

# Installation Instructions

## D263, D263TH, D273, and D273TH Photoelectric Smoke Detectors

### 1.0 GENERAL INFORMATION

The D263, D263TH, D273, and D273TH are U.L. Listed, open-area photoelectric smoke detectors designed for use with commercial fire protective signaling and household fire warning systems (see NFPA 72, "The National Fire Alarm Code").

For commercial and industrial installations, 30 ft. (9.2 m) spacing between detectors is recommended (in accordance with NFPA 72).

An LED indicator flashes approximately every 3.5 seconds to verify that the detector has power and that the smoke sampling circuitry is functioning. The LED will latch ON in the event of an alarm, allowing the user easy verification of individual detector alarms. The detector can be reset, after the alarm condition has been cleared, by power interruption.

Power supervision requires an optional End-of-Line Power Supervision device such as a D275 (for D273 and D273TH) and an EOL resistor as specified by the control manufacturer (for all four detectors).

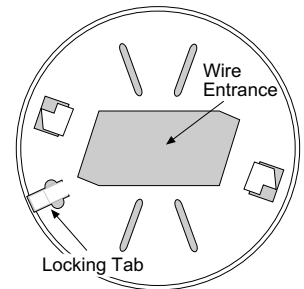
### 2.0 SPECIFICATIONS

- Description:**

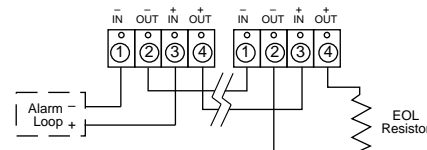
D263	2-Wire Photoelectric Smoke Detector
D263TH	2-Wire Photoelectric Smoke Detector with integral 135°F (56°C) heat sensor
D273	4-Wire Photoelectric Smoke Detector
D273TH	4-Wire Photoelectric Smoke Detector with integral 135°F (56°C) heat sensor
RC1-10	Replacement Chamber (sold in packs of 10)
- Operating Temperature:** +32 to +100°F (0 to +38°C). 0 to 95% relative humidity (non-condensing).
- Standby Voltage:** 2-wire = 8.5 to 33.0 VDC  
4-wire = 10.0 to 30.0 VDC
- Maximum RMS Ripple:** 25 percent of DC input.
- Start-up Current:** 120 micro-amps maximum.
- Standby Current:** 80 micro-amps @ 12 VDC  
90 micro-amps @ 24 VDC  
100 micro-amps @ 30 VDC
- Alarm Current:** 2-wire: Dependent on control panel. Panel must limit the alarm current to 100 mA maximum.  
4-wire: 16 mA @ 12 VDC  
17 mA @ 24 VDC  
(18 mA max. @ 30 VDC)
- Power-up Time:** 22 seconds maximum.
- Compatible Control Panels:** D263/D263TH: For control panel compatibility information see Technogram P/N 31866.  
D273/D273TH: Compatible with all U.L. Listed 4-wire control panels. Refer to control panel Installation Instructions for End-of-Line resistor selection
- Patents:** These smoke detectors are protected by one or more of the following patents: #5,400,014, #5,543,777, #D339,078, #DES,293,089.

### 3.0 MOUNTING AND WIRING

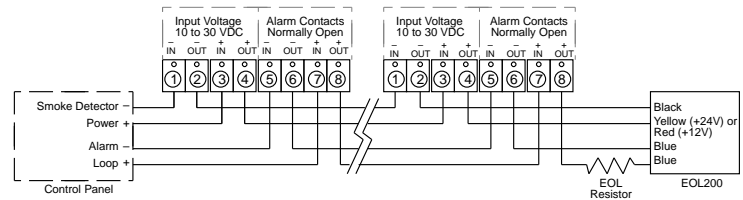
- Before mounting, remove the dust cover from the detector. The dust cover may be replaced during construction periods, but **must be removed once the alarm system is enabled.**
- Remove the detector from the mounting plate by pressing the locking tab and twisting. *If the locking tab is not desired, it can be broken off now.*
- Install the mounting plate and pull the wiring through the wire entrance.
- Connect wiring as shown below. The terminal block is removable. It may be easier to remove the terminal block from the detector before connecting wiring. To remove the terminal block, pull back, then up.



#### D263 / D263TH



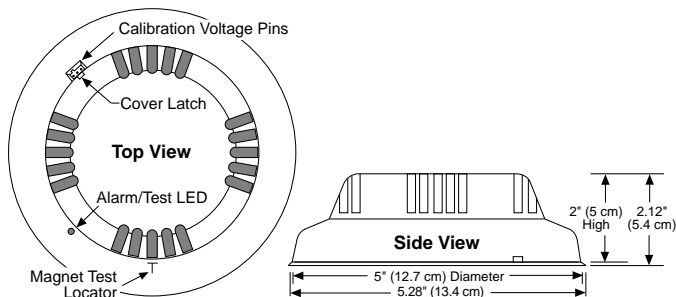
#### D273 / D273TH



- Connect the detector to the mounting plate. Twist it clockwise into place.

### 4.0 OPERATIONAL TESTING

- Note:** It is important to notify all concerned parties prior to any maintenance or testing of the fire alarm system, and then again after completion.
- Apply power to the system. Check for alarms.
  - Note which detectors are in alarm (if any), then shut the system down. Remove these detectors and re-check for proper wiring. If the problems persist, replace the affected detectors or swap them with known good units. This will determine if the problem is caused by the detector.
  - In the event of a system alarm with no detector alarms present, remove all detectors and check the wiring. Pay close attention to the wiring of each EOL Resistor and EOL Module.
- When the system is free of alarms, check each detector to ensure that the red LED indicator is flashing approximately every three seconds. This verifies that the detector is receiving power and operating properly.
- Test each detector to ensure it will cause a control panel alarm.
- To alarm the detectors, do one of the following:
  - Place a magnet horizontally against the detector's side (centered over the T marked on the head) to activate an internal reed switch, or use a U.L. Listed Aerosol smoke detector tester such as the Home Safeguard Industries' 25S to simulate an alarm. Follow the instructions with the Aerosol smoke detector tester.
- Note:** When a detector alarms, the red LED indicator will activate and latch ON. Be sure to clear the alarm by momentarily removing power before proceeding to the next detector. Clear alarms from each test before proceeding to the next detector.



## 5.0 SENSITIVITY TESTING

**Note:** The calibration of the detector is very important in determining its continued operation. Depending on local regulations, the frequency of calibration testing may be required more often than once a year. The National Fire Protection Association (NFPA) Standard 72, "The National Fire Alarm Code" recommends calibration tests be made at installation, then every other year, and Functional testing should be done monthly.

The sensitivity can be tested (to meet NFPA 72 "The National Fire Alarm Code" requirements) using either the magnet test or measuring the calibration voltage pins using a D1005 Test Cable. The calibration can also be quickly determined by a visual inspection of the detector's LED (see the Visual Check section below). These tests will confirm whether or not the detector is within its factory marked calibration range.

### Visual Check

This detector includes the Chamber Check™ Automatic Trouble Indication which allows the detector to automatically indicate if its calibration is out of the factory listed range. This allows you to meet the NFPA guidelines for sensitivity testing by visually inspecting the detector and checking the flash rate of the LED.

If the calibration is out of range for more than 24 hours, the alarm LED on the detector will begin to flash approximately once per second. The LED will flash approximately once every 3.5 seconds when the detector is operating normally.

**Note:** Perform the visual check on all detectors before resetting power. Disconnecting the detector power will erase this indication. If the detector has been reset within the last 24 hours, or you are unsure of the last reset time, you should use the magnet test or voltage output to confirm the sensitivity.

### Magnet Test

- Hold a magnet horizontally against the detector, centered over the "T" (see graphic on p. 1, column 1), for about 10 seconds. Observe the LED.
  - If the detector is within the factory marked calibration range, it will go into alarm and the alarm LED will latch ON.
  - If the detector is too sensitive, the LED will flash 6 times rapidly (once every 1/2 second) and then the detector will go into alarm.
  - If the detector is not sensitive enough, the LED will flash 4 times slowly (once every two seconds) and then the detector will go into alarm.
  - If the detector is not operational, it will not signal an alarm. Return the unit for repair.

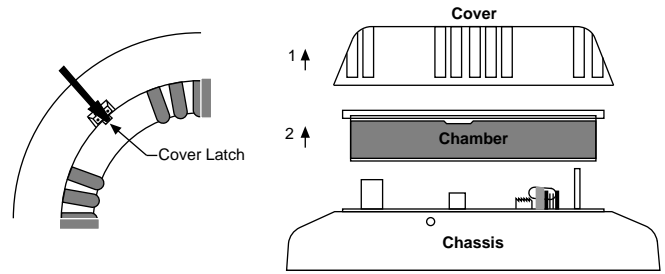
### Voltage Measurement Test

- Plug a D1005 Test Cable (an option) into the calibration voltage pin.
- Connect a digital voltmeter to the D1005 Test Cable. Connect the negative terminal of the meter to the black wire of the D1005 and connect the positive terminal of the meter to the test cable's red wire. **The white wire of the D1005 is not used.**
  - The voltage measured by the voltmeter equals 1/2 the sensitivity (in %/ft. obscuration) of the detectors.
  - Multiply the voltage by 2. The result should be within the factory marked calibration range printed on the label on the bottom of the detector.
- If the detector is outside of the factory marked calibration range, it should be removed and cleaned, or replaced as described in Section 6.0.
- After cleaning, or replacing the chamber:
  - Re-check the calibration voltage measurement.
  - If the detector is still outside of the factory marked calibration range, return the unit for re-calibration.

## 6.0 MAINTENANCE

- At least once a year, the detector cover should be cleaned. Use a vacuum, clean/dry compressed air, or water. Particular attention should be paid to the screens. In dusty areas or areas of heavy insect concentration, cleaning may be required more often. If cleaning the chamber is not a desirable option, it can be replaced using the RC1-10.

- To clean the detectors, perform the following:
  - Remove the detector from the mounting plate and disconnect the terminal strip.



- Insert a thin, flathead screwdriver into the cover latch and pry the cover away from the chassis.
- Grasp the chamber and pull it up and away from the chassis.
- With the chamber removed, clean the inside of the cover with a vacuum or clean/dry compressed air, or water.
- Clean the inside of the chamber with a vacuum or clean/dry compressed air. **Do not clean with water.** At this point, instead of cleaning the chamber, you may choose to replace it with an RC1-10 Replacement Chamber.
- Replace the chamber. **Hint:** place the chamber parallel to the chamber, then gently snap the locking tabs into place.
- Replace the cover.
- Connect the terminal strip and return the detector to its mounting plate.

**Important:** *The detectors should be tested for proper calibration after cleaning or chamber replacement.*

- Do not paint the detectors. Paint or other foreign matter covering the screens may prohibit or retard smoke from entering the detector.

## 7.0 THERMISTOR TEST (for D263TH and D273TH only)

Expose the thermistor to a heat source such as a hair dryer or a shielded heat lamp. Expose the thermistor until the detector goes into alarm and the alarm LED latches on. If the unit does not go into alarm, send the unit back to Detection Systems, Inc. for repair.

**Note:** Be sure to clear each alarm for each test before proceeding to the next detector.

## FCC COMPLIANCE NOTICE:

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in strict accordance with the manufacturer's instructions and recommendations, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- 1) Re-orient or relocate the receiving antenna.
- 2) Increase the separation between the equipment and the Receiver.
- 3) Connect the equipment into an outlet on a circuit different from the Receiver.
- 4) Consult the installing company or an experienced radio/TV technician for help.

The booklet, "How to Identify and Resolve Radio-TV Interference Problems," prepared by the FCC may prove helpful. It is available from the U. S. Government Printing Office, Washington, DC 20402. Specify Stock No. 004-000-00345-4.

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Radionics, Inc., 1800 Abbott Street  
Salinas, CA, 93901, U.S.A.  
Customer Service: (800) 538-5807