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# D285 Series Photoelectric Smoke Detector Heads (12/24 VDC)



- ▶ **Commercial or residential applications**
- ▶ **Two-wire or four-wire application, depending on base**
- ▶ **Chamber Check rapid-flash LED sends contaminated chamber reports**
- ▶ **Flashing LED power indicator**
- ▶ **Steady-On LED alarm indicator**
- ▶ **Modular design**

The D285 and D285TH detector heads detect the large smoke particles which typically result from wood, paper, and fabric combustion. The D285TH smoke detector also has a +135°F (+57°C) fixed temperature heat sensor. Use in areas where the ambient temperature does not exceed +100°F (+38°C). These detectors are compatible with two-wire or four-wire, 12 VDC or 24 VDC circuits. Also available are addressable bases for use on the POPEX bus.

These detectors have two components: the detector base and the detector head. The base is permanently attached and wired to a back box. The interchangeable heads quickly detach for replacement and cleaning without affecting circuit wiring. The D285 and D285TH detector heads attach to the following detector bases:

- D278S 12 V Four-wire Addressable (POPIT) Detector Base (6 in. [15.2 cm] diameter)
- D287 Two-wire Detector Base (5.5 in. [14 cm] diameter)
- D288 Two-wire Detector Base ([6 in. [15.2 cm] diameter)
- D292 Four-wire Detector Base (6 in. [15.2 cm] diameter)
- D293A Four-wire Detector Base (6 in. [15.2 cm] diameter) with Form C Relay
- D293E Power Supervision Detector Base (6 in. [15.2 cm] diameter) with Auxiliary Form A Relay
- D293S Four-wire Detector Base (6 in. [15.2 cm] diameter) with Sounder

- D298M 24 V Four-wire Addressable (POPIT) Master Detector Base (6 in. [15.2 cm] diameter)
- D298S 24 V Four-wire Addressable (POPIT) Slave Detector Base (6 in. [15.2 cm] diameter)

## Functions

### Detection chamber operation

The D285 and D285TH smoke detectors use an infrared (IR) LED light source and a silicon photodiode to measure light in a chamber. In normal conditions the light is absorbed in the chamber. The presence of a significant number of particulates allows the light to reflect to the photodiode. After three consecutive measurements exceeding the threshold level, the unit signals an alarm condition. The detector can be reset from the control panel, after an alarm condition is cleared, by interrupting power.

The detection chamber, designed for reliable smoke entry characteristics, is protected by a micro-fine insect screen to reduce dust accumulation and insect penetration and minimize nuisance alarms.

### Chamber Check Feature

To further reduce nuisance alarms, the D285 and D285TH heads check their calibration. This Chamber Check feature is automatic. If the head is out of calibration for a period exceeding 24 hours, the Trouble-Alarm LED flashes once per second, three times the normal rate.

### Testing

#### Internal diagnostic test

These heads have moisture-proof reed switches that react to an external magnet for testing. The magnet test simulates a 4% to 6% smoke obscuration that places the detector in an alarm condition. This test results in specific LED and alarm circuit responses to indicate:

- Detector within calibration standards
- Detector settings outside sensitivity standards
- Detector not operational

This test is especially useful in environmentally unstable or unclean areas.

#### Sensitivity voltage test

These detector heads have a socket that accepts the D1005 Test Cable. The D1005 connects to the detector head and allows a voltmeter to read the sensitivity of the device.

### LEDs

The D285 and D285TH have a built-in LED that flashes to indicate the device is powered. The LED latches on steady in an alarm condition.

## Certifications and Approvals

Region	Certification
USA	UL UROX: Smoke - Automatic Fire Detectors (UL268 and A), UROX7: Smoke - Automatic Fire Detectors Certified for Canada (cULus)
	CSFM 7272-1615:0134 SMOKE DETECTOR-SYSTEM TYPE-PHOTOELECTRIC
	NYC-MEA 274-93-E, Vol. VII
	MSFM
Hong Kong	HKFSD

## Installation/Configuration Notes

**Note** Smoke detectors are intended for detection circuits that protect people. Heat detectors are appropriate for circuits that protect property.

### Mounting

The D285 smoke detector head and D285TH smoke and heat detector head are parts of a compound device. The detector base installs over a back box and contains all the wiring. The detector head attaches to the base by aligning the head with the base and turning it clockwise. No tools are required for installation other than the hex key used to tighten the optional tamper screw.

### Wiring

The terminal block accepts up to 12 AWG (2.3 mm) wire.

## Technical Specifications

### Environmental Considerations

Radio Frequency Interference (RFI) Immunity:	No alarm or setup on critical frequencies in the range from 26 MHz to 950 MHz at field strengths less than 50 V/m
Relative Humidity:	Up to 93%, non-condensing
Temperature (operating):	+32°F to +100°F (0°C to +38°C)

### Mechanical Properties

Color:	Bone white
Dimensions (diameter x D):	4 in. x 1.25 in. (10.2 cm x 3.2 cm)

### Power Requirements

Current (alarm):	Two-wire: depends on control panel that must limit the alarm current to 100 mA maximum Four-wire: depends on detector base; refer to pertinent base specifications
Current (standby):	Two-wire: 0.08 mA at 12 VDC; 0.09 mA at 24 VDC Four-wire (D293E): 4 mA at 12 VDC or 24 VDC
RMS Ripple (maximum):	25% of DC input
Voltage (input):	Two-wire: 8.5 VDC to 33 VDC Four-wire: 10 VDC to 30 VDC

### Ordering Information

#### **D285 Photoelectric Smoke Head** **D285**

Photoelectric smoke detector head; requires base.

#### **D285TH Photoelectric Smoke Head with Fixed-Temperature (135°F [57°C]) Heat Sensor** **D285TH**

Photoelectric smoke detector head with heat sensor; requires base.

### Accessories

#### **D1005 Test Cable** **D1005**

Connects a digital voltmeter to the detector's calibration pin for verifying that the detector is within its calibration range

#### **DT-2 Detector Removal Tool** **DT-2**

Use the DT-2 to remove, replace, or test the detector head

#### **D275 Power Supervision Module** **D275**

Line supervision device for four-wire fire detection circuits

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