

## FCS-320-TP Conventional aspiration smoke detector series

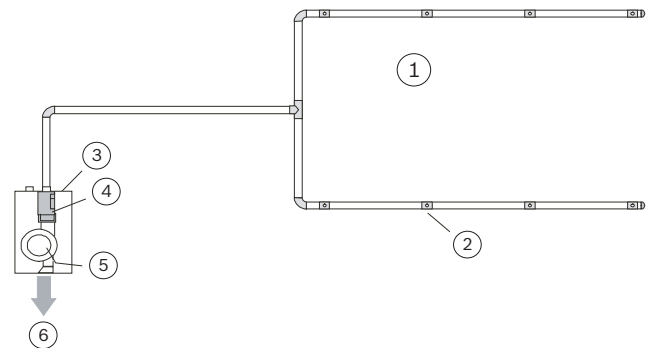


- ▶ High deceptive alarm immunity with intelligent signal processing
- ▶ Innovative airflow monitoring including single-hole monitoring detects obstruction and breakage
- ▶ Initial set-up made easy by automatic initialization
- ▶ Easy diagnostics through flash code on the detector module or by using the diagnostic software
- ▶ Simple implementation of the pipe system planning through patented suction-reducing film sheets

FCS-320-TP Conventional aspiration smoke detector series are active fire detection systems for early fire detection in area and equipment monitoring, as well as for the monitoring of air conditioning units or ducts (provided that the detector is installed outside of these units or ducts).

Aspiration smoke detectors are fitted with the latest fire detection technology. The resistance to contamination, the temperature compensation of the sensor signals and initialization in relation to air pressure ensure reliable operation even under difficult environmental conditions.

### System overview



Pos.	Description
1	Pipe system/air intake
2	Air sampling openings
3	Housing
4	Detector Module incl. airflow sensor
5	Aspiration unit
6	Air outlet

**Functions**

The aspiration unit takes air samples from the monitoring area through a pipe system with defined air sampling openings and passes the samples to the detector module.

Depending on the response sensitivity of the used detector module, the aspiration smoke detector triggers an alarm when the appropriate smoke density is reached. This alarm is displayed via the alarm LED on the unit and is transmitted to the fire panel.

An airflow sensor checks the connected pipe system for breakage and obstruction.

Intelligent signal processing *LOGIC·SENS* compares the measured smoke level with known disturbance variables and decides between alarm and deception. For the display and transmission of alarm and faults various delay times can be selected.

Each detector module is monitored for contamination, signal malfunction and device removal. Malfunctions and certain device states are displayed using various LED flash codes on the detector module's electronics PCB.

Fault messages are reset via the connected fire panel and the reset input or the reset module FCA-320-Reset.

There are three different detector modules available for the aspiration smoke detectors. These modules have different response sensitivities:

Detector module	Max. sensitivity (light obscuration)	Levels for selection
DM-TT-50(80)	0.5 %/m (0.8 %/m)	2
DM-TT-10(25)	0.1 %/m (0.25 %/m)	4
DM-TT-01(05)	0.015 %/m (0.05 %/m)	4

**i Notice**

The sensitivity is based on the measurements during standard test fires (previous measurement in brackets).

FCS-320-TP2 runs with two detector modules. Two air sampling pipe systems can be connected to monitor two areas. When monitoring only one area with two pipe systems, dual-detector dependency may be implemented.

**Variants**

FCS-320-TP1 and FCS-320-TP2 are the cost-effective aspiration smoke detectors for universal use with LED displays for operation, malfunction, and alarm (two alarm indications on the FCS-320-TP2).

**Regulatory information**

Region	Regulatory compliance/quality marks	
Europe	CPR	0786-CPR-20790 FCS-320-TPx_FCS-320-TTx_FAS-420-TPx_FAS-420-TTx
Morocco	CMIM	FCS-320-TP
Macao Special Administrative Region Government	CB	0851/GEL/DPI/2020
Germany	VdS	G 208046 FCS-320 TT_TP Series / FAS-420 TT_TP Series
Europe	CE	FCS-320-TP

**Installation/configuration notes**

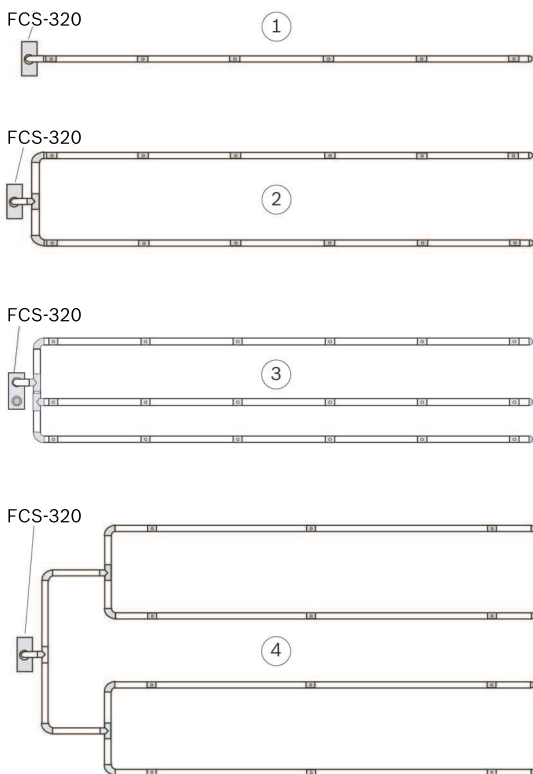
- For connection to conventional fire panels

**Planning of the pipe system**

- In planning, a distinction is made between area monitoring and equipment monitoring.
- PVC pipes and halogen-free aspiration pipes can be used.
- For equipment monitoring, halogen-free pipes should be used.
- The air sampling pipe system should be arranged such that any fires can be detected at the initial stage.
- The pipe system including air sampling openings must always be symmetrical in design ( $\pm 10\%$  deviation).
- If structural issues make it impossible to maintain this symmetry, the following conditions apply:
  - The number of air sampling openings and the length of the shortest and longest pipe branch within the pipe system must not exceed a quantity ratio of 1:2.
  - The distance between neighboring air sampling openings on the aspiration pipe must be even (max. deviation  $\pm 20\%$ ).
  - The diameters of the air sampling openings are determined separately for each pipe branch. The diameters depend on the total number of air sampling openings in the pipe branch in question.
- Greater distances between the aspiration smoke detector and aspiration pipe are specified for pipes with a 40 mm diameter.
- Depending on the geometrics of the area, the I-, U-, M- or double U-pipe system is utilized.

**i Notice**

Take notice when planning that the fans of the aspiration smoke detectors produce a noise level of 45 dB(A).



- Maximum of 32 air sampling openings per pipe system
- Max. pipe length / max. total monitoring area per pipe system:
  - 300 m / 2880 m<sup>2</sup> (VdS-compliant)
  - With two detector modules: 2\*280 m / 5760 m<sup>2</sup>

**Aspiration pipe planning**

- Aspiration pipe systems are constructed according to planning specifications with the common pipe components as well as components for special applications, e. g. water separator or detonation safety barrier.
- All borings for the smoke aspiration systems are made to a diameter of 10 mm and the exact aspiration openings are implemented by means of the patented suction-reducing film sheets. For each aspiration hole a suction-reducing film sheet with corresponding punch diameter and marking tape must be provided.

**i Notice**

For applications in areas where a blowing-out system is necessary (e. g. low-temperature areas or where high levels of dust accumulate), special suction reducers with plastic clips are available as separate items.

For further information on FCS-320 planning, refer to the user manual (F.01U.130.926).

**Pos. Designation**

- 1 I-pipe system
- 2 U-pipe system
- 3 M-pipe system
- 4 Double U-pipe system

- For a faster detection, it is best to select several short branches rather than a few long branches (U and double-U pipe systems preferable).
- Bends are preferable to angles in the event of directional changes.
- In order to increase transport speed in critical application areas, the fan voltage can be increased from 6.9 V to 9 V.

**Planning limitations**

- Pipe length between two air sampling openings:
  - Minimum 4 m (0.1 m with Simplified Pipe Planning)
  - Maximum 12 m.
- The maximum monitoring area per air sampling opening corresponds to the maximum monitoring area of point-type detectors according to valid planning guidelines.

**Technical specifications**

**Electrical**

Power supply (conventional)	14 V DC to 30 V DC	
Rated supply voltage	24 V DC	
Max. current consumption (at 24 V)	FCS-320-TP1 FCS-320-TT1	FCS-320-TP2 FCS-320-TT2
• Starting current, fan voltage 6.9 V (without reset board)	300/300 mA	320/330 mA
• Starting current, fan voltage 9 V (without reset board)	300/300 mA	320/330 mA
• On standby, fan voltage 6.9 V (without reset board)	200/200 mA	220/230 mA
• On standby, fan voltage 9 V (without reset board)	275/260 mA	295/310 mA
• On alarm, fan voltage 6.9 V (without reset board)	210/230 mA	240/290 mA
• On alarm, fan voltage 9 V (without reset board)	285/290 mA	315/370 mA
Reset board current consumption	Max. 20 mA	

## Environmental conditions

Protection category as per EN 60529	IP 20
Permissible temperature range	
• Aspiration smoke detector	-20 °C to +60 °C
• PVC pipe system	0 °C to +60 °C
• ABS pipe system	-40 °C to +80 °C
Permissible relative humidity (non-condensing)	10 to 95%

## Ordering information

### FCS-320-TP1 Aspiration smoke detector, 1 pipe system

Conventional aspiration smoke detector with LED displays for operation, malfunction, and alarm. For connecting one pipe system.  
Either DM-TP-50(80) or DM-TP-10(25) or DM-TP-01(05) Detector module must be ordered separately.  
Order number **FCS-320-TP1 | F.01U.141.197**

### FCS-320-TP2 Aspiration smoke detector 2 pipe systems

Conventional aspiration smoke detector with LED displays for operation, malfunction, and alarm. For connecting two pipe systems.  
Two detector modules to double the monitoring area or for 2-detector dependency must be ordered separately.  
Types available: DM-TP-50(80), DM-TP-10(25), DM-TP-01(05)  
Order number **FCS-320-TP2 | F.01U.141.198**

## Accessories

### DM-TP-50(80) Detector module max. sensitivity 0.5%/m

Detector module for aspiration smoke detectors TP variants, with max. sensitivity of 0.5 %/m (0.8 %/m) light obscuration.

Order number **DM-TP-50(80) | 4.998.143.394**

### DM-TP-10(25) Detector module max. sensitivity 0.1%/m

Detector module for aspiration smoke detectors TP variants, with max. sensitivity of 0.10 %/m (0.25 %/m) light obscuration.

Order number **DM-TP-10(25) | 4.998.143.395**

### DM-TP-01(05) Detect. module max. sensitivity 0.015%/m

Detector module for aspiration smoke detectors TP variants, with max. sensitivity of 0.015 %/m (0.05 %/m) light obscuration.

Order number **DM-TP-01(05) | 4.998.143.396**

### FAS-ASD-DIAG Diagnostic software

The FAS-ASD-DIAG Diagnostic software enables reading out all stored device data and gives advices to remove failures.

Including connection cable for USB interface and diagnosis tool with an infrared interface.

Order number **FAS-ASD-DIAG | F.01U.033.505**

### FCA-320-Reset Reset Module

Reset module for FCS-320-TP1, FCS-320-TP2 or FCS-320-TM

Order number **FCA-320-RESET | F.01U.141.199**

### TITANUS MT-1 MOUNT Device mounting

The bracket (two parts) enables mounting on racks or similar equipment.

Order number **TITANUS MT-1 MOUNT | 4.998.143.410**

### FCS-320-IK Installation kit

Installation kit for mounting reset module into a TP variant of Conventional aspiration smoke detectors.

Order number **FCS-320-IK | F.01U.141.201**

### RAS TEST-PIPE Test pipe for smoke aspiration system

Pipe with three different suction openings to make the functional test easier to carry out.

Order number **RAS TEST-PIPE | 4.998.148.848**

### RAS TEST ADAPTER Test adapter for smoke aspiration system

The test adapter is recommended for applications where the aspiration pipe system has to be fixed.

Order number **RAS TEST ADAPTER | 4.998.148.849**

### TITANUS AF-BR Marking tape suction-reducing film sheet

For securing a suction-reducing film sheet to prevent it from becoming displaced. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-BR | 4.998.143.413**

### TITANUS AF-2.0 Suction-reducing film sheets, 2.0mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-2.0 | 4.998.143.416**

### TITANUS AF-2.5 Suction-reducing film sheets, 2.5mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-2.5 | 4.998.143.417**

### TITANUS AF-3.0 Suction-reducing film sheets, 3.0mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-3.0 | 4.998.143.418**

### TITANUS AF-3.2 Suction-reducing film sheets, 3.2mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-3.2 | 4.998.143.419**

### TITANUS AF-3.4 Suction-reducing film sheets, 3.4mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-3.4 | 4.998.143.420**

### TITANUS AF-3.6 Suction-reducing film sheets, 3.6mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-3.6 | 4.998.143.422**

### TITANUS AF-3.8 Suction-reducing film sheets, 3.8mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-3.8 | 4.998.143.423**

### TITANUS AF-4.0 Suction-reducing film sheets, 4.0mm

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces

Order number **TITANUS AF-4.0 | 4.998.143.424**

**TITANUS AF-4.2 Suction-reducing film sheets, 4.2mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-4.2 | 4.998.143.425**

**TITANUS AF-4.4 Suction-reducing film sheets, 4.4mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-4.4 | 4.998.143.426**

**TITANUS AF-4.6 Suction-reducing film sheets, 4.6mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-4.6 | 4.998.143.427**

**TITANUS AF-5.0 Suction-reducing film sheets, 5.0mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-5.0 | 4.998.143.428**

**TITANUS AF-5.2 Suction-reducing film sheets, 5.2mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-5.2 | 4.998.143.429**

**TITANUS AF-5.6 Suction-reducing film sheets, 5.6mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-5.6 | 4.998.143.430**

**TITANUS AF-6.0 Suction-reducing film sheets, 6.0mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-6.0 | 4.998.143.431**

**TITANUS AF-6.8 Suction-reducing film sheets, 6.8mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-6.8 | 4.998.143.432**

**TITANUS AF-7.0 Suction-reducing film sheets, 7.0mm**

For covering an air sampling opening with corresponding punch diameter. Price per piece, delivery unit: 10 pieces  
Order number **TITANUS AF-7.0 | 4.998.143.433**

**Services****EWE-FCS320-IW 12 mths wrty ext FCS-320**

12 months warranty extension

Order number **EWE-FCS320-IW | F.01U.360.756**

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