

# D7050/D7050TH



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Installation Instructions

Multiplex Photoelectric  
Smoke Detectors

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## Notices

These instructions cover the installation of the D7050/D7050TH Multiplex Photoelectric Smoke Detectors on a D7024 or DS9400M 24 VDC Fire Alarm Control Panel (FACP) with a D7039 or DS9431 Multiplex Expansion Module installed. The D7024 and DS9400M FACPs require ROM version 2.0 or greater.

Install, test, and maintain the D7050/D7050TH according to these instructions, NFPA 72, local codes, and the Authority Having Jurisdiction (AHJ).



Follow the procedures in these instructions to avoid personal injury and damage to equipment. Failure to follow the procedures can cause the D7050-D7050TH to not operate properly. Bosch is not responsible for improperly installed, tested, or maintained devices.

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules and with RSS-210 of Industry and Science Canada. Operation is subject to the following conditions:

- This device does not cause harmful interference.
- This device must accept any interference received, including interference that might cause undesirable operation.

## 1.0 Description

The D7050/D7050TH are Underwriters Laboratories, Inc. (UL) Listed, open-area multiplex photoelectric smoke detectors. The D7050TH includes a built-in  $+135^{\circ}\text{F} \pm 5^{\circ}\text{F}$  ( $+57^{\circ}\text{C} \pm 2.7^{\circ}\text{C}$ ) heat detector. Both detectors can be used with the D7024 or DS9400M FACP containing a D7039 or DS9431 Module.

Each detector uses a D7050-B6 or MXB2W detector base.

For commercial and industrial installations, space the D7050/D7050TH 30 ft (9.2 m) according to NFPA 72.

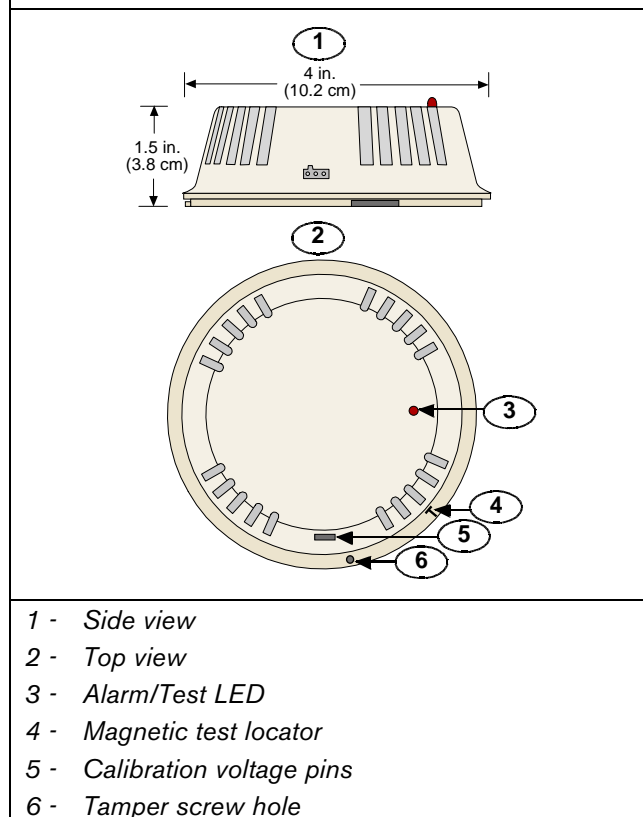


Wall-mounted smoke detectors must be at least 4 in. (10.2 cm) and no more than 12 in. (30.5 cm) below the ceiling.

An LED indicator flashes every 3 to 8 sec confirming the detector has power and the smoke sampling circuitry functions. The LED flashes at least once each second in an alarm allowing you to easily confirm individual detector alarms. The detector automatically resets after the alarm condition clears.

Refer to *Figure 1* for the D7050/D7050TH's dimensions and components.

**Figure 1: D7050/D7050TH Side and Top Views**



## 2.0 Installation



Do not use shielded cable.

For multiplex bus wiring requirements, refer to the *D7024 Operation and Installation Guide* (P/N: 31799), the *DS9400M Reference Guide* (P/N: 44578), the *D7039 Installation Guide* (P/N: 38685), or the *DS9431 Installation Instructions* (P/N: 41381).

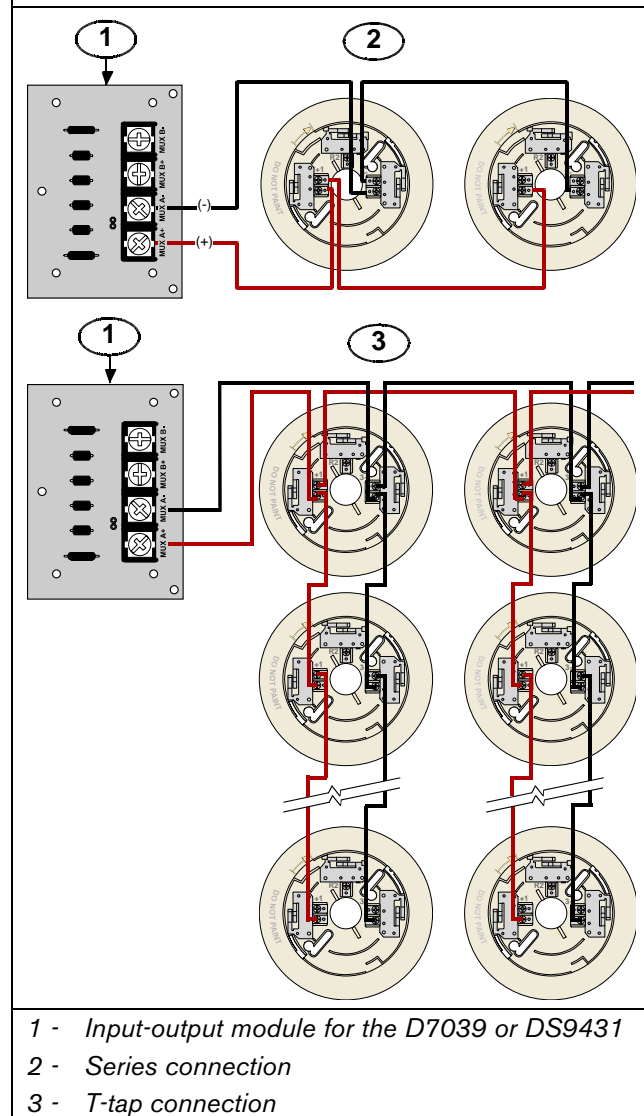


Do not exceed a maximum line resistance of 50  $\Omega$ .

## 3.0 Wiring the D7050-B6 Base

You can wire the D7050-B6 Base in series or T-tap (refer to *Figure 2*).

**Figure 2: Wiring the D7050-B6 Base**



You can replace the dust cover during construction periods, but it must be removed once the alarm system is enabled.

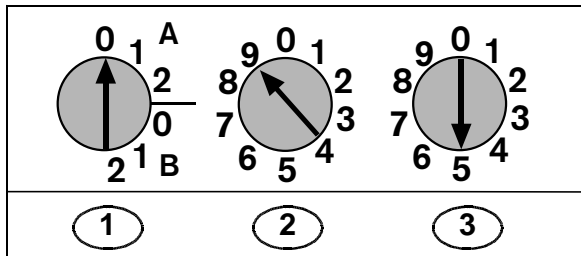
## 4.0 Setting the Address



Set the D7050's address before connecting to the control panel and applying power. The address number is the same as the input point or zone number.

Set the D7050's address using a flat-blade screwdriver to position the rotary switches (*Figure 3*) located on the front. Note that the switches click when turned.

**Figure 3: Setting the D7050 Address**



1 - Hundreds    2 - Tens    3 - Ones

A = D7024 FACP, B = DS9400M FACP

For example:

0 hundreds, 9 tens, 5 ones = Address 95 on the D7024 FACP

The valid address range is from 009 to 255. Refer to the *D7024 Operation and Installation Guide* (P/N: 31499) or the *DS9400M Reference Guide* (P/N: 44578) for additional address limitations.



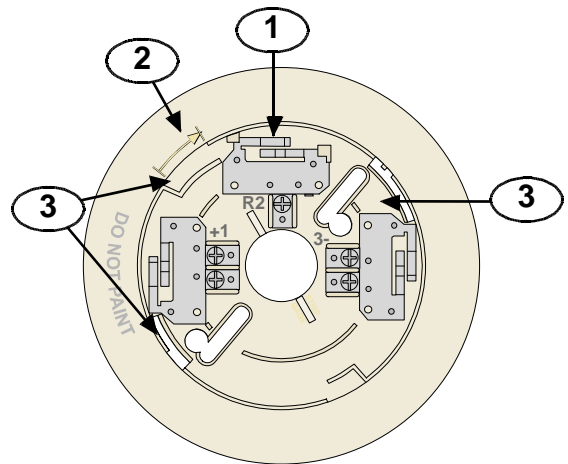
The A address range works on the D7039 Multiplex Expansion Module with the D7024 FACP. The B address range works on the DS9431 Multiplex Expansion Module with the DS9400M FACP.

*Figure 3* shows the A address range set at 095, allowing the D7039 to work with the D7024 FACP.

## 5.0 Mounting

1. Unscrew the tamper screw located in the recess on top of the dust cover.
2. Remove the dust cover from the detector. You can replace the dust cover during construction periods, but it must be removed once the alarm system is enabled.
3. Mount and wire the base according to its instructions.
4. Mount the detector on the base, turning it clockwise until it clicks into place. When secure, the alignment line aligns with the tamper screw hole (refer to *Figure 4*).

**Figure 4: Mounting D7050/D7050TH on the Base**



1 - Base contacts (3)

2 - Alignment arrow

3 - Insert detector contacts here and rotate clockwise



The detector is keyed. Do not force the detector onto the base.

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## 6.0 Programming

Refer to the control panel's reference guide for multiplex programming instructions.

## 7.0 Testing

Test the D7050/D7050THs immediately after installation. Also test these detectors according to the NFPA 72 or more often as required by local code.

### 7.1 Operational Testing



Notify all concerned parties before and after completing maintenance on or testing the fire alarm system.

1. Apply power to the system and check for alarms.
  - a. Note any detectors in alarm, as indicated by one or more flashes per second, and shut down the system if there are any alarms.
  - b. Remove the alarmed detectors and recheck for proper wiring.
  - c. If problems continue, replace the affected detectors or swap them with known good units to determine if the problem is caused by the detector.
2. When the system is free of alarms, check each detector to ensure the red LED indicator flashes approximately every 3 to 8 sec to confirm the detector properly operates.
3. Test each detector to ensure it causes a control panel alarm.
4. Alarm the detectors by doing one of the following:
  - a. To activate an internal reed switch, place a magnet horizontally against the detector's side and centered over the "T" marked on the head.
  - b. Use a UL 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.
5. When a detector alarms, the red LED indicator activates and flashes at least once per second. Clear the alarm by initiating a System Reset before proceeding to the next detector.

### 7.2 Sensitivity



Calibration is important in determining a detector's continued operation. Depending on local regulations, calibration testing might be required more often than once a year. According to NFPA 72, perform a Calibration Test at installation and every other year thereafter. Perform a Functional Test monthly.

Test the sensitivity to meet NFPA 72 requirements by conducting a Magnet Test (*Section 7.2.3 Magnet Test* on page 6), or by measuring the calibration voltage pins using a D1005 Test Cable (*Section 7.2.4 Voltage Measurement Test* on page 6). Visually inspect the detector's LED to quickly determine the calibration (*Section 7.2.2 Visual Check*). These tests confirm whether or not the detector is within its factory marked calibration range.

#### 7.2.1 Sensitivity Test

The control panel continually monitors the D7050/D7050THs. If it exceeds the limits of the sensitivity thresholds, the control panel reports the detector in question and generates a fault condition.

#### 7.2.2 Visual Check

The D7050/D7050TH includes the Chamber Check Automatic Trouble Indication that allows it to automatically show if its calibration is out of the factory listed range. This check meets the NFPA guidelines for sensitivity testing by visually inspecting the detector and checking the LED flash rate.

If the calibration is out of range during power up or longer than 24 h, the Alarm LED begins double flashing. The LED flashes approximately once every 3 to 8 sec when the detector operates normally.



Visually check all detectors before disconnecting the multiplex bus. Disconnecting the bus erases the Chamber Check Automatic Trouble Indication. If the detector was disconnected or the control panel lost power within the last 24 h, perform a Magnet Test or Voltage Measurement Test to confirm sensitivity.

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### 7.2.3 Magnet Test



Ensure the control panel is in the Fire Walk Test Mode before performing a Magnet Test. If the control panel is not in this mode, it sends Fire Reports to the central station. Refer to your control panel reference guide for Fire Walk Test information.

Hold a magnet horizontally against the detector for approximately 10 sec, centering it over the T on the housing. Observe the LED.

- If the detector is within the factory marked calibration range, it goes into alarm and the Alarm LED flashes at least once per second.
- If the detector is too sensitive, the LED flashes rapidly six times (once every half second) and the detector goes into alarm.
- If the detector is not sensitive enough, the LED flashes four times slowly (once every 2 sec) and the detector goes into alarm.
- If the detector is not operational, it does not signal an alarm. Return the detector for repair.

### 7.2.4 Voltage Measurement Test

1. Plug a D1005 Test Cable (optional) into the calibration voltage pin.
2. Connect a digital voltmeter to the D1005.
3. Connect the meter's negative terminal to the D1005's black wire, and connect the meter's positive terminal to the D1005's red wire. The D1005's white wire is not used. The voltage measured by the voltmeter equals half the sensitivity (in %/ft obscuration) of the D7050.
4. Multiply the voltage by two. The result should be within the factory marked calibration range printed on the label on the bottom of the detector.
5. If the detector is outside the factory marked calibration range, remove and clean it or replace it as described in *Section 7.1 Operational Testing* beginning on page 5.
6. Recheck the calibration voltage measurement. If the detector is still outside the factory marked calibration range after cleaning, return it to the factory for recalibration.

### 7.2.5 Thermistor Test (D7050TH only)

1. Expose the thermistor to a heat source such as a hair dryer or shielded heat lamp until the detector goes into alarm and the Alarm LED latches on. Do not touch the thermistor directly.
2. Clear each alarm for each test before proceeding to the next detector.

## 8.0 Maintenance

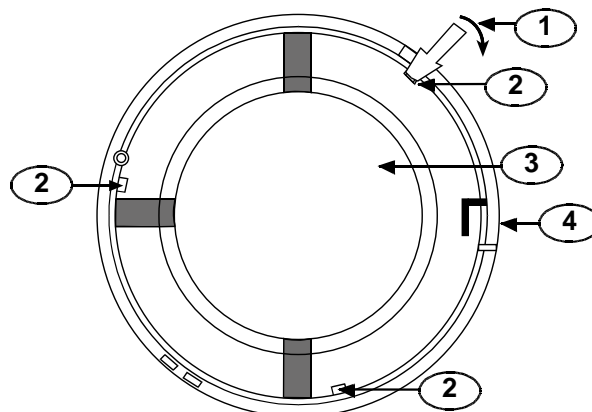


Notify all concerned parties before and after completing maintenance on or testing the fire alarm system.

Clean the detector and base at least once a year using a vacuum or clean dry compressed air. Pay particular attention to the screens. In dusty areas or areas of heavy insect concentration, cleaning might be required more often.

1. Remove the detector from its base.
2. Clean the base with a clean cloth and common window cleaner.
3. Remove the detector cover using a thin, flathead screwdriver to pry the chamber from the cover. Insert the screwdriver into the cover slots as shown in *Figure 5* and pry up the detector chamber cover.

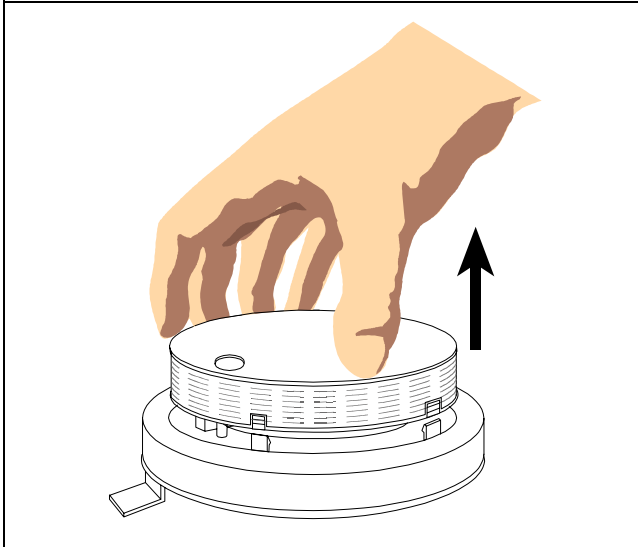
**Figure 5: Removing the D7050/D7050TH Cover**



- 1 - Screwdriver inserted into cover slot
- 2 - Cover slot (3)
- 3 - Detector chamber
- 4 - Cover

- Gently pull the cover up and away from the chamber as shown in *Figure 6*.

**Figure 6: Removing the D7050/D7050TH Chamber Cover**



- With the chamber cover removed, clean the inside of the cover with a vacuum or clean dry compressed air.



Do not clean the D7050/D7050TH components with water or any liquid cleaner.

- Replace the chamber cover ensuring the holes for the LED and thermistor line up over the LED and thermistor. Place the cover parallel to the chamber and gently snap the locking tabs into place.
- Replace the detector cover and carefully align the LED and thermistor holes.
- Return the detector to its base.
- Test the detectors for proper calibration using one of the tests described in *Section 7.0 Testing* beginning on page 5.



Do not paint the D7050/D750THs. Paint or other foreign matter covering the screens can stop or delay smoke from entering the detector.

## 9.0 Specifications

**Table 1: Specifications**

<b>Standby Current</b>	0.5 mA at 12 VDC
<b>Alarm Current</b>	0.56 mA at 12 VDC
<b>Minimum Operating Voltage</b>	8 VDC peak
<b>Power-up Time</b>	22 sec maximum
<b>Installation Temperature</b>	+32°F to 100°F (0°C to +38°C)
<b>Relative Humidity</b>	0% to 93% non-condensing
<b>Required Accessories</b>	D7050-B6 Detector Base

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