

**ADR-20R**  
**OPTICAL SMOKE DETECTOR**  
**for burglar alarm systems**

---

**INSTALLATION AND MAINTENANCE MANUAL**

**IK-E289-001GB**  
IIIK Edition



The ADR-20R residential optical smoke detector complies with the requirements of the


detector covered by this manual, following European Union directives:

**CPD** 89/106/EWG - on  
**EMC** 2004/108/WE - on

construction materials;  
electromagnetic compatibility.

The ADR-20N optical smoke detector has been approved with the EC Certificate of Conformity No. 1438/CPD/0145, issued by the Scientific and Research Centre for Fire Protection (CNBOP) Józefów, Poland, a EU notified authority No. 1438, confirming its compliance with the requirements of PN-EN 14604: 2006 standard.


The certificate can be download from the manufacturer's [www.polon-alfa.pl](http://www.polon-alfa.pl) web site.

 <b>1438</b>
Polon-Alfa Spółka z ograniczoną odpowiedzialnością Sp. k. 155, Glinki Street, PL 85-861 Bydgoszcz, POLAND 08 1438/CPD/0145
EN 14604 <b>ADR-20R Smoke Detector</b> Application – fire security
Technical data - IK-E289-001GB manual

Read the manual carefully before assembling and activation of the detector.

Any nonconformity with the instructions contained in the manual may be harmful or may cause violation of the law in force

POLON-ALFA shall not bear responsibility for any harms resulted from the unit application discordantly to the requirements of this instruction.

A waste product, unsuitable for further use, shall be passed to a waste electric and electronic equipment collection point.	
---	---

**NOTE:** The manufacturer reserves the right to change specifications of products at any time without prior notice

## 1 PURPOSE

The ADR-20R optical smoke detector is designed for detection of a visible smoke that is concurrent with most fire combustion. It is dedicated to monitor a fire hazard in facilities equipped with burglar alarm systems.

The detector is power supplied from a burglar alarm control panel. An alarm signal is transferred to the control panel or another signalling device using relay contacts.

While monitoring, the relay operates in one of two modes:

- voltage mode (N), when the relay is permanently alive and its contacts are being switched as soon as the detector is activated or a detector power supply outage occurs;
- non-voltage mode (O), when the relay contacts are connected only during the detector activation.

## 2 TECHNICAL SPECIFICATIONS

Operating voltage	12 V ± 20 %
Quiescent current	
- in "O" operation mode	≤ 500 µA
- in "N" operation mode	≤ 17 mA
Relay contacts max. load	0.5 A for 125 V AC 1.0 A for 30 V DC
Operating temperature range	from -10 °C to +55 °C
Relative humidity	up to 95 % at 40 °C
Mass	≤ 0,15 kg
Dimensions	Ø112 mm x 57 mm
Sensitivity to test aerosol acc. to PN-EN 14604:2006 standard	m = 0.20 ÷ 0.38

## 3 SAFETY CONDITIONS

### 3.1 Repairs and maintenance

Any repair must be carried out by the manufacturer.

POLON-ALFA bears no responsibility for the operation of any apparatus being serviced and repaired by an unauthorised personnel.

### 3.2 Works at height

Any detector installation works carried out at height must be executed with particular care utilising tools and machinery in good working condition.

Special attention shall be given to the stability of ladders, platforms, lifts, etc.

Any electric tools shall be used strictly obeying the safety rules specified in the manufacturer instruction manuals.

### 3.3 Anti-dusting eye protection

It is obligatory to use protective anti-dusting glasses and masks during detector installation works that produce high amount of dust, such as hole drilling for detector base mounting on ceilings.

## 4 GENERAL DESCRIPTIONS

The ADR-20N smoke detector consists of the following main parts: a base (1), a bottom (9) with an electronic circuit and a labyrinth, and a casing (6). An optical assembly and an acoustic signalling device are installed inside the bottom. The casing encloses a wire protective grid that prevents irruption of small insects or pieces of dirt.

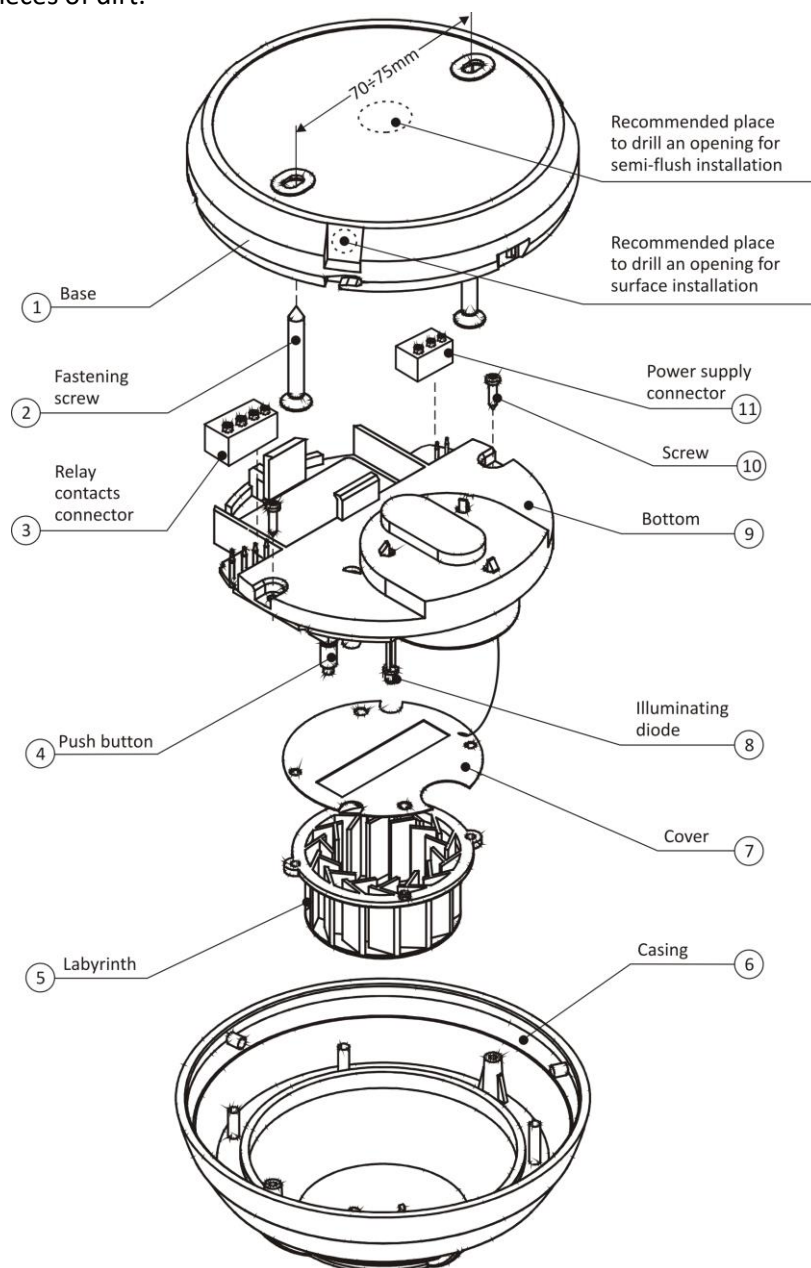


Fig. 1

The bottom is fixed to the casing with two screws (10). Two small devices protrude from the casing: a test button (4) and an illuminating LED (8) that indicates the detector mode. Fragments of a printed circuit board (PCB) with contact pins are visible from the bottom side. These contact pins hold connectors (3 and 11) to connect power supply (12 V DC) and a detector line through NO or NC relay contacts.

The detector factory settings provide for voltage (N) mode as it is shown on Fig. 2. In case it is necessary to change it into non-voltage (O) mode, the detector should be dismantled and the jumper (12) positioned as shown on the figure.

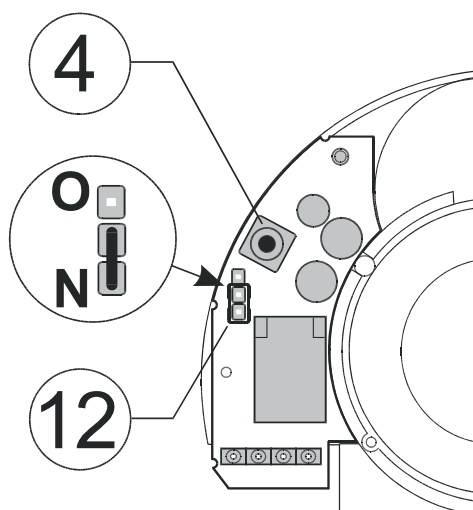


Fig. 2

## 5 INSTALLATION

The detectors are recommended to be installed in all rooms exposed to a high fire hazard level. They may be mounted in hallways, staircases as well as in passages between rooms endangered by a fire occurrence.

It is recommended to install the detector on ceilings, leaving at least 20 cm of unobstructed space from walls or other elements that may hamper free smoke access to the detector.

Two holes (with 72-mm spacing) should be drilled in order to install extension anchor bolts fixing the detector to the ceiling. When cables are to be routed under the wall plaster (semi-flush mounting), the base should be drilled in its centre; in case of on-plaster cable routing (surface mounting), the hole should be drilled in the base side wall (suggested hole locations are shown on Fig. 1) leaving the minimum distance from the bottom. The cables should be inserted into the holes and then the base should be fixed in the place intended for installation. The detectors may be interconnected using a typical telecommunication PVC insulated cable of 0.12 – 0.5 mm<sup>2</sup> cross section (0.4 – 0.9 mm diameter) – those diameters concern also the resistor endings. Two wires may be connected to one contact (a wire and a resistor ending). It is allowed to connect wires of different dimensions (within 0.4 – 0.9 mm range) to one contact. The minimum length of the wires protruding from the base is 5 cm. Bare (un-insulated) wire endings (at least 8 mm long) should be inserted into the connector taken off from the pins as it is shown on Fig. 3; The clamps of the connector will clench the wires automatically.

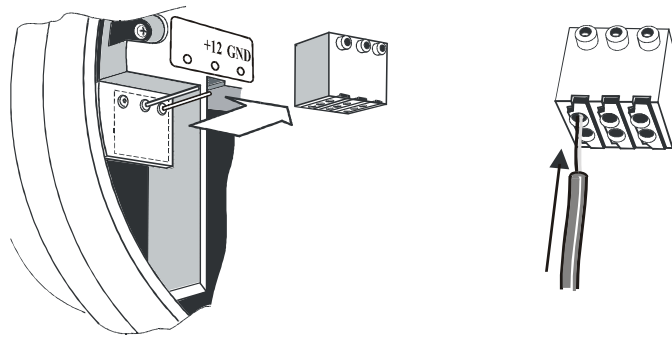


Fig. 3

A removal of a wire from the connector is possible after pressing down an orange blocking push-button with a finger nail. The connector with the wires should be pushed on the contact pins protruding from the detector. The detector operation should be checked by pressing the test push button and holding it for few seconds. The test result is positive when a LED flashes several times and subsequently an acoustic signal is heard and the relay is switched on. The inspected detector can be installed in the base turning it clockwise until the catches snap.

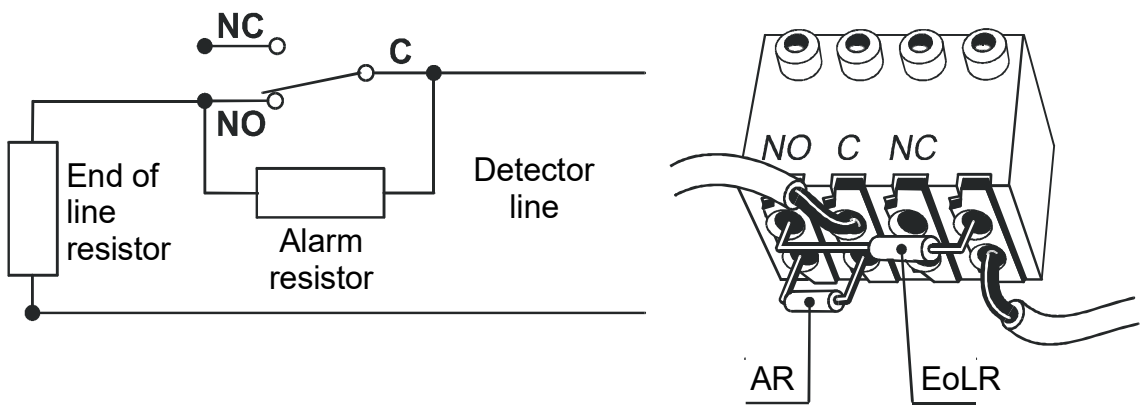


Fig. 4a

An exemplary connection of the last detector into a detecting line of a burglar alarm control system – in a non-voltage (N) operation mode and with power supply on – is shown on Fig. 4a.

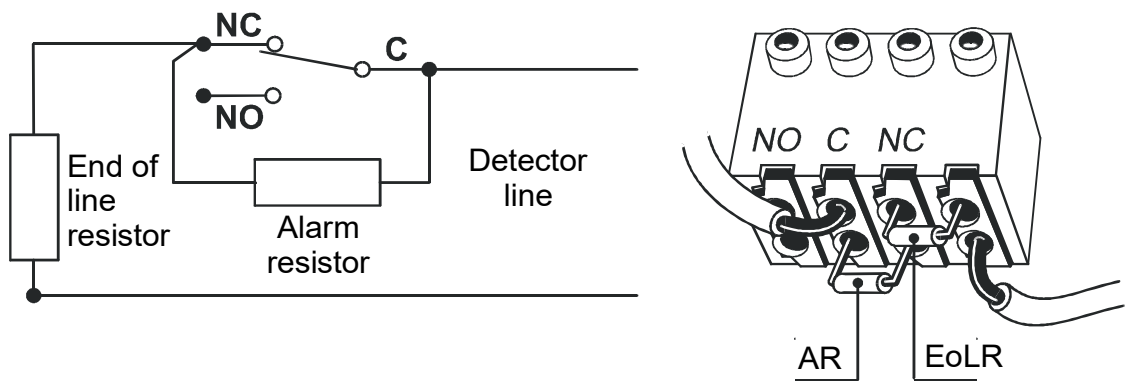


Fig. 4b

An exemplary connection of the last detector into a detecting line of a burglar alarm control system – in a voltage (O) operation mode and with power supply on – is shown on Fig. 4b.

## 6 PRINCIPLES OF OPERATION

The detector monitoring activity begins when power supply is switched on. An information about the detector mode is communicated by acoustic and optical signals as per the following table:

Detector mode	Modulated audio signal	LED blinking, relay switched on	Short audio signal 40 s interval	LED flashing 40 s interval
Supervision, smoke detection				X
Alarm after smoke detection	X	X		
Low power supply voltage			X	X
Detector testing with TEST button	X	X		
Fault, brakeage			X	
No power supply		X*		

\* - only in N mode and only the relay switching on

In case a factor that causes a particular mode decays, the detector automatically returns to its supervision mode.

## 7 MAINTENANCE INSTRUCTIONS

In case of dust accumulation inside the measuring chamber, which may be a result of a long-term device usage, the detector sensitivity level will increase up to evoking false alarms. It is recommended to clean the optical module (labyrinth and lenses of both transmitting and receiving photodiode that are placed within the labyrinth) every year.

In order to carry the cleaning process out it is necessary:

- remove the detector from its base by turning it counter clockwise and taking it off;
- disconnect the connectors (3, 11);
- remove two screws (10) fastening the bottom (9) to the detector casing (6);
- take the casing off;
- bend softly the catches that clamp the labyrinth (5) and take it out;

- using soft brush clean carefully the labyrinth, the hollows where the diodes are placed as well as the metal cover, from the side of the labyrinth;
- in case such cleaning is not effective, it is allowed to wash the labyrinth with warm water with an addition of washing-up liquid;
- after cleaning and drying no water stain may be left on the labyrinth internal surfaces.

After cleaning reassemble the detector in the following order:

- check whether the metal cover does not conceal the audio signalling device opening;
- press the labyrinth down until its catches snap; in this position the printed circuit board should closely adhere the bottom edges; the labyrinth should be tightly fastened in upright position (with no bending);
- place the module into the casing so as the LED and the testing button poke out above the casing surface;
- fasten the module to the casing with two screws;
- reconnect the power supply connectors and check the detector operation;
- install the detector inside the base.

## 8 NOTES

**The ADR-20R detectors do not contain any radioactive material.**

**It should be avoided to install the detectors in draughty places.**

**They should not be mounted above stoves, kettles and similar places where smoke or water vapour may occur.**







**POLON-ALFA S.A.**

POLAND 85-861 Bydgoszcz, ul. Glinki 155 | [www.polon-alfa.pl](http://www.polon-alfa.pl)  
EXPORT DEP. phone no. +48 52 36 39 278, email: [export@polon-alfa.pl](mailto:export@polon-alfa.pl)  
SERVICE DEP. phone no. +48 52 36 39 390, email: [serwis@polon-alfa.pl](mailto:serwis@polon-alfa.pl)