

The SD-401 self-contained fire detector

This device is designed to detect the presence of fire inside residential or commercial buildings. It should not be installed in industrial premises. The battery-powered detector has a built-in local warning siren combined with a red LED indicator.

The detector combines an optical smoke sensor with a heat sensor. Both sensors have their outgoing signals processed digitally, resulting in higher false alarm immunity. The optical sensor works using a light diffusion principle and is very sensitive to the presence of large-sized particles which are characteristic of dense smokes. By contrast, the sensor is less sensitive to small-sized particles which are typical of cleanly burning fires. In particular, the smoke sensor is not capable of detecting the by-products of cleanly-burning fluids such as alcohols, for instance. This deficiency is compensated for by the built-in heat sensor. This sensor provides a slower reaction when compared to the smoke sensor, but is much better at reacting to fires with rapidly rising heat producing only a little smoke.

Smoke/heat sensor participation is configurable by DIP switches.

Detection range, detector positioning

Exposing fire conditions to the smoke and heat sensors requires some level of air circulation. It is therefore necessary to install the SD-401 detectors in such a place on the ceiling that (in the case of fire) smoke masses are forced to go in the direction of the detector's position. This can usually be achieved in most buildings. However, the SD-401 is not suitable for installation in outdoor spaces or interiors with an extremely high ceiling where fire by-products would not reach the detector position.

The following table shows the detector's working range in relation to the height of the ceiling on which the detector is installed. The range is expressed as the radius of the circular fire detection area for a detector installed on a ceiling directly above.

	Ceiling height (m)					
	< 4.5	4.5-6	6-8	8-11	11-25	> 25
Smoke detection	7.5* m	7.5* m	7.5* m	7.5* m	Not suitable	Not applicable
Heat detection	5* m	5* m	5* m	Not suitable	Not applicable	Not applicable
<i>Not applicable – meant for a particular ceiling height range</i>						
<i>Not suitable – not usually used in such cases</i>						
* – the radius of the detection area below the detector						

• Installation on a horizontal level ceiling

Due to the possible occurrence of a cold air layer right under the ceiling, the detectors must not be imbedded into the ceiling. The distance between any point to be protected and an imaginary vertical line from the detector down to the floor must not exceed the radius indicated in the table.

• Installation on a sloping ceiling

If the SD-401 is installed just under an apex formed by the joining of two sloping ceilings the values indicated in the table can be increased by 1% for every degree of slope up to a maximum of 25%. If the space to be protected is under a saw-tooth type of roof, SD-401 detectors should be installed under each apex. However, a roof with a shallow saw-tooth form can be acceptable if the height difference between the highest and lowest parts of the ceiling does not exceed 5% of the total ceiling height.

• Walls, partitions, obstacles, and trussed ceilings

The SD-401 must not be installed closer than 0.5 m from any wall or partition. A narrow room with a width of less than 1.2m requires the detector(s) to be placed at a distance of at least one third of the room's width away. In the case of separating walls (partitions, warehouse objects) which do not reach the ceiling, the space is considered to be fully separated if the gap between the top of the separating wall and the ceiling does not exceed 0.3 m. A free space of at least 0.5m is required under the detector. Irregularities in ceiling shape which do not exceed 5% of ceiling height are considered insignificant – the ceiling can be regarded as being even and limits from the table are applicable. However, any irregularity (including beams) exceeding 5% of the ceiling height is considered to be a wall with the consequences stated above.

• Ventilation and air circulation

The detectors must not be installed directly by a fresh air inlet, e.g. air conditioning vents. In the case of air being supplied through a perforated ceiling, each detector must be placed so that no perforation hole occurs within 0.6m of the detector.

• Avoid installing the detector in the following locations:

- Places with poor air circulation (niches, corners, apexes of A-shaped roofs).
- Places exposed to dust, cigarette smoke or steam.
- Places with over-intense air circulation (close to ventilators, heat sources or air conditioning outlets).
- Kitchens and other cooking places (because steam, smoke or oily fumes can reduce detector sensitivity).

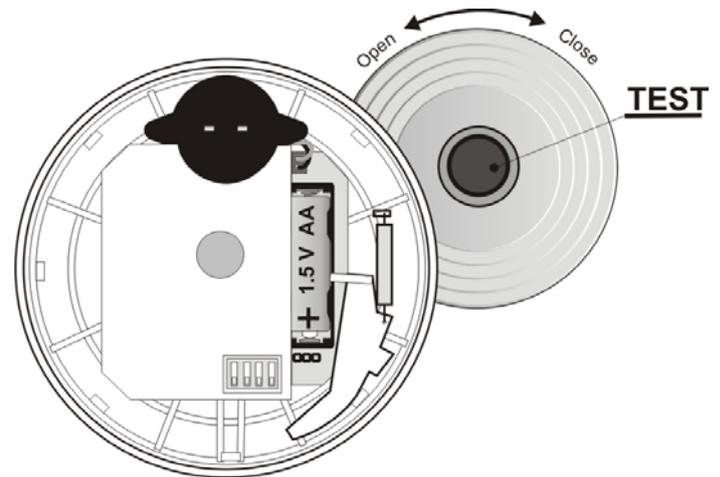
Caution: The most common reason for the detector to be accidentally triggered is improper detector location.

See CEN/TS 54-14 standard for detailed installation guidelines.

Installation and settings

Take the following steps:

1. Open the detector by turning the rear cover and remove the battery.
2. Screw the rear cover onto the desired location.
3. Set the required function via DIP switches – see picture below.
4. Insert the battery and close the detector – put the detector's body on the fixed rear cover and turn it clockwise.
5. After installing a battery into the detector, allow approx. 15 seconds for stabilisation. This period is indicated by the LED being continuously lit and is followed by an auto-test. Successful performance of the auto-test is confirmed acoustically.



1	ON	Not used	3	OFF	Smoke (EN 14604) or Heat (EN 54-5)
	OFF		4	OFF	
2	ON	Memory ON	3	ON	Smoke only (EN 14604) (heat indifferent)
	OFF	Memory OFF	4	OFF	
			3	OFF	Heat only (EN 54-5) (smoke indifferent)
			4	ON	
			3	ON	Smoke and Heat (both simultaneously)
			4	ON	

Closing the detector is disabled if no battery has been installed!

Remove the battery for 1 minute whenever you change the DIP switch setting!

Fire alarm

Optical smoke sensor: Smoke entry into the detector is indicated as a pre-alarm state by the LED flashing. If the smoke threshold density is exceeded, a siren sound is generated, gradually increasing in volume.

Heat sensor: – indication logic is equal to that of the smoke sensor.

Alarm memory: The detector alarm memory can be enabled by pressing and holding the test button during battery installation up to LED light up. Alarm LED indication continues even if normal conditions are restored. The indication can be stopped by pressing the button.

Silencing the siren during an alarm: During a fire alarm, the detector LED flashes 2 times briefly and the built-in siren sounds (at a higher intensity than during a test). Under these conditions the siren can be silenced by pressing the test button. However, if normal conditions are not restored within approx. 10 minutes (the smoke does not clear from the room or the temperature does not drop), the siren re-activates.

Testing the detector

The functioning of the detector can be tested by pressing and holding the test button for approx. 3 seconds. A properly functioning detector responds with one beep and a short flash. A fault is indicated by 4 beeps and the LED permanently flashing. In this case, remove the battery and re-insert it after 1 minute. If the fault indication occurs again (the LED starts permanently flashing after about 1 minute), consult the installer company.

The detector should be tested this way at least once in every 30 days.

Warning: Never start a fire in a building to test the detector. Instead, use smoke-simulating aerosols aerosol testing equipment for realistic testing.

Battery replacement

The detector monitors its battery voltage and if too low, a short acoustic warning signal is emitted every 45 seconds. Battery replacement should not be delayed by more than two weeks. As mentioned above, the detector is automatically tested after each battery insertion. **Expired batteries should not be thrown into the garbage, but disposed of according to local regulations.**

Specification

Voltage	1x AA 1.5 V alkaline battery
Power consumption – stand by/alarm	40 µA/250 mA
Battery lifetime	typically 2 years
Smoke detection	optical, light dispersion
Smoke sensor sensitivity	$m = 0.11 - 0.13 \text{ dB/m to EN 14 604}$
Temperature detection	class A2 to EN 54-5
Fire-alarm temperature	+60 °C to +70 °C
Acoustic power of the built-in siren	85 dB / 3m A
Operational temperature range	-10°C to +70 °C
Recommended date for replacement	6 years
Dimensions	diameter: 126 mm, height: 65 mm
Complies with EN 14 604, A2 EN 54-5, EN 50130-4, EN 55022,	

CE 1293-CPD-0077 Jablotron Ltd. hereby declares that the SD-401 is in compliance with the essential requirements and other relevant provisions of Directive 1989/106/EC. The original of the conformity assessment can be found on the web site www.jablotron.com, Technical Support section.

Note: Dispose of batteries safely depending on battery type and local regulations. Although this product does not contain any harmful materials we suggest you return the product to the dealer or directly to the manufacturer after use.



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