

# FCP-320/FCH-320 Conventional Automatic Fire Detectors

www.boschsecurity.com



**BOSCH**  
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-OC320-R470	FCP-OT320 / FCP-OT320-R470	FCP-O320 / FCP-O320-R470	FCH-T320 / FCH-T320-FSA / FCH-T320-R470
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 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**

Detector type	Drift compensation	
	Optical unit	Gas sensor
FCP-OC320 FCP-OC320-R470	x	x
FCP-OT320 FCP-OT320-R470	x	--
FCP-O320 FCP-O320-R470	x	--
FCH-T320 FCH-T320-R470 FCH-T320-FSA	--	--

**Certifications and approvals**

The detectors comply with:

Detector type	EN54-5:2000/ A1:2002	EN54-7:2000/ A1:2002/A2:2006
FCP-OC320		•

FCP-OC320-R470		•
FCP-OT320	•	•
FCP-OT320-R470	•	•
FCP-O320		•
FCP-O320-R470		•
FCH-T320	•	
FCH-T320-R470	•	
FCH-T320-FSA	•	

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

**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; its characteristic curve corresponds to class A1R

**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 Ω or 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	Approx. 80 g / approx. 120 g
• FCP-OC320 / FCP-OC320-R470	Approx. 85 g / approx 130 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	-20 °C to +50 °C
• FCP-O320 / FCP-O320-R470	-20 °C to +65 °C
• FCP-OC320 / FCP-OC320-R470	-10 °C to +50 °C

**Planning**

Monitoring area	Max. 120 m <sup>2</sup> (Heed local guidelines!)
• FCH-T320 / -R470 / -FSA	Max. 40 m <sup>2</sup> (Heed local guidelines!)
Maximum installation height	16 m (Heed local guidelines!)
• FCH-T320 / -R470 / -FSA	6 m (Heed local guidelines!)

**Special features**

Response sensitivity	
• Optical part (in line with EN 54-7)	FCP-OC320 / FCP-OC320-R470 < 0.23 dB/m

	FCP-OT320 / FCP-OT320-R470 < 0.19 dB/m FCP-O320 / FCP-O320-R470 < 0.16 dB/m
• Thermal maximum part	>54 °C
• Thermal rate-of-rise part (in line with EN 54-5)	FCH-T320: A2R FCH-T320-FSA: A1R
• Chemical part	In ppm range
Color code	
• FCP-OC320 / FCP-OC320-R470	Blue ring
• FCP-OT320 / FCP-OT320-R470	Black ring
• FCP-O320 / FCP-O320-R470	No marking
• FCH-T320 / -R470 / -FSA	Red ring

**Ordering information**

**FCP-O320 Smoke detector optical**

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 Smoke detector, optical**

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

**FCH-T320 Heat detector, rate-of-rise**

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, DIBt protection closures**  
thermal differential/thermal maximum detector,  
conventional technology, with 820 Ohm alarm resistor  
Order number **FCH-T320-FSA**

---

**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**

---

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

---

**FAA-420-SEAL Damp room seal, 10 pcs**  
1 package = 10 pieces  
Order number **FAA-420-SEAL**

---

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

---

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

---

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

---

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

---

**FAA-420-RI-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-RI-DIN**

---

**FAA-420-RI-ROW Remote indicator**  
For applications where the automatic detector is not  
visible, or mounted in false ceilings/floors.  
Order number **FAA-420-RI-ROW**

---

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

---

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

---

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

---

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

---

**SSK400 Dust protection, 10pcs**  
(packing unit = 10 units)  
Order number **SSK400**

---




**TP4 400 Label plate small**  
(packing unit = 50 units)  
Order number **TP4 400**




---




**TP8 400 Label plate large**  
(packing unit = 50 units)  
Order number **TP8 400**

---

## FCP-320/FCH-320 Conventional Automatic Fire Detectors

	<b>FCP-O320 Smoke detector optical</b>	<b>FCP-OC320 Multisensor detector optical/chemical</b>	<b>FCP-OT320 Multisensor detector optical/thermal</b>
			
Detector type	optical	optical/chemical	optical/thermal
Operating voltage	8.5 V DC ... 30 V DC	8.5 V DC ... 30 V DC	8.5 V DC ... 30 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 m <sup>2</sup>	max. 120 m <sup>2</sup>	max. 120 m <sup>2</sup>
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	-	-	-

	<b>FCP-O320-R470 Smoke detector, optical</b>	<b>FCP-OC320-R470 Multisensor detector optical/chemical</b>	<b>FCP-OT320-R470 Multisensor detector optical/thermal</b>
			
Detector type	optical	optical/chemical	optical/thermal
Operating voltage	8.5 V DC ... 30 V DC	8.5 V DC ... 30 V DC	8.5 V DC ... 30 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 m <sup>2</sup>	max. 120 m <sup>2</sup>	max. 120 m <sup>2</sup>
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, rate-of-rise	FCH-T320-R470 Heat detector	FCH-T320-FSA Heat detector, DIBt protection closures
			
Detector type	thermal differential/thermal maximum	thermal differential/thermal maximum	thermal differential/thermal maximum
Operating voltage	8.5 V DC . . . 30 V DC	8.5 V DC . . . 30 V DC	8.5 V DC . . . 30 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 m <sup>2</sup>	max. 40 m <sup>2</sup>	max. 40 m <sup>2</sup>
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	-	-	●

**Represented by:**

**Europe, Middle East, Africa:**  
 Bosch Security Systems B.V.  
 P.O. Box 80002  
 5600 JB Eindhoven, The Netherlands  
 Phone: + 31 40 2577 284  
 emea.securitysystems@bosch.com  
 emea.boschsecurity.com

**Germany:**  
 Bosch Sicherheitssysteme GmbH  
 Robert-Bosch-Ring 5  
 85630 Grasbrunn  
 Germany  
 www.boschsecurity.com

**North America:**  
 Bosch Security Systems, Inc.  
 130 Perinton Parkway  
 Fairport, New York, 14450, USA  
 Phone: +1 800 289 0096  
 Fax: +1 585 223 9180  
 onlinehelp@us.bosch.com  
 www.boschsecurity.us

**Asia-Pacific:**  
 Robert Bosch (SEA) Pte Ltd, Security Systems  
 11 Bishan Street 21  
 Singapore 573943  
 Phone: +65 6571 2808  
 Fax: +65 6571 2699  
 apr.securitysystems@bosch.com  
 www.boschsecurity.asia