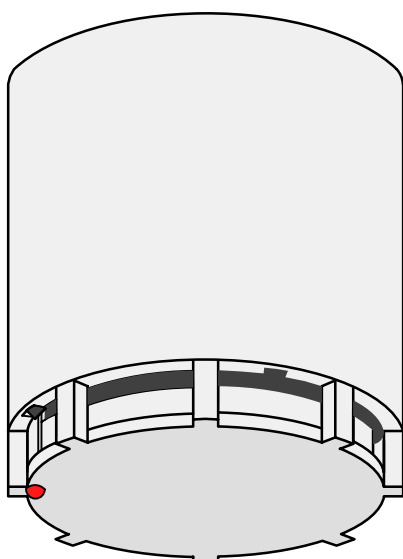


Optical smoke detector

NOM 100 LSN/NOM K 100 LSN

NOM 100 LSN



NOM K100 LSN

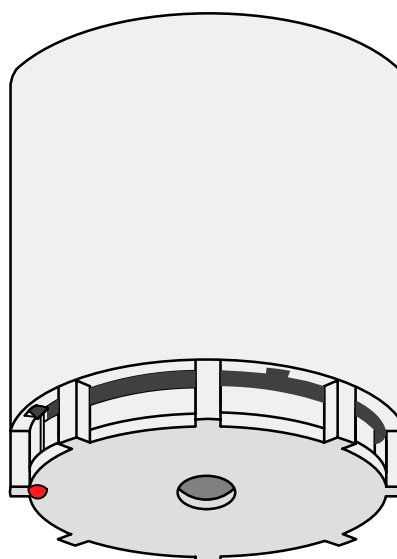


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1. Product Description

Optical smoke detectors NOM 100/NOM K 100 work using a scattered light procedure and are suitable for use in all cases where smoke is likely to form in the event of a fire.

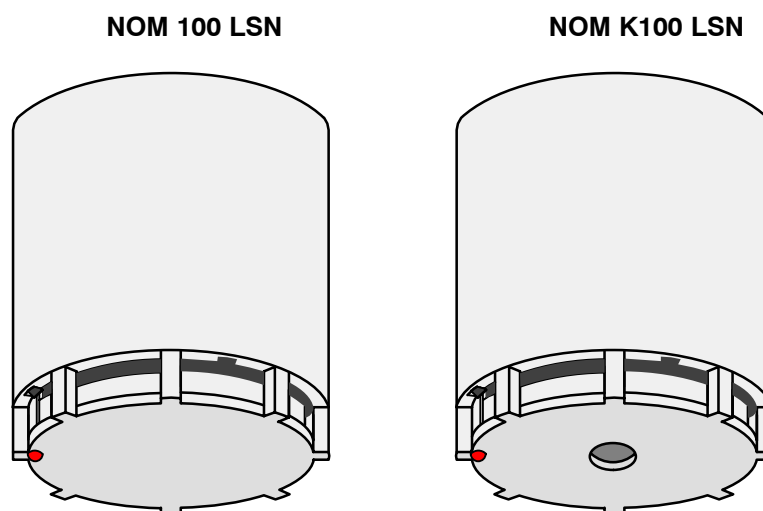
The detectors are particularly sensitive to white, visible smoke (e.g. smoldering fires). With other types of smoke (e.g. open fires with smoke that is hardly visible and with thick, black smoke), detection sensitivity is, as a result of the design, somewhat lesser, but does always comply with the values required in line with EN 54.

The optical detector is available in two designs:

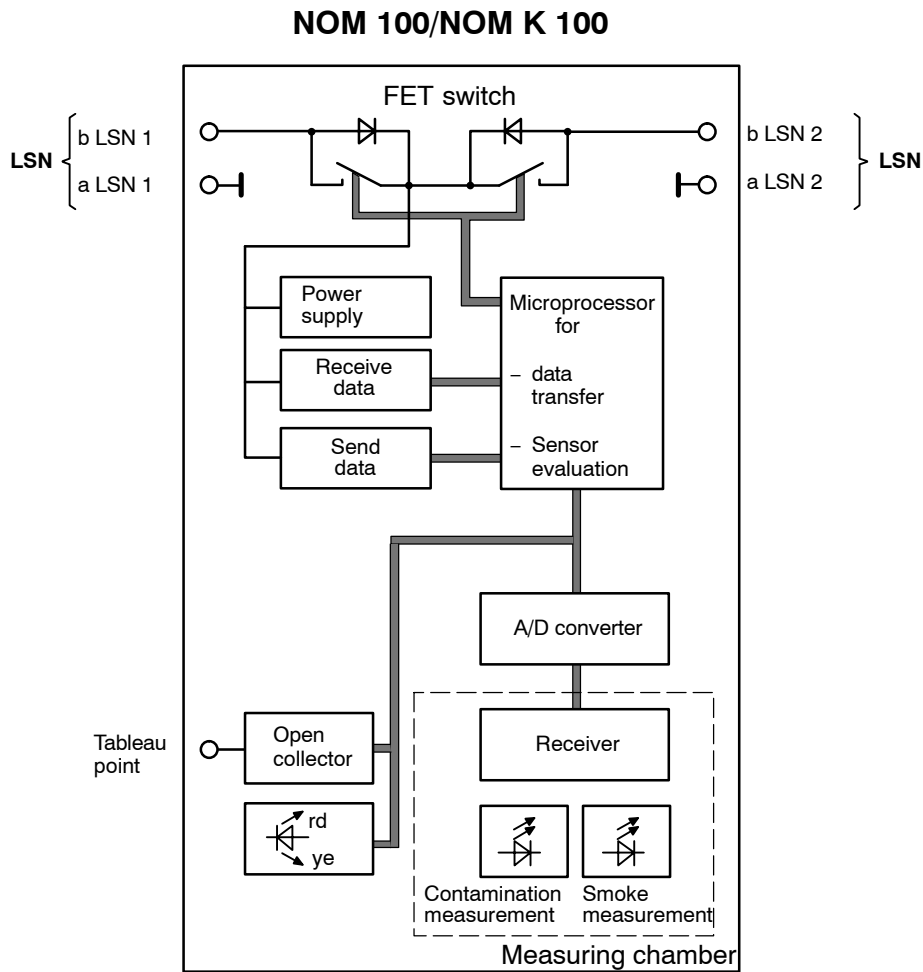
- Standard smoke detector NOM 100 LSN
and
- Smoke detector NOM K 100 LSN for use in a ventilation duct.

The smoke detectors are designed for connection in a local security network (LSN). Depending on the application, connection takes place with other network elements in loops or stub lines.

The power supply is provided by the two wires of the data line.



1.1. Block Diagram



2. Features

- Detector polling routines and evaluation with transmission of events in the case of:
 - Deviation from basic value
 - Detector fault due to the risk of false alarms caused by excessive contamination
 - Detector exchange requirement (maintenance)
 - Pre-alarm (change in functionality)
 - Alarm
- Automatic adjustment of thresholds
- Measurement of detector contamination using a separate smoke recording method
- Individual detector identification
- Active sensor technology self-monitoring with relevant evaluation electronics
- Wide sensor check (remote diagnosis)
- Different detector display via a two-color LED (red = alarm, yellow = fault)
- Activation of a remote external detector alarm display
- Several base versions are available for the detector. (See PI-34.95b detector base NMS 100).
- Can be connected to the following fire panels:
 - BZ 500 LSN
 - UEZ 1000 (LSN)
 - UEZ 2000LSN
 - UGM 2020 (LSN)
 - Control units with receiver modules with identical connection properties
- VdS approval number: **G 293004**

3. Planning Notes

3.1. Recommended use

NOM K 100	NOM 100	Use	
○	⊗	Clean, maintained rooms	⊗ Recommended ○ Not recommended Offices, hotels, hospitals, nursing homes, stores, theaters, museums, churches, assembly rooms/exhibition rooms etc.
○	⊗	Easily contaminated rooms	Depots/machine shops, production/manufacturing workshops with low dust accumulation etc.
○	○	Very contaminated rooms 1	Rooms with dust and lint accumulation (wood/textile industry)
○	⊗	Very contaminated rooms 2	Rooms used for raw/semi-finished production for mechanical engineering etc. with the exception of strong, oily deposits
○	⊗	Electrical risks 1	Cable ducts, cable funnels, raceways, rooms with electro-technical/IT/switching stations with a wind speed of < 10m/s
○	⊗	Electrical risks 2	Object surveillance in switch cabinets/switchboards etc.
○	○	Rooms with corrosive ambient air	Chemicals industry, plastics processing etc.
○	○	Rooms susceptible to smoke and flash formation 1	Manufacturing workshops, smoking offices, conference rooms, laundromats
○	○	Rooms susceptible to smoke and flash formation 2	Halls with vehicle operation (combustion engines)
⊗	○	Wind tunnel electrical risks 1	Wind tunnels with a wind speed of < 20m/s

Anti-theft protection

If required, detector modules can be secured with a lock to prevent theft or accidental movement.

Maximum number of detectors in an LSN ring

Owing to the different current consumption from the LSN data line, the maximum number of network elements (interfaces and detectors) that can be connected must always be observed.

The limiting values can be determined by reading the product information for the danger detection system in question.

Installation cable

The installation cable for the NLT line must be a J–Y(St)Y n x 2 x 0.6 or J–Y(St)Y n x 2 x 0.8 cable.

Norms, guidelines and planning recommendations

Additional norms, guidelines, and planning recommendations with respect to installation location, monitoring area etc. must be taken into account (see fire detector manual).

4. Scope of Order

4.1. Detector Models

Product ID	DU*	Designation
2.799.330.824	PC	NOM 100 LSN optical smoke detector
2.799.330.865	PC	NOM K 100 optical smoke detector for use in a ventilation duct

*DU = Delivery unit, PC = Pieces, PAK = Pack

4.2. Detector base

Product ID	DU*	Designation
2.799.330.859	PC	NMSKV 100 ventilation duct base

4.3. Accessories

Product ID	DU*	Designation
2.799.330.669	PC	External detector alarm display MPA external detector alarm display according to DIN 14 623
2.799.330.870	PAC	Replacement filter (packaging unit = 10 pieces)

5. Device Design

The NOM 100/NOM K 100 comprises a detector module and a detector base. The housing is made from impact-resistant ABS plastic.

The NOM K 100 is supplied with a dust filter and the appropriate mounting clamp.

The detector module contains the photo-electronic part with the light source and the light receiver, a electronic evaluation switching, a wire mesh for insect protection in the smoke entry opening, shielding against electrical interference fields and a silent individual display (two-color LED).

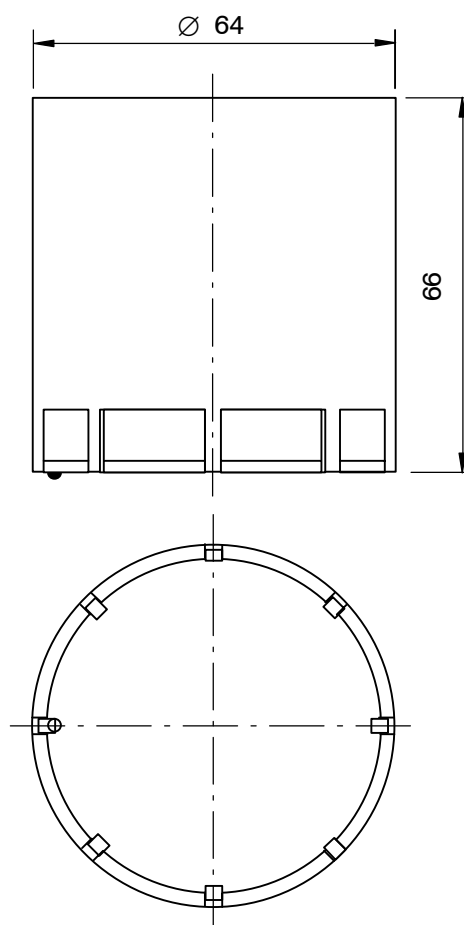
The detector base contains the contact and locking pins and the terminal clamps for the detector line and also offers the option of connecting an external detector alarm display.

The detector module is engaged in the detector base by slotting it in and turning it.

Several detector base versions are available for NOM 100.

There is a special ventilation duct base for the NOM K 100.

5.1. Dimensions – Detector Module

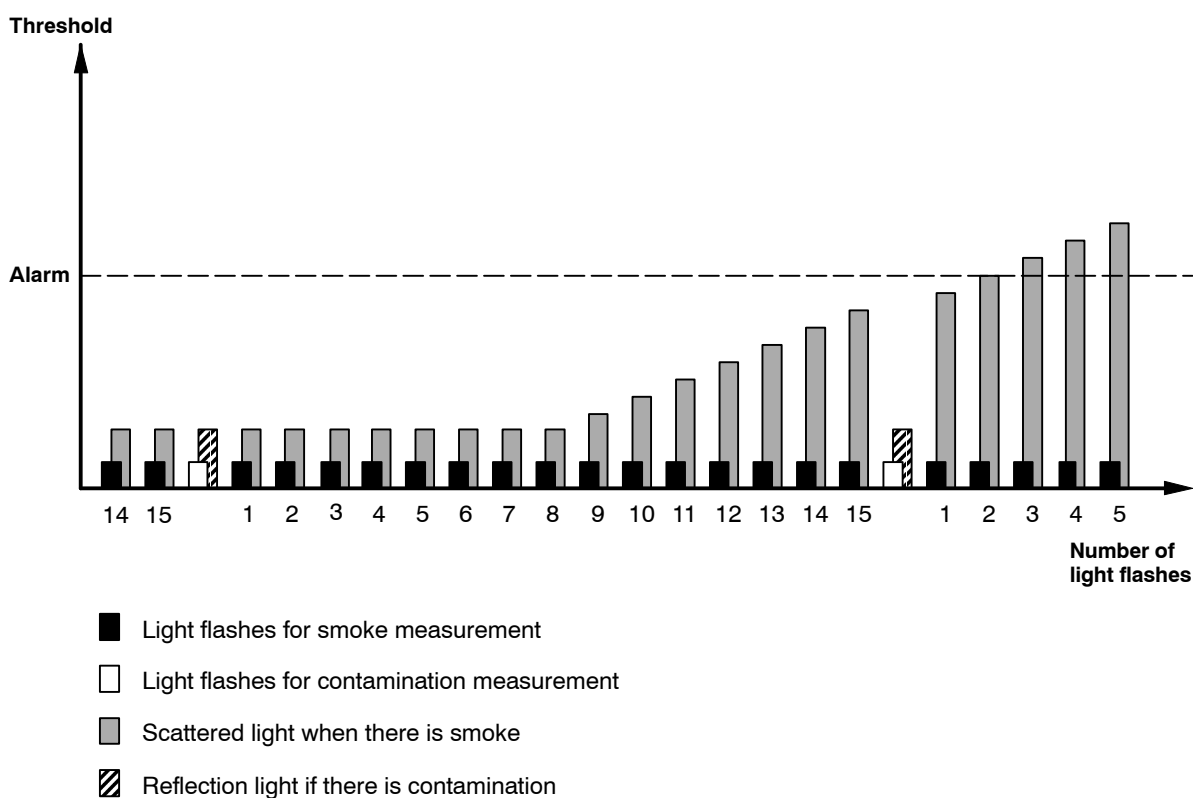


6. Functional Description

Smoke and contamination are measured separately with the NOM 100/NOM K 100. For **smoke measurement**, a light source sends 15 light flashes through the measuring area one after the other at one second intervals.

For **contamination measurement**, an additional light source then sends a light flash to the opposite interior wall.

In both cases, the light, which contacts a photo diode, provides information about quiescent state, contamination or alarm.



6.1. Smoke measurement

Inside the black interior housing, a light source (infrared LED) sends light flashes through the measuring area at one second intervals. A photo cell located opposite is trained on the unlit interior wall, below the LED.

When there is no smoke, only a small amount of scattered light penetrates the convex lens and reaches the photo diode.

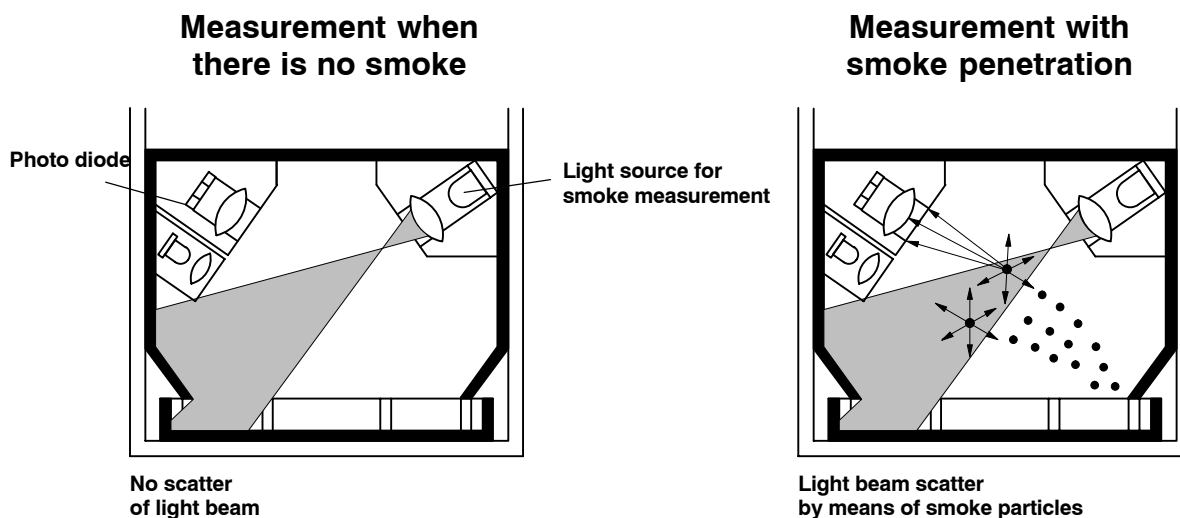
The evaluation of this limited volume of light is used to monitor proper detector function.

If smoke penetrates the measuring area, the light flashes are deflected to the smoke particles. The convex lens helps more scattered light reach the photo diode.

An alarm is triggered if a threshold specified in the detector is reached for three consecutive scattered light pulses.

The measuring area has a wind-resistant design and permits smoke detection at a max. wind speeds of 10 m/s at the detector.

Detector NOM K 100 is used in ventilation ducts (up to max. 20 m/s at detector).



6.2. Contamination measurement

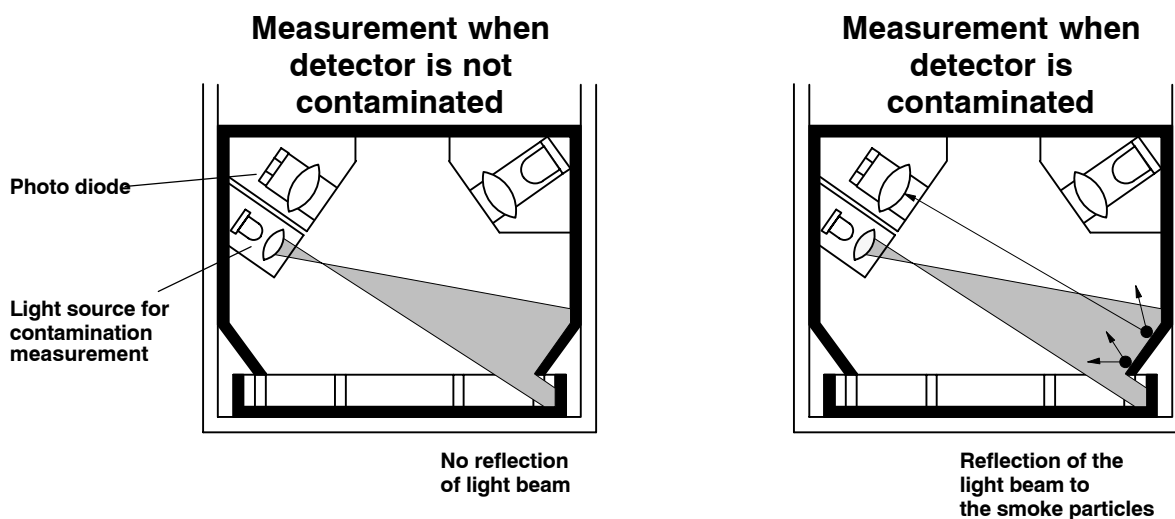
Contamination is measured using a different method. A second light source (infrared LED) sends a light flash to the opposite interior wall.

If the detector is not contaminated, the light beam is absorbed almost completely by the black interior wall. The presence of small volumes of smoke does not lead to any substantial change.

The evaluation of this limited volume of light is used to monitor proper detector function.

If the detector is contaminated, the accumulated dirt particles cause the light beam to be reflected.

Bundled by the convex lens, more scattered light reaches the photo cell. Evaluation takes place irrespective of the scattered light value determined (see also “Detector Fault”).



6.3. Monitoring Stages

Alarm signaling takes place at different thresholds for smoke and contamination.

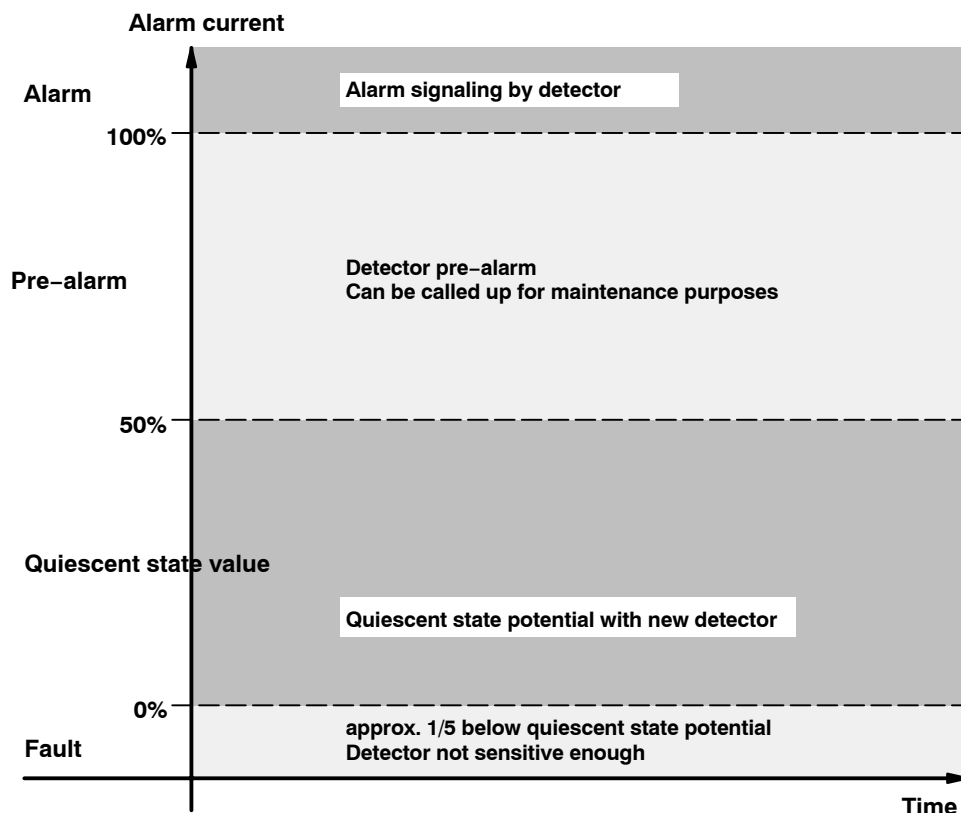
For smoke

The evaluation is made during smoke measurement using the scattered light measured and the resulting current.

If specific thresholds, defined in the detector, are exceeded, the detector issues a corresponding message.

- at 50%: pre-alarm message to the control panel
- at 100%: alarm message to the control panel

A fault message is triggered if the smoke volume falls below the 0% threshold by approx. 20%.



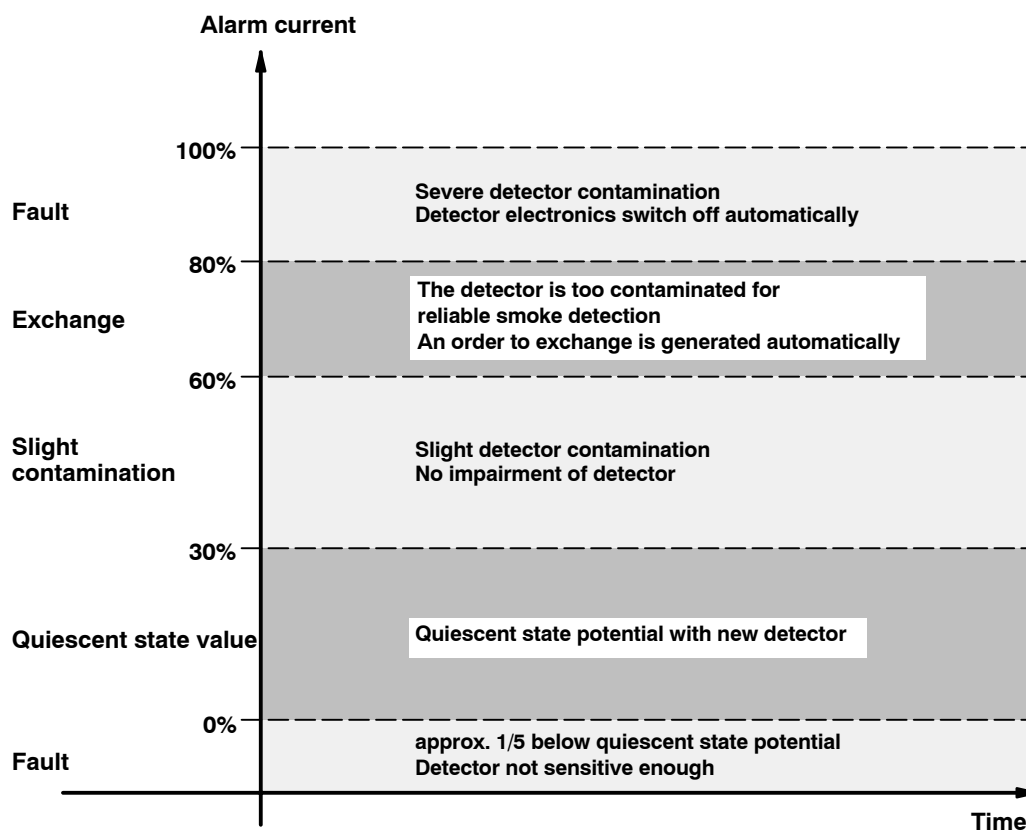
For contamination

The evaluation is made during contamination measurement using the reflection light measured and the resulting current.

If specific thresholds, defined in the detector, are exceeded, the detector issues a corresponding message.

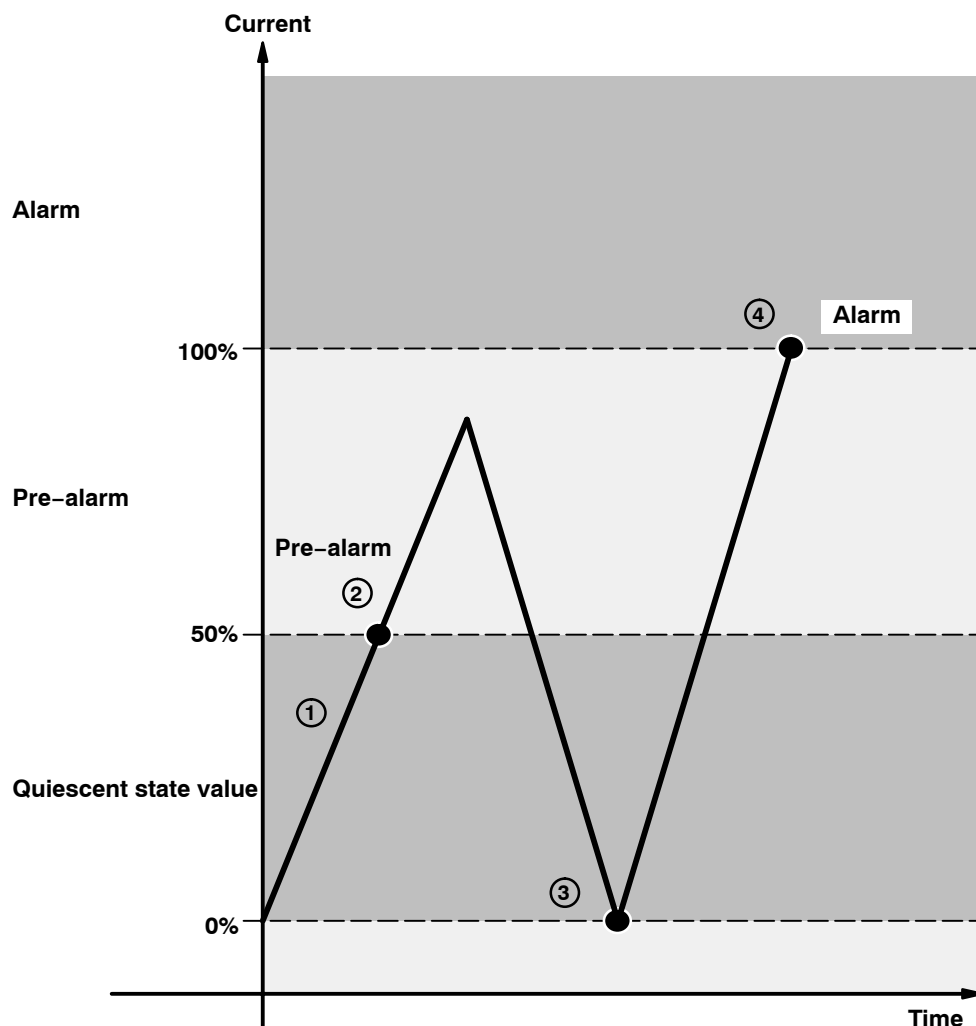
- at 30%: service message to control panel and compensation of alarm threshold
- at 60%: order to exchange detector
- at 80%: automatic detector switch-off

A fault message is triggered if the smoke volume falls below the 0% threshold by approx. 20%.



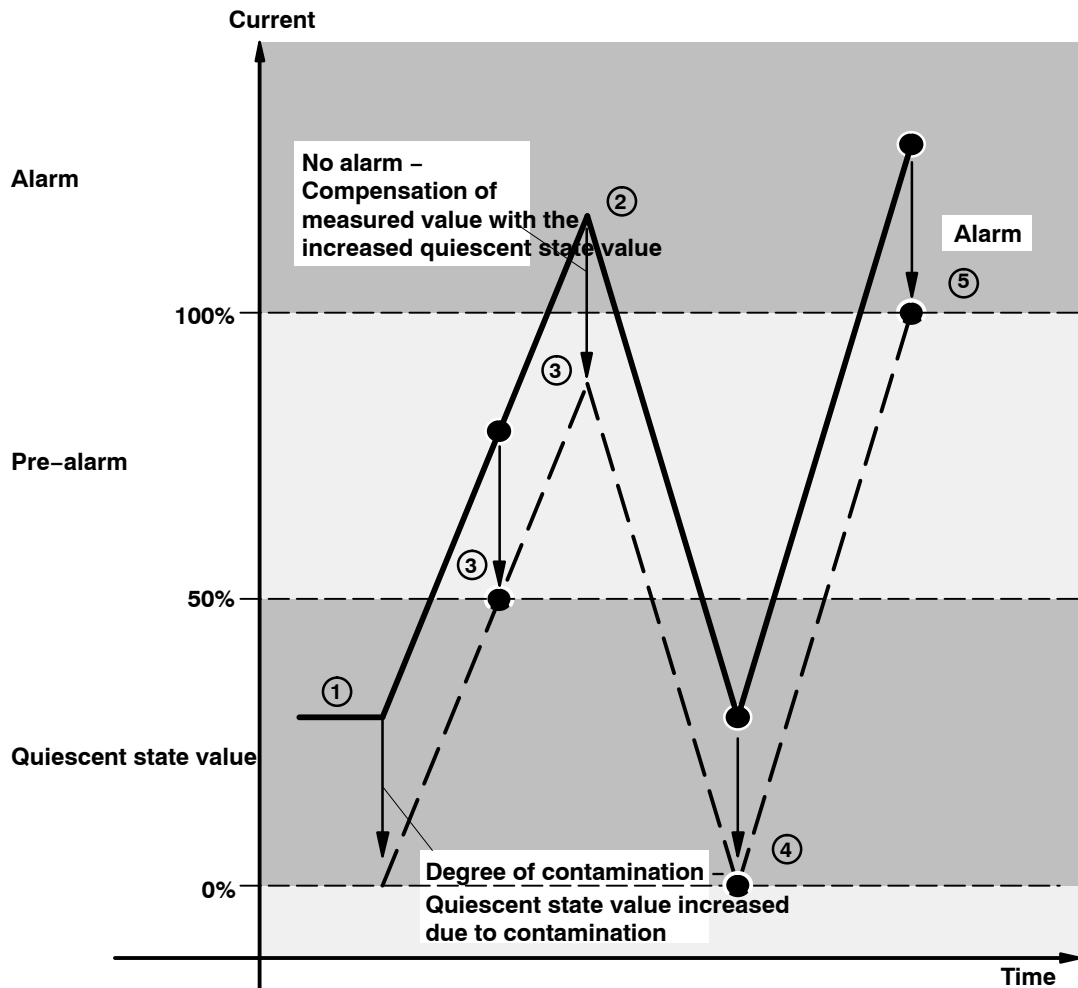
6.4. Alarm Triggering

Alarm triggering when detector is not contaminated



- ① If there is smoke or contamination, the current provoked by the photo cell increases.
- ② A pre-alarm is issued by the detector if 50% of the alarm current is reached. This message and its corresponding detector address may be displayed on the control panel if necessary.
- ③ Return to quiescent state value if there is no increase in smoke volume.
- ④ An alarm is triggered if the current increases beyond 100% of the alarm current. The detector LED flashes red.

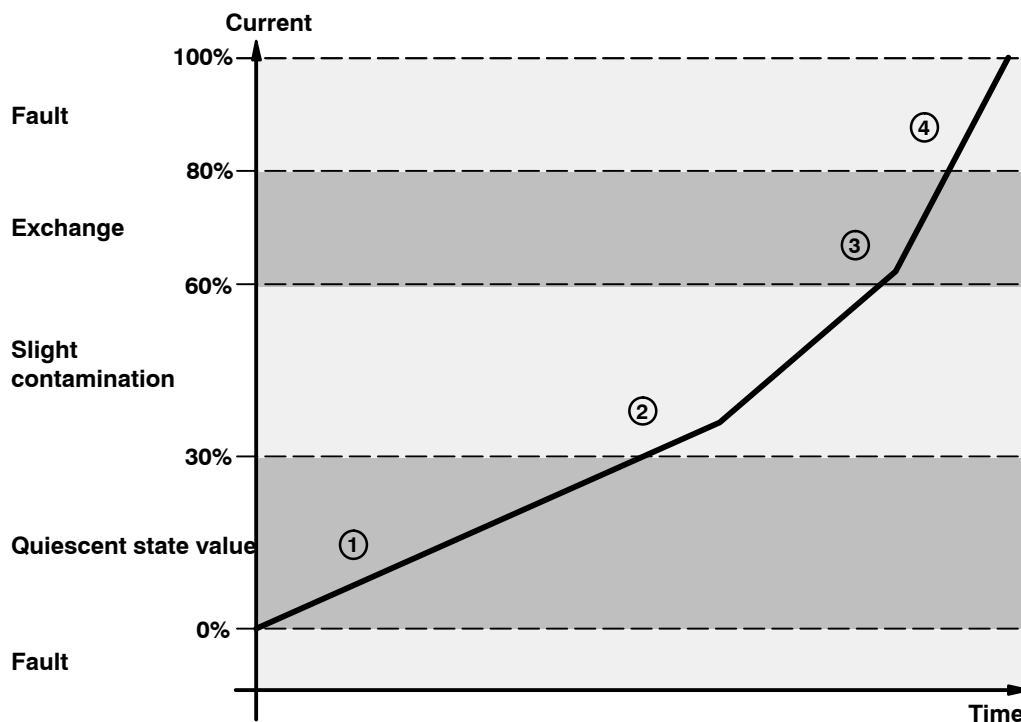
6.4.1. Alarm triggering when detector is slightly contaminated



- ① Detector contamination means that the quiescent state value has already increased.
- ② Smoke penetration results in an increased measured value.
- ③ The detector compensates for this measured value with the degree of contamination previously determined and saved.
- ④ Return to quiescent state value.
- ⑤ If, following an increase in the alarm current and the result compensation by the degree of contamination, the 100% threshold is exceeded, an alarm is triggered. The detector LED flashes red.

6.5. Detector Fault

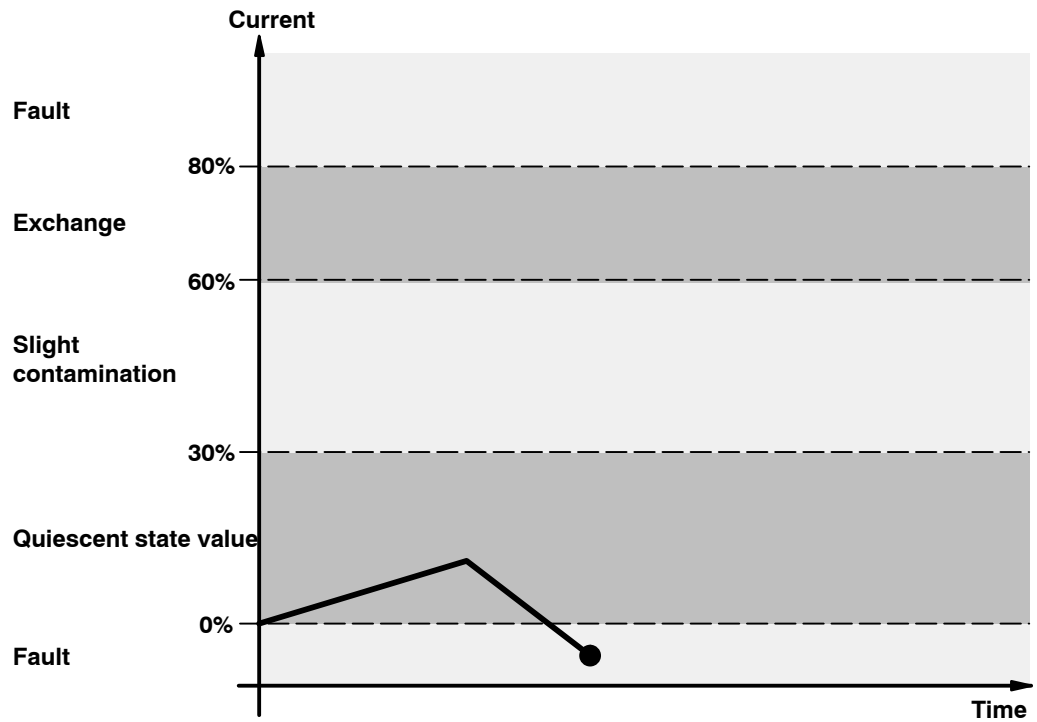
6.5.1. Detector exchange required/detectors highly contaminated



- ① If there is contamination, the flow through the photo cell increases
- ② A message may be transmitted if the 30% threshold is reached in 16 consecutive contamination measurements. The detector alarm threshold will simultaneously be increased by the degree of contamination to reproduce the original sensitivity to smoke.
- ③ There may be an automatic order to exchange the detector if the 60% threshold is reached.
(approx. 30% has been compensated)
- ④ At 80% of the alarm threshold the detector is extremely contaminated; compensation is no longer possible. The risk of alarms has increased considerably. The detector deactivates its measuring system. The LED flashes yellow.

6.5.2. Detector not sensitive enough

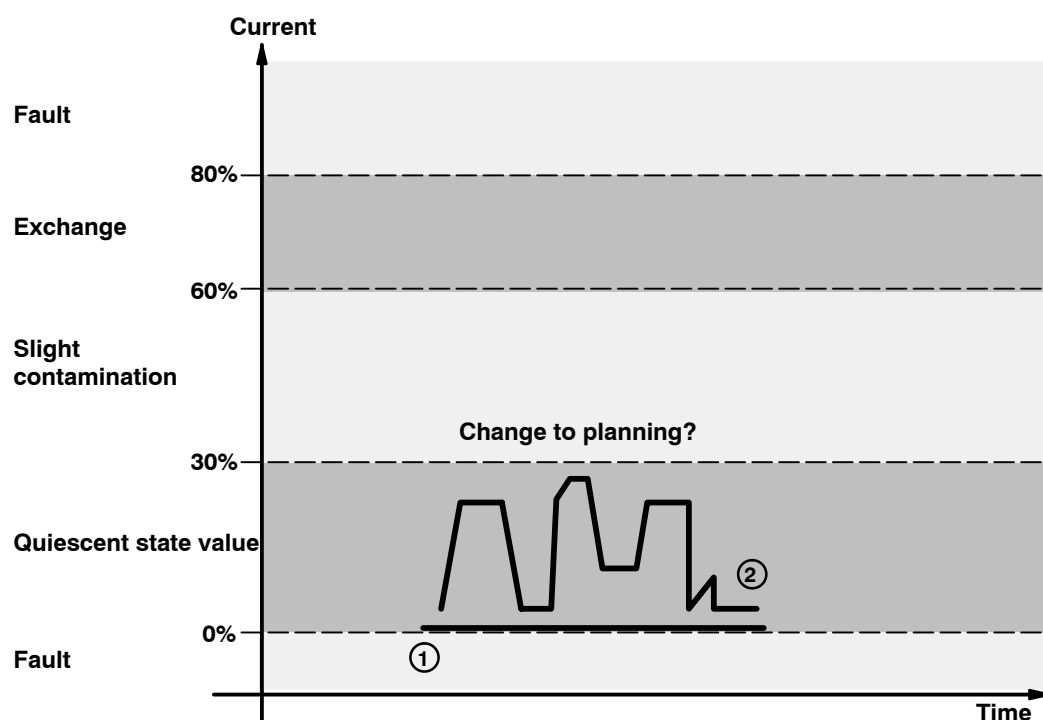
The detector is automatically switched off if the measured value is approx. 20% below the 0% threshold. Reliable detection of smoke particles is not possible as the detector is no longer sensitive enough.



6.6. Planning Monitoring/Change in Functionality

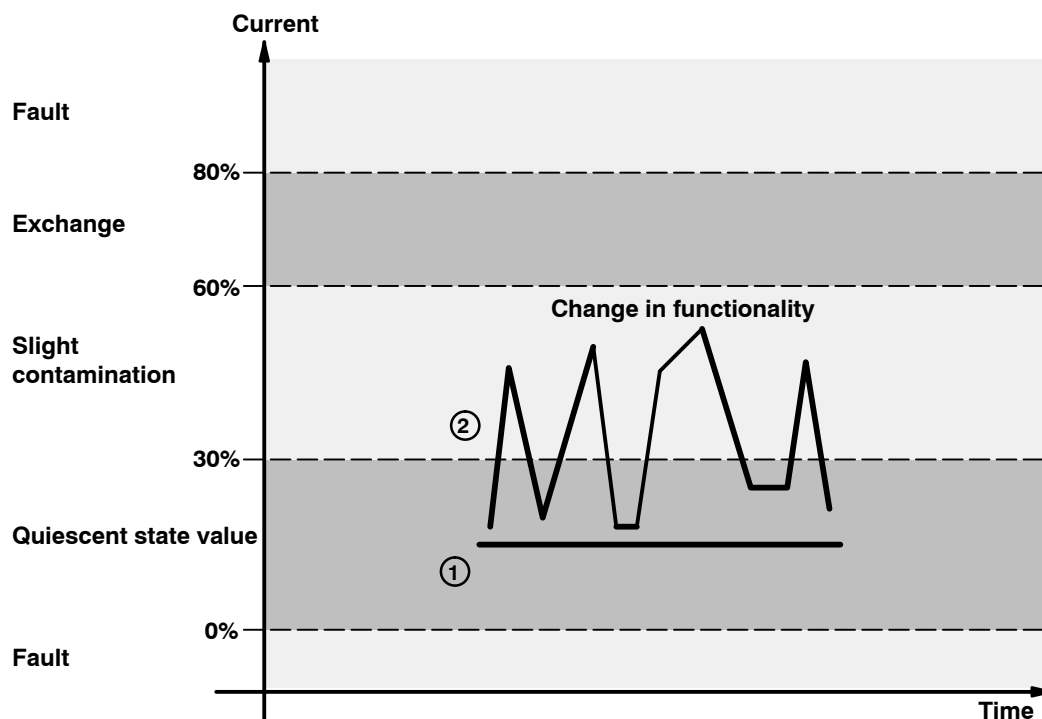
In addition to the monitoring and message functions, the detector can also be used to call up the analog measured volume in realtime using a special operating mode. These values can be used for later information.

6.6.1. Planning monitoring



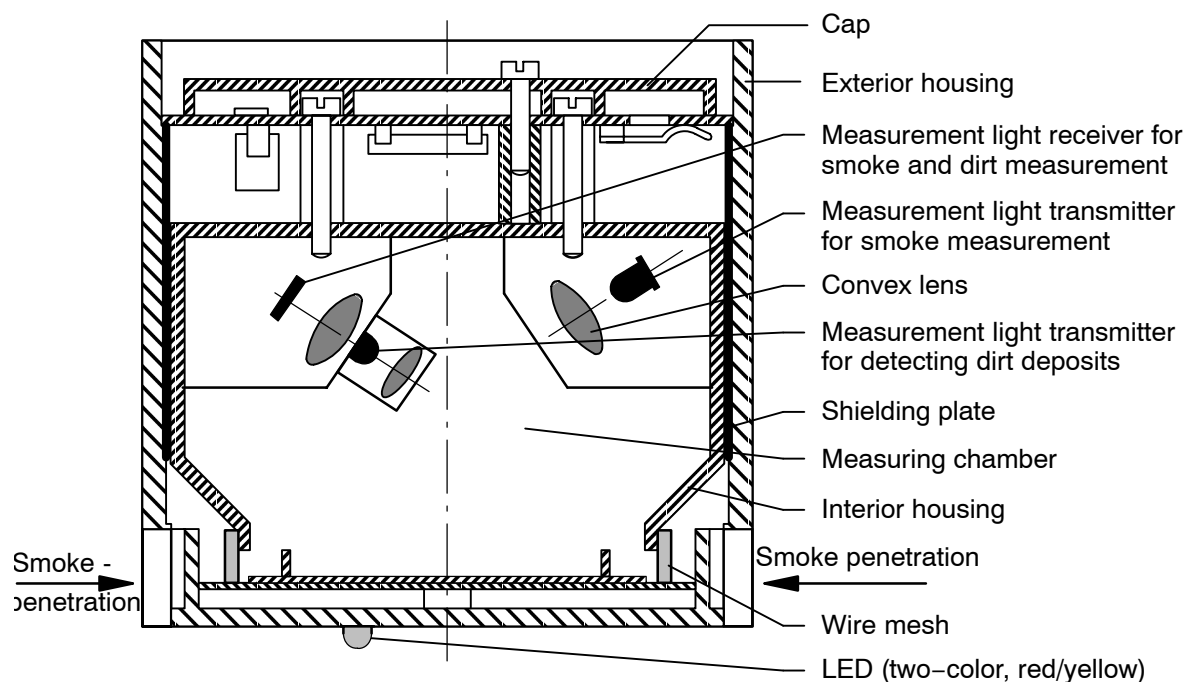
- ① The characteristic curve represents the typical path for a recently installed detector. There are no fluctuations. The detector is appropriate for the installation location.
- ② If, when evaluating the measured values, the characteristic curve changes but is still within the quiescent state range, perform a check to reduce the number of false alarms. If conditions at the installation location have changed since the planning stage (e.g. smoke generated by operation or increased dust accumulation), either the causes of the changes must be rectified or another detector model must be selected.

6.6.2. Change in functionality



- ① The characteristic curve represents the path of a detector that has already been operational for some time. The value has increased slightly due to contamination. However, the detector remains fully functional.
- ② If there are fluctuations outside the quiescent state range, it can be assumed that the use at the installation location has changed. With this sort of atypical fluctuation, the causes must be rectified to prevent a false alarm.

6.7. Sectional View of Upper Section of Detector

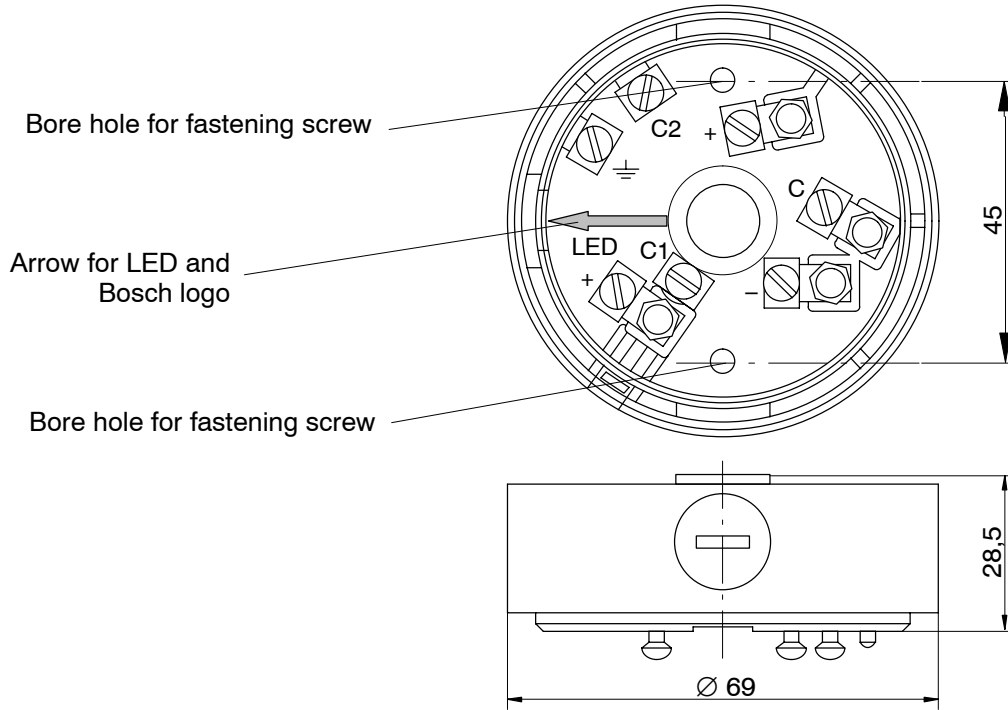


7. Technical Data

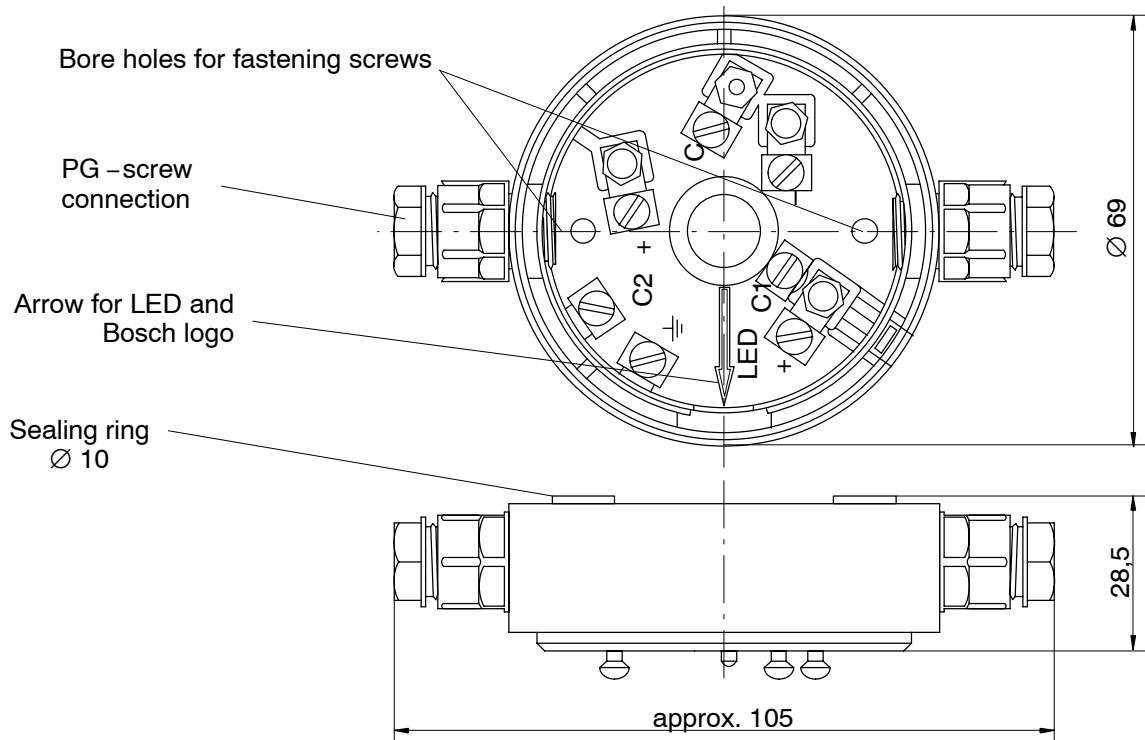
Operating voltage	12.5V DC . . . 33V DC
Current consumption (NLT)	0.7mA
Alarm transmission	per word via 2-wire LSN line
Individual display	two-color LED (red = alarm, yellow = fault)
Indicator output	max. 15mA (if activation = 0V)
Work principle	Tyndall effect
Response sensitivity	0.2 dB/m (in line with EN 54 T7)
Permissible wind speed:	
– NOM 100	max. 10m/s
– NOM K 100	max. 20m/s
Permissible radioactive impact	1mSv/h (0.1R/h)
Monitoring area	max. 120m ² (observe VdS guidelines)
Mounting height	max. 16m (observe VdS guidelines)
Permissible usage temperature	–10°C . . . +60°C
Permissible storage temperature	–30°C . . . +80°C
Permissible relative humidity	98% (without condensation)
Dimensions (D x H)	64 x 66mm
Weight	approx. 145g (with standard base)
Housing material	polycarbonate plastic (Macrolon)
Protection category as per EN 60 529	IP 43
Color	white

8. Assembly Drawings for Detector Bases

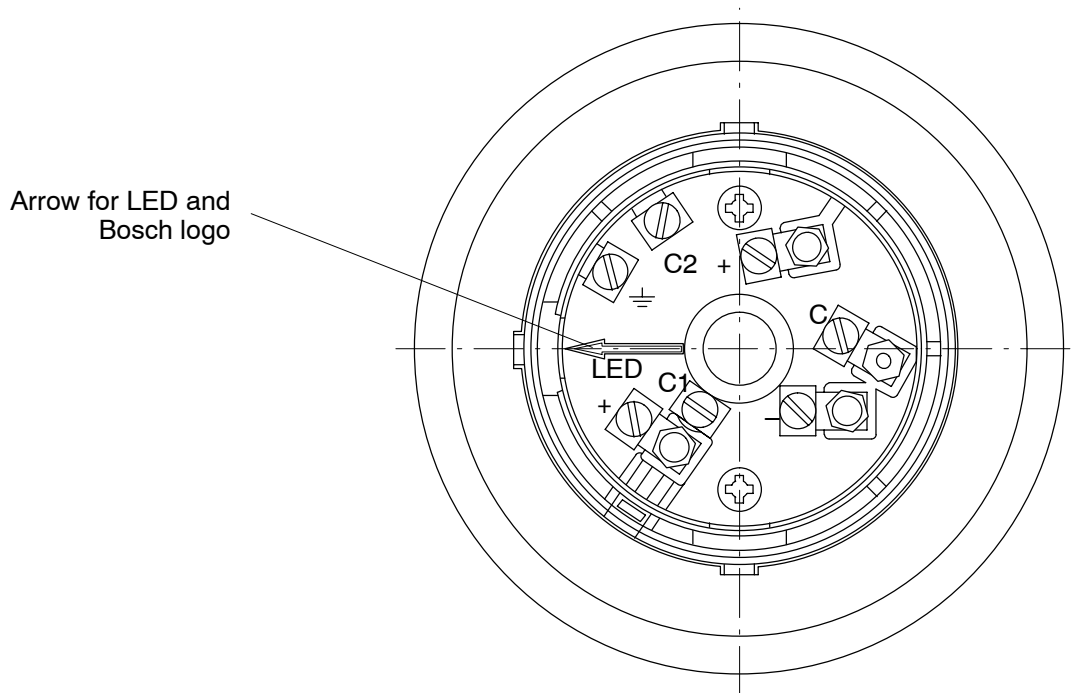
8.1. Standard Detector Bases NMS 100, NMS 100 V



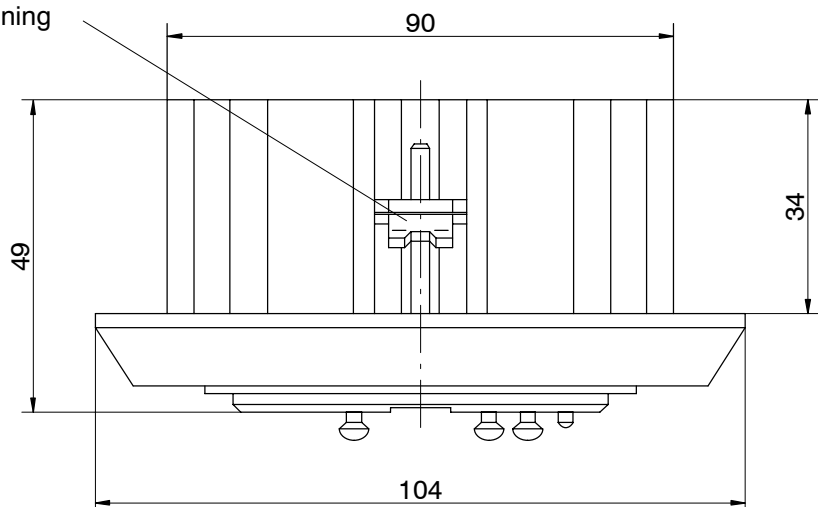
8.2. Damp Room Detector Bases NMS F 100, NMS F 100 V



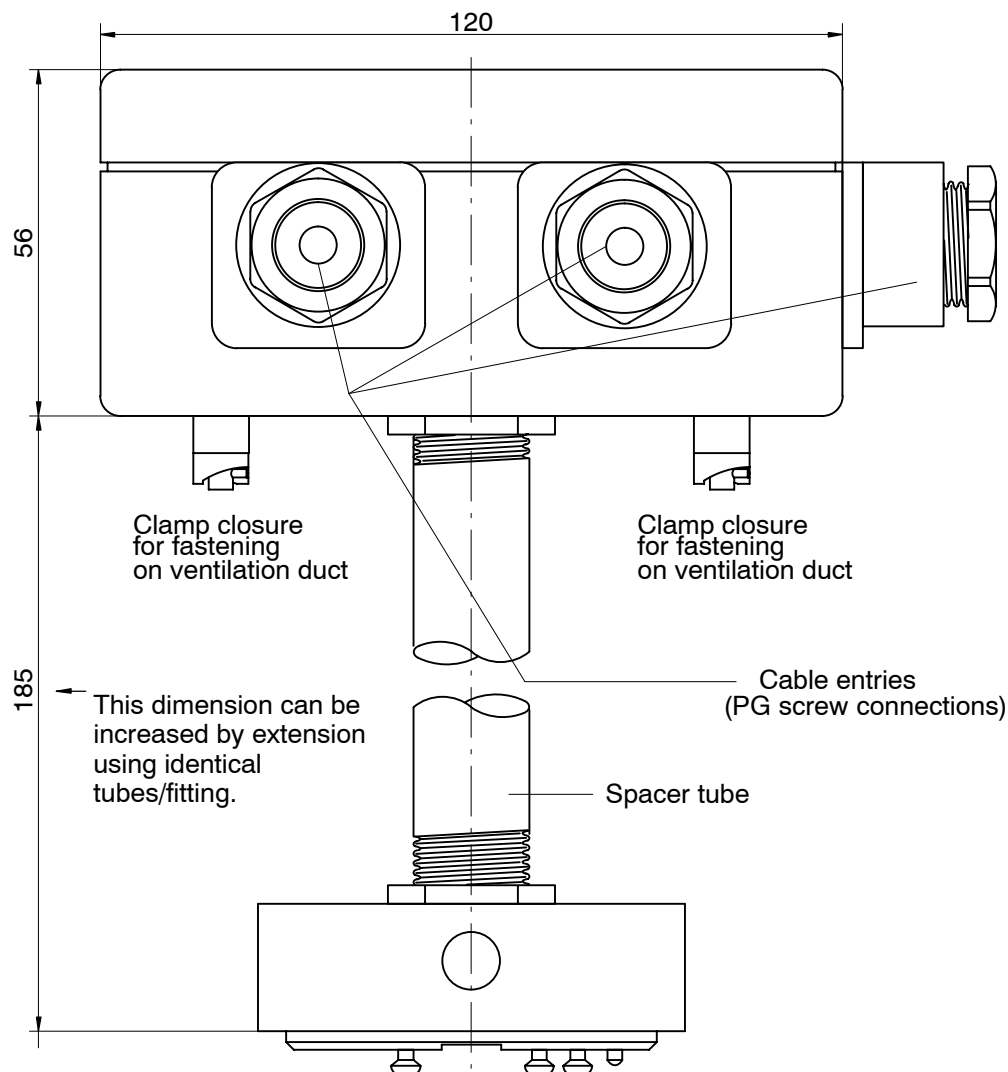
8.3. Cavity Detector Bases NMS H 100, NMS H 100V



Retaining claw for cavity fastening



8.4. Ventilation Duct Detector Base NMS K 100



8.5. Mounting Tips for Detector Bases

When mounting bases, ensure that the LED and the Bosch logo are in the position indicated by the arrow. Planning guidelines for mounting height, detector distance etc. must be observed.

NMS 100/NMS 100 V/NMS F 100/NMS F 100 V

Detector bases NMS 100/NMS 100 V/NMS F 100/NMS F 100 V are mounted using two screws 4mm in diameter 45mm apart.

NMS H 100/NMS H 100 V

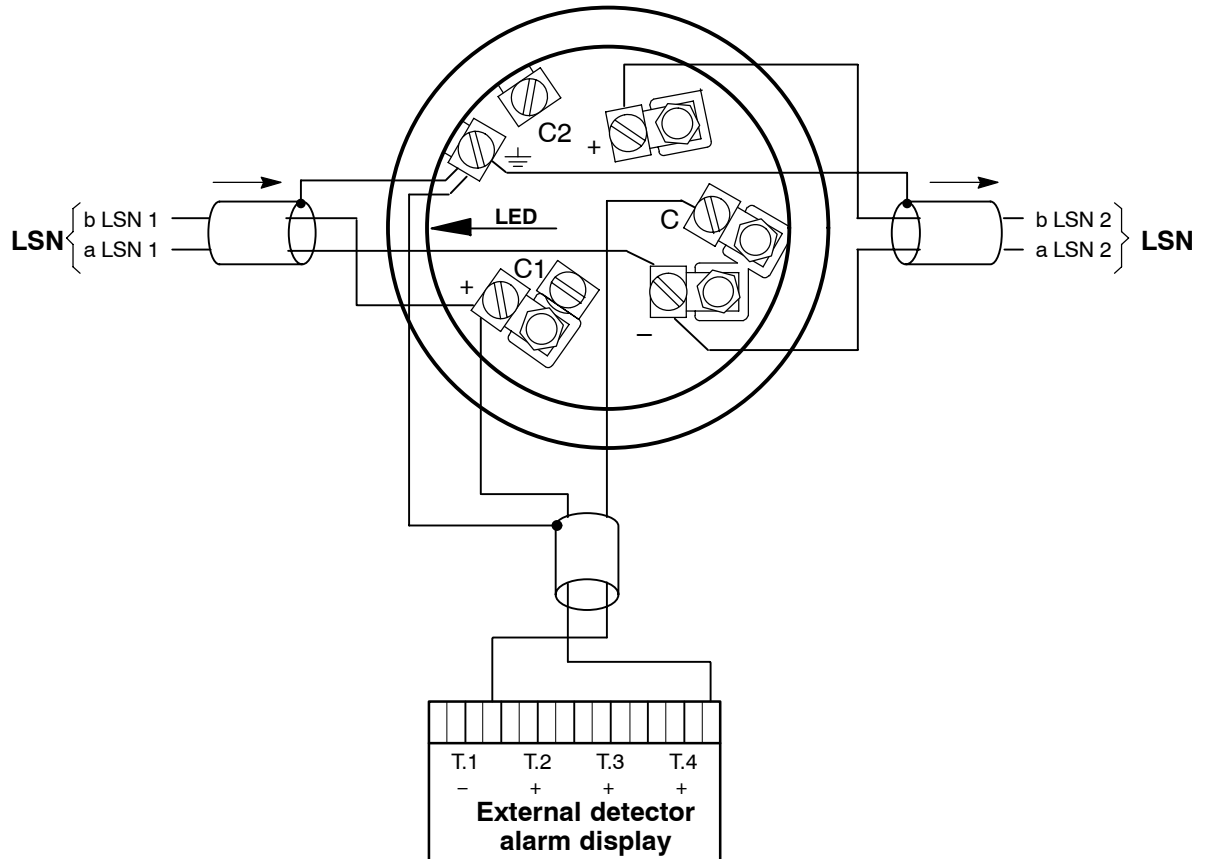
The cavity bases are mounted using two adjustable clamps integrated in the base.

NMS K 100

The ventilation duct detector base NMS K 100 is secured to the ventilation duct using two clamp closures integrated in the mounting base.

8.6. Connection Diagram

8.6.1. Detector Base NMS 100



Connector pin assignment		
+	b LSN 1	from the control panel or preceding LSN element
⊥	b LSN 1	from the control panel or preceding LSN element
+	b LSN 2	to the next LSN element
⊥	a LSN 2	to the next LSN element
C	C point	if required, see connection above
⊥	Ground connection for cable shielding Position grounding drain wire, ground control panel side	
C1, C2	Unassigned clamps that can be used as required	
The + connections are equivalent, "from" and "to" are interchangeable.		

9. Tips on Maintenance and Service

For maintenance and inspection work on smoke detector systems, in Germany the regulations of DIN VDE 0833 apply, which refer to the maintenance interval according to the manufacturer's instructions.

- Maintenance and inspection work should be carried out regularly and by trained personnel.
- Bosch Sicherheitssysteme recommends a functional and visual inspection at least once a year.

9.1. Repair

In the event of a defect, the entire detector is exchanged.

9.2. Disposal

Defective detectors are exchanged and should be disposed of in accordance with legal regulations.

9.3. Additional Documentation



For those with access authorization, on the Bosch ST ExtraNet at **www.boschsecurity.com/emea/fire** the current information for each product, as well as the installation instructions supplied with the device, are available for download as a PDF file.

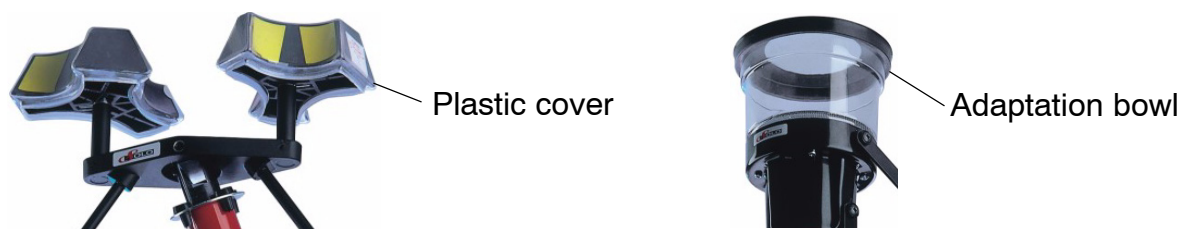
9.4. Service Accessories



Product ID	LE*	Designation
4.998.112.113	ST	Universal detector exchanger.
4.998.112.071	ST	Test device for optical smoke detectors.
4.998.112.074	ST	Solo A3-001 smoke detector testing gas (250ml spray can).
4.998.112.069	ST	Telescope rod (1m – 3.38m) made from fiberglass. can be extended with max. 3 extension rods.
4.998.112.070	ST	Extension bar made from fiberglass (1 m).
4.998.112.073	ST	Transport case for the test equipment

*LE = Delivery unit; ST = Pieces; PAK = Pack

Spare parts for the service accessories



Product ID	LE*	Designation
4.998.082.502	ST	Plastic cover for the detector exchange attachment (2 pieces are required for the universal detector exchanger).
4.998.072.024	ST	Adaptation bowl for the smoke detector test device from the service set with the product ID 2.799.330.868

10. Table of Abbreviations

ABS	=	A crylonitrile B utadiene S tylene
aP	=	a uf P utz (surface-mounted)
BMZ	=	F ire p anel
DIBt	=	D eutsches I nstitut für B autechnik (German Institute for Technology)
DIN	=	G erman I nstitute for S tandardization
GLT	=	D Ccurrentline t echnology
LED	=	L ight E mitting D iode
LSN	=	L ocal S ecurity N etwork
PC	=	P olycarbonate
PI	=	P roduct i nformation
PP	=	P olypropylene
UEZ	=	U niverselle E uropazentrale (Universal European Central)
UGM	=	U niverselle G efahren m eldezentrale (Universal danger detection system)
uP	=	u nter P utz (concealed)
VDE	=	A ssociation of G erman E lectrical E ngineers
VdS	=	VdS Schadenverhütung GmbH

11. Notes



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