Aspiration smoke detectors from the FCS-320-TM series are active fire detection devices for providing early smoke and fire detection. They are used for space and equipment protection as well as for monitoring air conditioning units or ducts (provided that it is installed outside of these units or ducts). You can also pinpoint the exact location of the fire using the innovative fire source identification operation. The aspiration 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**

- **Pipe system**
- **FCS-320-TM series** Aspiration 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
**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.

**Variants**

All devices have LED displays for operating mode, malfunction and main alarm, and also offer an infrared diagnostics port. In addition, FCS-320-TM-R offers an optical fire source identification display for up to five zones.

**Regulatory information**

<table>
<thead>
<tr>
<th>Region</th>
<th>Regulatory compliance/quality marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>CMIM FCS-320-TM</td>
</tr>
<tr>
<td>Macao Special Administrative Region Government</td>
<td>CB 0851/GEL/DPI/2020</td>
</tr>
<tr>
<td>Germany</td>
<td>VdS G209144 FCS-320-TM_FAS-420-TM</td>
</tr>
</tbody>
</table>

**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.
Notice
Planning with fire source identification requires I pipe configuration.

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I-pipe system</td>
</tr>
<tr>
<td>2</td>
<td>U-pipe system</td>
</tr>
<tr>
<td>3</td>
<td>M-pipe system</td>
</tr>
<tr>
<td>4</td>
<td>Double-U pipe system</td>
</tr>
</tbody>
</table>

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

Technical specifications

**Electrical**

<table>
<thead>
<tr>
<th>Power supply (Conventional)</th>
<th>14 V DC-30 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption from auxiliary power supply (24 V)</td>
<td>Fan voltage</td>
</tr>
<tr>
<td></td>
<td>9 V 10.5 V 12 V 13.5 V</td>
</tr>
<tr>
<td></td>
<td>Starting current</td>
</tr>
<tr>
<td></td>
<td>120 mA 130 mA 145 mA 160 mA</td>
</tr>
<tr>
<td></td>
<td>In standby</td>
</tr>
<tr>
<td></td>
<td>90 mA 110 mA 130 mA 150 mA</td>
</tr>
<tr>
<td></td>
<td>At alarm</td>
</tr>
<tr>
<td></td>
<td>125 mA 135 mA 150 mA 175 mA</td>
</tr>
</tbody>
</table>

**Environmental conditions**

<table>
<thead>
<tr>
<th>Protection category according to EN 60529</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without air return IP 20</td>
</tr>
<tr>
<td>With pipe section 100 mm/pipe bend IP 42</td>
</tr>
<tr>
<td>With air return IP 54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permissible temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration smoke detector -20 °C to +60 °C</td>
</tr>
<tr>
<td>PVC pipe system -10 °C to +60 °C</td>
</tr>
<tr>
<td>ABS pipe system -40 °C to +80 °C</td>
</tr>
</tbody>
</table>

Permissible relative humidity (non-condensing) Max. 95%

**Ordering information**

**FCS-320-TM Aspiration smoke detector**
conventional aspirating smoke detector with LED displays for operating mode, malfunction and alarm
Order number **FCS-320-TM | F.01U.141.195**

**FCS-320-TM-R Aspiration smoke detector, room-ident**
conventional aspirating smoke detector with LED displays for operating mode, malfunction, alarm and fire source identification
Order number **FCS-320-TM-R | F.01U.141.196**

**FAS-420-TM-HB Housing base**
housing base for aspiration smoke detector
Order number **FAS-420-TM-HB | F.01U.078.494**
Fire Alarm Systems - FCS-320-TM Conventional aspiration smoke detector series

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

FCA-320-RELAY Relay module
relay module for aspirating smoke detector FCS-320-TM or FCS-320-TM-R
Order number FCA-320-RELAY | F.01U.141.200

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

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

Test Adapter
The Test Adapter is recommended for applications where the suction pipe system has to be fixed.
Order number RAS test adapter | 4.998.148.849

TITANUS AF-BR Marking tape suction-reducing film sheet
Price per piece, DU 10 pieces
Order number TITANUS AF-BR | 4.998.143.413

TITANUS AF-2.0 Suction-reducing film sheets, 2.0mm
Price per piece, DU 10 pieces
Order number TITANUS AF-2.0 | 4.998.143.416

TITANUS AF-2.5 Suction-reducing film sheets, 2.5mm
Price per piece, DU 10 pieces
Order number TITANUS AF-2.5 | 4.998.143.417

TITANUS AF-3.0 Suction-reducing film sheets, 3.0mm
Price per piece, DU 10 pieces
Order number TITANUS AF-3.0 | 4.998.143.418

TITANUS AF-3.2 Suction-reducing film sheets, 3.2mm
Price per piece, DU 10 pieces
Order number TITANUS AF-3.2 | 4.998.143.419

TITANUS AF-3.4 Suction-reducing film sheets, 3.4mm
Price per piece, DU 10 pieces
Order number TITANUS AF-3.4 | 4.998.143.420

TITANUS AF-3.6 Suction-reducing film sheets, 3.6mm
Price per piece, DU 10 pieces
Order number TITANUS AF-3.6 | 4.998.143.422

TITANUS AF-3.8 Suction-reducing film sheets, 3.8mm
Price per piece, DU 10 pieces
Order number TITANUS AF-3.8 | 4.998.143.423

TITANUS AF-4.0 Suction-reducing film sheets, 4.0mm
Price per piece, DU 10 pieces
Order number TITANUS AF-4.0 | 4.998.143.424

TITANUS AF-4.2 Suction-reducing film sheets, 4.2mm
Price per piece, DU 10 pieces
Order number TITANUS AF-4.2 | 4.998.143.425

TITANUS AF-4.4 Suction-reducing film sheets, 4.4mm
Price per piece, DU 10 pieces
Order number TITANUS AF-4.4 | 4.998.143.426

TITANUS AF-4.6 Suction-reducing film sheets, 4.6mm
Price per piece, DU 10 pieces
Order number TITANUS AF-4.6 | 4.998.143.427

TITANUS AF-5.0 Suction-reducing film sheets, 5.0mm
Price per piece, DU 10 pieces
Order number TITANUS AF-5.0 | 4.998.143.428

TITANUS AF-5.2 Suction-reducing film sheets, 5.2mm
Price per piece, DU 10 pieces
Order number TITANUS AF-5.2 | 4.998.143.429

TITANUS AF-5.6 Suction-reducing film sheets, 5.6mm
Price per piece, DU 10 pieces
Order number TITANUS AF-5.6 | 4.998.143.430

TITANUS AF-6.0 Suction-reducing film sheets, 6.0mm
Price per piece, DU 10 pieces
Order number TITANUS AF-6.0 | 4.998.143.431

TITANUS AF-6.8 Suction-reducing film sheets, 6.8mm
Price per piece, DU 10 pieces
Order number TITANUS AF-6.8 | 4.998.143.432

TITANUS AF-7.0 Suction-reducing film sheets, 7.0mm
Price per piece, DU 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