BOSCH

Invented for life

FCS-320-TM Series Conventional Aspirating Smoke Detectors

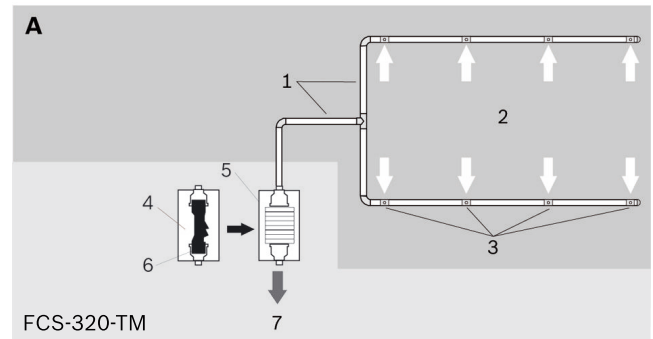▸ **For connecting to conventional fire panels**

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

▸ **Innovative fire source identification technology allows the exact location of the fire to be pinpointed by monitoring up to five distinct zones**

▸ **Innovative airflow monitoring including single-hole monitoring detects obstruction and breakage**

▸ **Installation and commissioning made easy by plug-and-play function**

▸ **Easy to diagnose using FAS-ASD-DIAG Diagnostic Software**

▸ **Simple implementation of the pipe system planning through patented aspiration reducing film sheets**

The FCS-320-TM Series Aspirating Smoke Detectors are active fire detection systems for early fire detection in zone and equipment protection, as well as for the monitoring of air-conditioning units or ducts. The exact location of the fire can be pinpointed using the innovative fire source identification.

The aspirating smoke detectors are fitted with the latest fire 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 difficult environmental conditions.

System Overview

FCS-320-TM

A	Pipe system
FCS-320-TM series	Aspirating smoke detector
1	Smoke aspiration pipe
2	Air intake
3	Air sampling openings
4	Detection unit incl. airflow sensor
5	Housing base
6	Aspiration unit
7	Air outlet

Functions

The aspiration unit uses a pipe system with defined air sampling openings to draw in air samples from the monitoring range and route them to the detection unit.

Depending on the programmed response sensitivity of the detection unit and the alarm threshold, the FCS-320-TM Aspirating Smoke Detector triggers the alarm when the appropriate light obscuration level is reached. The alarm is displayed via the main alarm LED on the device and forwarded to the connected fire panel.

Various time-delay settings can be selected for displaying and forwarding alarms and malfunctions.

Malfunction messages are reset via the connected fire panel and the Reset Module FCA-320-Reset.

Avoiding false alarms

The *LOGIC·SENS* intelligent signal processing compares the measured smoke level with known disturbance variables and decides whether something is an alarm or deception.

Fire source identification

Innovative fire source identification technology allows the exact location of the fire to be pinpointed by monitoring up to five distinct zones.

Airflow monitoring

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

Response sensitivity

FCS-320-TM series Aspirating Smoke Detectors have a response sensitivity of 0.5%/m to 2%/m light obscuration. The alarm threshold can be set at intervals of 0.1%/m with FAS-ASD-DIAG.

FCS-320-TM series variant models

All FCS-320-TM series Aspirating Smoke Detectors have LED displays for operating mode, malfunction and main alarm, as well as offering an infrared diagnostics port. In addition to this, the FCS-320-TM-R variant offer an optical fire location display for up to five zones.

Certifications and Approvals

Region	Certification	
Switzerland	VKF	AEAI 21137 FCS-320-TM_FAS-420-TM
Europe	CE	FCS-320-TM
	CPD	0786-CPD-20879 FCS-320-TM_FAS-420-TM

Installation/Configuration Notes

Pipe system planning

In planning, a distinction is made between area monitoring and equipment monitoring.

The aspiration pipe system should be arranged such that any fires can be detected at the initial stage. The number of air sampling openings and the structure of the pipe system depend on the size and geometry of the monitoring area.

Symmetrical structure

The aspiration pipe system incl. aspiration borings should preferably be symmetrical in structure, i.e.:

- Same number of air sampling openings per pipe branch
- Same pipe branch lengths (maximum deviation ± 20%)
- Same distance between adjacent air sampling openings on the smoke aspiration pipe (maximum deviation ± 20%)

Asymmetrical structure

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 adjacent air sampling openings on the smoke aspiration pipe must be the same (maximum 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.
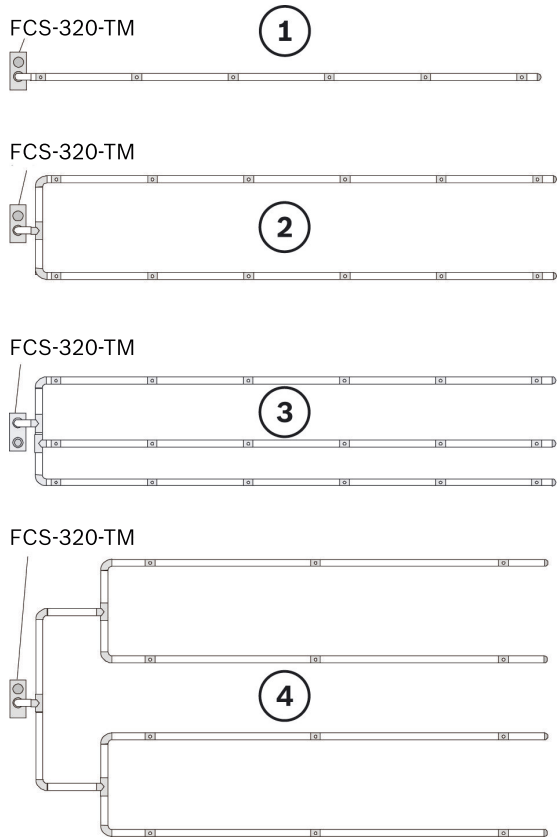
Branch length

For faster detection, it is best to select several short branches rather than a few long branches (U and double-U pipe systems preferable).

Pipe configuration

Depending on the geometry of the area, the aspiration pipe is planned as an I, U, M or double-U pipe system.

Note   Planning with fire source identification requires I pipe configuration.

FCS-320-TM ①

FCS-320-TM ②

FCS-320-TM ③

FCS-320-TM ④

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

For further information on the following aspects of FCS-320-TM planning, please refer to the operation guide "FCS-320-TM Series Aspirating Smoke Detectors LSN improved version" (Product ID F.01U.130.928):

- Planning airflow monitoring
- Defining the sensitivity
- Planning limitations
- Planning air sampling pipes
- Standard Pipe Planning
- Simplified Pipe Planning
- Planning for Forced Airflow
- Setting of the fan current

Parts Included

Type of device	Qty.	Components
FCS-320-TM	1	Standard Aspirating Smoke Detector unit with LED displays for operating mode, malfunction and alarm
FCS-320-TM-R	1	Standard Aspirating Smoke Detector unit with LED displays for operating mode, malfunction, alarm and fire source identification
Note		The FAS-420-TM-HB Housing Base must be ordered separately for standard units.

Technical Specifications

Electrical

Power supply	15 V DC . . 30 V DC		
Current consumption from auxiliary power supply	Fan voltage		
	9 V	10.5 V	12 V
- Starting current	150 mA	150 mA	150 mA
- In standby	90 mA	110 mA	130 mA
- With alarm	125 mA	135 mA	150 mA

Displays on the device

	FCS-320-TM	FCS-320-TM-R
Operation	Green LED	Green LED
Malfunction	Yellow LED	Yellow LED
Alarm	Red LED	Red LED
Fire location display	-	5 red LEDs (zones A-E)
Smoke level display	-	-
Infrared port	IR transmitter/receiver	IR transmitter/receiver

Mechanics

Conical duct connections Ø 25 mm	1x aspiration pipe 1x air return
• Aspiration pipe	1 pipe
• Air return	1 pipe
Cable bushings:	
• Housing base sides	8 x M 20 and 2 x M 25
• Housing base rear wall	4 x M 25
Dimensions (W x H x D)	140 x 222 x 70 mm
Weight	Approx. 0.8 kg
Housing material	Plastic (ABS)
Housing color	Papyrus white (RAL 9018)

Environmental conditions

Protection category according to
EN 60529

•	Without air return	IP 20
•	With pipe section 100 mm/pipe bend	IP 42
•	With air return	IP 54

Permissible temperature range:

•	FAS-420-TM series Aspirating 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)	Max. 95%

Special features

Sound power level (at 9 V fan voltage) EN27779, 1991	40 dB(A)
Response sensitivity (light obscuration)	0.5 to 2.0%/m
Life cycle of fan (at 12 V and 24 °C)	60,000 hrs

Ordering Information

FCS-320-TM Conventional Aspirating Smoke Detector with LED displays for operating mode, malfunction and alarm	**FCS-320-TM**
FCS-320-TM-R Conventional Aspirating Smoke Detector with LED displays for operating mode, malfunction, alarm and fire source identification	**FCS-320-TM-R**

Accessories

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.	**FAS-ASD-DIAG**
FCA-320-Relay Relay Module Relay module FCS-320-TM or FCS-320-TM-R	**FCS-320-Relay**
FCA-320-Reset Reset Module Reset module for FCS-320-TP1, FCS-320-TP2 or FCS-320-TM	**FCA-320-Reset**
Test Pipe	**RAS test pipe**
Test Adapter	**RAS test adapter**
AF-BR Marking Tapes for Aspiration Reducing Film Sheets Price per piece, DU 10 pieces	**TITANUS AF-BR**
AF-2.0 Aspiration Reducing Film Sheets 2.0 mm Price per piece, DU 10 pieces	**TITANUSAF-2.0**

Ordering Information

AF-2.5 Aspiration Reducing Film Sheets 2.5 mm Price per piece, DU 10 pieces	**TITANUSAF-2.5**
AF-3.0 Aspiration Reducing Film Sheets, 3.0 mm Price per piece, DU 10 pieces	**TITANUSAF-3.0**
AF-3.2 Aspiration Reducing Film Sheets, 3.2 mm Price per piece, DU 10 pieces	**TITANUSAF-3.2**
AF-3.4 Aspiration Reducing Film Sheets, 3.4 mm Price per piece, DU 10 pieces	**TITANUSAF-3.4**
AF-3.6 Aspiration Reducing Film Sheets, 3.6 mm Price per piece, DU 10 pieces	**TITANUS AF-3.6**
AF-3.8 Aspiration Reducing Film Sheets, 3.8 mm Price per piece, DU 10 pieces	**TITANUSAF-3.8**
AF-4.0 Aspiration Reducing Film Sheets, 4.0 mm Price per piece, DU 10 pieces	**TITANUSAF-4.0**
AF-4.2 Aspiration Reducing Film Sheets, 4.2 mm Price per piece, DU 10 pieces	**TITANUSAF-4.2**
AF-4.4 Aspiration Reducing Film Sheets, 4.4 mm Price per piece, DU 10 pieces	**TITANUSAF-4.4**
AF-4.6 Aspiration Reducing Film Sheets, 4.6 mm Price per piece, DU 10 pieces	**TITANUSAF-4.6**
AF-5.0 Aspiration Reducing Film Sheets, 5.0 mm Price per piece, DU 10 pieces	**TITANUSAF-5.0**
AF-5.2 Aspiration Reducing Film Sheets, 5.2 mm Price per piece, DU 10 pieces	**TITANUSAF-5.2**
AF-5.6 Aspiration Reducing Film Sheets, 5.6 mm Price per piece, DU 10 pieces	**TITANUSAF-5.6**
AF-6.0 Aspiration Reducing Film Sheets, 6.0 mm Price per piece, DU 10 pieces	**TITANUSAF-6.0**
AF-6.8 Aspiration Reducing Film Sheets, 6.8 mm Price per piece, DU 10 pieces	**TITANUSAF-6.8**
AF-7.0 Aspiration Reducing Film Sheets, 7.0 mm Price per piece, DU 10 pieces	**TITANUSAF-7.0**
FAS-420-TM-HB Housing Base for Aspirating Smoke Detectors Series FAS-420-TM	**FAS-420-TM-HB**