FCP-320/FCH-320 Conventional Automatic Fire Detectors

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Invented for life

- 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

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.

System overview

Operating mode	Detector type			
	FCP-OC320	FCP-OT320	FCP-O320	FCH-T320/T320-FSA
Combined	x	x	-	-
Optical (scattered light measurement)	x	x	x	-
Thermal max.	-	x	-	x
Thermal differential	-	x	-	x
Chemical (gas measurement)	x	-	-	-

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.
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 310 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	Detector type			
	FCP-OC320	FCP-OT320	FCP-O320	FCH-T320 / T320-FSA
Drift compensation in optical unit	x	x	x	-
Drift compensation in the gas sensor	x	-	-	-

Certifications and approvals

The detectors comply with:

Detector type	EN54-5:2000/ A1:2002	EN54-7:2000/ A1:2002
FCP-OC320		•
FCP-OC320-R470		•
FCP-OT320	•	•
FCP-OT320-R470	•	•
FCP-O320		•
FCP-O320-R470		•
FCH-T320	•	
FCP-T320-R471	•	
FCH-T320-FSA	•	

Region	Certification	
Germany	VdS	G 208003 FCH-T320_-R470
	VdS	G 208004 FCH-T320-FSA
	VdS	G 208001 FCP-O320_-R470
	VdS	G 208002 FCP-OT320_-R470
	VdS	G 208005 FCP-OC320_-R470
Europe	CE	FCP-/FCH-320
	CPD	0786-CPD-20353 FCH-T320_FCH-T320-R470
	CPD	0786-CPD-20354 FCH-T320-FSA
	CPD	0786-CPD-20351 FCP-O320_FCP-O320-R470
	CPD	0786-CPD-20355 FCP-OC320_FCP-OC320-R470
	CPD	0786-CPD-20352 FCP-OT320_FCP-OT320-R470
		000018/01 FCP-O320

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).

Installation/configuration notes in accordance with VdS/VDE/DIBt

- 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.
- When planning fire barriers according to DIBt, you have to use the FCH-T320-FSA. This detector has the characteristic curve corresponds to class A1R.

Parts included

Detector type	Qty.	Components
FCP-OC320	1	Multisensor Detector Optical/Chemical
FCP-OT320	1	Multisensor Detector Optical/Thermal
FCP-O320	1	Optical Smoke Detector

FCH-T320	1	Heat Detector (Thermal Differential/Thermal Maximum)
FCH-T320-FSA	1	Heat Detector for Fire Barriers conforming to DIBt, Quality-controlled (Thermal Differential/Thermal Maximum)

Technical specifications

Electrical

Operating voltage	8.5 V DC to 30 V DC
Current consumption	< 0.12 mA
Alarm output	Increase in current (alarm resistance 820 Ωor 470 Ω)
Indicator output	Open collector connects 0 V in the event of an alarm over 3.92 kΩ

Mechanics

Individual display	LED red
Dimensions	
• Without base	Ø 99.5 x 52 mm
• With base	Ø 120 x 63.5 mm
Housing material	Plastic, ABS
Housing color	White, similar to RAL 9010, matt finish
Weight	Without / with packaging
• FCP-OC320	Approx. 85 g / approx 130 g
• FCP-OT320 / FCP-O320 / FCH-T320 / FCH-T320-FSA	Approx. 80 g / approx. 120 g

Environmental conditions

Protection class as per EN 60529	IP 40, IP 43 with detector base with damp room seal
Permissible relative humidity	95% (non-condensing)
Permissible air speed	20 m/s
Permissible operating temperature	
• FCP-OC320	-10 °C to +50 °C
• FCP-OT320	-20 °C to +50 °C
• FCP-O320	-20 °C to +65 °C
• FCH-T320 / T320-FSA	-20 °C to +50 °C

Planning

Monitoring area	
• FCP-OC320, FCP-OT320, FCP-O320	Max. 120 m² (Heed local guidelines!)
• FCH-T320	Max. 40 m² (Heed local guidelines!)
Maximum installation height	16 m (Heed local guidelines!)
• FCP-OC320, FCP-OT320, FCP-O320	16 m (Heed local guidelines!)
• FCH-T320	6 m (Heed local guidelines!)

Special features

Response sensitivity	
• Optical part	< 0.2 dB/m, in line with EN 54 T7
• Thermal maximum part	>54 °C
• Thermal rate-of-rise part (in line with prEN 54-5)	FCH-T320: A2R FCH-T320-FSA: A1R
• Chemical part	In ppm range
Color code	
• FCP-OC320	Blue ring
• FCP-OT320	Black ring
• FCP-O320	No marking
• FCH-T320 / T320-FSA	Red ring

Ordering information

FCP-O320 Optical Smoke Detector
conventional technology, with 820 Ohm alarm resistor
Order number **FCP-O320**

FCP-OT320 Multisensor Detector Optical/Thermal
conventional technology, with 820 Ohm alarm resistor
Order number **FCP-OT320**

FCP-OC320 Multisensor Detector Optical/Chemical
conventional technology, with 820 Ohm alarm resistor
Order number **FCP-OC320**

FCP-OC320-R470 Multisensor Detector Optical/Chemical
conventional technology, with 470 Ohm alarm resistor
Order number **FCP-OC320-R470**

FCP-OT320-R470 Multisensor Detector Optical/Thermal
conventional technology, with 470 Ohm alarm resistor
Order number **FCP-OT320-R470**

FCP-O320-R470 Optical Smoke Detector
conventional technology, with 470 Ohm alarm resistor
Order number **FCP-O320-R470**

FCH-T320 Heat Detector
conventional technology, thermal differential/thermal maximum detector, with 820 Ohm alarm resistor
Order number **FCH-T320**

FCH-T320-R470 Heat Detector
thermal differential/thermal maximum detector, conventional technology, with 470 Ohm alarm resistor
Order number **FCH-T320-R470**

FCH-T320-FSA Heat Detector, for Fire Barriers conforming to DIBt
thermal differential/thermal maximum detector, conventional technology, with 820 Ohm alarm resistor
Order number **FCH-T320-FSA**

Accessories

MS 400 Detector Base
Order number **MS 400**

MS 400 B Detector Base
Bosch-branded detector base for surface mounted and flush-mounted cable feed
Order number **MS 400 B**

MSC 420 Additional Base with Damp Room Seal
for surface-mounted cable feed
Order number **MSC 420**

MSR 320 Conventional Detector Base with Relay
with a change-over relay (Form C)
Order number **MSR 320**

MSD 320 Conventional Detector Base with Diode
for Great Britain
Order number **MSD 320**

MSS 300 Detector Base Sounder White
Control via C-point of the detector
Order number **MSS 300**

MSS 300-WH-EC Detector Base Sounder White
Control through fire panel via interface
Order number **MSS300-WH-EC**

MSR 320 Conventional Detector Base with Relay
with a change-over relay (Form C)
Order number **MSR 320**

MPA External Detector Alarm Display according to DIN 14623
the transparent red alarm display conforms to DIN 14623
Order number **MPA**

FAA-420-RI Remote Indicator
required if the detector is not directly visible or has been mounted in false ceilings or false floors
Order number **FAA-420-RI**

Mounting Bracket for Fire Detectors on False Floor Stilts
Order number **FMX-DET-MB**

MK 400 Detector Console
Console for DIBt compliant mounting of detectors above doors etc., including detector base
Order number **MK 400**

MH 400 Detector Heating Element
usable at locations where the functional safety of the detector might be impaired by condensation
Order number **MH 400**

SK 400 Protective Basket
prevents damage
Order number **SK 400**

SSK 400 Protective Dust Cover
(packing unit = 10 units)
Order number **SSK 400**

TP4 400 Support Plate for Detector Identification
(packing unit = 50 units)
Order number **TP4 400**

TP8 400 Support Plate for Detector Identification
(packing unit = 50 units)
Order number **TP8 400**

FCP-320/FCH-320 Conventional Automatic Fire Detectors

	FCP-O320 Optical Smoke Detector	FCP-OC320 Multisensor Detector Optical/Chemical	FCP-OT320 Multisensor Detector Optical/Thermal
			
Detector type	optical	optical/chemical	optical/thermal
Operating voltage	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC
Current consumption	< 0.12 mA	< 0.12 mA	< 0.12 mA
Protection category	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400
Permissible operating temperature	-20 °C . . . +65 °C	-10 °C . . . +50 °C	-20 °C . . . +50 °C
Monitoring area	max. 120 m²	max. 120 m²	max. 120 m²
Maximum installation height	16 m	16 m	16 m
Alarm resistance	820 Ω	820 Ω	820 Ω
Color code	no marking	blue loop	black loop
For fire barriers conforming to DIBt, quality-controlled	–	–	–

	FCP-O320-R470 Optical Smoke Detector	FCP-OC320-R470 Multisensor Detector Optical/Chemical	FCP-OT320-R470 Multisensor Detector Optical/Thermal
			
Detector type	optical	optical/chemical	optical/thermal
Operating voltage	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC
Current consumption	< 0.12 mA	< 0.12 mA	< 0.12 mA
Protection category	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400
Permissible operating temperature	-20 °C . . . +65 °C	-10 °C . . . +50 °C	-20 °C . . . +50 °C
Monitoring area	max. 120 m²	max. 120 m²	max. 120 m²
Maximum installation height	16 m	16 m	16 m
Alarm resistance	470 Ω	470 Ω	470 Ω
Color code	no marking	blue loop	black loop
For fire barriers conforming to DIBt, quality-controlled	–	–	–

	FCH-T320 Heat Detector	FCH-T320-R470 Heat Detector	FCH-T320-FSA Heat Detector, for Fire Barriers conforming to DIBt
			
Detector type	thermal differential/thermal maximum	thermal differential/thermal maximum	thermal differential/thermal maximum
Operating voltage	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC	8.5 V DC . . . 33 V DC
Current consumption	< 0.12 mA	< 0.12 mA	< 0.12 mA
Protection category	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400	IP 40, IP 43 with MSF 400
Permissible operating temperature	-20 °C . . . +50 °C	-20 °C . . . +50 °C	-20 °C . . . +50 °C
Monitoring area	max. 40 m²	max. 40 m²	max. 40 m²
Maximum installation height	6 m	6 m	6 m
Alarm resistance	820 Ω	470 Ω	820 Ω
Color code	red loop	red loop	red loop
For fire barriers conforming to DIBt, quality-controlled	–	–	●

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