Contact NO	
9	24V ACDC (V+)	
10	24V ACDC (V-)	
11	Not Used	
12	SMV Contact	
13	SMV Contact NO	
14	SMV Contact NO	
15	REM Alarm LED Jack	
16	AUX 1 Contact NO	
17	AUX 1 Contact NO	
18	AUX 2 Contact COM	
19	24V ACDC (V+)	
20	24V ACDC (V-)	
21	Not Used	
22	Not Used	
23	Not Used	
24	AC Neutral	
25	AC Line	

Controller specifications

- Controller shall include:
 - One set of normally open alarm initiation contacts for connection to an existing device circuit on a fire alarm control panel
 - Two Form C auxiliary relays for use with roof-top 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

Wire Size:
High voltage terminals: 12-22 AWG
14-22 AWG
All others: 20-26 VAC, 50/60 Hz
120 VAC, 50/60 Hz
220/240 VAC, 50/60 Hz

Operating current:

20-25VDC: 1.75 mA
24VAC: 900 mA at 50/60 Hz
120VAC: 100 mA, 50 Hz
75 mA at 60 Hz
220/240 VAC: 50 mA at 50 Hz
40 mA at 60 Hz
Red (Alarm)
Yellow (Trouble)
Green (Power)

LED indicators:

Red (Alarm)
Yellow (Trouble)
Green (Power)

Relays:

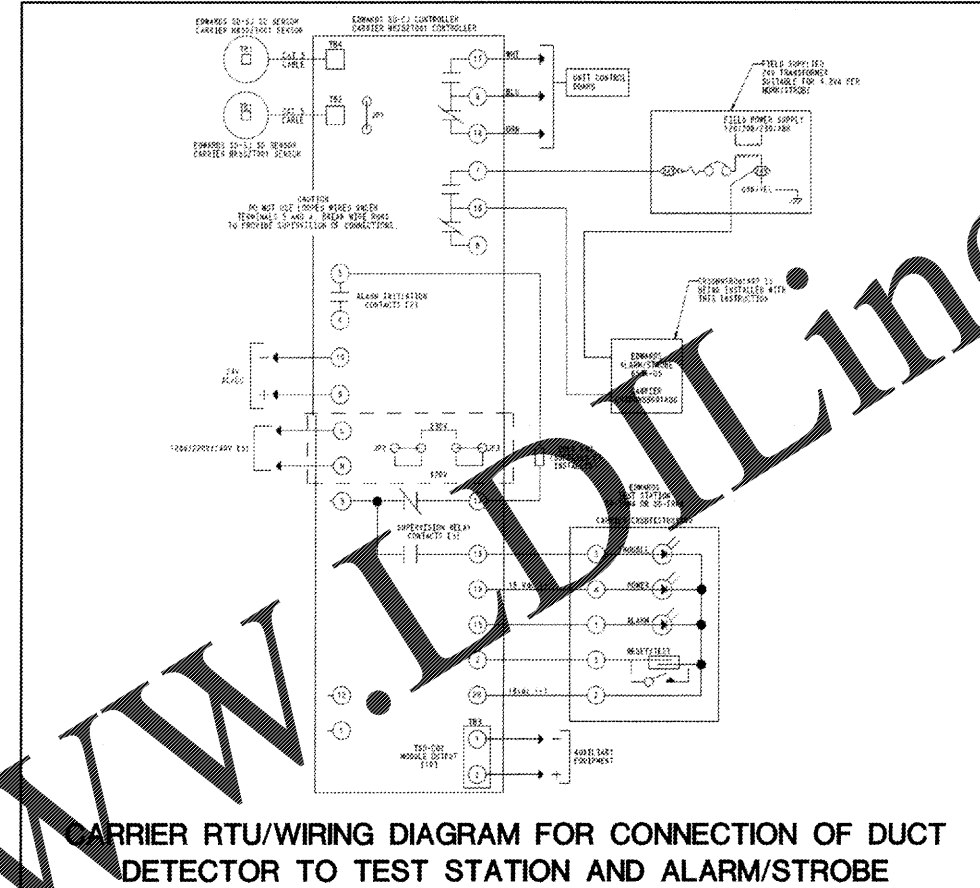
Alarm initiation relay:
Quantity: 1
Normally open
2.0 A at 30 VDC (resistive)
Auxiliary relays:
Quantity: 2
Form C
15A at 30 VDC
Supervision (trouble) relay:
Quantity: 1
Form C
2.0 A at 30 VDC (resistive)

Detector specifications:

Sensing:
Sensing detection method: Photoelectric
Air velocity (min. alert): 100 - 4,000 fpm
Response (differential (min-max)): 0.035 - 1.00 ft
Sensitivity: 0.02 to 2.45 nonreciprocal
Wire size: 14 to 22 AWG
2-wire measurement
Power up time: 6 seconds max
Alarm test response time: 5 to 7 seconds
Reset (alarm):
Yellow (Trouble)
Yellow (Dirty)
Green (Power)



Turn to the Expert



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 necessary Remote Magnet Test/Reset Station.

SAFETY CONSIDERATIONS

Installation and servicing of air conditioning equipment can be hazardous due to various pressures and electrical components. Only trained and qualified personnel should attempt repair or service this equipment. Intentional personnel who perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service

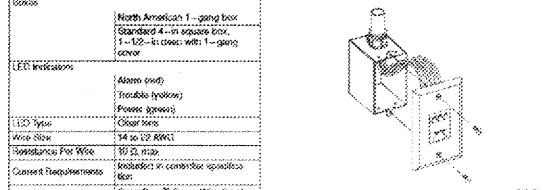
WARNING
ELECTRICAL SHOCK HAZARD
Failure to follow the warning could result in personal injury or death. Before installing or servicing systems always turn off main power to system and install lockout tag. There may be more than one disconnect switch. Turn off necessary lines power switch if applicable.

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 status. The SD-TRM4 requires a separate AC power source and connections (See Fig. 1).

CAUTION
ALARM SYSTEM ACTIVATION HAZARD
Failure to follow caution may result in unexpected alarm activation and possible fire. Do not place the duct detector into the alarm state as part of the test. Disconnect all auxiliary equipment from the controller before performing the test. If the detector is connected to a fire alarm system, verify the proper activation before performing the test.

To perform the alarm test using an SD-TRM4:
1. Hold the test magnet 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, press the reset button on the test magnet to the target area 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.



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

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	Power (green) Clear lens
Wire Size	14 to 22 AWG
Minimum Wire	14 to 22 AWG
Current Requirements	Indicated in controller specifications
Connectable Detectors	SuperDuct™ Four-Wire Smoke Detector
Operating Environment	
Temperature	20° - 151° F (0° - 50° C)
Humidity	10% RH, non-condensing
Storage Temperature	-20° to 150° F (-4° to 70° C)

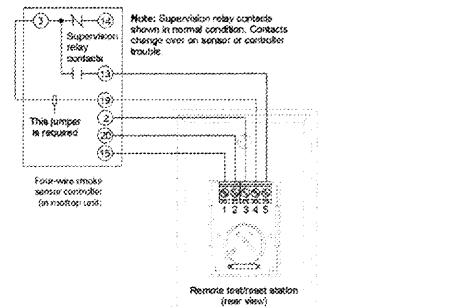


Fig. 4 - Wiring Diagram

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 personal 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. The test connector AC power until installation is complete.

WARNING
The 6536-G5 Horn/Strobe (Figure 3) can be connected on any single gang 2" x 4" (51 mm x 102 mm) electrical box, or standard 4" x 4" (102 mm x 102 mm) electrical box, or standard 4" x 4" (102 mm x 102 mm) junction box with a center ring.

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 voltage could be stored in the strobe circuit once it is energized.

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

Table 1. Specifications

Operating Voltage	24V 50/60 Hz, 24V DC
Alarm Current	175 mA, 120 mA

Figure 1. Details of Horn/Strobe

Figure 2. Connecting the Horn and Strobe

COMM # 4155
DATE: 3-23-18
REVISION DATE:

DUCT DETECTOR - TEST STATION - ALARM/STROBE

John K. Collins, P.E. MEB887
Professional Engineer
Mechanical, Electrical, Plumbing
and Fire Protection
417.862.3265
www.kcollins.com



CRAIG A. SCHNEIDER, AIA
ARCHITECT
1736 East Sunshine, Suite 417
Springfield, Missouri 65804
e-mail: architect@estertechneer.com
417.862.0558
Fax: 417.862.3265

PROJECT:
NEW O'REILLY AUTO PARTS STORE
NC STATE HWY 211
SEVEN LAKES, NC
HVAC DETAILS

O'Reilly AUTO PARTS
CORPORATE OFFICES
233 SOUTH PATTERSON
SPRINGFIELD, MISSOURI 65802
(417) 862-2674 TELEPHONE

COMM # 4155
DATE: 3-23-18
REVISION DATE: