

TUP-40

FIXED TEMPERATURE/RATE-OF-RISE HEAT DETECTOR

Installation and maintenance manual

IK-E291-001GB

IIB Edition




The TUP-40 heat detector, covered by this manual, complies with the requirements of the following European Union directives:

CPD 89/106/EWG - on construction goods;
EMC 2004/108/WE - on electromagnetic compatibility.

The TUP-40 detector has been approved with the EC Certificate of Conformity No. 1438/CPD/0019, issued by the Scientific and Research Centre for Fire Protection (CNBOP) Józefów, Poland, an EU notified authority No. 1438, confirming its compliance with the requirements of PN-EN 54-5:2003 standard.


The certificate can be downloaded from www.polon-alfa.pl.

 1438
Polon-Alfa Spółka z ograniczoną odpowiedzialnością Sp. k. Glinki 155 Street, PL 85-861 Bydgoszcz 05 1438/CPD/0019
EN 54-5 TUP-40 heat detector (fixed temperature/rate-of-rise type, conventional, detachable) Application – fire security
Technical data – IK-E291-001GB manual

Read the manual carefully before the detector mounting and activation.

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 harm resulted from the unit application discordantly to the requirements of this manual.

A waste product, unsuitable for further use, shall be passed to a waste electric and electronic equipment collection point.	
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NOTE: The manufacturer reserves the right to change specifications of products at any time without a prior notice.

1 PURPOSE

The TUP-40 heat detector is designed for detection and indication of a fire hazard or a fire in indoor premises, in which during the initial phase of a fire a very fast rise of temperature can be observed or – due to various reasons – the ambient temperature increases reaching a threshold that constitutes a fire thread.

The TUP-40 detectors are intended to interoperate with conventional control panels or to be installed in side lines of addressable control panels manufactured by Polon-Alfa or other producers that obtained Polon-Alfa's consent for interoperation of those detectors with their control panels. The TUP-40 heat detector is an A1R class device designed to operate in the temperature range between – 25 °C and + 50 °C.

The detector meets the requirements of the PN-EN 54-5:2003 standard.

2 TECHNICAL SPECIFICATIONS

Quiescent voltage	12 V ÷ 28 V
Quiescent current	≤ 40 µA
Alarm current	20 mA
Minimum operation temperature level	- 25 °C
Allowable relative humidity	≤ 95 % at 40 °C
Detector class (acc. to PN-EN 54-5:2003)	A1R
Actuation time	acc. to Table 1
Static actuation temperature	from 54 °C to 65 °C
Typical operating temperature	25 °C
Mass (without base)	0.2 kg
Dimensions without base	Ø 115 x 43 mm
Dimensions with G-40 base	Ø 115 x 54 mm
Maximum installation height *)	7.5 m
Maximum supervised area *)	30 m ²
Standard colour	white

**) the TUP-40 heat detectors should be installed (height, arrangement) in accordance with the design guidelines settled by the Scientific and Research Centre for Fire Protection*

3 SAFETY CONDITIONS

3.1 Repairs and maintenance

Any maintenance works or periodic inspections 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.

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 stability of ladders, elevators, lifts, etc.

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

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 in ceilings.

4 DESIGN DESCRIPTIONS

The detector mechanical design is shown in Fig. 1. The device main part is a detecting circuit comprising a thermistor. The thermistor is placed centrally and protrudes above the detector housing and is protected against a mechanical damage by a basket. The detecting circuit is connected directly to a printed board which contains electronic circuits and a microprocessor that monitors the detector operation. The detector construction and outer shape allow for free air movement and direct influence on the detection circuit. The whole structure is placed in a white plastic housing which is composed of a basket, detector cover and ring. The TOP-40 detector is installed in the G-40 base where detecting line wires are connected to.

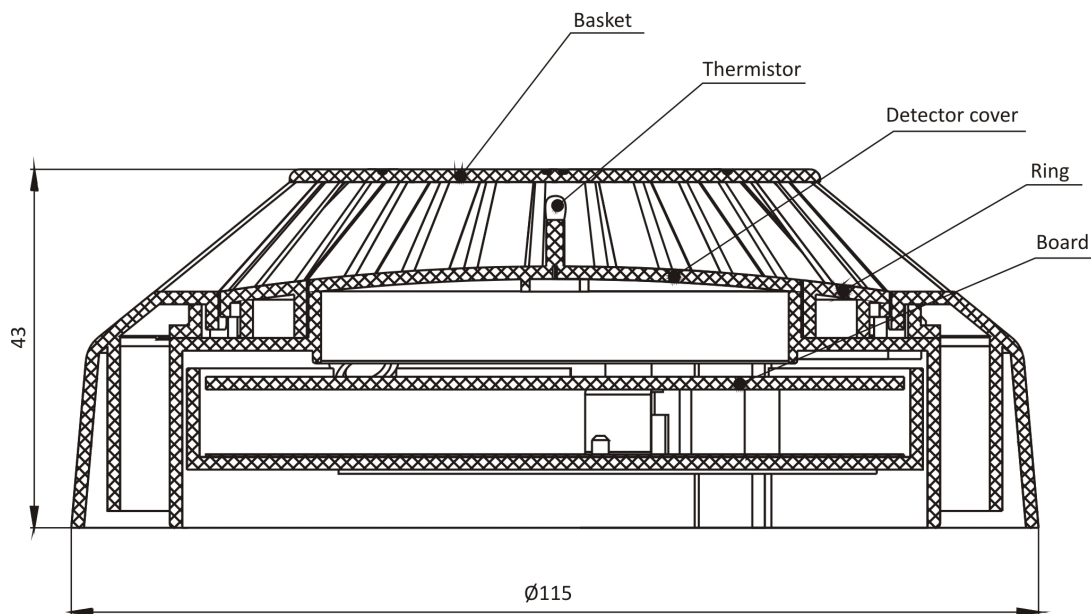


Fig. 1 TUP-40 heat detector design

5 PRINCIPLE OF OPERATION

The TUP-40 heat detector reacts to rise of temperature which occurs in the initial phase of a fire. In case a pre-set temperature rise threshold is exceeded, the detector electronic circuit transmits a current signal to the fire control panel. Such an alarm signal can be evoked also due to a detection circuit fault. The detector is furnished with an optical indicator that is lit in the alarm mode. It enables fast location of the actuated detector and is helpful in periodic detector inspections. In case a detector is hardly visible or is installed in a difficult-to-reach space, an additional optical alarm indicator (WZ-31) may be connected in an accessible and visible place.

The actuation times are presented in Table 1 (acc. to PN-EN 54-5:2003 standard).

Table 1

Rate of air temperature rise from typical operation temperature	A1R class			
	Minimum actuation time		Maximum actuation time	
K/min	min	s	min	s
1	29	00	40	20
3	7	13	13	40
5	4	09	8	20
10	1	00	4	20
20		30	2	20
30		20	1	40

The heat detectors operation parameters are listed in Table 2 (acc. to PN-EN 54-5:2003 standard).

Table 2

Detector class	Typical operation temperature °C	Maximum operation temperature °C	Minimum static actuation temperature °C	Maximum static actuation temperature °C
A1R	25	50	54	65

The terms used in the tables mean:

Typical operation temperature - **the temperature at which the detector can work for a long time when no fire thread exists.**

Maximum static actuation temperature – **the maximum temperature at which the detector can work for a short time when no fire thread exists.**

Static actuation temperature – **the temperature at which the detector evokes an alarm signal at an insignificant temperature rise rate.**

6 INSTALLATION

The detector bases should be connected in accordance with the diagram presented in the G-40 base manual or the control panel Operation and Maintenance Documentation. When all detectors are installed, the control panel or a power supply device should be switched on in order to check the circuit proper operation. Each detector must be inspected individually. In case an alarm is evoked in the control panel or in a supplying and alarming device, it is necessary to stop the detector warning and reset the alarm with a proper push button in the control panel or short interruption in the detector power supply circuit.

Simultaneous alarm evoking in more than three detectors installed in one line can additionally result in a fault indication (a line short circuit).

7 SERVICING AND MAINTENANCE

During the operation life, the TUP-40 detector should be subjected to periodical inspection at least once per 6 months in order to confirm the detector proper operation and its appropriate interoperation with the control panel. During periodical inspections it is necessary to remove a possible dust layer, spider-web and other detection circuit contamination.

A faulty detector should be sent to the manufacturer for repair.

During renovation and painting works the detectors must be protected against a damage and contamination.

8 STORAGE AND TRANSPORTATION

8.1 Storage

The TUP-40 detectors should be kept in individual packages in closed premises at the temperature between +5 °C and +35 °C, and relative humidity not exceeding 80 %. The detectors enclosure should be free of volatile sulphur compounds, acid and alkaline vapours.

The devices should be stored at least 1.5 m from heating equipment.

8.2 Transportation

The TUP-40 detectors should be carried in any transport means, however, meeting the requirements marked on the packages and protecting them against possible mechanical damage. It is forbidden to transport the devices in temperatures lower than - 40 °C and higher than + 70 °C (at 80 % humidity) and relative humidity higher than 95% at + 40 °C.