

Smoke detector battery, titanium white	5TC1 290
Smoke detector battery, aluminium metallic	5TC1 293
Smoke detector battery, tobacco	5TC1 294

Product and functional description



The DELTA reflex smoke detector Battery (VdS approval applied for) has been designed for use in the private residential sector. In the event of a fire, the smoke detector detects the development of smoke in good time and issues an alarm. In addition to stand-alone operation, up to 40 smoke detectors of the same make can be networked together via a twin-core cable.

It is also possible to fit the smoke detector with a plug-in smoke detector module relay for external signalling devices (e.g. horn, strobe light) or a plug-in smoke detector module wave uni for radio transmission (GAMMA wave).

NOTE:

The exact functionality when using the relay module or radio module can be taken from the corresponding operating and mounting instructions.

The DELTA reflex smoke detector battery is available in the colours titanium white (similar to RAL 9010), aluminium metallic (similar to RAL 9006) and tobacco (similar to RAL 8019).

The function of the smoke detector is based on the photoelectric scattered light principle without radioactive preparations: an infrared transmitter and receiver (photocell) are arranged in the measuring chamber of the smoke detector so that the emitted light signal of the transmitter cannot directly hit the receiver. The smoke originating from a fire penetrates the measuring chamber and scatters the light signal emitted by the transmitter. Due to the dispersion, the beams of light hit the light receiver (photocell) and are converted into an electrical signal which triggers the optical (flashing light signal) and acoustic (pulsating signal tone, 85dB(A)) alarms.

The reset of the alarm is either carried out automatically when the smoke has completely escaped the measuring chamber or if the alarm/acknowledgement button has been pressed.

The functional check of the smoke detector e.g. for gradual pollution (dust deposits) is likewise carried out by pressing the alarm/ acknowledgement button. If the function is correct, a short acoustic signal is issued and the LED flashes 10 times. Any possible faults are displayed visually by the continual flashing of a light signal.

The power supply of the smoke detector is ensured by conventional batteries (3x1.5V miniature Alkaline, AA). The typical battery service life of the smoke detector is 5 years without alarms. This also applies when the relay module or radio module is connected. If the battery voltage drops below a minimum level, the smoke detector reports that the batteries must be changed by sending a cyclical optical and acoustic signal (short signal tone) for at least 30 days. During this period, the smoke detector is also fully functional even with the modules connected.

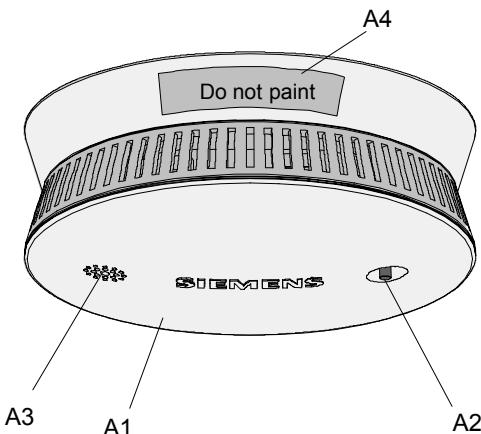
To guarantee the function of the smoke detector, it is not possible to install the detector without the batteries being inserted (battery compartment check). The reverse voltage protection also prevents the smoke detector from being damaged if the batteries are incorrectly inserted.

Product and functional characteristics

- VdS approval applied for
- Battery-operated smoke detector for the residential sector, based on the photoelectric scattered light principle
- Long battery service life: typically 5 years
- Can be networked: up to 40 smoke detectors of the same make
- Functional extension via plug-in modules:
 - Smoke detector module relay 5TC1 291
 - Smoke detector module wave uni 5WG3 255-8AB01
- Smoke detector available in the colours:
 - titanium white 5TC1 290
 - aluminium metallic 5TC1 293
 - tobacco 5TC1 294
- Optical and acoustic alarms
- Functional test and pollution/fault display using alarm/acknowledgement button
- Display for battery replacement
- Battery compartment check
- Reverse voltage protection when batteries are incorrectly inserted

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Operation, operational signals and alarm signals



- A1 Smoke detector battery
- A2 Alarm/acknowledgement button with visual display (LED)
- A3 Acoustic signalling device
- A4 "Do not paint" sticker

The operation of the smoke detector is carried out solely via the alarm/acknowledgement button (A2). This is used either for the functional check of the smoke detector (A1) e.g. for gradual pollution (dust deposits) or required to acknowledge the smoke alarm. The alarm/ acknowledgement button also contains the visual display (LED A2) for the operational and alarm signals. The acoustic alarm (signal tone) is carried out via the signalling device (A3).

Operational signals and alarm signals

Signal		Status
optical	acoustic	
flashing pulse in 48s cycle	–	normal function (monitoring)
flashes briefly 10 times	short signal tone	test O.K.
flashes in 1s cycle	–	test not O.K.
flashes in 1s cycle	3 short signal tones in 4s cycle	smoke alarm (local)
flashing pulse in 48s cycle	3 short signal tones in 4s cycle	received smoke alarm (for networking)
3 flashing pulses in 48s cycle	short signal tone in 48s cycle	signals that battery is weak (30 days)

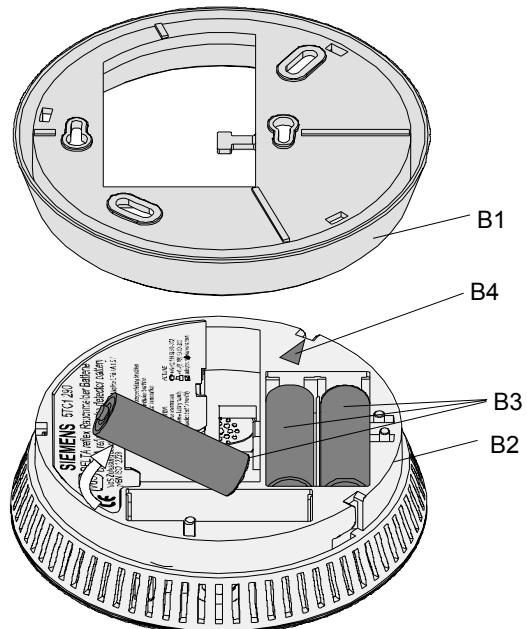
Signals after alarm acknowledgement

Signal	Acknowledgement	
	optical	acoustic
flashes in 1s cycle	signal tone OFF	local alarm acknowledgement with smoke in room
flashing pulse in 48s cycle	signal tone OFF	local alarm acknowledgement without smoke in room
flashes in 1s cycle	3 short signal tones in 4s cycle	received alarm acknowledgement with smoke in room (for networking)
flashing pulse in 48s cycle	signal tone OFF	received alarm acknowledgement without smoke in room (for networking)

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Battery replacement

If battery voltage reaches or falls below the lower limit, this is displayed both visually and acoustically (see table of operational signals and alarm signals).



1. Open the device consisting of two parts (base B1 and smoke detector B2) by turning it anti-clockwise (bayonet lock).
2. Remove the batteries (B3) from the battery compartments.
3. Insert the three new batteries with the correct polarity.

CAUTION:

Only batteries of the type 1.5V miniature Alkaline, AA should be used.

4. Insert the smoke detector in the base and lock in place by turning it clockwise. The red triangles are used for orientation (B4/E4).

CAUTION:

The smoke detector can only be fixed in the base when the batteries have been inserted.

5. Carry out the functional test (see page 6).



The exhausted batteries must be disposed of in accordance with the appropriate regulations

Service and maintenance

In principle, the smoke detector is maintenance-free. the following process should be carried out for an additional check:

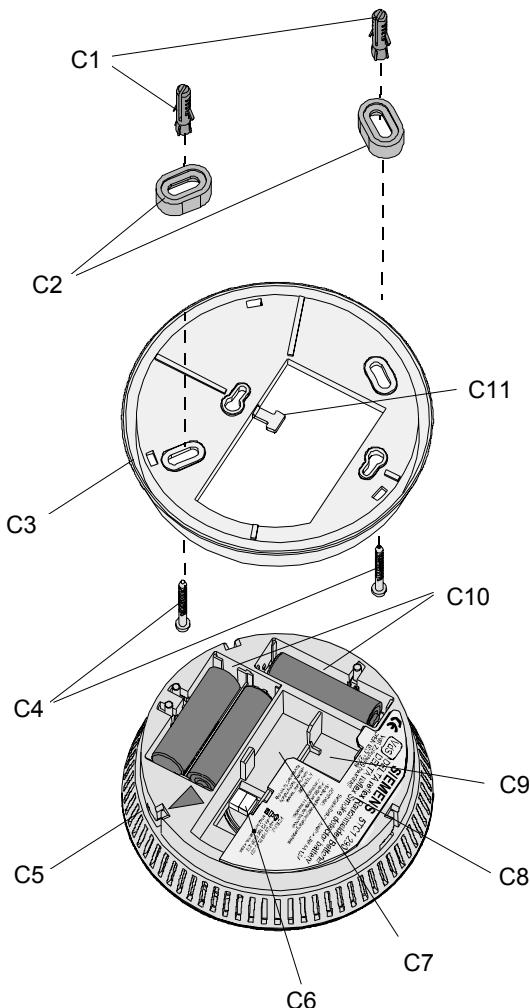
Monthly:

Carry out a functional test (see page 6).

Twice a year:

The outside of the smoke detector should be cleaned occasionally e.g. with a slightly damp cloth.

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Structure of the smoke detector

- C1 Plug
- C2 Spacer
- C3 Base
- C4 Screw
- C5 Smoke detector
- C6 Plug-in terminal for wire connection
- C7 Storage space for cables
- C8 Module cover
- C9 Module location for radio module or relay module
- C10 battery compartments incl. batteries
- C11 Fixing for cable ties

Technical data**Power supply**

- Carried out via batteries 3x1.5V miniature Alkaline, AA
- Battery service life: typically 5 years (without alarms)
- Battery low signal: three short flashing pulses every 48s and short acoustic signal tone

Sensitivity

In accordance with pr EN 12239

Signalling

- Acoustic signalling device: > 85dB(A) at distance of 3m
- Visual display: red LED

Networking

- Up to 40 smoke detectors with a twin-core, twisted cable e.g. type J-Y(St)Y 2x2x0.6mm
- Total cable length: max. 400m

CAUTION:

Only DELTA reflex smoke detectors battery (5TC1 290, 5TC1 293, 5TC1 294) may be linked together.

- Can also be extended with plug-in modules:
 - Smoke detector module relay
 - Switching voltage: max. 30V DC / 42V AC
 - Switching current: max. 1A DC / 0.5A AC
 - Smoke detector module wave uni
 - Radio frequency: 868MHz
 - Range in free field: approx. 100m

Mechanical data

- Housing: plastic (ABS, ASA)
- Housing dimensions (\varnothing x H): 120 x 44mm
- Weight (without battery): 148g
- Installation: surface-mounted with or without spacer

Electrical safety

Type of protection (in acc. with EN 60529): IP30

EMC requirement

Complies with EN 61000-6-1, EN 50081-1, EN 50130-4

Environmental conditions

- Ambient operating temperature: 0 to + 50°C
- Storage temperature: -25 to +70°C
- Relative humidity (not condensing): 5% to 93%

Approval

VdS approval applied for

CE norm

In accordance with the EMC guideline (residential buildings)

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Installation instructions

NOTE:

- A smoke detector detects smoke but not the fire or the heat generated.
- A smoke detector only monitors a specific area. To cover the entire house (apartment), sufficient detectors must be mounted and networked as required.
- Additional safety is offered by plug-in modules e.g. to trigger a horn, a signal lamp or a telephone dialling device.



DANGER

- The device may only be used for permanent installations in dry interior rooms.
- The smoke detector may only be networked with smoke detectors of the same make.
- Do not glue or paint the smoke detector.
- The smoke detector only operates correctly with the stipulated alkaline batteries. Do not use batteries or mains-operated devices.
- During the functional test, a safety distance of at least 50cm should be maintained in order to avoid ears being damaged by the alarm tone.

Installation and wiring

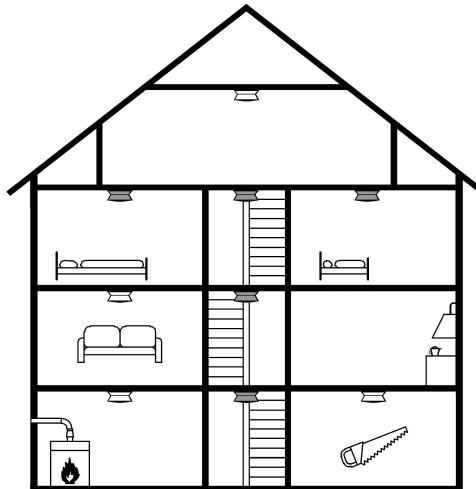
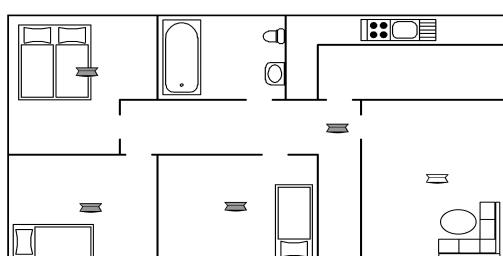
Installation site

Installation site

- Smoke detectors must be installed per floor, preferably in the hallway and also in each bedroom.

Optimum protection +

- Smoke detectors must be installed in each living room and bedroom as well as in the hallway.
- To ensure that many rooms are informed as early as possible about a fire, all the smoke detectors should be interlinked.



NOTE:

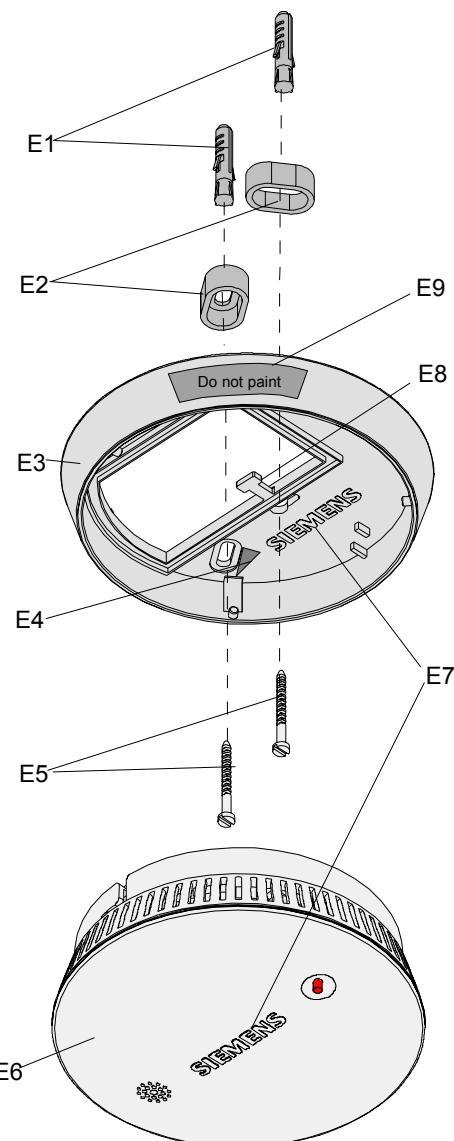
- Each smoke detector can monitor a maximum area of 60m².
- Smoke detectors should be placed as near to the middle of the ceiling as possible. If this is not possible, maintain a minimum distance of 15cm from the wall and corners.
- In rooms with slanted, pointed or gabled ceilings, the smoke detector should be placed approx. 90cm from the highest point of the ceiling.
- In rooms with a height of more than 3m, several devices are required (installation height on the wall: 2.5m).
- When considering the mounting position, typical air currents that are dependent on the individual conditions must be taken into account.

Unsuitable installation sites

For reasons of safety and to avoid false alarms and malfunctions, smoke detectors should not be mounted in the following places:

- In rooms where high levels of steam, dust or smoke are produced.
- In rooms with fireplaces and open chimneys.
- In the vicinity of electrical fields (e.g. fluorescent lamps and energy-saving lamps; minimum distance: 50cm).
- In places where the ambient temperatures lie below 0°C or above +50°C.

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Installation

1. Open the device consisting of two parts (base E3 and smoke detector E6) by turning it anti-clockwise (bayonet lock).
2. Fix the supplied sticker (E9) "Do not paint" onto the outside of the base.

NOTE:

Install the smoke detector so that the LED is clearly visible when entering the room. The SIEMENS inscription (E7) on the smoke detector (E6) and base (E3) should be used for orientation.

3. Mount the base (E3) on the ceiling using the installation materials supplied (screws E5 and pin E1). Use the spacer (E2) for increased space requirements. The bracket for cable ties (E8) should be used to fix cables or pipes.
4. Insert the three batteries supplied in the battery compartment (C10) with the correct polarity.

CAUTION:

The smoke detector can only be fixed in the base when the batteries have been inserted. The module cover must be mounted to avoid malfunctions (due to fluctuations in pressure or supply air).

5. Insert the smoke detector in the base and lock in place by turning it clockwise. The red triangles are used for orientation (B4/E4).
6. carry out the functional test (see below).

Functional test:

The function of each smoke detector must be checked after the installation has been successfully completed as well as once a month. Press the alarm/ acknowledgement button (A2) for approx. 2 seconds.

- If the horn sounds once and the LED flashes 10 times, the smoke detector operates correctly.
- If the functional test fails, only the LED starts to flash continually. The smoke detector should then be replaced.
- If the horn does not sound and the LED does not flash, the polarity of the batteries must be checked. If this is not successful, the smoke detector should also be replaced.

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Networking of smoke detector

Up to 40 smoke detectors can be connected together. If a detector now records smoke, the alarm is emitted from all the interlinked devices at the same time. The LED only flashes on the detector that triggered the alarm. It is therefore easy to determine which smoke detector has been triggered. The connection of the detectors is carried out with a twisted twin-core cable (e.g. J-Y(ST)Y 2x2x0.6mm). The total cable length of the interlinked smoke detectors may not exceed 400m. If the polarity is incorrect, the reverse voltage protection prevents the detector from being damaged; an alarm is issued.

CAUTION:

- It should be ensured that there are no cables between the seal of the top and bottom and bottom of the device.
- It is only possible to interconnect devices of the same type as otherwise malfunctions may occur.
- After a successful installation, it is advisable to carry out a wiring test. A smoke alarm can be triggered (e.g. with cigarettes, aerosol or special matches) for this purpose. The alarm is either reset automatically when the smoke has fully escaped from the measuring chamber or when the alarm/acknowledgement button has been pressed.

Networking

F1 Smoke detector battery
 F2 Linking terminal
 F3 + connection
 F4 - connection
 F5 Further linked smoke detectors battery
 F6 Module cover

Procedure for networking smoke detectors:

1. Remove the linking terminal (F2) from the smoke detector.
2. Strip the insulation from the connecting wires (approx. 6mm)
3. Insert the wires into the spring-clamp terminals of the linking terminal (F2).
4. Insert the linking terminal on the smoke detector again.
5. Carry out a functional test (only works locally).

Relay module and radio module

It is possible to fit the smoke detector with a plug-in relay module or radio module.

Relay Module:

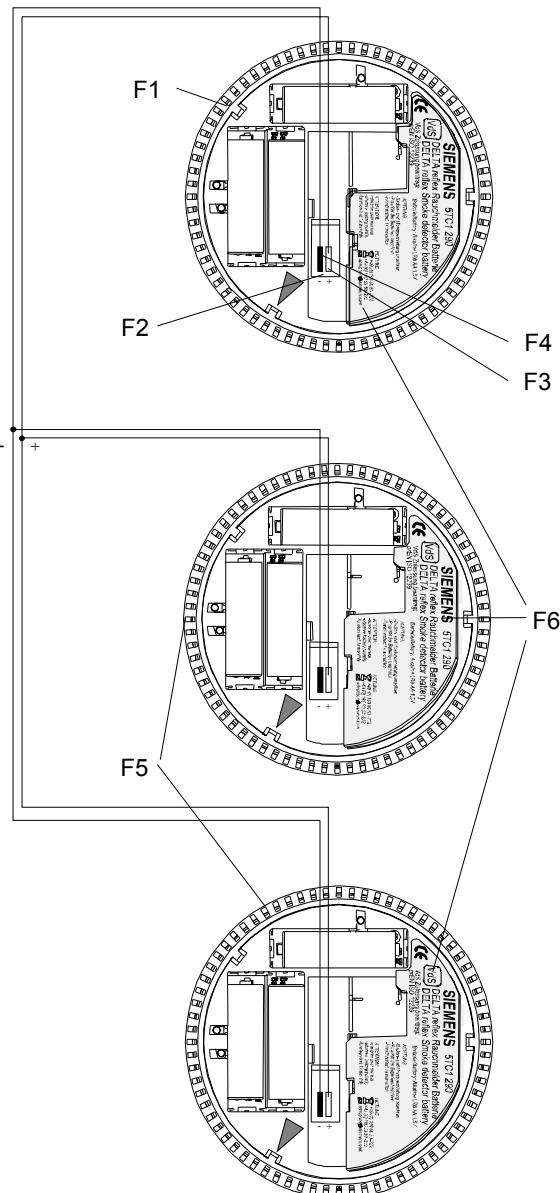
Relay with floating changeover contact for triggering external alarm and signalling devices such as horns, sirens or telephone dialling devices.

Radio module:

Routing of alarms via radio

NOTE:

The exact functionality when using the relay module or radio module can be taken from the corresponding operating and mounting instructions.



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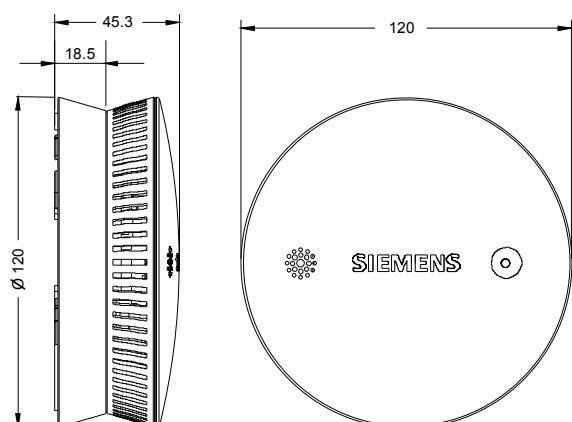
Possible causes of fire

To prevent fires, the following causes of fire should be avoided:

- Damaged electrical cables, incorrect usage and overheating of electrical devices
- Flammable materials next to electrical devices that generate high levels of heat such as irons, toasters and deep-fat fryers
- Unattended open flames such as candles, chimneys and tealights
- Smoking on the sofa or in bed
- Short circuits caused by standby operation of radios, televisions and computers
- Overload and overheating of sockets via multiway adapters
- Dirty extractor hoods with grease deposits
- Children playing with matches

Dimensions Diagram

Dimensions in mm



General notes

- Any faulty devices should be returned to the local SIEMENS office.
- If you have any additional queries about the product, please contact our Technical Support department:

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adsupport@siemens.com