

D297 Smoke detector, long-range beam, 12V

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Invented for life



- ▶ Operates over distances between 30 ft (9 m) and 350 ft (107 m)
- ▶ Six levels of switch-selectable sensitivity
- ▶ Built-in alignment sights and tamper protection
- ▶ Automatic range adjustment, signal synchronization, and contamination adjustment
- ▶ Remote indicator plate annunciates detector status and provides test points for voltage monitoring

The D297 Long-range beam smoke detector (12V) is used in clear open structures. Arenas, atriums, auditoriums, ballrooms, churches, factories, museums, and warehouses are typical areas. Each detector consists of a transmitter, a receiver, and a remote indicator plate. The transmitter and receiver typically mount on the ceiling or high on walls or columns. They provide an effective and unobtrusive means of supervising public areas for fire protection.

The remote indicator plate, included with the detector, provides a convenient means of verifying detector status. Install it anywhere within 500 ft. (152 m) of the beam receiver when using 18 AWG (0.75 mm²) wire). Three LEDs indicate normal, trouble, and alarm conditions, and test points monitor the detector circuit.

Functions

Aim Mode

When the cover is removed from the receiver, the receiver goes into aim mode. When the cover is removed from the transmitter, the transmitter stops transmitting. Pressing the Aim Mode button on the

transmitter allows transmission while the cover is off. For fine tuning which requires a measurable voltage at the receiver, remove both covers and enable transmission.

Alarm Operation

The transmitter emits a pulsed infrared beam. The receiver compares the intensity of the beam over a period of time with an alarm threshold. Select one of six levels of sensitivity for the alarm threshold through a switch on the receiver.

If signal strength is below the preset threshold for longer than the alarm period, the receiver signals an alarm.

Signal Compensation

The receiver automatically compensates for the gradual loss of signal due to dust and dirt build-up on the cover. The receiver measures the intensity of the pulsed infrared beam emitted by the transmitter over a period of time. The receiver compares this data with a preset trouble threshold. The receiver sends a trouble signal to the control panel when:

- 50% of the signal is lost or
- the signal gains 20%

When the dust and dirt build-up is cleaned or the blockage is removed, the detector automatically resets.

Tamper Detection

If the transmitter or receiver covers are removed, the detector sends a trouble signal to the control panel.

Trouble Detection

The receiver compares the transmitter's infrared beam intensity over a period of time with a preset threshold. When an object blocks the beam, $\geq 90\%$ of the signal can be lost for more than 20 seconds. If this condition happens, the receiver sends a trouble signal to the control panel.

Certifications and approvals

Region	Regulatory compliance/quality marks	
USA	UL	UL 268, Smoke Detectors for Fire Alarm Systems
	FM	see the FM Approval Guide
	CSFM	see www.boschsecurity.com (the Bosch website)
Canada	ULC	CAN/ULC-S529, Smoke Detectors for Fire Alarm Systems
Hong Kong	HKFSD	J-005/C/024

Installation/configuration notes

Mounting Considerations

The transmitter and receiver mount on standard 3.5-inch or 4-inch square or octagonal back boxes or European Beza boxes. The indicator plate mounts on a standard single-gang back box.

The distance between the transmitter and receiver can range from 30 ft (9 m) to 350 ft (107 m). When using 18 AWG (ISO 0.75 mm²) wire within conduit, the indicator plate must be within 500 ft (152 m) of the receiver.

Mount the detectors directly to the ceiling or to side walls. Do not mount the units so that the beam runs closer than 4 in. (10.2 cm) to the intersection of the wall and the ceiling. Otherwise, place and space the detectors according to NFPA 72.



Notice

The beam path should be clear of moving objects. Avoid areas subject to normal smoke concentrations such as kitchens and garages. Do not install units where normal ambient temperatures are below -22°F (-30°C) or above +130°F (+54°C).

Spacing between Systems

For adequate coverage, the lateral spacing between adjacent detector systems must not exceed 60 ft (18 m).

Wiring

System wire terminals accept 18 AWG to 12 AWG (ISO 0.75 mm² to 4 mm²) solid wires.

Parts included

Quantity	Component
1	D297 Transmitter
1	D297 Receiver
1	D306 Remote Indicator Plate with 3 ft (1 m) cable
1	D1005 Test Cable
1	Hardware Pack
1	Literature Pack

Technical specifications

Electrical

Alarm Current (Receiver)	75 mA at 12 VDC
Standby Current	Receiver: 50 mA at 12 VDC Transmitter: 20 mA at 12 VDC
Operating Voltage	10.2 VDC to 15.0 VDC
Alarm contacts	Normally Open (N/O) contacts rated 1 A, 60 VDC maximum for DC resistive loads, do not use with capacitive or inductive loads
Auxiliary alarm contacts	Normally Open (N/O) contacts rated 1 A, 60 VDC maximum for DC resistive loads, do not use with capacitive or inductive loads
Trouble contacts	Normally Closed (N/C) contacts rated 1 A, 60 VDC maximum for DC resistive loads, do not use with capacitive or inductive loads

Environmental

Environment	Indoor, dry
Relative humidity	0% to 95%, non-condensing
Temperature (storage and operating)	-22°F to +130°F (-30°C to +54°C) <i>For UL Listed installations, the range is +32°F to +130°F (0°C to +54°C)</i>

Mechanical

Dimensions	7 in. x 5.5 in. x 5.5 in. (17.8 cm x 14 cm x 14 cm)
Mounting	Mount to 3.5 in. or 4-in. square or octagonal electrical boxes or European Beza boxes
Adjustability	Internally adjustable optics for $\pm 90^\circ$ horizontal, and $\pm 10^\circ$ vertical adjustment
Sensitivity	Field selectable for 20%, 30%, 40%, 50%, 60%, or 70% beam obscuration

System Signaling	Conventional four-wire system, do not use with systems incorporating an alarm verification feature
Signal Delay	Fire: Selectable 30 sec or 5 sec Trouble: 20 ± 2 sec
Spacing (distance between systems)	60 ft. (18 m) maximum, spacing confirmed by Underwriters Laboratories (UL) testing
Transmission range	30 ft. (9 m) to 350 ft. (107 m)
Tamper	Receiver: Access door tamper switch in series with trouble contacts. Transmitter: When the cover is removed, the cover tamper switch interrupts transmission

Ordering information

D297 Smoke detector, long-range beam, 12V

The D297 provides an effective and unobtrusive means of supervising public areas for fire protection. It consists of a transmitter and receiver that typically mount on the ceiling or high on walls or columns. A remote indicator plate mounts at eye level.
Order number **D297**

Accessories

D344-RL Remote indicator plate

Used with the D340 Series Duct Smoke Detector Housings
Order number **D344-RL**

D344-RT Remote test/indicator plate, 24V

Used with the D340 Series Duct Smoke Detector Housings
Order number **D344-RT**

D308 Field test kit for D296/D297

Allows testing the calibration of the D296 and D297 beam smoke detectors
Order number **D308**

D1005 Test cable 3ft

Connects a digital voltmeter to the detector's calibration pin for verifying that the detector is within its calibration range
Order number **D1005**

Represented by:

Europe, Middle East, Africa:
Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
emea.securitysystems@bosch.com
emea.boschsecurity.com

Germany:
Bosch Sicherheitssysteme GmbH
Robert-Bosch-Ring 5
85630 Grasbrunn
Germany
www.boschsecurity.com

North America:
Bosch Security Systems, Inc.
130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: +1 800 289 0096
Fax: +1 585 223 9180
onlinehelp@us.bosch.com
www.boschsecurity.us

Asia-Pacific:
Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2808
Fax: +65 6571 2699
apr.securitysystems@bosch.com
www.boschsecurity.asia