FCP-320/FCH-320 Conventional Automatic Fire Detectors

The FCP-320/FCH-320 Series Conventional Automatic Fire Detectors set new standards in fire detection technology through a combination of optical, thermal and chemical (gas) sensors and intelligent evaluation electronics. Their most impressive feature is their ability to prevent false alarms, as well as speed and accuracy of detection.

The enhanced operating voltage range of 8.5 V DC up to 30 V DC and the two variants with 820 Ω alarm resistor or 470 Ω alarm resistor enables the detector application with nearly all conventional fire panels.

<table>
<thead>
<tr>
<th>System overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating mode</strong></td>
</tr>
<tr>
<td>Combined</td>
</tr>
<tr>
<td>Optical (scattered light measurement)</td>
</tr>
<tr>
<td>Thermal max.</td>
</tr>
</tbody>
</table>

### Functions

The FCP-OC320 and FCP-OT320 Multisensor Detectors each combine two detection principles. All sensor signals are analyzed continually by the internal evaluation electronics and are linked with each other. If a signal combination fits the detector's programmed code field, an alarm is automatically triggered. By linking the sensors, the combined detectors can also be used in places where work carried out gives rise to light smoke, steam or dust.

#### Optical sensor (smoke sensor)

The optical sensor uses the scattered-light method. An LED transmits light to the measuring chamber, where it is absorbed by the labyrinth structure. In the event of a fire, smoke enters the measuring chamber and the smoke particles scatter the light from the LED. The amount of light hitting the photo diode is converted into a proportional electrical signal.

#### Thermal sensor (temperature sensor)

A thermistor in a resistance network is used as a thermal sensor; an analog-digital converter measures the temperature-dependent voltage at regular intervals.

### V d S

- High reliability of detection thanks to evaluation electronics
- Active adjustment of the threshold (drift compensation) if the optical sensor becomes dirty
- Activation of a remote external detector alarm display possible
- Mechanical removal lock (can be activated/deactivated)
- Dust-repellent labyrinth and cap construction
When the maximum temperature of 54°C is exceeded (thermal maximum), or if the temperature rises by a defined amount within a specified time (thermal differential), the temperature sensor triggers the alarm status.

Chemical sensor (CO gas sensor)
The main function of the gas sensor is to detect carbon monoxide (CO) generated as a result of a fire, but it will also detect hydrogen (H) and nitrous monoxide (NO). The sensor signal value is proportional to the concentration of gas. The gas sensor delivers additional information to effectively suppress deceptive values.

Depending on the service life of the gas sensor, the OC 320 detector switches off the C sensors after five years of operation. The detector will continue to function as an O detector. The detector should then be exchanged immediately in order to be able to keep using the higher reliability of detection of the OC detector.

Special features

<table>
<thead>
<tr>
<th>Detector type</th>
<th>Drift compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Optical unit</td>
</tr>
<tr>
<td>FCP-OC320</td>
<td>x</td>
</tr>
<tr>
<td>FCP-OC320-R470</td>
<td>x</td>
</tr>
<tr>
<td>FCP-OT320</td>
<td>x</td>
</tr>
<tr>
<td>FCP-OT320-R470</td>
<td>x</td>
</tr>
<tr>
<td>FCP-O320</td>
<td>x</td>
</tr>
<tr>
<td>FCP-O320-R470</td>
<td>x</td>
</tr>
<tr>
<td>FCH-T320</td>
<td>--</td>
</tr>
<tr>
<td>FCH-T320-R470</td>
<td>--</td>
</tr>
<tr>
<td>FCH-T320-FSA</td>
<td>--</td>
</tr>
</tbody>
</table>

The detectors comply with:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FCP-OC320</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCP-OC320-R470</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCP-OT320</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCP-OT320-R470</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCP-O320</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCP-O320-R470</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCH-T320</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>FCH-T320-R470</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Regulatory information

<table>
<thead>
<tr>
<th>Region</th>
<th>Regulatory compliance/quality marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>CMIM FCP-320</td>
</tr>
<tr>
<td></td>
<td>CMIM MSS300</td>
</tr>
<tr>
<td>Europe</td>
<td>CPR 0786-CPR-20351 FCP-O320_FCP-O320-R470</td>
</tr>
<tr>
<td></td>
<td>CPR 0786-CPR-20352 FCP-OT320_FCP-OT320-R470</td>
</tr>
<tr>
<td></td>
<td>CPR 0786-CPR-20353 FCH-T320_FCH-T320-R470</td>
</tr>
<tr>
<td></td>
<td>CPR 0786-CPR-20355 FCP-OC320_FCP-OC320-R470</td>
</tr>
<tr>
<td>Germany</td>
<td>VdS G 208001 FCP-O320-R470</td>
</tr>
<tr>
<td></td>
<td>VdS G 208002 FCP-OT320-R470</td>
</tr>
<tr>
<td></td>
<td>VdS G 208003 FCH-T320-R470</td>
</tr>
<tr>
<td></td>
<td>VdS G 208004 FCH-T320-FSA</td>
</tr>
<tr>
<td></td>
<td>VdS G 208005 FCP-OC320-R470</td>
</tr>
<tr>
<td>Europe</td>
<td>CE FCP-/FCH-320</td>
</tr>
<tr>
<td></td>
<td>CE MSR 320</td>
</tr>
<tr>
<td></td>
<td>CPD 0786-CPD-20354 FCH-T320-FSA</td>
</tr>
</tbody>
</table>

Installation/configuration notes

- Up to 32 detectors can be connected per primary line
- Maximum cable length: 1000 m, for J-Y(St) Y n x 2 x 0.6/0.8
- Country-specific standards and guidelines must be observed during the planning phase
- The detector can be painted (cap and base) and thereby adapted to the surrounding colour scheme; note the information in the Painting Instructions (Document Number F.01U.089.231)
- Planning for multisensor detectors follows the guidelines for optical detectors, unless a specific VdS planning guideline is available (see DIN VDE 0833 Part 2 and VDS 2095)
- The OC and OT types are planned using the guidelines for optical detectors if operated as optical detectors or as combined detectors; see DIN VDE 0833 Part 2 and VDS 2095
**Technical specifications**

### Electrical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>8.5 V DC to 30 V DC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>&lt; 0.12 mA</td>
</tr>
<tr>
<td>Alarm output</td>
<td>Increase in current (alarm resistance 820 Ω or 470 Ω)</td>
</tr>
<tr>
<td>Indicator output</td>
<td>Open collector connects 0 V in the event of an alarm over 3.92 kΩ</td>
</tr>
</tbody>
</table>

### Mechanics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual display</td>
<td>LED red</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Without base</td>
<td>Ø 99.5 x 52 mm</td>
</tr>
<tr>
<td>With base</td>
<td>Ø 120 x 63.5 mm</td>
</tr>
<tr>
<td>Housing material</td>
<td>Plastic, ABS</td>
</tr>
<tr>
<td>Housing color</td>
<td>White, similar to RAL 9010, matt finish</td>
</tr>
<tr>
<td>Weight without/packaging</td>
<td>Approx. 80 g / approx. 120 g</td>
</tr>
<tr>
<td>FCP-OC320 / FCP-OC320-R470</td>
<td>Approx. 85 g / approx. 130 g</td>
</tr>
</tbody>
</table>

### Environmental conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection class</td>
<td>IP 41, IP 43 with FAA-420-SEAL or MSC 420</td>
</tr>
<tr>
<td>Permissible relative humidity</td>
<td>95% (non-condensing)</td>
</tr>
<tr>
<td>Permissible air speed</td>
<td>20 m/s</td>
</tr>
<tr>
<td>Permissible operating temperature</td>
<td>-20 °C to +50 °C</td>
</tr>
<tr>
<td>FCP-0320 / FCP-0320-R470</td>
<td>-20°C to +65°C</td>
</tr>
<tr>
<td>FCP-OC320 / FCP-OC320-R470</td>
<td>-10°C to +50°C</td>
</tr>
</tbody>
</table>

### Limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring area</td>
<td>Max. 120 m² (Heed local guidelines!)</td>
</tr>
</tbody>
</table>

### Special features

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response sensitivity</td>
<td></td>
</tr>
<tr>
<td>Optical part (in line with EN 54-7)</td>
<td>FCP-OC320 / FCP-OC320-R470 &lt; 0.23 dB/m</td>
</tr>
<tr>
<td></td>
<td>FCP-OT320 / FCP-OT320-R470 &lt; 0.19 dB/m</td>
</tr>
<tr>
<td></td>
<td>FCP-O320 / FCP-O320-R470 &lt; 0.16 dB/m</td>
</tr>
<tr>
<td>Thermal maximum part</td>
<td>&gt;54 °C</td>
</tr>
<tr>
<td>Thermal rate-of-rise part (in line with EN 54-5)</td>
<td>FCH-T320 / FCH-T320-R470: A2R</td>
</tr>
<tr>
<td></td>
<td>FCH-T320-FSA: A1R</td>
</tr>
<tr>
<td>Chemical part</td>
<td>In ppm range</td>
</tr>
<tr>
<td>Color code</td>
<td></td>
</tr>
<tr>
<td>FCP-OC320 / FCP-OC320-R470</td>
<td>Blue ring</td>
</tr>
<tr>
<td>FCP-OT320 / FCP-OT320-R470</td>
<td>Black ring</td>
</tr>
<tr>
<td>FCP-O320 / FCP-O320-R470</td>
<td>No marking</td>
</tr>
<tr>
<td>FCH-T320 / FCH-T320-R470 / FSA</td>
<td>Red ring</td>
</tr>
</tbody>
</table>

### Ordering information

**FCP-O320 Smoke detector optical**
conventional technology, with 820 Ohm alarm resistor
Order number FCP-O320 | F.01U.026.293

**FCP-OT320 Multisensor detector optical/thermal**
conventional technology, with 820 Ohm alarm resistor
Order number FCP-OT320 | F.01U.026.295

**FCP-OC320 Multisensor detector optical/chemical**
conventional technology, with 820 Ohm alarm resistor
Order number FCP-OC320 | F.01U.026.292

**FCP-OC320-R470 Multisensor detector optical/chemical**
conventional technology, with 470 Ohm alarm resistor
Order number FCP-OC320-R470 | F.01U.029.867

**FCP-OT320-R470 Multisensor detector optical/thermal**
conventional technology, with 470 Ohm alarm resistor
Order number FCP-OT320-R470 | F.01U.029.862

FCP-O320-R470 Smoke detector, optical conventional technology, with 470 Ohm alarm resistor
Order number FCP-O320-R470 | F.01U.029.857

FCH-T320 Heat detector, rate-of-rise conventional technology, thermal differential/thermal maximum detector, with 820 Ohm alarm resistor
Order number FCH-T320 | F.01U.026.291

FCH-T320-R470 Heat detector thermal differential/thermal maximum detector, conventional technology, with 470 Ohm alarm resistor
Order number FCH-T320-R470 | F.01U.029.861

FCH-T320-FSA Heat detector, DIBt protection closures thermal differential/thermal maximum detector, conventional technology, with 820 Ohm alarm resistor
Order number FCH-T320-FSA | F.01U.026.294

Accessories

MS 400 B Detector base with Bosch logo
Bosch-branded detector base for surface mounted and flush-mounted cable feed
Order number MS 400 B | F.01U.215.139

MS 400 Detector base
Detector base for surface mounted and flush-mounted cable feed, not branded.
Order number MS 400 | 4.998.021.535

FAA-420-SEAL Damp room seal, 10 pcs
Damp room seal
Delivery unit is 10.
Order number FAA-420-SEAL | F.01U.215.142

MSR 320 Base with relay, conventional with a change-over relay (Form C)
Order number MSR 320 | 4.998.114.565

MSC 420 Base extension with damp room sealing
Extension for detector bases with surface-mounted cable feed
Order number MSC 420 | 4.998.113.025

MSS 300 Base sounder white
Control via C-point of the detector
Order number MSS 300 | 4.998.025.371

MSS300-WH-EC Base sounder, white
Control through fire panel via interface
Order number MSS300-WH-EC | 4.998.120.501

FAA-420-R1-DIN Remote indicator for DIN application
For applications where the automatic detector is not visible, or mounted in false ceilings/floors.
This version complies with DIN 14623.
Order number FAA-420-R1-DIN | F.01U.289.620

FAA-420-R1-ROW Remote indicator
For applications where the automatic detector is not visible, or mounted in false ceilings/floors.
Order number FAA-420-R1-ROW | F.01U.289.120

FMX-DET-MB Mounting bracket
Mounting bracket for installation in false floors
Order number FMX-DET-MB | 2.799.271.257

WA400 Wall bracket
Console for DIBt compliant mounting of detectors above doors etc., including detector base
Order number WA400 | 4.998.097.924

MH 400 Heating element
usable at locations where the functional safety of the detector might be impaired by condensation
Order number MH 400 | 4.998.025.373

SK 400 Protective cage
prevents damage
Order number SK 400 | 4.998.025.369

SSK400 Dust protection, 10pcs
Protective dust cover for automatic point type detectors.
Delivery unit is 10.
Order number SSK400 | 4.998.035.312

TP4 400 Label plate small
Support plate for detector identification.
Delivery unit is 50.
Order number TP4 400 | 4.998.084.709

TP8 400 Label plate large
Support plate for detector identification, large.
Delivery unit is 50.
Order number TP8 400 | 4.998.084.710

Services

EWE-FPTDT-IW 12 mths wrty ext Fire Point Detector
12 months warranty extension
Order number EWE-FPTDT-IW | F.01U.360.736

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