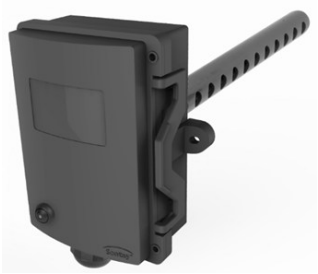
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SD-D
Duct Smoke Detector

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Features and Benefits

- Manual or auto reset
- Fault relay output
- Self-test feature

Technical Overview

The SD-D duct smoke detector operates on the obscuration principle, using infrared technology and is designed specifically to cope with the difficult measurement conditions in air ducts, such as high velocity and levels of dirt accumulation. The relay output is either auto or manual reset relay output on detection of smoke.

Product Codes

SD-D	Duct smoke detector

Specification

Supply	24Vac/dc, ±20%
Power consumption	50mA max.
Relay outputs (smoke & fault)	SPST 2A @ 48V
Minimum duct size	100 x 320mm
Maximum duct size	450 x 450mm*
LED indication	ON in alarm
Alarm relay (selectable)	Manual or auto reset
Probe:	
Dimensions	305 x 20mm dia.
Material	Plastic
Housing:	
Material	PC (Halogen free, flame retardant & UV stabilized)
Dimensions	123 x 103 x 54mm
Environmental:	
Housing:	-30 to +60°C 20 to 80% non-condensing
Media:	10 to 40°C
Protection	IP65
Country of origin	Denmark
Conformity	EMC, CE & UKCA Marked

* Please see recommendations on page 2.

WEEE Directive:

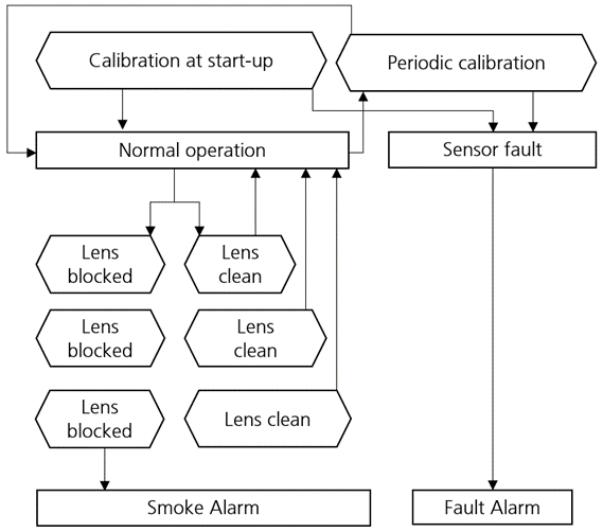
At the end of the products useful life please dispose as per the local regulations.
Do not dispose of with normal household waste.
Do not burn.

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How It Works

The sensor uses an infrared transmitter and receiver inside the housing. The transmitter sends a light beam down the probe, where a mirror reflects it back to the receiver. When the probe is clear, the receiver gets the full signal. If smoke is present, the partides block or scatter the beam, so the receiver can't detect it. This loss of signal triggers the alarm.

Calibration at start-up:
When the SD-D is powered on, it automatically adjusts itself. The transmitter slowly increases its light output until the receiver picks up a strong enough signal. Once this link is confirmed, the sensor remembers the setting until it's switched off again. After that, if anything, such as smoke, blocks the light, the sensor will recognize the problem and trigger the alarm.



Periodic calibration:
Dust or other contamination can reduce the mirror's reflectivity over time. The detector automatically recalibrates every 7 days to maintain proper signal levels and reliable smoke detection.

Recommendations:
Probe Length & Duct Size: The SD-D has a 300 mm probe and should not be used in ducts exceeding 450 mm in diameter or square size unless used as secondary, non-life-safety detection in areas already covered by a fire alarm system capable of shutting down ventilation fans. Larger ducts may not be fully monitored.

Mounting Location:

- Fit the detector **after filters and humidifiers** to prevent false alarms from dust or moisture.
- Avoid direct **sunlight on the photocell**.
- Do **not install near sharp bends**, as turbulence may divert smoke from the probe.
- Avoid mounting **close to supply or extract fans**.

Orientation & Airflow: The SD-D is an optical beam detector; air velocity has minimal effect. For optimal detection, the probe holes should be parallel to airflow.

Large Installations & Duct Dilution: In systems where multiple small ducts feed a common large duct, smoke may be diluted, risking detection failure. For example, if 10 small ducts feed into a main duct and only one detector is installed, smoke from one duct may be diluted by 90%. In such cases, **install detectors in each small duct** to ensure reliable operation.

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Installation

Handling & Precautions:

- Use **antistatic precautions** – static discharge can damage the PCB.
- Install **after construction/renovation** to avoid dust (warranty may be void if contaminated).

Installation Steps:

1) Fix housing to duct with screws.

2) Open lid by pressing the tab, feed cable through gland and terminate wires (see "Electrical Connections"). Tighten gland for watertight seal.

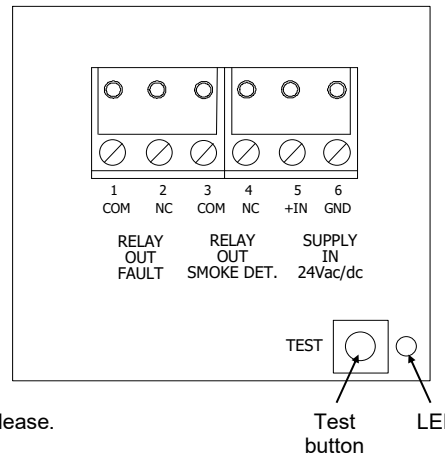
3) For outdoor use, mount with cable entry at bottom. If fed from above, add a rain loop before entry.

5) Check supply voltage before powering.

Electrical Connections

1.	Fault Output	Common
2.	Fault Output	Normally Closed*
3.	Smoke Detection Output	Common
4.	Smoke Detection Output	Normally Closed*
5.	Supply	+24Vac/dc, ±20%
6.	Supply	0V

* See alarm conditions



Changing Reset Modes

Auto: Hold reset 5 sec → internal green LED off 1 sec → release.

Manual: Hold reset 5 sec → internal orange & external red LED 1 sec → release.

Calibration & Alarm Conditions

- Auto-calibrating: internal LED flashes red.
- Calibration complete: LED turns orange briefly, then PCB LED stays green.
- Alarm/fault: LEDs turn red.
- Relay energized in normal operation; de-energizes on fault to shut down connected equipment safely.

Relay status

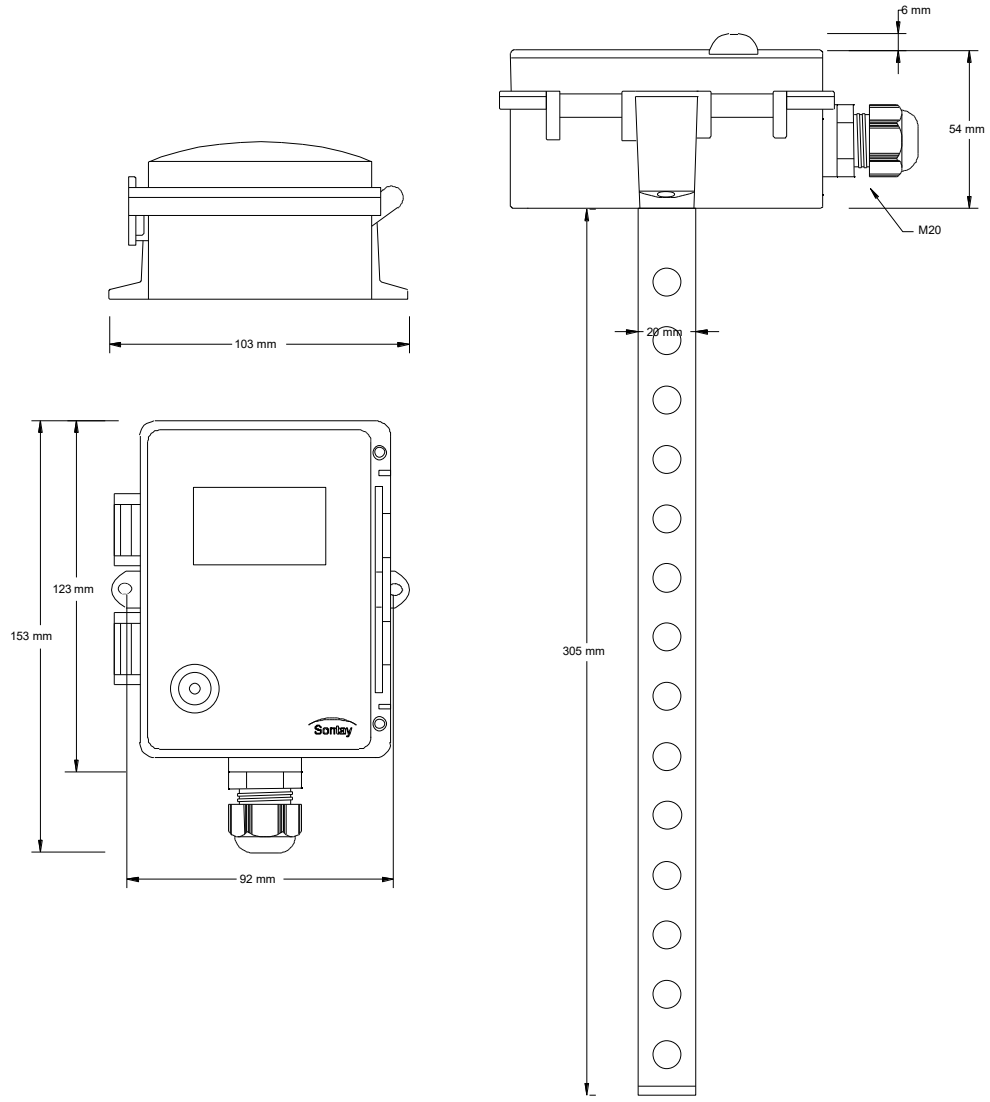
- Un-powered Open
- Powered Closed
- Alarm Open

Self-Test, Failure Mode & Manual Reset

- Press the button on the PCB to run a self-test.
- Both relays open and LEDs turn red.
- If the detector fails, the external LED flashes red.

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Dimensions



Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense resulting from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.

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