FCS-320-TP Series Conventional Aspirating Smoke Detectors

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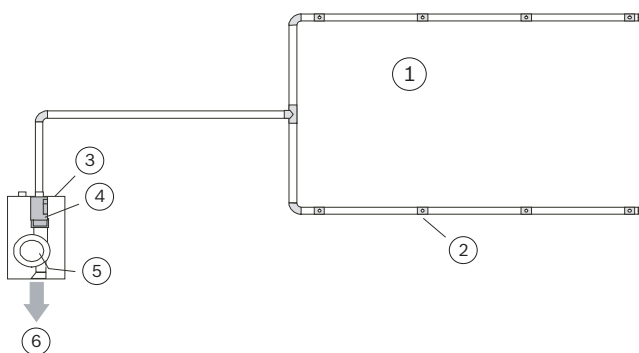
BOSCH

Invented for life

▶ Connectable to conventional fire panels

▶ High deceptive alarm immunity with intelligent signal processing *LOGIC·SENS*

▶ 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 FAS-ASD-DIAG diagnostic software

The FCS-320-TP Series Aspirating Smoke Detectors are 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. They have the latest detection technology. Their resistance to contamination, the temperature compensation of the sensor signals and initialization in relation to air pressure ensure reliable operation even under extreme 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 Aspirating 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 FCS-320-TP Series Aspirating Smoke Detectors. These modules have different response sensitivities:

Detector Module	Max. sensitivity (light obscuration)	Levels for selection
DM-TP-50(80)	0.5 %/m (0.8 %/m)	2
DM-TP-10(25)	0.1 %/m (0.25 %/m)	4
DM-TP-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).

The 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.

Model variants FCS-320-TP Series
The variants FCS-320-TP1 and FCS-320-TP2 are the cost-effective Aspirating Smoke Detectors for universal use with LED displays for operation, malfunction, and alarm (two alarm indications on the FCS-320-TP2).

Certifications and approvals

Region	Certification	
Germany	VdS	G 208046 FCS-320 TT_TPSeries / FAS-420 TT_TPSeries
Europe	CE	FCS-320-TP
	CPD	0786-CPD-20790 FCS-320-TPx_FCS-320-TTx_FAS-420-TPx_FAS-420-TTx

Installation/configuration notes

- For connection to conventional fire panels
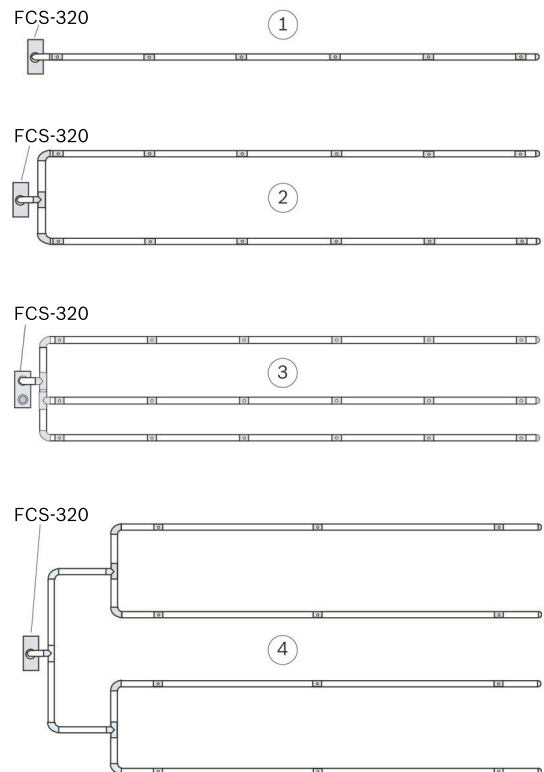
Planning of the pipe system
- In planning, a distinction is made between area monitoring and equipment monitoring.

- 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 (±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 ± 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 Aspirating 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 Aspirating Smoke Detectors produce a noise level of 45 dB(A).

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.
- Maximum of 32 air sampling openings per pipe system
- Max. pipe length / max. total monitoring area per pipe system:
  - 300 m / 2880 m2 (VdS-compliant)
  - With two Detector Modules: 2*280 m / 5760 m2

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 Aspiration Reducing Film Sheets. For each aspiration hole a Aspiration 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 the following aspects of FCS-320 planning, please refer to the operation guide "FCS-320 Series Aspirating Smoke Detectors LSN improved version" (product ID F.01U.130.926):
- Specifying the sensitivity
- Standard planning in line with VdS
- Planning with long pipe feed lines
- Planning for high-rise warehouses
- Simplified Planning
- Planning with single-hole monitoring
- Planning for forced airflow

Parts included

Type of device	Qty	Components
FCS-320-TP1	1	Aspirating Smoke Detector basic unit, with LED displays for operation, malfunction, and alarm, for one Detector Module, for connecting one pipe system
FCS-320-TP2	1	Aspirating Smoke Detector basic unit, with LED displays for operation, malfunction, and alarm, for two Detector Modules, for connecting two pipe systems

i **Notice**

One or two Detector Modules must be ordered separately for the basic units (see table).

For type of device	Qty	Required Detector Modules
FCS-320-TP1	1	Either DM-TP-50(80), DM-TP-10(25) or DM-TP-01(05)
FCS-320-TP2	2	DM-TP-50(80), DM-TP-10(25) and/or DM-TP-01(05)

Technical specifications

Electrical

Operating voltage	14 V DC to 30 V DC	
Current consumption from auxiliary power supply (at 24 V)	FCS-320-TP1	FCS-320-TP2
• Starting current, fan voltage 6.9 V	300 mA	330 mA
• Starting current, fan voltage 9 V	300 mA	330 mA
• In standby, fan voltage 6.9 V	200 mA	230 mA
• In standby, fan voltage 9 V	260 mA	310 mA
• On alarm, fan voltage 6.9 V	230 mA	290 mA
• On alarm, fan voltage 9 V	290 mA	370 mA

Mechanics

Displays on the device	
FCS-320-TP1 / FCS-320-TP2	
• In operation	Green LED
• Malfunction	Yellow LED
• Alarm	1 red LED / 2 red LEDs

Conical duct connections for Ø 25 mm	
• Aspiration pipe	1 pipe / 2 pipes
• Air return	1 pipe
Cable bushings	5 x M 20 and 2 x M 25
Dimensions (W x H x D)	200 x 292 x 113 mm
Housing material	Plastic (ABS)
Housing color	Papyrus white, RAL 9018
Weight	Approx. 1.5 kg

Environmental conditions

Protection class as per EN 60529	IP 20
Permissible temperature range	
• FCS-320-TP Series Aspirating Smoke Detectors	-20 ℃ to +60 ℃
• Pipe system PVC	00 ℃ to +60 ℃
• Pipe system ABS	-40 ℃ to +80 ℃
Permissible relative humidity (non-condensing)	10 to 95 %

Special features

Acoustic power level	45 dB(A)
Response sensitivity	max. light obscuration
• Detector Module DM-TP-50(80)	0.5 %/m (0.8 %/m)
• Detector Module DM-TP-10(25)	0.1 %/m (0.25 %/m)
• Detector Module DM-TP-01(05)	0.015 %/m (0.05 %/m)
Service life of the fan (12 V)	43,000 hrs at 24 ℃

Ordering information

FCS-320-TP1 Conventional Aspirating Smoke Detectors
Order number **FCS-320-TP1**

FCS-320-TP2 Conventional Aspirating Smoke Detectors
Order number **FCS-320-TP2**

Accessories

DM-TP-50(80) Detector Module
for TITANUS Basic Devices *PRO·SENS*® TP-1 A and
TP-2 A, with max. sensitivity of 0.5 %/m (0.8 %/m)
light obscuration
Order number **DM-TP-50(80)**

DM-TP-10(25) Detector Module
for TITANUS Basic Devices *PRO·SENS*® TP-1 A and
TP-2 A, with max. sensitivity of 0.10 %/m (0.25 %/m)
light obscuration
Order number **DM-TP-10(25)**

DM-TP-01(05) Detector Module
for TITANUS Basic Devices *PRO·SENS*® TP-1 A and
TP-2 A, with max. sensitivity of 0.015 %/m (0.05 %/m)
light obscuration
Order number **DM-TP-01(05)**

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**

FCA-320-Reset Reset Module
Reset module for FCS-320-TP1, FCS-320-TP2 or
FCS-320-TM
Order number **FCA-320-Reset**

MT-1 Device Mounting
Order number **TITANUS MT-1 mount**

FCS-320-IK Installation Kit
installation kit for mounting of FCA-320-Reset modules
into FCS-320-TP1 or FCS-320-TP1
Order number **FCS-320-IK**

Test Pipe
Order number **RAS test pipe**

Test Adapter
Order number **RAS test adapter**

AF-BR Marking Tapes for Aspiration Reducing Film Sheets
Price per piece, DU 10 pieces
Order number **TITANUS AF-BR**

AF-2.0 Aspiration Reducing Film Sheets 2.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-2.0**

AF-2.5 Aspiration Reducing Film Sheets 2.5 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-2.5**

AF-3.0 Aspiration Reducing Film Sheets, 3.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-3.0**

AF-3.2 Aspiration Reducing Film Sheets, 3.2 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-3.2**

AF-3.4 Aspiration Reducing Film Sheets, 3.4 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-3.4**

AF-3.6 Aspiration Reducing Film Sheets, 3.6 mm
Price per piece, DU 10 pieces
Order number **TITANUS AF-3.6**

AF-3.8 Aspiration Reducing Film Sheets, 3.8 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-3.8**

AF-4.0 Aspiration Reducing Film Sheets, 4.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-4.0**

AF-4.2 Aspiration Reducing Film Sheets, 4.2 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-4.2**

AF-4.4 Aspiration Reducing Film Sheets, 4.4 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-4.4**

AF-4.6 Aspiration Reducing Film Sheets, 4.6 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-4.6**

AF-5.0 Aspiration Reducing Film Sheets, 5.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-5.0**

AF-5.2 Aspiration Reducing Film Sheets, 5.2 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-5.2**

AF-5.6 Aspiration Reducing Film Sheets, 5.6 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-5.6**

AF-6.0 Aspiration Reducing Film Sheets, 6.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-6.0**

AF-6.8 Aspiration Reducing Film Sheets, 6.8 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-6.8**

AF-7.0 Aspiration Reducing Film Sheets, 7.0 mm
Price per piece, DU 10 pieces
Order number **TITANUSAF-7.0**