

MICROPROCESSOR BASED ADDRESSABLE MONITORING ELEMENT EKS-6080

POLON 3000 / POLON 6000 INTERACTIVE FIRE DETECTION AND ALARM SYSTEM

INSTALLATION AND MAINTENANCE MANUAL

IK-E378-001-GB

Edition I



The EKS-6080 monitoring element, which is the subject of this Manual, meets the essential requirements of the following regulations of the European Parliament and of the Council (EU) and European Union directives:

- CPR** CPR/305/2011 Regulation (EU) of the European Parliament and of the Council of 9 March 2011 establishing harmonised conditions for the marketing of consumer products repealing Council Directive 89/106/EEC;
- LVD** Directive 2014/35/EU on electrical equipment intended for use within certain voltage limits;
- EMC** Directive 2014/30/EU on electromagnetic compatibility.

The product has been issued by CNBOP-PIB, Notified Body No. 1438, a certificate of constancy of performance confirming the possession of technical features/parameters required by EN 54-18:2005+AC:2007 and EN 54-17:2005+AC:2007.

The Manufacturer's technical features/parameters exceeding the requirements of the listed standards and other features/parameters of the product detailed in this manual unspecified in the listed standards are confirmed by the Manufacturer.

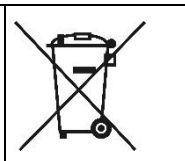
The certificate and the Declaration of Performance are available on the website www.polon-alfa.com.

The contents of this manual should be thoroughly read and understood before installation and operation of the device.

Failure to follow the recommendations in this manual may prove dangerous or result in a violation of applicable regulations.

The manufacturer POLON-ALFA is not responsible for damage caused as a result of use inconsistent with these instructions.

A worn-out product, unfit for further use, should be handed over to one of the points dealing with the collection of waste electrical and electronic equipment.



Note – The right to make changes is reserved

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1. Purpose

The EKS-6080 monitoring element is addressable device designed for:

- monitoring of activation of automatic safety and fire devices,
- status monitoring of any devices.

The EKS-6080 monitoring element is designed to work in addressable detection lines of POLON 3000 and POLON 6000 fire alarm control panels.

Device is adapted for indoor and outdoor operation.

The parametric inputs (IN) of the EKS-6080 monitoring element enables the connection of independent, NO or NC potential-free contacts.

2. Technical specifications

Operating voltage	16.5 ÷ 24.6 V
Current draw from detection line (in quiescent mode)	< 210 µA
Detection Line Short Circuit Isolator	yes
Configuration of monitoring elements	from the control panel
Number of inputs	8
Input Function	monitoring or alarm
Initiation of input	potential-free NO or NC contact
Input cable connection supervising	short circuit, open
Input line capacity	< 12 nF (approx. 100 m of YnTKSY 1x2x0.8 mm cable)
Cable entry:	
- cable bushing for the detection line	2 x M12, cable Ø 3-6.5 mm
- input cable bushing	8 x M12, cable Ø 3-6.5 mm
Conductor permissible cross-section	up to 2.5 mm ²
Dimensions	Figure 3.1
Weight	< 0.55 kg
Operating temperature	-40 ÷ +85 °C
Climate category	40/085/04
Permissible relative humidity	up to 95 % at 40 °C
Ingress protection	IP 66
Enclosure material and colour	Polycarbonate (PC), Grey

3. Design description

The EKS-6080 monitoring element is made in the form of a printed circuit board with the set of connectors and electronic components placed in enclosure.

Wall mounting slots are located in the corners of the enclosure.

Cable glands are mounted along the sides of the enclosure base Figure 3.1.

The M12 gland is used to insert the detection line cable or input cable.

The housing cover is mounted with four screws to the housing base.

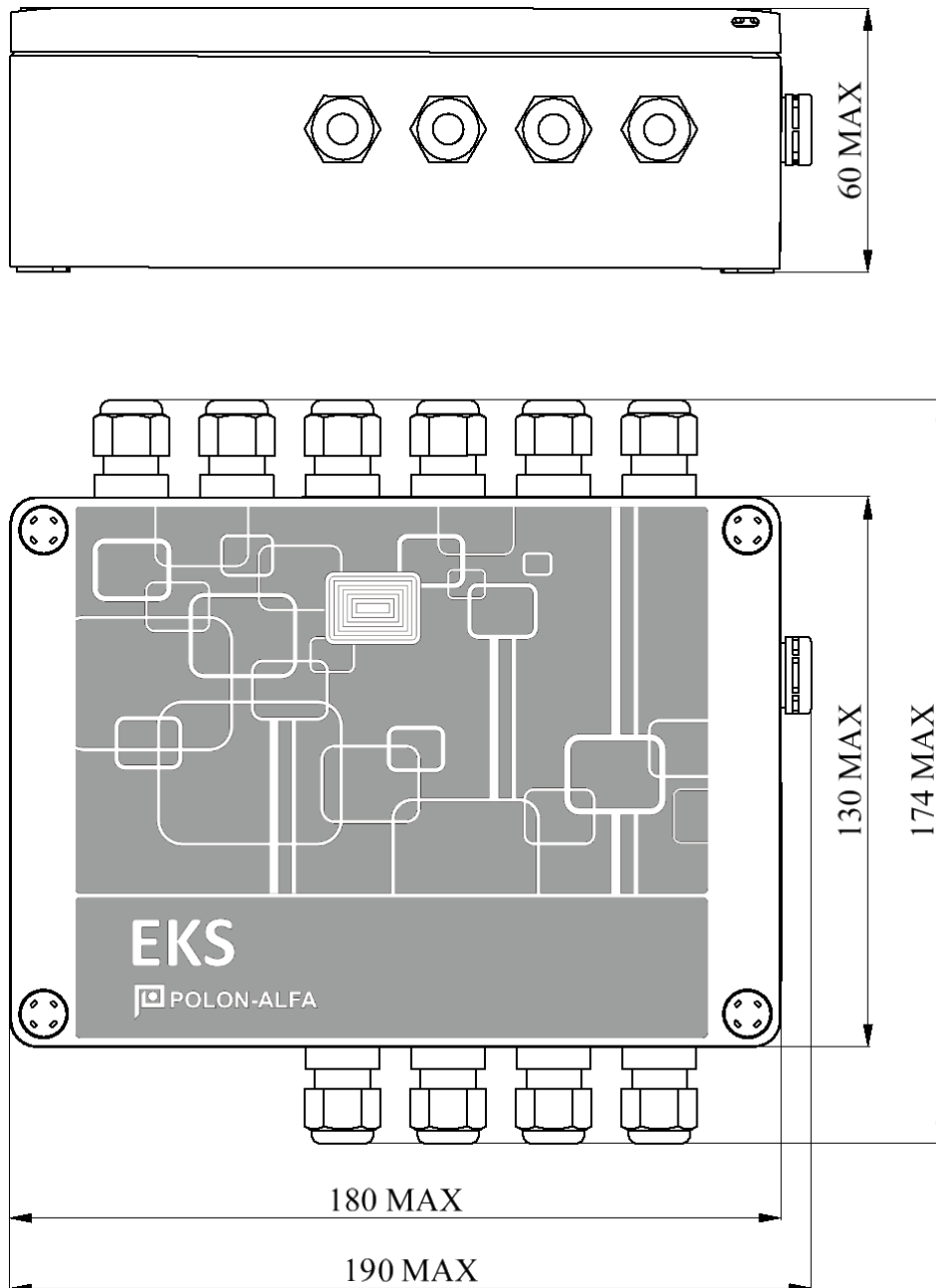


Figure 3.1 EKS-6080 Dimensions

4. Principle of operation

Communication between the POLON 3000 or POLON 6000 control panels and the EKS-6080 monitoring element is carried out through addressable two-wire detection line. A unique, fully digital communication protocol enables transferring any information from the panel to the monitoring element and from the element to the control panel.

The monitoring element enables the following statuses to be transmitted to the control panel:

- saving the address,
- reading out the address,
- saving the operating mode,
- reading the operating mode,
- receiving an active state X from INn input, two-state control or alarm input, NO or NC,
- receiving an active X or X and Y active state from INn input, three-state control input, NO,
- cable damage connected to the INn input (if a short circuit or open circuit) occurs,
- short circuit isolation,
- location (report from the TEST button),
- non-volatile memory corruption (erroneous data stored in non-volatile memory).

The mode of operation of the element determines the way in which the monitoring element is to operate.

The operating mode of the EKS-6080 monitoring element is determined by configuration bytes that indicate the mode of operation of this element.

After setting the input to the active state, it is possible to set operating modes for individual inputs.

All EKS-6080 board labelling is shown in Figure: 4.1.

The INn input of the monitoring element reacts to a short circuit or opening of potential-free contacts. The control panel signals such change as an active state from the monitoring or alarm input, depending on the operation mode. A short circuit or break in the input wire is detected by the monitoring element and signaled by the control panel as an input cable fault.

Monitoring element sample connection is shown in Figure: 7.1.

The monitoring element is equipped with an internal short-circuit isolator that cuts off the compact part of the detection line from the adjacent functional part, which allows continued uninterrupted operation. An active state from the INn alarm input of the element is signalled by a pulsed red light of a LED located between the detection line connector set and the INn input connector unit. It enables to quickly locate the alarming element and is an aid in periodic operation monitoring of the element.

Fault states of the monitoring element and activation of the short-circuit isolator are signalled by yellow LED flashing.

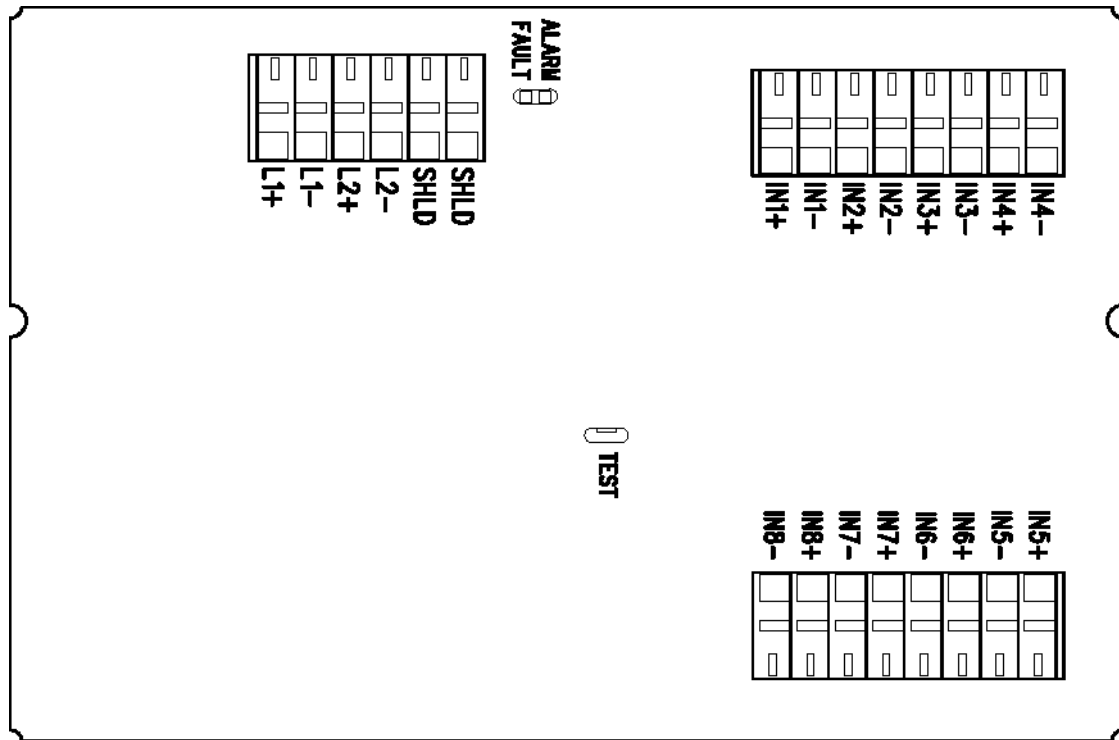


Figure 4.1 EKS-6080 PCB labelling

5. Monitoring element operating modes

Depending on the type of operation of the control output, its mode of operation should be defined:

- activation monitoring,
- state monitoring,
- fire alarm.

If the input operating mode is selected as activation monitoring, two- or three-state mode operation is possible.

The cooperation method between the input and the potential-free NO or NC contact must also be determined.

Supervised output must be assigned for activation monitoring.

For an alarm input, it is necessary to assign it to a detection zone.

6. Maintenance and operation

The monitoring element unfailing operation depends on maintaining appropriate operating conditions, correct installation and regular periodic inspections.

The inspection is carried out in order to determine the proper operation of the element and its correct cooperation with the control panel. The inspection should be carried out at least every 12 months by a person that knows the element to the extent that is able to recognize any operation irregularities. The test consists in verifying the functions of the element in an operating alarm system.

Note:

Inspections should be carried out with special caution.

For any renovation work, protect the controls from being painted with masking tape. Elements damaged during painting and renovation works due to the fault of the persons conducting these works (e.g. painted casing, glued with paint, ...) are not subject to warranty repairs.

The control element is equipped with a "TEST" button, which allows you to test the communication of this element with the control panel and determine its location in the facility. After pressing the "TEST" button and holding it for about 2 seconds, the element starts flashing a yellow LED, which means proper communication with the control panel.

To press the "TEST" button, insert the screwdriver into the hole to a depth of not less than 4 mm and move it in the direction marked with an arrow until you feel a "click". The tip of the screwdriver should not be larger than 4x1 mm. The method of pressing the TEST button is shown in Figure: 6.1.

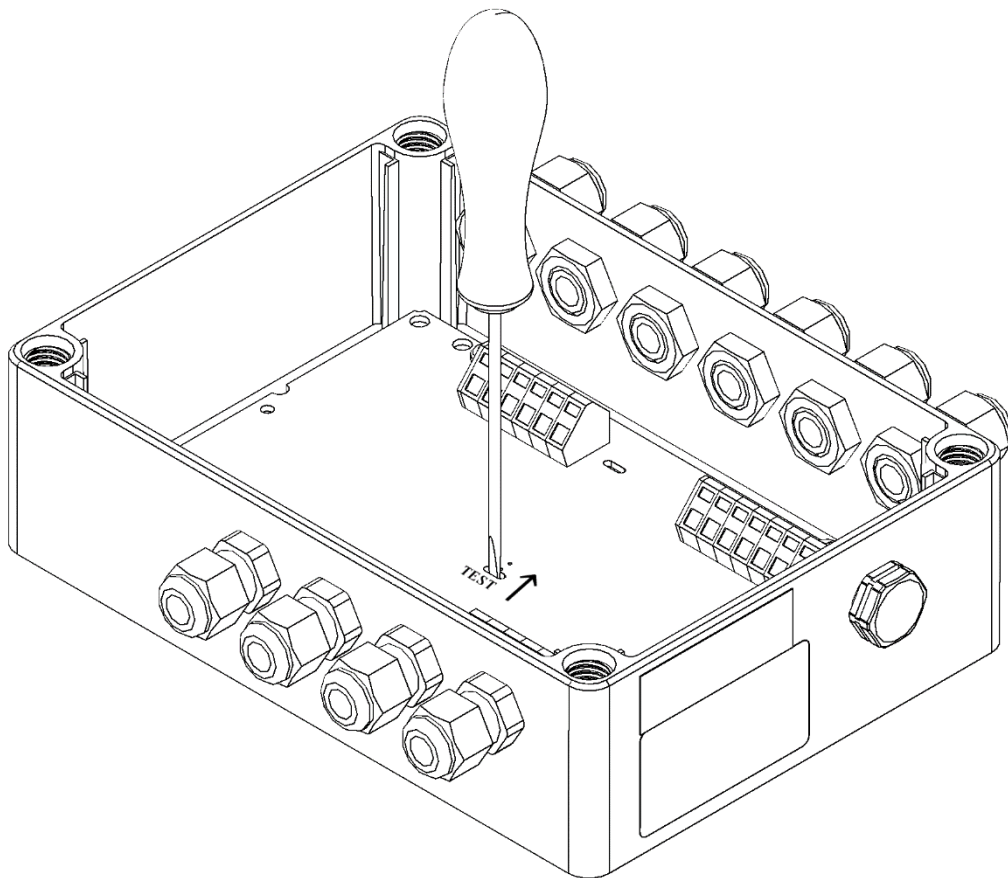


Figure 6.1 TEST Button – switch on method

7. Installation

The EKS-6080 monitoring elements are recommended to be installed on the detection line in the vicinity of the controlled devices.

The elements can operate in loop, loop with straight branches or in radial detection lines of POLON 3000 or POLON 6000 control panels (see the Installation and Maintenance Manual of control panels).

An example of the EKS-6080 connection method is shown in Figure:7.1.

The housings of the monitoring elements should be mounted on walls or ceilings by screwing them with four screws through the holes in the corners. Screws with Φ 6 wall plugs are recommended. Installation cables should be entered through cable bushings.

Detection line or input IN must be entered through M12 Φ 3÷6.5 mm cable bushing.

It is important to pay attention to proper sealing in cable grommets and plugging unused entries when inserting cables in the enclosure.

Screwdriver must be used when connecting installation cables with its working part pressed all the way into the smaller hole of the connector, cable then inserted into the larger hole and screwdriver removed.

It is recommended to use a short bent screwdriver 3.5x0.5 mm, cat. no. WAGO 210-258 (purchase from POLON-ALFA). Connect the wires as described on the connectors. Connect the detection line shields to the fields marked SHLD.

The wires of the alarm system should be laid in accordance with the regulations applicable to low-voltage electrical installations.

Monitoring elements installation is not recommended in rooms with a corrosive atmosphere, containing gases and caustic vapours as well as dust.

The EKS-6080 monitoring elements are equipped with a "Pressure equalization element", especially useful when mounted outdoors.

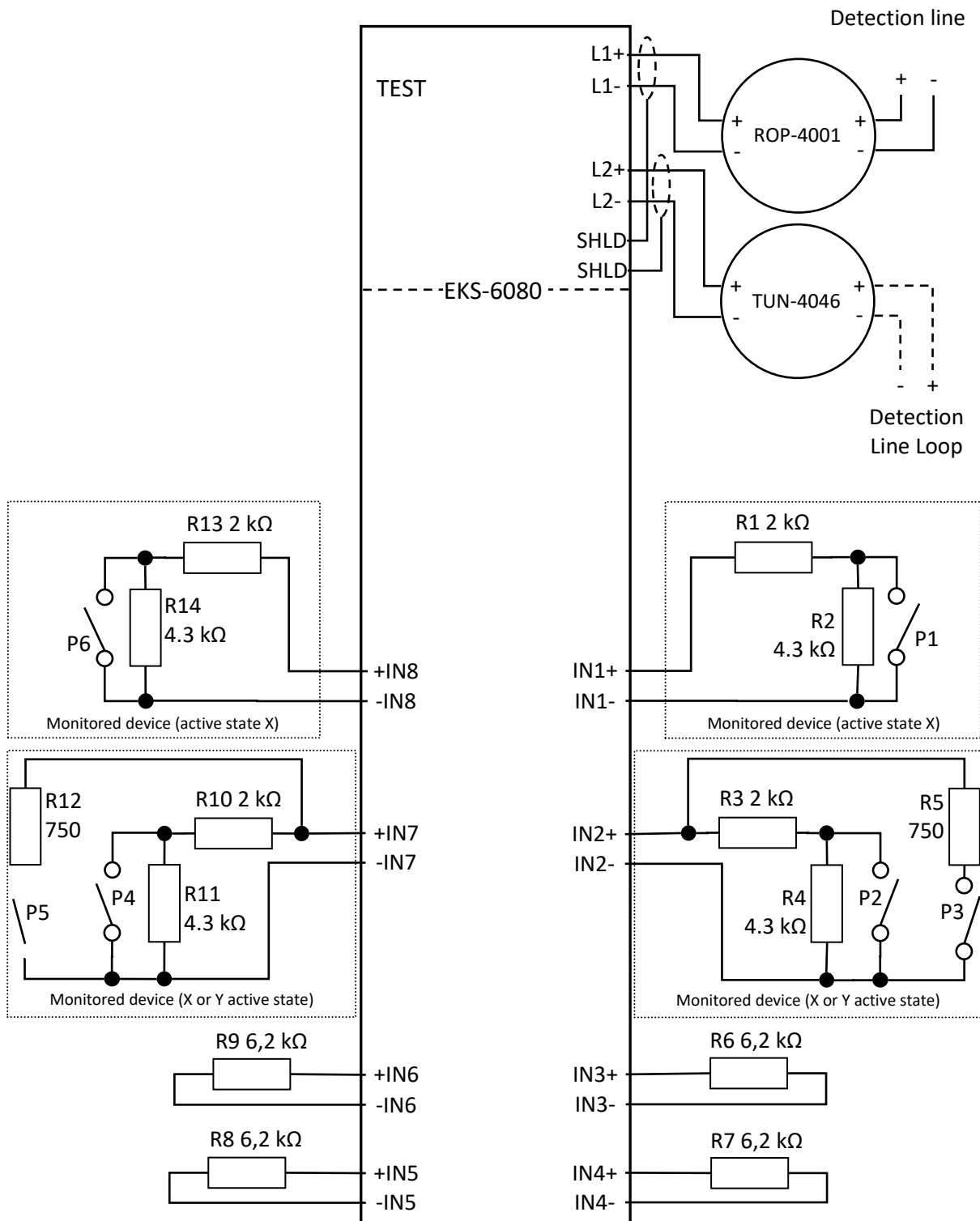


Figure 7.1 EKS-6080 Connection Diagram

8. Safety conditions

8.1. Repairs and maintenance

Maintenance and periodic inspections must be carried out by authorized personnel of companies trained or approved by POLON-ALFA.

All repairs must be carried out by the manufacturer.

POLON-ALFA is not responsible for the operation of equipment maintained and repaired by unauthorized personnel.

8.2. Works at height

Work at height related to the installation of monitoring elements should be carried out with special care and the use of functional equipment and tools. Special attention should be paid to the stability of ladders, lifts, etc.

Power tools must be used in accordance with the conditions of their safe operation specified in the relevant manufacturer's instructions.

8.3. Anti-dusting eye protection

During work that generates a large amount of dust, especially when drilling holes in ceilings to attach the bases of the control element housing, safety goggles and dust masks should be used.

8.4. Protection against electric shock

When installing the monitoring elements the relevant national regulations for low-voltage electrical installations must be followed. All work can only be performed by authorized persons.

If the system uses a voltage higher than the permissible touch voltage, this voltage must be switched off before opening the enclosure cover.

Detection line screens must be close fixed with the connectors without unnecessary excess.

Strip the remaining wires at the appropriate length so that only the insulated part is available when inserted into the connectors. This will reduce accidental short circuits between wires.

9. Storage and transport

9.1. Storage

The EKS-6080 monitoring elements should be stored in enclosed spaces where no caustic vapours and gases are present, the temperature between 0 °C to +40 °C, and the relative humidity does not exceed 80 % at a temperature of +35 °C.

During storage, the components should not be exposed to direct sunlight or heat from heating devices. The shelf life of the components in the transport packaging should not exceed 12 months.

9.2. Transport

The EKS-6080 monitoring elements must be transported in confined spaces of means of transport, in packaging that meets the requirements of the applicable transport regulations.

The temperature during transport should not be lower than -40 °C and above +55 °C, and the relative humidity should not exceed 95 % at +45 °C.



POLON-ALFA S.A.

POLAND 85-861 Bydgoszcz, ul. Glinki 155 | www.polon-alfa.com

EXPORT DEP. phone no. +48 52 36 39 278, e-mail: export@polon-alfa.pl

SERVICE DEP. phone no. +48 52 36 39 390, e-mail: serwis@polon-alfa.pl