

ADR-20N

SELF-CONTAINED OPTICAL SMOKE DETECTOR

Installation and Maintenance Manual

IK-E289-003GB

Issue 1A




The ADR-20N residential self-contained optical smoke detector covered by this manual, complies with the requirements of the following European Union directives:

CPD 89/106/EWG - on construction materials;
EMC 2004/108/WE - on 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 form www.polon-alfa.pl web site.

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Polon-Alfa Spółka z ograniczoną odpowiedzialnością Sp. k. 155, Glinki Street, PL 85-861 Bydgoszcz, POLAND 08 1438/CPD/0145
EN 14604 ADR-20N Self-contained Smoke Detector Application – fire security
Technical data - IK-E289-003GB manual

Read the manual carefully before assembling and operation 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.

<p>According to the European Union regulations it is forbidden to dispose the waste equipment marked with the sign of a crossed container (as shown beside) to industrial scrap-heap. Any waste product, unsuitable for further use, shall be passed to a waste electric and electronic equipment collection point. Delivering the waste equipment to special collection points for utilization and recycling reduces an adverse impact of harmful components used in the device production upon environment and human health.</p> <p>The ADR-20N detector mass (without a battery): 0.125 kg</p>	
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NOTE: The manufacturer reserves the right to change specifications of products at any time without prior notice

1 PURPOSE

The ADR-20N optical smoke detector is designed for detection of a visible smoke that is concurrent with most fire combustion. It is dedicated to monitor residential facilities, cellars, garages, attics, etc. The detector is battery-operated using a replaceable 9V 6F22 battery mounted inside its casing. It is possible to inter-connect detectors with a two-core cable creating a detecting network – detection of a fire by one detector activates an alarm signal in other detectors in the supervised premises.

2 TECHNICAL SPECIFICATIONS

Power supply	9 V 6F22 battery (not included)
Quiescent current	< 10 μ A
Operation temperature range	from -10 °C to +55 °C
Relative humidity	\leq 95 % at 40 °C
Detector mass (without battery)	\leq 0.13 kg
Dimensions (with base)	\varnothing 112 x 57 mm
Sensitivity to test aerosol acc. to PN-EN 14604:2006 standard	$m = 0.20 \div 0.38$
Audio alarm volume	> 85 dB at 3-m distance
Battery operation life	1 - 3 years (depending on type)

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 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, etc.

Any electric tool 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: base (1), 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 grid that prevents irruption of small insects or pieces of dirt.

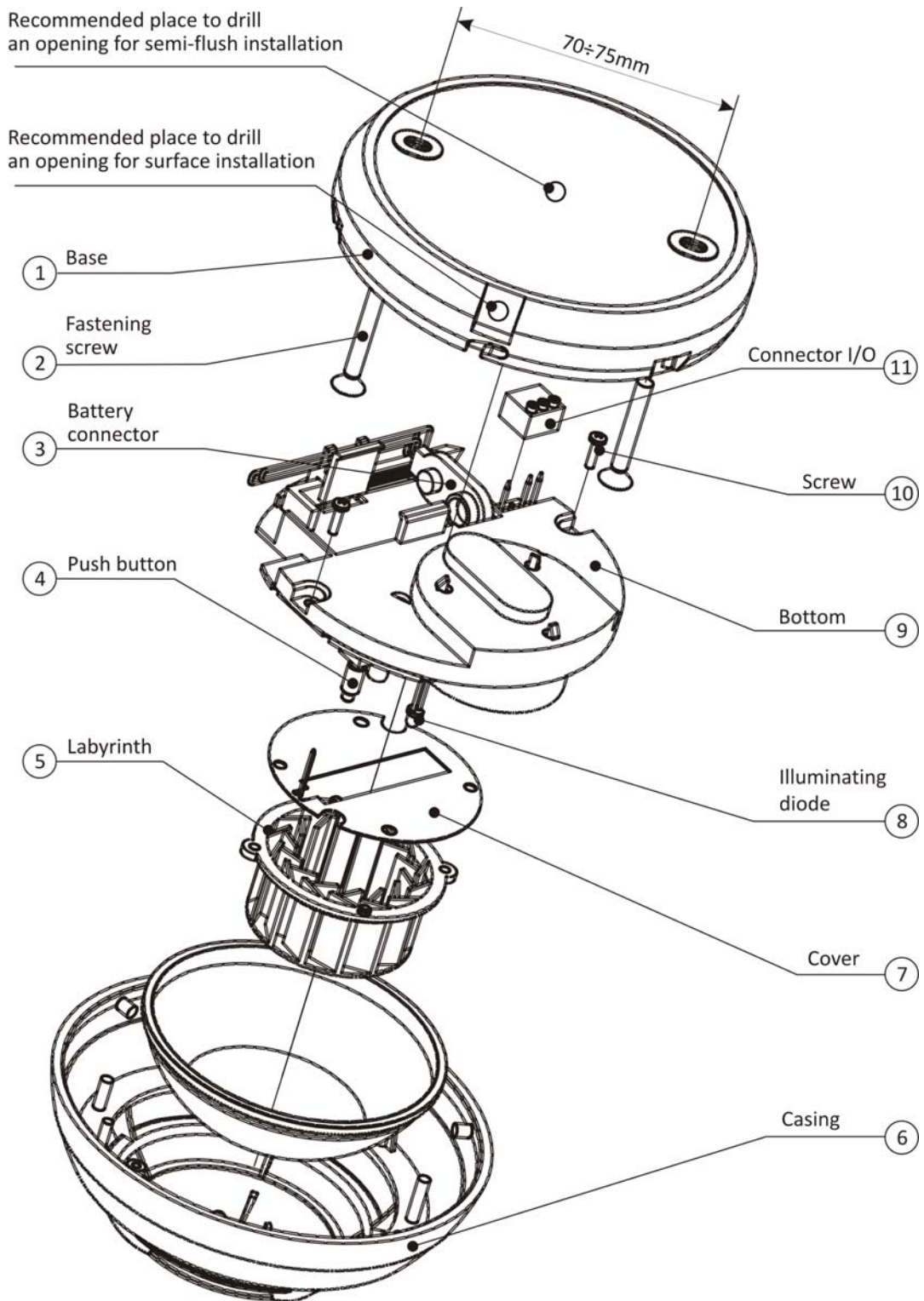


Fig. 1

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 a connector (11) to interconnect several detectors in a network.

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.

In case the detectors are intended to work in a network, they should be linked – all detector GND clamps must be interconnected; the same concerns the I/O clamps.

When cables are led under the wall plaster (semi-flush mounting), the base should be drilled in its centre; in case of on-plaster cable leading (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 placed 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 mm² cross section (0.4 – 0.9 mm diameter). Two wires may be connected to one contact (wire and resistor endings). It is allowed to use different size wires (within 0.4 – 0.9 mm range) in one contact. The minimum length of the wire protruding from the base is 5 cm. Bare (un-insulated) ends of wires (at least 8 mm long) should be pushed in the connector taken out from the base as it is shown on Fig. 2. The clamps of the connector will clench the wires automatically.

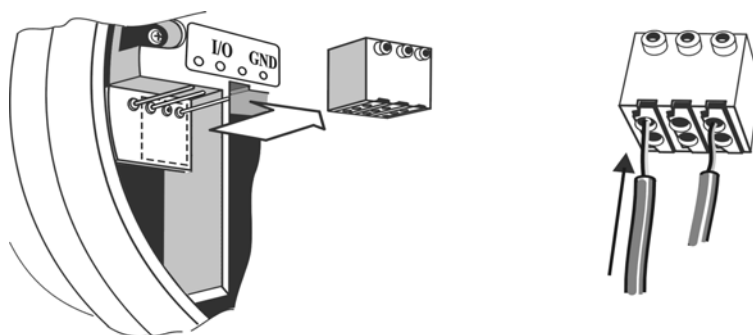


Fig. 2

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 battery should be connected and inserted so that the red blocking plate pulls back according to the Figure 3. The detector operation should be checked by pressing down the test push button for few seconds. The test result is positive when a LED flashes several times and subsequently an acoustic signal is heard. The inspected detector can be installed in the base turning it clockwise until the catches snap.

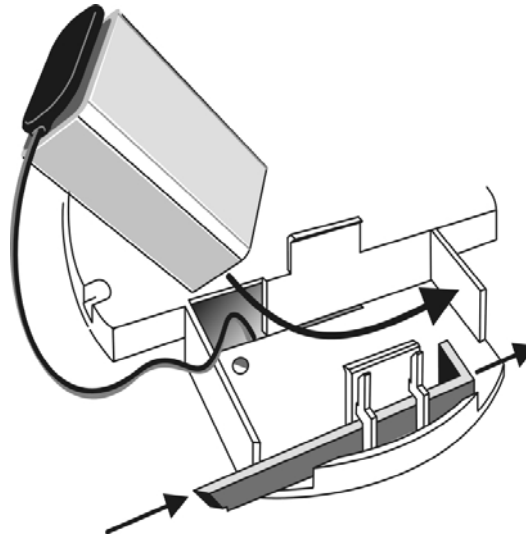


Fig. 3

6 PRINCIPLES OF OPERATION

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

Detector mode	Modulated audio signal	LED flashing	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 the TEST button	X	X		
Fault			X	

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

Depending on the type of a battery used, the detector operation period may vary:

- ordinary batteries – min. 1 year; the detector will work normally for at least 30 days since the first low battery signal has been transmitted
- alkaline batteries – min. 2 years; low battery signal for min. 30 days
- lithium batteries – min. 3 years; low battery signal for min. 60 days.

Frequent detector tests and its activation inspections will result in the operation period shortening.

7 MAINTENANCE INSTRUCTIONS

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

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

- remove the detector from its base turning it counter clockwise and taking it off;
- disconnect the connector (11);
- remove two screws (10) fastening the bottom (9) to the casing (6) of the detector;
- take the casing off;
- bend softly the catches that hold 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 acoustic 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 that the LED and the testing button poke out above the casing surface;
- fasten the module to the casing with two screws;
- connect a battery and check the detector operation;
- install the detector inside the base.

8 NOTES

A supplying battery is not included in a standard detector package – it should be ordered separately.

The ADR-20N 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.