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. 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.
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 detection unit. Depending on the programmed response sensitivity of the detection unit and the alarm threshold, the aspiration smoke detector triggers the alarm when the appropriate light obscuration level is reached. The alarm is displayed through 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

Intelligent signal processing LOGIC-SENS compares the measured smoke level with known disturbance variables and decides between alarm and 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

The aspiration 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.

For further information on FCS-320-TM planning, refer to the user manual (F.01U.130.928).

### Technical specifications

<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>

### 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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current consumption from auxiliary power supply (24 V)</th>
<th>Fan voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting current</td>
<td>120 mA      130 mA 145 mA 160 mA</td>
</tr>
<tr>
<td>In standby</td>
<td>90 mA       110 mA 130 mA 150 mA</td>
</tr>
<tr>
<td>At alarm</td>
<td>125 mA      135 mA 150 mA 175 mA</td>
</tr>
</tbody>
</table>

### 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:
  - Aspiration smoke detector: -20°C to +60°C
  - PVC pipe system: -10°C to +60°C
  - ABS pipe system: -40°C to +80°C
- Permissible relative humidity (non-condensing): Max. 95%

### Ordering information

**FCS-320-TM Aspiration smoke detector**
Conventional aspiration smoke detector with LED displays for operating mode, malfunction and alarm. For connecting one pipe system. The FAS-420-TM-HB Housing base must be ordered separately.
Order number **FCS-320-TM | F.01U.141.195**

**FCS-320-TM-R Aspiration smoke detector, room-ident**
Conventional aspiration smoke detector with LED displays for operating mode, malfunction, alarm and fire source identification. For connecting one pipe system. The FAS-420-TM-HB Housing base must be ordered separately.
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**

**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 aspiration 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
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