BOSCH
Invented for life

MAGIC.SENS Automatic LSN Fire Detectors

- **Detector properties adapted to cater for room usage**
- **Active adjustment of the threshold (drift compensation)**
- **Self-monitoring sensor technology with fault indication on the fire panel in the event of sensor failure or heavy soiling**
- **Preservation of LSN loop functions in the event of wire interruption or short-circuit of a detector through integrated isolators**
- **Robust and durable**

MAGIC.SENS 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.

System Overview

Operating mode	Detector type				
	OTC	**OC**	**OT**	**O**	**T**
Combined	x	x	x	-	-
Optical	x	x	x	x	-
Thermo-max.	x	-	x	-	x
Thermal differential	x	-	x	-	x
Chemical	x	x	-	-	-

Functions

Sensor technology and signal processing

The individual sensors can be configured via the LSN network manually or using a timer.

All sensor signals are analyzed continually by the internal evaluation electronics and are linked with each other. The link between the sensors means that the combined detectors can also be used where light smoke, steam or dust must be expected during the course of normal operation.

Only if the signal combination corresponds to that for the programming of the selected usage site field code will the alarm be triggered automatically. This results in a higher level of security against false alarms.

In addition, the time curve for fire and malfunction detection sensor signals is also analyzed, resulting in increased reliability of detection for each individual sensor.

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, from which an analog-digital converter measures the temperature-dependent voltage at regular intervals.

Depending on the specified detector class, the temperature sensor triggers the alarm status when the maximum temperature of 54 °C or 69 °C is exceeded (thermal maximum), or if the temperature rises by a defined amount within a specified time (thermal differential).

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 OTC 410 and the OC 410 detectors switch off the C sensors after five years of operation. The detectors will continue to function as an OT or O detector. The detector should then be exchanged immediately in order to be able to keep using the higher reliability of detection of the OTC or OC detector.

Special features	Detector type				
	OTC 410	OC 410	OT 400 E	O 400 E	T 400 E
Drift compensation, optical part	x	x	x	x	-
Drift compensation, gas sensor	x	x	-	-	-
Contamination detection	x	x	x	x	-
Sensor shutoff/operational mode switching	x	-	x	-	-
Current analog values readable	x	x	x*	x*	x*
Operating hours readable	x	x	x*	*x	x*
Contamination level readable	x	x	x*	x*	
Serial number readable	x	x	x*	x*	x*

** Does not apply to KKW types*

LSN features

Operating data display

With the exception of KKW type detectors, the following values can be read out for all detectors using the WinPara program (Version 4.53 or later):

- Serial number
- Contamination level (with O-part)
- Operating hours
- Current analog values.

Analog values are:

- Optical system values: current measured value of the scattered light sensor; the measuring range is linear and covers from 170 (new) to 700 (dirty).
- Contamination: the contamination value shows how much the current contamination value has increased relative to the original condition.
- CO value: display of the current measured value (max. 550).

Self-monitoring of sensor technology

The sensor technology is constantly self-monitored using the following fire panel display:

- Fault indication in the event of sensor failure (life-zero monitoring)
- Continuous display of contamination level during service
- Fault indication if heavy contamination is detected (in place of false alarms)

Manual or time-controlled switch-off of individual sensors is required for adjustment to extreme interference factors.

In the event of an alarm, individual detector identification is transmitted to the fire panel.

Further performance characteristics

The detectors have a dust-repellent labyrinth and cap construction.

The detector alarm indication takes the form of a red flashing LED that is easily visible 360°.

It is possible to activate a remote external detector alarm display.

The stable and robust detector base no longer has to be directed due to the centralized position of the individual display.

The integrated strain relief for interfloor cables prevents the removal of cables from the terminal after installation. The terminals for cable cross-sections up to 2.5 mm^2 are very easily accessible.

The detector bases have a mechanical removal lock (can be activated/deactivated).

Certifications and Approvals

Region	Certification	
Germany	VdS	G 201081 OTC 410 LSN
		G 201080 OC 410 LSN
		G 202045 OT 400 E
		G 299092 OT 400 LSN KKW
		G 202044 O 400 E LSN
		G 202043 T 400 E LSN
	PTB	01 ATEX 2163 X OTC/OC 310/410, OT/O/T 300/400, DKM/SKM 120, DM/SM 210, MPA

Region	Certification	
Europe	CE	OTC 410 LSN
		OC 410 LSN
		OT 400 E LSN
		OT 400 LSN KKW
		O 400 E LSN
		O 400 LSN KKW
		T 400 E LSN
		T 400 LSN KKW
Poland	CNBOP	2105/2006 O 400 E
		2083/2006 OT 400 E
		2104/2006 T 400 E
Turkey	TSE	14.10.01/TSE-6990 Detectors
Czech Republic	TZÚS	080-001244 O 400 E LSN, O 300
		080-001247 T 400 E LSN, T 300
		080-001250 OT 400 E LSN, OT 300
		080-001253 OC 410 LSN, OC 310
		080-001256 OTC 410 LSN
Hungary	TMT	TMT-89/2/2004 O 400 E, T 400 E, OT 400 E, OC 410, OTC 410
Russia	GOST	POCC DE.C313.B06297
		POCC DE.C313B06298

Installation/Configuration Notes

- Up to 127 detectors can be connected per loop or stub.
- Maximum cable length **1000 m**, for J-Y(St) Y n x 2 x 0.6/0.8
- Can be connected to the following LSN fire panels:
  - BZ 500 LSN
  - UEZ 2000 LSN Universal Fire Panel
  - UGM 2020 Universal Security System
  - Plus other fire panels and their receiver modules with identical connection conditions.
- Country-specific standards and guidelines must be observed during the planning phase.

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

- The OTC, OC and OT types are planned in accordance with the guidelines for optical detectors if operated as optical detectors or combined detectors (see DIN VDE 0833 Part 2 and VDS 2095).
- If occasional disconnection of the optical unit (scattered light sensor) is required, planning must be based on the guidelines for heat detectors (see DIN VDE 0833 Part 2 and VDS 2095):
- When planning fire barriers according to DIBt, note that the T 400 LSN must be configured in line with class A1R.

Parts Included

Detector type	Qty.	Components
OTC 410	1	Multisensor Detector Optical/Thermal/Chemical
OC 410	1	Multisensor Detector Optical/Chemical
OT 400 E	1	Multisensor Detector Optical/Thermal
O 400 E	1	Optical Smoke Detector
T 400 E	1	Heat Detector (Thermal Differential/Thermal Maximum)
OT 400 KKW	1	Multisensor Detector Optical/Thermal *
O 400 KKW	1	Optical Smoke Detector *
T 400 KKW	1	Heat Detector (Thermal Differential/Thermal Maximum) *

**For use in areas with increased radioactive radiation*

Technical Specifications

Electrical

Operating voltage	15 V DC . . . 33 V DC
Current consumption	< 0.7 mA
Alarm output	Per data word by two-wire signal line
Indicator output	Open collector connects 0 V over 1.5 kΩ, max. 15 mA

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 (Novodur)
• Color	White, similar to RAL 9010, matt finish
Weight	Without / with packaging
• OTC 410 / OC 410	Approx. 80 g / approx. 125 g
• OT 400 / O 400 / T 400	Approx. 75 g / approx. 115 g

Environmental conditions

Protection class as per EN 60529	IP 30, IP 32 with damp room seal
Permissible operating temperature	
• OTC 410	-10 °C . . . +50 °C
• OC 410	-10 °C . . . +50 °C
• OT 400	-20 °C . . . +50 °C
• O 400	-20 °C . . . +65 °C
• T 400	-20 °C . . . +50 °C
Permissible relative humidity	95% (non-condensing)
Permissible air speed	20 m/s

Planning

Monitoring area	
• OTC 410, OC 410, OT 400, O 400	Max. 120 m^2 (Heed local guidelines!)
• T 400	Max. 40 m^2 (Heed local guidelines!)
Maximum installation height	16 m (Heed local guidelines!)
• OTC 410, OC 410, OT 400, O 400	16 m (Heed local guidelines!)
• T 400	7.5 m (Heed local guidelines!)

Special features

Response sensitivity	
• Optical part	< 0.15 dB/m, in line with EN 54 T7
• Thermal maximum part	> 54 °C / >69 °C
• Thermal differential part	A1R / A2R / BR, as per prEN 54-5 (programmable)
• Gas sensor	In ppm range
Color code	
• OTC 410	Yellow loop
• OC 410	Blue loop
• OT 400	Black loop
• O 400	No marking
• T 400	Red loop

Ordering Information

OTC 410 LSN Multisensor Detector Optical/Thermal/Chemical	**OTC 410**
OC 410 LSN Multisensor Detector Optical/Chemical	**OC 410**
OT 400 E LSN Multisensor Detector Optical/Thermal	**OT 400 E**
OT 400 LSN KKW Multisensor Detector Optical/Thermal for use in areas with increased radioactive radiation	**OT 400 LSN KKW/FSA**
O 400 E LSN Optical Smoke Detector	**O 400 E**
O 400 LSN KKW Optical Smoke Detector for use in areas with increased radioactive radiation	**O 400 LSN KKW**
T 400 E LSN Heat Detector thermal differential/thermal maximum	**T 400 E**
T 400 LSN KKW Heat Detector thermal differential/thermal maximum, for use in areas with increased radioactive radiation	**T 400 LSN KKW/FSA**

Ordering Information

Accessories

MS 400 Detector Base for surface-mounted and flush-mounted cable feed	**MS 400**
MSF 400 Detector Base with Damp Room Seal for surface-mounted and flush-mounted cable feed	**MSF 400**
MSC 420 Additional Base with Damp Room Seal for surface-mounted cable feed	**MSC 420**
MS 420 LSN Detector Base with Spring for use in Great Britain	**MS 420**
MPA External Detector Alarm Display according to DIN 14623	**MPA**
Mounting Bracket for Fire Detectors on False Floor Stilts	**FMX-DET-MB**
MK 400 Detector Console Console for DIBt compliant mounting of detectors above doors etc., including detector base	**MK 400**
MH 400 Detector Heating Element	**MH 400**
SK 400 Protective Basket	**SK 400**
SSK 400 Protective Dust Cover (packing unit = 10 units)	**SSK 400**
TP4 400 Support Plate for Detector Identification (packing unit = 50 units)	**TP4 400**
TP8 400 Support Plate for Detector Identification (packing unit = 50 units)	**TP8 400**

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

Europe, Middle East, Africa:
Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
Fax: +31 40 2577 330
emea.securitysystems@bosch.com
www.boschsecurity.com

Asia-Pacific:
Robert Bosch (SEA) Pte Ltd, Security Systems
38C Jalan Pemimpin
Singapore 577180
Phone: +65 6319 3453
Fax: +65 6319 3499
apr.securitysystems@bosch.com
www.boschsecurity.com

Represented by

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