

PUO-35 & PUO-35Ex

ULTRAVIOLET FLAME DETECTORS

Installation and Maintenance Manual

IK-E186-001GB

IIIC Edition



KDB

The PUO-35 and PUO-35Ex flame detectors covered by the present manual, complies with the requirements of the following European Union directives:

2004/108/WE on electromagnetic compatibility;
94/9/WE on equipment and protective systems intended for use in potentially explosive atmosphere.

The PUO-35 and PUO-35Ex flame detectors have been approved with the Certificate of Conformity No. 1987/2005 issued by the Scientific and Research Centre for Fire Protection (CNBOP) Józefów, Poland, an EU notified authority No. 1438, that allows their application in fire detection systems.

The PUO-35Ex intrinsically safe flame detector has been additionally approved with the following certificates:

- WE type Inspection Certificate No. nr KDB 04ATEX170X allowing its application in explosion hazardous areas, issued by KDB in Mikołów, Poland
- Quality Assurance Acknowledgement No. GIG 04 ATEXQ 021, issued by the Central Mining Institute, an EU notified authority No. 1453.

The certificate may be downloaded from www.polon-alfa.pl web site.

The national conformity declaration No. 1PI/E186/2005 dated 12.12.2005 is available on request from the manufacturer.

Read the manual carefully before assembling and operation.

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

The manufacturer POLON-ALFA bears no responsibility for any damage resulting from usage inconsistent with the manual.

The waste product, unsuitable for further use, shall be passed to the nearest point of collection of 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 PUO-35 flame detector is designed for detection of flame resulting from a fire hazard in zones where in normal conditions no flame related processes take place and no direct sunlight operates on the detector's body.

The PUO-35Ex intrinsically safe detector must be connected to a detection line only through a **intrinsically safe protective barrier or separator of $U_o < 28V$, $I_o < 93 \text{ mA}$ parameters**. The PUO-35Ex detector is installed in rooms and zones qualified as 1st and 2nd explosive hazard category resulting from potential explosion danger of explosive gases or inflammable liquids that are ranked at IIA, IIB and IIC explosiveness subgroups and T1 up to T6 temperature classes.

2 TECHNICAL SPECIFICATIONS

Operating voltage	20 V + 10 % - 15 %
Quiescent current	max. 100 μ A
Alarm current (at 20V)	20 mA - 5 mA
Sensitivity (acc. to EN 54-10)	2 class (17 m)
Angle of view	120 °
Operating temperature range	- 10 °C ÷ + 55 °C
Intrinsic safety rating	Ex i _b IIC T6
Casing ingress protection	IP 44
Relative humidity	up to 93 % at 40 °C
Mass	0.45 kg

3 INTRINSIC SAFETY PARAMETERS

Supply line marginal parameters:

Maximum input voltage	U_i	28 V
Maximum input current (amperage)	I_i	93 mA
Maximum input power	P_i	0,66 W
Maximum inner capacity	C_i	32,5 nF
Maximum inner inductance	L_i	3 mH
Maximum outer capacity	C_o	50 nF **
Maximum outer inductance	L_o	1,2 mH**

Detector – alarm indicator connecting line parameters:

Maximum outer voltage	U_o	28 V***
Maximum outer current (amperage)	I_o	93 mA***
Maximum outer power	P_o	0,66 W***

* negligible parameters

** represents the sum of capacity and inductance resulting from the length of cables that may be connected to the detector

*** values that may occur in marginal case of uncountable damages

Intrinsically safe barrier or separator parameters:

Maximum output voltage	U_o	28 V
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Maximum output current (amperage)	I_o	93 mA
Maximum output power	P_o	0,66 W
Minimum output resistance	R_i	300 Ω
Maximum outer capacity	C_o	83 nF
Maximum inner inductance	L_o	4,2 mH

Connecting cable example (YnTKSY):

Core diameter	mm	0,8	1,0
Single core resistance	Ω /km	37,5	24
Pair of cores capacity	nF/Km	120	120
Inductance	mH/km	0,7	0,7

Note:

The total line capacity and line inductance as well as total inner inductance of the detectors installed behind an intrinsically safe barrier of separator must not exceed the level of 83 nF and 4.2 mH. As a result every single PUO-35Ex detector requires an individual intrinsically safe barrier of separator.

4 SAFETY CONDITIONS

4.1 Repairs and maintenance

Any maintenance works or periodic inspection shall be executed by skilled personnel employed by companies authorised and trained by POLON-ALFA.

Any repairs must be carried out by the manufacturer.

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

4.2 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 stability of ladders, elevators, lifts, etc.

Any electric tools shall be used strictly obeying the safety rules stated in instruction manuals by manufacturers.

4.3 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 in ceilings.

5 CONSTRUCTION AND OPERATION PRINCIPLE

The detector casing is made of plastic highly resistant to damages that occur during operation period.

The shape and dimensions are shown in Fig. 1 (appendix 1).

An electronic module mounted on two printed boards is installed inside the casing.

Connecting sockets are so designed that the detectors can be installed in '30' model range bases.

The detectors react to UV flame radiation with a wavelength at ~200 nm. The detectors are resistant to all sources of artificial light, which do not contain UV radiation.

6 SERVICING INSTRUCTIONS

The detectors are required to pass periodic examinations to prove that the detector operates properly and interoperates with the fire control panel properly.

The actuation test may be carried out using a lighter or match flame.

The-35 detectors should be installed in such a manner that eliminates direct sunlight to fall directly on the sensor.

7 MAINTENANCE AND REPAIRS

In case of proper utilisation of the detectors, maintenance activities are limited to periodic checks, operation inspections and – if necessary – dust or other dirt removal from the detector's body or glass cover (PUO-35Ex). It should be done using pure ethyl alcohol.

It is critical to remember that the detector's sensitivity depends on cleanness of its glass parts. Dirt or dust accumulated in those places may result in the detector's sensitivity deterioration or even malfunction.

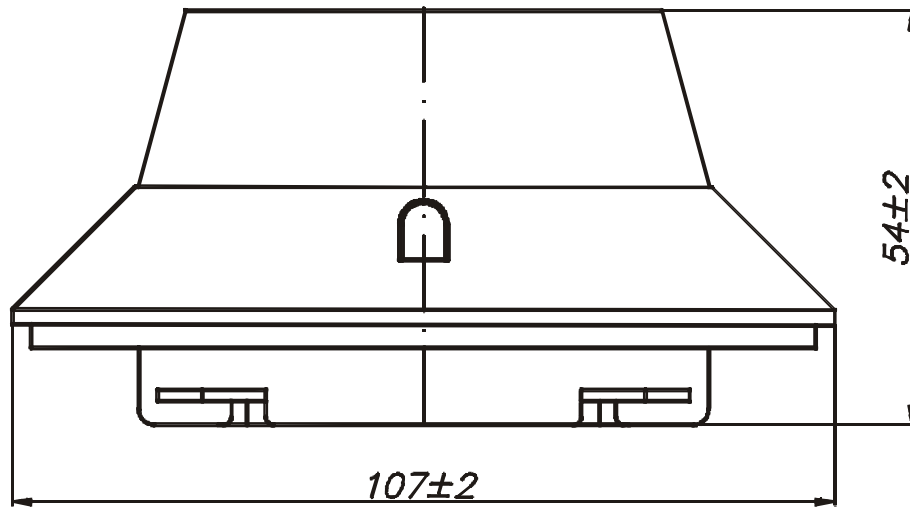
Note:

When checking detectors installed in explosion hazardous zones it is obligatory to obey regulations that apply to such dangerous spaces.

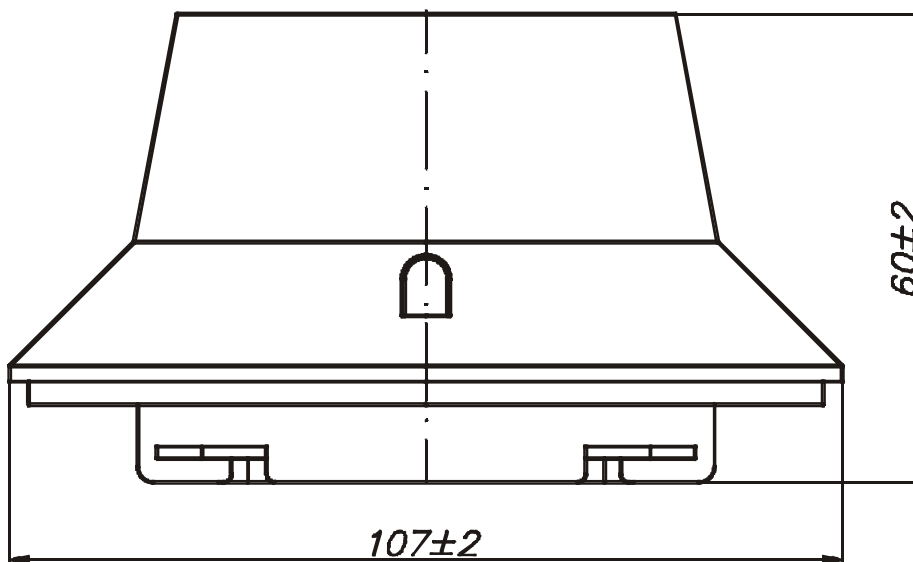
8 STORAGE AND TRANSPORTATION

The PUO-35 and PUO-35Ex detectors must be kept in individual packages in closed rooms free of acid or alkaline vapours and volatile compounds of sulphur at the temperature between - 10 °C and + 55 °C and relative humidity up to 80%.

The detectors can be carried in transport packages with any transport means provided the transport instructions given on their packing are observed and they are properly protected from any mechanical damage.



PUO - 35



PUO - 35Ex

Fig. 1. POU-35 and POU-35Ex detector shape and overall dimensions.