D263/D273 Series



Security Systems

EN

Installation Instructions

Photoelectric Smoke Detector

BOSCH

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Notice

Install, test, and maintain the D263/D273 Series according to these instructions, NFPA 72, Local Codes and the authority having jurisdiction (AHJ). Failure to follow these instructions can result in the detectors not operating properly.

Bosch is not responsible for improperly installed, tested, or maintained devices.

Follow the procedures in these instructions to avoid personal injury or damage to equipment.

NFPA 72 requires performing a complete system-wide functional test following modifications, repairs, upgrades, or adjustments to the system's components, hardware, wiring, programming, software, and firmware.

FCC Compliance

This device complies with Part 15 of the FCC Rules and the RSS-210 of Industry and Science Canada.

Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesirable operation.

Changes or modifications not expressly approved by Bosch Security Systems can void the user's authority to operate the equipment.

1.0 Overview

These instructions cover the D263/D273 Series Photoelectric Smoke Detector installations in a fire system supervised by a Bosch fire alarm control panel (FACP).

The D263/D273 Series are UL Listed, open-area detectors designed for use with commercial fire protective signaling and household fire warning systems (refer to NFPA 72).

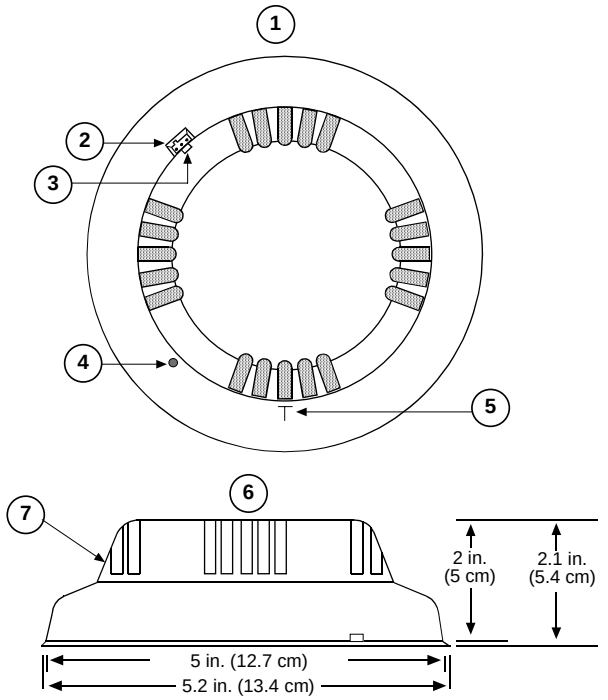
For commercial and industrial installations, space the detectors 30 ft (9.2 m) apart as recommended by NFPA 72.

An LED indicator flashes approximately every 3.5 sec to verify the detector has power and the smoke sampling circuitry is functioning. The LED latches ON during an alarm, allowing the user to easily verify individual detector alarms. After you clear the alarm condition, reset the detector by interrupting power.

The LED on the D273IS latches on during an alarm from heat but not from smoke.

Power supervision requires an optional end-of-line (EOL) power supervision device such as a D275, on the D273 Models without EOL relay, and an EOL resistor as specified by the control panel manufacturer. The D273ES, D273THE and D273THES have a built in EOL supervision relay and can be used as an equivalent to the D275.

Figure 1: D263/D273 Series Detector Top and Side Views



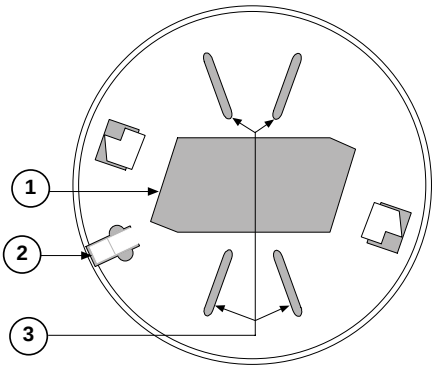
1 - Top view
2 - Calibration voltage pins
3 - Cover latch
4 - Alarm and Test LED
5 - Magnet Test locator
6 - Side view
7 Dust cover

2.0 Mounting

1. Remove the dust cover. The dust cover can be replaced during construction periods, but it must be removed after the alarm system is enabled.
2. Remove the detector from the mounting plate by pressing the locking tab and twisting it counterclockwise. If you do not want the locking tab, break if off now (refer to *Figure 2*).
3. Install the mounting plate, insert the wiring, and pull the wiring through the wire entrance.

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Figure 2: Mounting a D263/D273 Series Detector



1 - Wire entrance
2 - Locking tab
3 - Mounting holes

3.0 Wiring

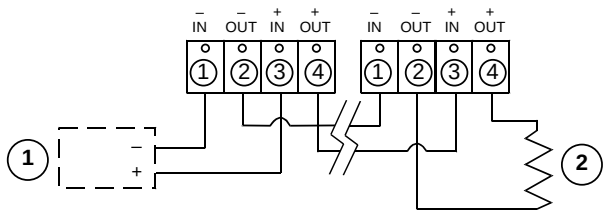
Before connecting or disconnecting any D263/D273 Series Detectors, remove all AC and battery power from the FACP. Failure to do so can result in personal injury and damage to the equipment.

The terminal block is removable. It might be easier to remove the terminal block from the detector before making the wire connections. Remove the terminal block by pulling it back and then pulling up. Refer to *Figures 3 through 8* on pages 3 through 5 for wiring details.

When all wiring connections are made, connect the detector to the mounting plate by twisting it clockwise into place.

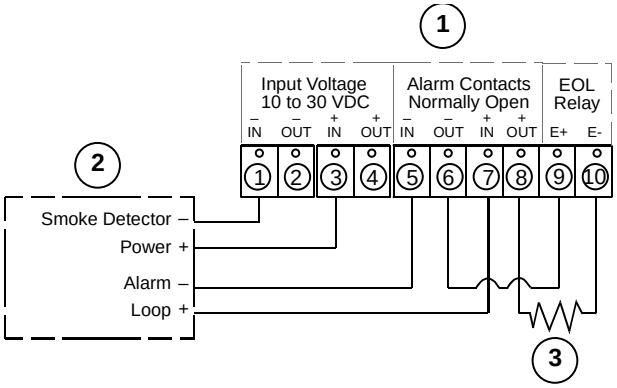
Refer to your control panel's installation instructions for EOL resistor selection.

Figure 3: D263 Series/D263TH Wiring



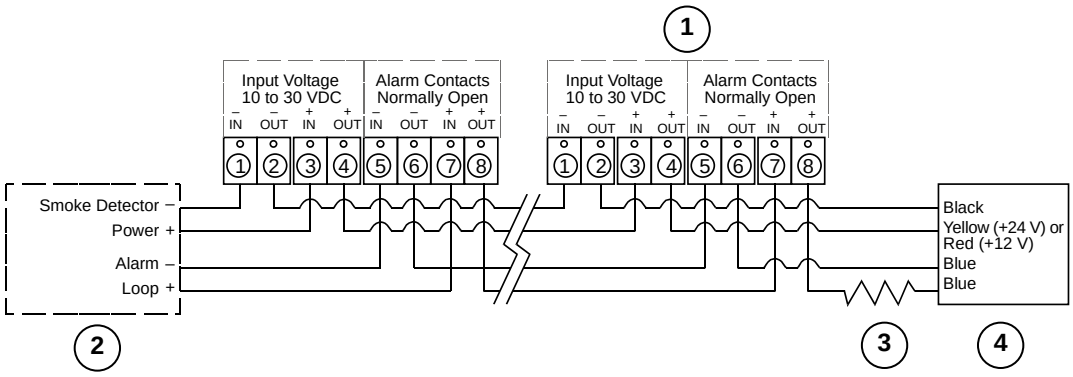
1 - Alarm loop
2 - EOL resistor

Figure 4: D273ES/D273THES Wiring



1 - Last detector
2 - Control panel
3 - EOL resistor

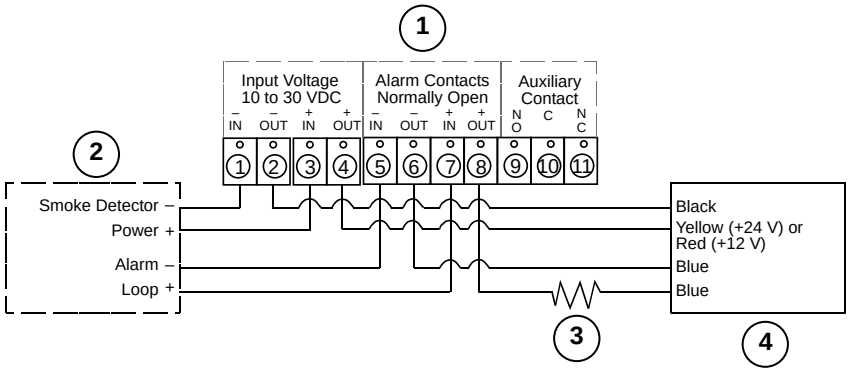
Figure 5: D273/D273TH Wiring



1 - Last detector
2 - Control panel
3- EOL resistor
4 - D275 EOL Power Supervision Module

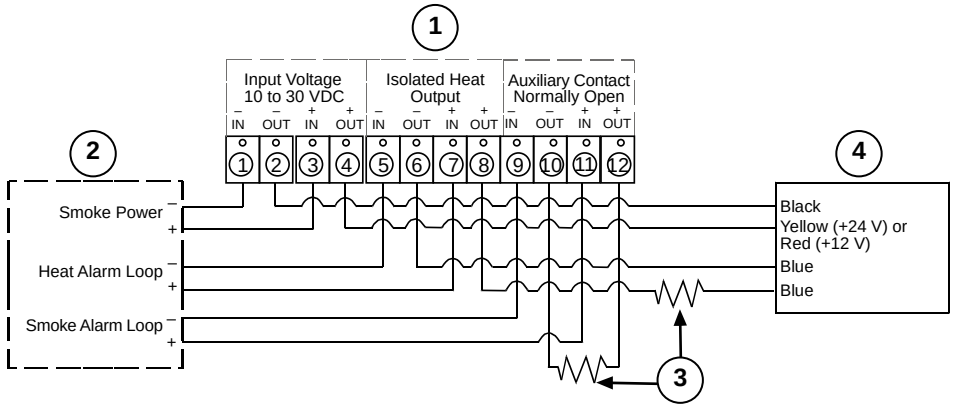
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Figure 6: D273THS/D273THC/D273THCS Wiring



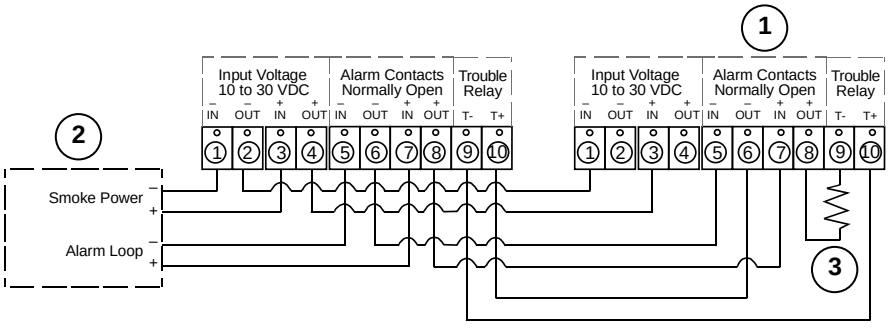
1 - Last detector
2 - Control panel
3 - EOL resistor
4- D275 EOL Power Supervision Module
Note: Auxiliary contact wiring is for the D273THS, D273THC, and D273THCS Models only

Figure 7: D273IS Wiring



1 - Last detector
2 - Control panel
3- EOL resistor
4 - D275 EOL Power Supervision Module

Figure 8: D273THR/D273THSR Wiring



1 - Last detector
2 - Control panel
3- EOL resistor

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4.0 Testing

4.1 Operational Testing

Before and after maintaining or testing the fire alarm system, notify all concerned parties.

1. Apply power to the system and check for alarms.
   a. Note which detectors are in alarm (if any) and remove power to the system.
   b. Remove the alarmed detectors and recheck for proper wiring.
   c. If the problems persist, replace the affected detectors or swap them with known good units. This determines if the problem is caused by the detector.
   d. If there is 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.
2. When the system is free of alarms, check each detector to ensure the red LED indicator is flashing approximately every 3.5 sec. This verifies the detector is receiving power and operating properly.
3. Test each detector to ensure it causes a control panel alarm. Do one of the following to alarm the detectors:
   - Place a magnet horizontally against the detector's side, centering it over the "T" marked on the head activating an internal reed switch. On the D273IS this activates the heat detector relay and latches, or
   - Use a UL Listed aerosol smoke detector tester such as the Home Safeguard Industries' 25S to simulate an alarm. Follow the tester instructions. On the D273IS this energizes the smoke detector relay and it remains in this state as long as smoke is in the chamber (non-latching).

When a detector alarms, the red LED indicator activates and latches ON.

Clear the alarm by momentarily removing power before proceeding to the next detector. Clear alarms from each test before proceeding to the next detector.

4.2 Sounder Testing

The sounders on the D263THS, D273ES, D273THES, D273THS, and D273THSR produce a steady tone (latching) from any alarm condition. The D273IS produces a steady tone from a heat alarm (latching) and a temporal pattern from a smoke alarm (non-latching). If using a D132B, the sounder produces a pattern the same as the notification appliance circuit (NAC) control panel.

4.3 Sensitivity Testing

You must calibrate the detector for continuous operation. Depending on local regulations, calibration testing might be required more than once a year. NFPA 72 recommends calibration testing at installation, and then every other year. Perform a Functional Test annually.

Test the detector's sensitivity to meet NFPA 72 requirements by conducting a Magnet Test, or measuring the calibration voltage pins with a D1005 Test Cable. You can also visually inspect the detector's LED to quickly determine calibration as described in *Section 4.3.1 Visual Check*.

The sensitivity tests confirm if the detector is within its factory-marked calibration range.

4.3.1 Visual Check

The D263/D273 Series detectors include the Chamber Check® Automatic Trouble Indication allowing the detector to automatically indicate when its calibration is out of the factory listed range. Use Chamber Check® to meet 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 h, the detector's Alarm LED begins to flash approximately once per second. The LED flashes approximately once every 3.5 sec when the detector is operating normally.

Perform the visual check on all detectors before resetting power. Disconnecting the detector power erases this indication.

If the detector was reset within the last 24 h or you are unsure of the last reset time, perform a Magnet Test or check the voltage output to confirm the sensitivity.

4.3.2 Magnet Test

Hold a magnet horizontally against the detector, centered over the "T" for about 10 sec, and observe the LED (refer to *Figure 1* on page 3).

- If the detector is within the factory marked calibration range, it activates an alarm and the Alarm LED latches ON.
- If the detector is too sensitive, the LED rapidly flashes six times (once every 1/2 sec). Then the detector activates an alarm.
- If the detector is not sensitive enough, the LED slowly flashes four times, once every 2 sec, and the detector activates an alarm.
- If the detector is not operational, it does not activate an alarm. Return the unit for repair.

4.3.3 Voltage Measurement Test

1. Plug a D1005 Test Cable into the calibration voltage pins.

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2. Connect a digital voltmeter to the D1005 Test Cable.

   Connect the negative terminal of the meter to the black wire of the D1005, and then 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 is half the detector's sensitivity, in %/ft (m) obscuration.

3. Multiply the voltage by "2."

   Ensure the result is within the factory-marked calibration range printed on the label on the bottom of the detector.

4. If the detector is outside the factory-marked calibration range, remove it and clean it. Or replace is as described in *Section 5.0 Maintenance* on page 7.

5. After cleaning the chamber, recheck the calibration voltage measurement. If the detector is still out of range, return it for re-calibration.

4.4 Thermistor Test (For TH and IS models)

Expose the thermistor to a heat source, such as a hair dryer or a shielded heat lamp, until the detector activates an alarm and the Alarm LED latches on.

The D273IS has a separate smoke and heat relay. Only the heat relay changes states during this alarm.

Before proceeding to the next detector, clear each alarm for every test.

Pay particular attention to the screens when cleaning the detector. In dusty areas or areas of heavy insect concentration, you might need to clean the screens more often.

Unlatch and pry the cover away from the chassis. Refer to *Items 1 through 3* in *Figure 9*.

1. Grasp the chamber and pull it up and away from the chassis. Refer to *Items 4 and 5* in *Figure 9*.
2. Clean the cover's interior with a vacuum or clean and dry compressed air.
3. Clean the chamber's interior with a vacuum or clean and dry compressed air.

Do not clean the chamber's interior with water.

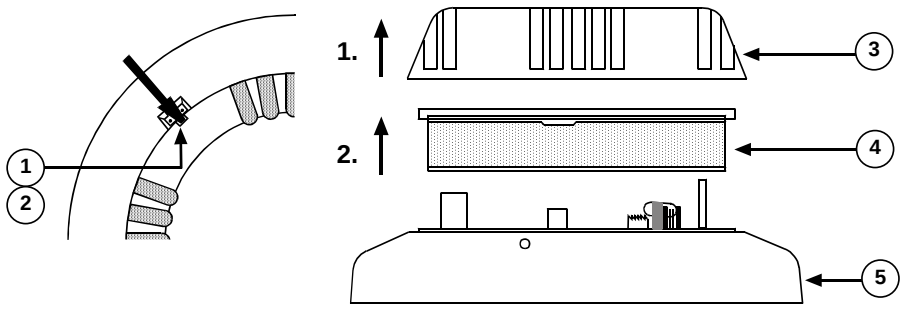
4. Replace the chamber by placing it parallel to the chassis and gently snapping the locking tabs into place.
5. Replace the cover.
6. Connect the terminal block and return the detector to its mounting plate.
7. Test the detector for proper calibration.

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

5.0 Maintenance

At least once a year, clean the detector.

Figure 9: Cleaning the D263/D273 Series Detector



1 - Insert flat head screwdriver
2 - Cover latch
3 - Cover
4- Chamber
5 - Chassis

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6.0 Specifications

Table 1: Specifications

	D263 Series	D273 Series
Wiring	Two-wire	Four-wire
Standby Voltage	8.5 VDC to 33 VDC	10 VDC to 30 VDC
Maximum RMS Ripple	25% of DC input	
Current	Refer to *Table 2*.	
Power up	22 sec maximum	
Relay Contacts	Form A: 0.5 A; 200 VDC Form C: 120 VAC/30 VDC at 1 A, 30 W maximum	
Operating Temperature	+32°F to +100°F (0°C to +38°C); 0 to 95% RH	
Dimensions (H x D)	2 in. x 5 in. (5.1 cm x 12.7 cm)	
Control Panel Compatibility	Refer to *Technical Service Note: Two-Wire Smoke Detector Compatibility* (P/N: 31866).	Compatible with all UL Listed, four-wire control panels. For EOL resistor selection, refer to the specific control panel's installation instructions.
Patents	Smoke detectors are protected by one or more of patents #5,400,014; #5,543,77; #D339,708; #DES293,089	

Table 2 lists the types of the D263/D273 Series Models.

Table 2: D263/D273 Series Models

Model	Circuit Type	135°F (57°C) Heat Sensor	85 dB Sounder	Trouble Relay	EOL Relay	Auxiliary Relay	Current Draw	
							Standby	Alarm
D263	Two-wire						100 µA maximum	Determined by control panel*
D263TH	Two-wire	X					100 µA maximum	Determined by control panel*
D263THC	Two-wire	X				X	100 µA maximum	Determined by control panel*
D263THS	Two-wire	X	X				100 µA maximum	Determined by control panel*
D273	Four-wire						100 µA maximum	18 mA maximum
D273ES	Four-wire		X		X		15 mA	96 mA maximum
D273IS	Four-wire	Isolated	X				140 µA maximum	100 mA maximum
D273TH	Four-wire	X					100 µA maximum	18 mA maximum
D27THC	Four-wire	X				X	100 µA maximum	33 mA maximum
D273THCS	Four-wire	X	X			X	100 µA maximum	90 mA maximum
D273THE	Four-wire	X			X		15 mA	36 mA maximum
D273THES	Four-wire	X	X		X		15 mA	96 mA maximum
D273THR	Four-wire	X		X			18 mA maximum	36 mA maximum
D273THS	Four-wire	X	X				100 µA maximum	78 mA maximum
D273THSR	Four-wire	X	X	X			15 mA	96 mA maximum

* Control panel must limit alarm current to 100 mA maximum.

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