

**MULTI-SPECTRUM INFRARED
FLAME DETECTOR
PPW-40REx**

User Manual No.

IK-E326-001

Rev. I



KDB

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1 STATEMENT OF CONFORMITY

The herein described multispectral flame detector PPW-40REx conforms to the essential requirements of the relevant EU Directives.

1.1 EU Directives and Harmonized Standards

Construction Product Regulation (CPR) Regulation No. 305/2011 of the European Parliament and of the European Council of 9th March 2011 laying down harmonised conditions for the marketing of construction products and replacing the Directive of the European Council No. 89/106/EEC.

EN 54-10:2005 (EN 54-10:2002) Fire detection and fire alarm systems - Part 10: Flame detectors - Point detectors

EN 54-10:2005/A1:2006 (EN 54-10:2002) Fire detection and fire alarm systems - Part 10: Flame detectors - Point detectors

EMC Directive No. 2004/108/EC - Law of 16th April 2007 – Law on Electromagnetic Compatibility (Dz.U. issue No. 82, item No. 556).

EN 61000-4-2:2009 (EN 61000-4-2:2009) Electromagnetic Compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

EN 61000-4-3:2007 (EN 61000-4-3:2006) Electromagnetic Compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test.

EN 61000-4-4:2010 (EN 61000-4-4:2004) Electromagnetic Compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test

EN 61000-4-5:2010 (EN 61000-4-5:2006) Electromagnetic Compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test

EN 61000-4-6:2009 (EN 61000-4-6:2009) Electromagnetic Compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields.

ATEX 94/9/EC - Ordinance of the Minister of Economy of 22nd Dec. 2005 (Dz. U. issue No. 263, item No. 2203) on the basic requirements for equipment and protective systems for use in potentially explosive atmospheres.

EN 60079-0:2009 (EN 60079-0: 2009) Electrical Apparatus for Explosive Gas Atmospheres -- Part 0: General Requirements

EN 60079-1:2010(EN 60079-1: 2007) Electrical Apparatus for Explosive Gas Atmospheres -- Part 1: Flameproof Enclosures "d"


EN 60079-31:2011 (EN 60079-31:2009) Explosive Atmospheres -- Part 31: Equipment Dust Ignition Protection by Enclosure "t"

Conformity with Directive No. 94/9/EC confirmed with EC-type examination certificate No. KDB 13ATEX0058X issued by Główny Instytut Górnictwa, notified body No. 1453.

In order to ensure conformity of the product with essential safety requirements the following standards were used at the design and fabrication stages:

1.2 Certificate

The multi-spectrum infrared flame detector PPW-40REx has been certified for conformity with the requirements of the standards EN 54-10:2005 and EN 54-10:2005/A1:2006, as evidenced by the Certificate of Constancy of Performance (COP) No. 1438/CPR/0349 issued by JC CNBOP of Józefów, notified body No. 1438.

		
Polon-Alfa Sp. z o.o., Sp.k. 85-861 Bydgoszcz, ul. Glinki 155 1438 1438/CPR/0349		
Multi-spectrum Flame Detector PPW-40REx EN 54-10 Declaration of Performance No. 1/E326/2014/PL		
Essential Characteristics	Performance	Clause of harmonised standard No. EN 54-10:2002 A1:2005
Nominal activation conditions/ sensitivity, response delay (response time) and performance under fire conditions		
Classification	Class 1	4.2
Reproducibility	pass	5.2
Repeatability	pass	5.3
Directional dependence	pass	5.4
Fire sensitivity	pass	5.5
Dazzling (operational)	pass	5.6
Essential Characteristics	Performance	Clause of the Harmonised Technical Specification No. EN 54-10:2002 A1:2005
Operational reliability		
Individual alarm indication	pass	4.3
Connection of ancillary devices	pass	4.4
Monitoring of detachable sensors	pass	4.5
Manufacturer's adjustments	pass	4.6
On-site sensitivity adjustment	N.A.	4.7
Data	pass	4.8

Additional requirements for software controlled detectors	pass	4.9
Tolerance to supply voltage		
Variation in supply parameters (operational)	pass	5.16
Durability of operational reliability and response delay: temperature resistance		
Dry heat (operational)	pass	5.7
Cold (operational)	pass	5.8
Durability of operational reliability: vibration resistance		
Shock (operational)	pass	5.12
Impact (operational)	pass	5.13
Vibration, sinusoidal (operational)	pass	5.14
Vibration, sinusoidal (endurance)	pass	5.15
Durability of operational reliability: humidity resistance		
Damp heat, cyclic (operational)	pass	5.9
Damp heat, steady state (endurance)	pass	5.10
Durability of operational reliability: corrosion resistance		
Sulphur dioxide (SO ₂) corrosion resistance (endurance)	pass	5.11
Durability of operational reliability: electrical stability		
Electromagnetic compatibility (operational)	pass	5.17
Intended use: Fire safety systems – point flame detector used in interior and exterior fire alarm systems		
Technical Data - see User Manual No. IK-E326-001		

1.3 Notes

Be sure to read and understand these instructions before proceeding to installation and operation of the flame detector. Failure to follow these guidelines can cause a hazard condition or result in noncompliance with the requirements of the relevant binding codes.

POLON-ALFA Sp. z o.o., Sp. k., the manufacturer, may not be held responsible for any loss or damage resulting from using this product not in accordance with these guidelines.

At the end of its useful life, the product must be disposed of through one of electrical and electronic waste recycling companies.



Note – The content of this manual may be changed (subject to prior approval of such changes by the notified body).

2 INTENDED USE

PPW-40REx detector provides high flame detection efficiency of hydrocarbon based fuels providing high immunity to false alarms owing to the employed array of three IR sensors operating of different wavelengths.

The product can be used both inside and outside of buildings.

It is intended for use in potentially explosive atmospheres containing flammable mixtures of gases and vapours with air (ATEX subgroups IIA, IIB, IIC) and flammable dust/ air mixtures (ATEX subgroups IIIA, IIIB, IIIC). The detector is compatible with control panels receiving alarm signals from voltage-free relay contacts and may also be connected to other systems via 4 - 20 mA current loop.

The detector has IP66 rated aluminium housing.

3 MARKING

PPW-40REx is marked with the following symbols:



II 2G Ex d IIC T6 Gb



II 1D Ex ta IIIC T85°C IP66

Moreover, it has a permanently affixed label including, inter alia the **CE** mark.

Each product shall be provided with permanently attached label, as shown below: Fig. 1.



Fig. 1 Rating plate

Each product is supplied accompanied with the written declaration of conformity containing the following information:

- Manufacturer: POLON-ALFA Sp. z o.o., Sp. k.
- Product name: PPW-40REx multi-spectrum flame detector
- Product No.: sequential number/ year of manufacture
- Declaration: The product conforms the requirements of Directive No. 94/9/EC on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially Explosive Atmospheres
- EC examination certificate:

- Certification body: GIG KD Barbara
- Applicable harmonised standards:

EN 60079-0:2009;
EN 60079-1:2010;
EN 60079-31:2011.

4 SAFETY PRECAUTIONS

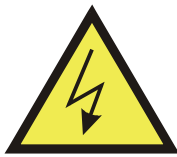
Do not open the detector housing in explosive atmosphere before disconnecting power.

Note: the short circuit making current of ta level safety devices should not be greater than 10kA.

Most of the detector components are protected by paint coat. Minimum clearance distance of 5 mm, as required by EN 60664-1, is maintained between all uninsulated elements, such as external and internal terminals and between these elements and the detector housing.

The system installation must be done by qualified technician.

During assembly and installation take steps to avoid formation of explosive atmosphere in the space concerned. During that time other monitoring methods should be implemented, for example with the use of portable detectors. The work must stop immediately should a hazardous situation occur.



Electrical equipment is a possible source of hazard. The operating voltages and currents of the electrical equipment described herein may be a source of ignition of explosive atmospheres.

Failure to comply with the guidelines provided in this manual and with general safety rules may result in death or serious body injuries as well as irrecoverable damage to equipment.

The device should be installed by qualified technician in compliance with the requirements of the relevant safety codes and the local working procedures. The requirements of EN 60079-14 apply.

In any case when the environmental conditions differ from those given in the data sheet consult the manufacturer.

4.1 Maintenance and repairs

Maintenance and periodic inspections must be carried out by licensed technicians from authorised servicing companies or trained by the flame detector manufacturer.

The flameproof cylindrical connection (see Fig. 2) should be weather sealed by application of silicon free grease.

The threaded flameproof connection should be secured with Loctite 222.

Before carrying out functional testing or periodic maintenance of the fire alarm system disable the alarm signal outputs to avoid false alarm and/or activating the fire suppression system.

NOTE:

The device includes a non-detachable permanently sealed flameproof connection (see Fig. 2).

Repairs of damaged device must be done by its manufacturer.

POLON-ALFA may not be held responsible for improper functioning of devices which have been maintained and/or repaired by unauthorised personnel.

4.2 Work at height

Particular care must be applied when carrying out any installation works at height. Make sure the equipment and tools are in good repair.

In particular verify stability of any ladders, work platforms, etc.

When using handheld power tools comply with the safety requirements as defined by the manufacturer.

4.3 Protection of eyes from dust

Installation of the device involves works generating a lot of dust, including in particular drilling holes in ceilings to fix the sensor bases and during such works use safety glasses and dust masks must be worn.

4.4 Refurbishment works

Before proceeding to refurbishment and painting works dismount the detector head and protect the base against damage and dirt.

5 CONSTRUCTION

As required to avoid hazards related to use in potentially explosive atmospheres containing gases, vapours of flammable liquids and dust the device is provided with explosion proof housing - flameproof enclosure.



The flameproof enclosure comprises the detector base (chassis), detector head and locking ring. For location of flameproof connections see Fig. 2. The main external dimensions of the device are given in Fig. 3.

Cables are inserted into the housing via. maximum three cable gland entries provided in the detector base. When only one or two inlets are used the remaining threaded holes must be plugged with dedicated, M25x1.5 flameproof plugs of Ex de rating, tightened with # 10 Allen key.

The cables are inserted through cable gland entries with M25 x 1.5 thread providing flameproof treaded connection (min. 6 thread engagements are required). The cable gland entries and stopping plugs are Ex rated components certified for conformity with the following standards as evidenced by the relevant EC type test certificates:

EN 60079-0:2009;
EN 60079-1:2010;
EN 60079-31:2011.

and bear the following marking:

 II 2G Ex d IIC T6 Gb
 II 1D Ex ta IIIC T85°C IP66

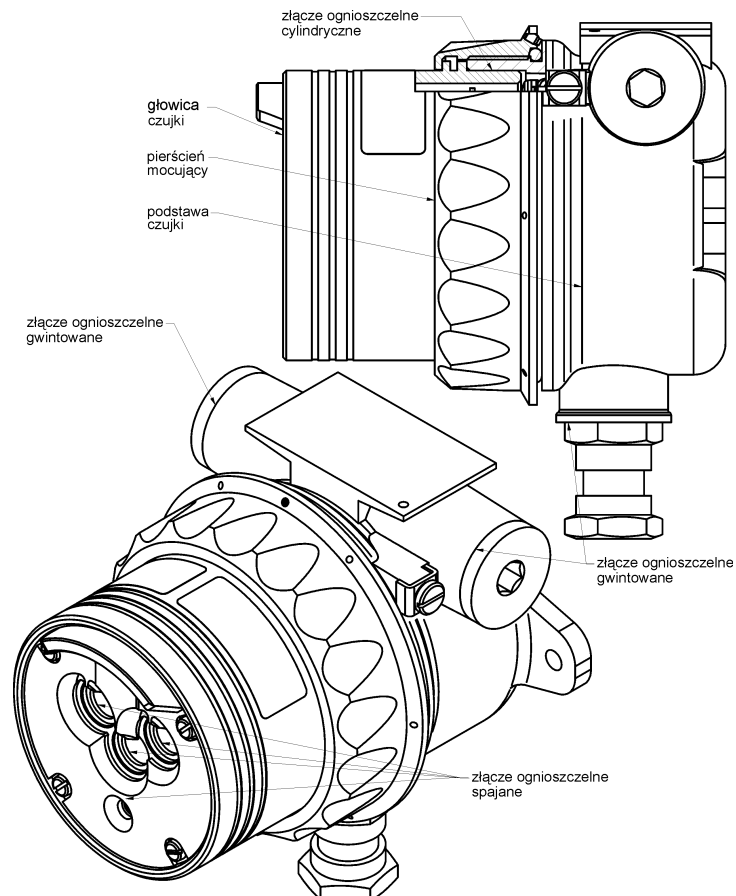


Fig. 2 Flameproof housing of PPW-40REx, location of flameproof connections

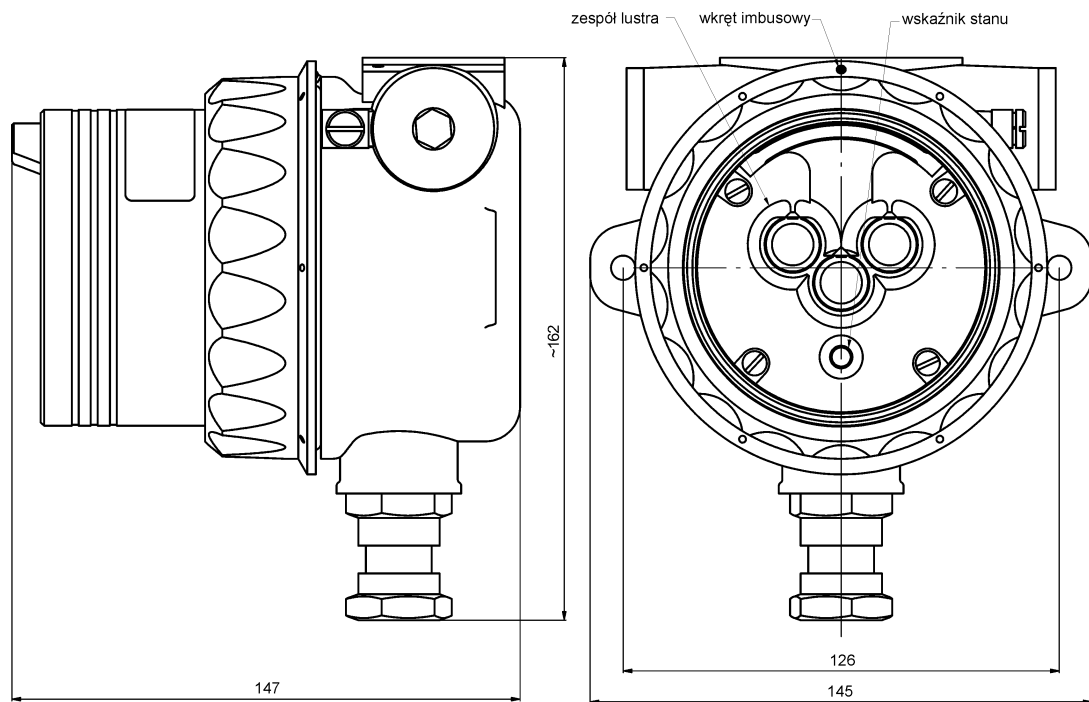


Fig. 3. Dimensioned drawing of PPW-40Ex

It is possible to fix the detector using adjustable mounting bracket. Fig. 4 presents dimensioned drawing of bracket mounted detector.

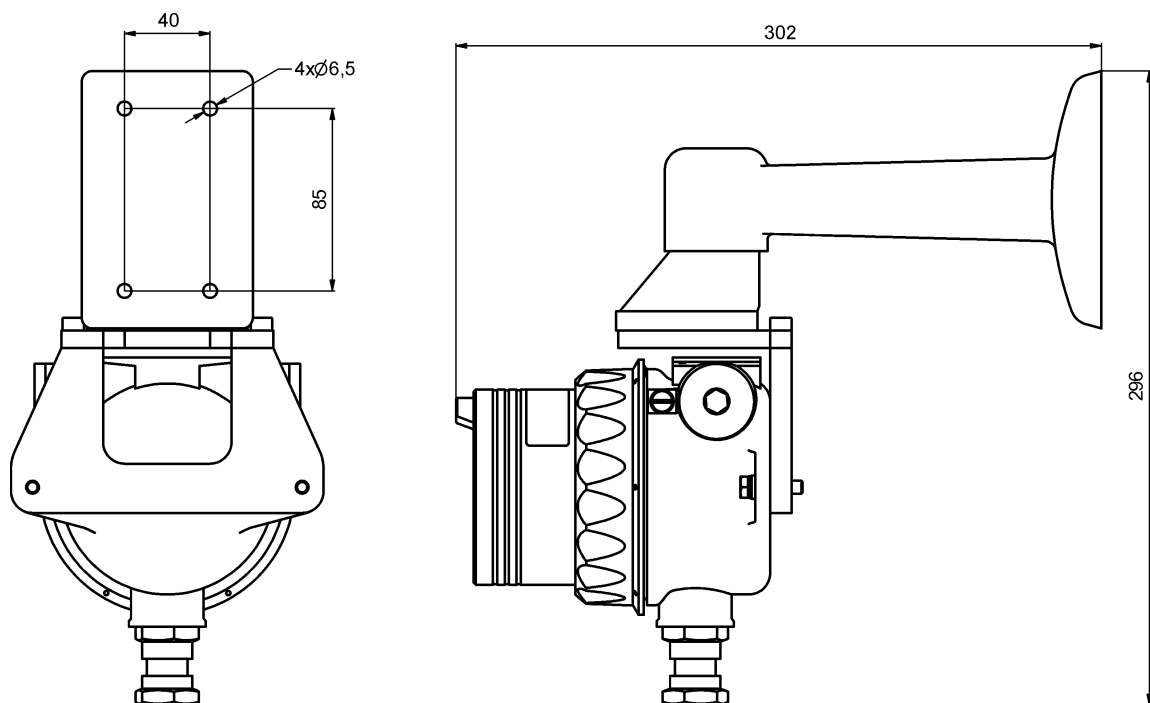


Fig. 4 Detector fixed using mounting bracket

Mounting bracket is adjustable in two axes: 60° vertically and 360° horizontally. The range of adjustment in the vertical axis is presented in Fig. 5.

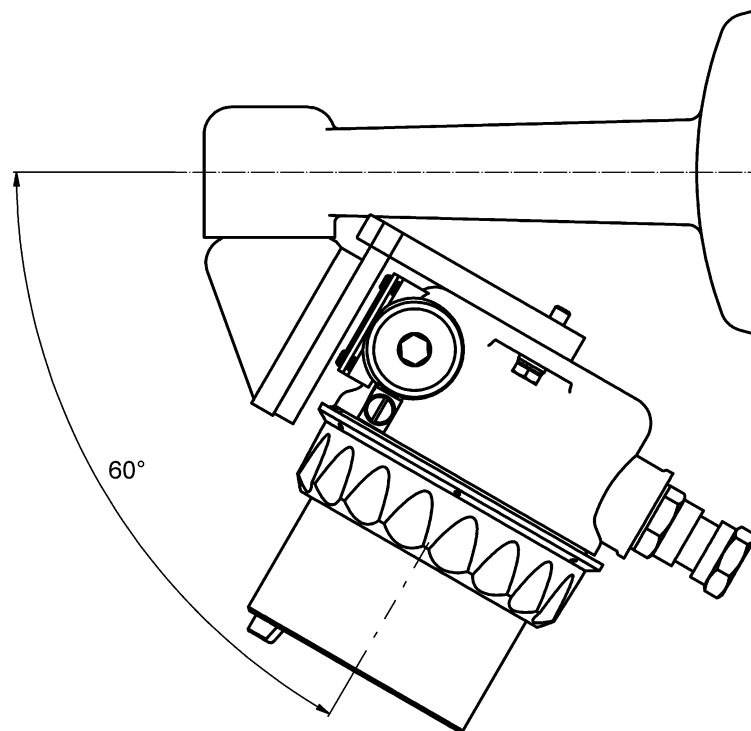


Fig. 5 Adjustment of mounting bracket in vertical axis

6 DESCRIPTION OF OPERATION

PPW-40REx detects electromagnetic radiation within the infrared range. This radiation is detected by three IR sensors that respond to different wavelengths of radiation reaching them through small apertures (windows) and the output signals generated by these sensors are amplified, processed and interpreted by the microprocessor-based controller system.

The microcontroller supervises the work of the detector and the collected data include, besides the measured signals, also the detector temperature, supply voltage, current date and time. The microcontroller analyzes the measurement results, makes decisions and is responsible for exchange of signals between the detector and the fire alarm control panel (FACP).

The controller verifies functioning of the main components of the detector and any malfunctioning is annunciated to FACP.

The detector is equipped with a heating element to ensure the required clarity of the optical components. The function of the heating element is to keep the glass windows free of water vapour, frost, ice, etc.

6.1 Output signals

The detector has relay outputs for alarm and fault signals and 4-20 mA current loop output. These outputs are used to provide detector status information.

a) Relay outputs

The detector has two relay outputs: ALARM and FAULT. Contact rating: 5 A at 30 VDC.

- The ALARM (A) relay is used to signal detected alarm condition. NC, NO and COM contact terminals are available with redundant NO and COM terminals. In the detection mode the coil is not energised. The output may operate in latching or non-latching mode. When set to the latching mode then the detector must be rest in order to return to the detection mode.
- The FAULT (U) relay is used to signal fault condition of the device itself. NO and COM contact terminals are available with redundant COM terminals. In the detection mode the

coil is energised. The output operates in non-latching mode only. When the fault is removed the relay automatically returns to the status before the fault occurred.

b) 4-20 mA output

The sensor may send the detector status information to other automation systems. The output may operate in latching or non-latching mode when in alarm condition. When set to the latching mode then the detector must be rest in order to return to the detection mode. Maximum resistance of signal loop: 400 Ω at 18-36 VDC supply voltage. Current signals depending on the detector status are given in Table 1. Failure in the current loop is NOT indicated as fault.

Table 1 – Current values for 4-20 mA output depending on the detector status

Current value	Operating status of detector
0 mA (+0.3 mA)	Power supply failure
1 mA (± 0.3 mA)	General fault
2 mA (± 0.3 mA)	Optics failure
3 mA (± 0.3 mA)	Excessive background noise
4 mA (± 0.3 mA)	Detection
20 mA (± 0.5 mA)	Alarm

6.2 Status indication

The operating status of detector is indicated by three colour LED installed on the faceplate of detector housing. It indicated detection, alarm and fault status as appropriate. The status indicator helps to quickly locate the sensor and is used in periodic functional testing. The LED indications are explained in Table 2.

Table 2 – Detector status indicator, key to displayed colours

Detector status	Displayed colour
Detection	Green
Fault	Yellow
Alarm	Red

6.3 Self-testing feature

Automatic test feature. The detector carries out the self-test every minute. Thus removes the need to use open flame or other source to check tripping of the detector. The “optical fault” alarm is generated when the range of detection is 50% of the factory value. The FAULT relay contacts are opened and yellow colour is displayed by the detector status indicator and current signal of 2 mA is generated if current loop is connected to the detector.

Manual test feature. The self-test may be activated manually. Manually activated self-test operates in the same way as automatic self-test except that when passed it activates ALARM relay. Manual self-test is carried out to remove the need for testing with open flame or other source causing the detector to trip.

Note: Before carrying out the manual self test disable connection to the fire suppression system.

For using the manually activated self-test function a twisted pair cable must be routed between the detector and push button location. The self-test is activated by shorting terminals 12 and 13 for at least

2 seconds. The detector switches to special mode with the outputs set to non-latching operation and IR test signal is generated. The test is passed if ALARM relay is activated, the indicator displays red signal and the current loop generates 20 mA signal. After a while the detector returns automatically to the status before the test. No ALARM signal means that the test is failed. For other relevant information see MAINTENANCE section below.

6.4 Communication

The detector has RS-485 interface communicating with the remote control software. With the remote control software it is possible to:

- receive detector status information on PC,
- remotely select the outputs operation mode (latching/ non-latching),
- self-testing optical surfaces,
- view the EVENT LOG.

RS-485 interface equipped with external cable, enables transmission of data to a maximum distance of 1200m provided the capacitance of cable is less or equal to 56nF/km. The actual maximum distance at which the detector may be controlled via RS-485 interface will depend on the cable specifications, including in particular capacitance.

6.5 Recording of events

The detector records the events and stores them in non-erasable memory in the EVENT LOG. Each event record includes the data, time, detector temperature and supply voltage. The event log may be viewed via RS-485 interface.

6.6 Terminal strip

The size of cable terminals is 0.5mm² to 2.5mm². External cables are connected to the terminal strip located in the detector base, entered through cable gland entries. Maximum three (3 No.) cable glands may be fitted in the detector base.

7 INSTALLATION

The device may be installed by a qualified technician only.

The location should not be obscured in any way, and provide maximum field of view of the monitored area.

Additional recommendations:

- identify the place where flame may occur with the highest probability,
- with greater distances from the source of flame use laser distance meter for positioning of detector,
- ensure easy access to the detector for cleaning and maintenance.
- when installing outdoors the device should be slightly tilted down to facilitate shedding of water and snow from the optical surfaces,
- the base should be sound and free of excessive vibration.

Bear in mind that fog, rain and ice can strongly attenuate IR radiation thus decreasing the detector sensitivity.

The detector should be positioned with the reflector assembly up and status indicator down.

NOTE – The device is not designed for installation in areas with atmospheres promoting corrosion, containing corrosive vapours/gasses and dust. The installation location should minimise condensation of water vapour on the optical surfaces.

8 COMPATIBILITY WITH FIRE ALARM CONTROL PANELS AND CONTROL SYSTEMS

PPW-40REx flame detector is compatible with fire alarm control panels receiving signals from voltage-free relay contacts. Power supply must be 24 VDC.

Terminal strip wiring diagram is presented in Fig. 6.

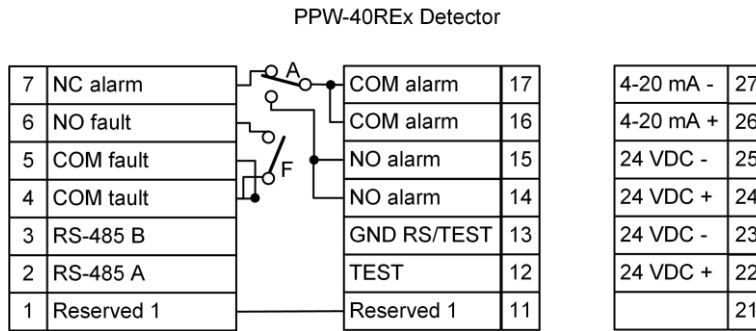


Fig. 6 Terminal strip diagram and external connections of PPW-40REx

Note: In the detection mode the coil of FAULT relay is energised and the NO and COM contacts are closed while the coil of ALARM relay is not energised and the NC and COM contacts are closed (NO and COM contacts are open).

For wiring between the detector and FACP see Fig. 7. Dashed lines represent the prewired connections inside the detector. The detector cannot be supplied with power directly from the FACP detection loop. The detector should be supplied with electricity from external mains adapter or 24 VDC socket in FACP of min. 0.5 A current rating. The power supply cable should be connected through Pk reset button to reset outputs operating in latching mode. To reset the detector open the contacts of Pk reset button for at least 2 sec. For non-latching mode the reset button is not needed and should be omitted when wiring the detector to the source of power. The alarm and end-of-line resistors should be appropriate for FACP used.

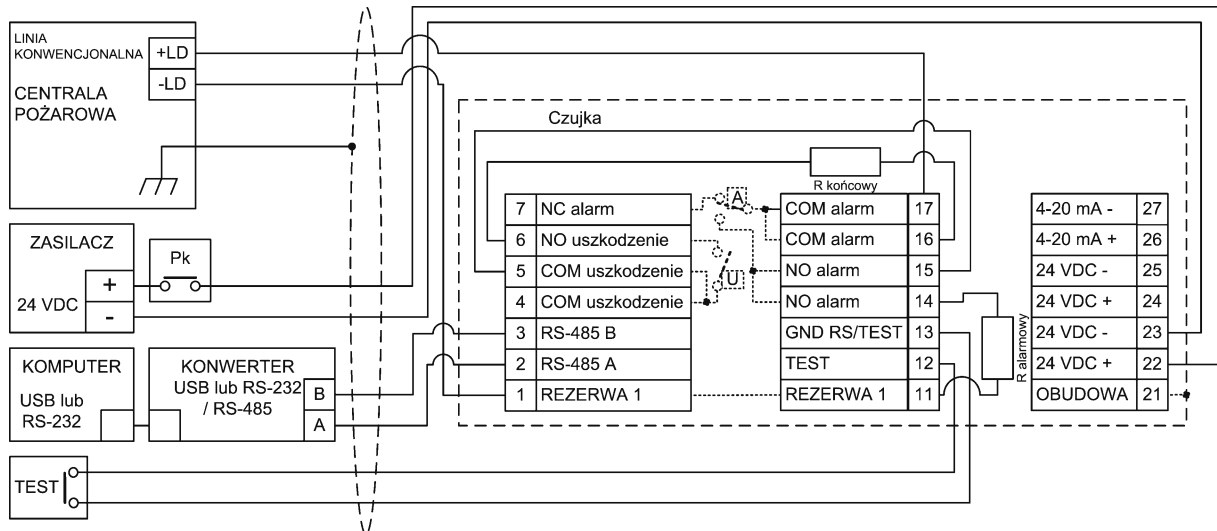


Fig. 7 Recommended wiring for connecting one detector to FACP

Wiring between the detector and IGNIS POLON-ALFA control panel is shown in Fig. 8 - Dashed lines represent the prewired connections inside the detector. The detector should be supplied with electricity from 24 VDC socket provided for this purpose in FACP. The power cable should be run through PLC configured in such a way that the alarm reset operation opens the contacts. This method of wiring applies to latching mode. When the outputs are set to non-latching mode PLC should not be used and the detector should be supplied directly from the 24 VDC source. The resistors to be used are 1 k Ω for alarm and 4.7k Ω or 9.1k Ω for end-of-line resistor depending on IGNIS model. The resistance values of the alarm and end-of-line resistors apply to wiring diagram presented in Fig. 8 below.

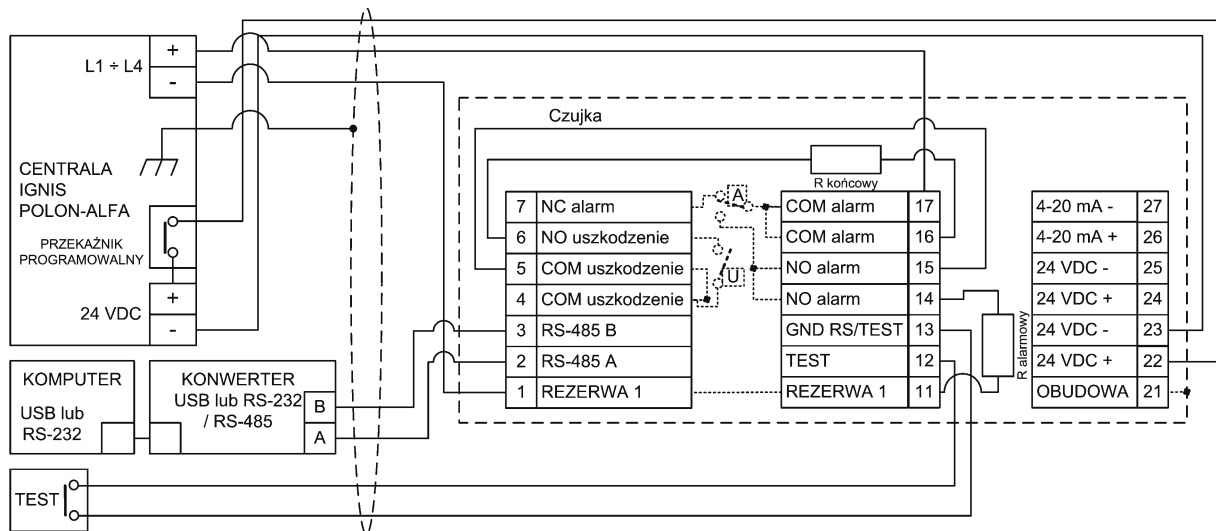


Fig. 8 Recommended wiring for connecting one detector to IGNIS control panel

Wiring between the detector and POLON-4000 POLON-ALFA control panel is shown in Fig. 9. Dashed lines represent the prewired connections inside the detector. The detector should be supplied with electricity from 24 VDC socket provided for this purpose in FACP. The power cable should be run through programmable controller configured in such a way that alarm reset operation opens the contacts. This method of wiring applies to latching mode. When the outputs are set to non-latching mode PLC should not be used and the detector should be supplied directly from the 24 VDC source. In order to minimise power requirement of addressable circuit of the control panel the ADC-4001M mains adapter should be set to operating mode 4. The resistors to be used are 5.1k Ω for alarm and 8.2k Ω for end-of-line resistor. The resistance values of the alarm and end-of-line resistors apply to wiring diagram presented in Fig. 9 below.

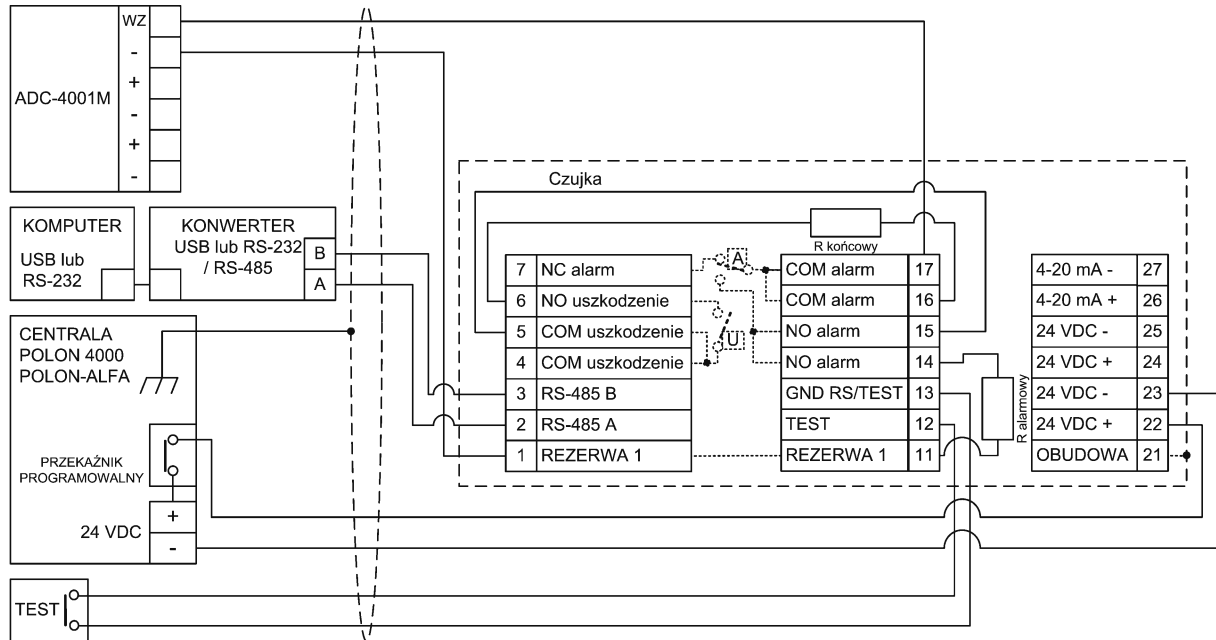


Fig. 8 Recommended wiring for connecting one detector to POLON-4000 control panel

Wiring diagram for connecting more than one detector is presented in Fig. 10.

Wiring between connector and external control system is presented in Fig. 11 and Fig. 12.

Dashed lines represent the prewired connections inside the detector.

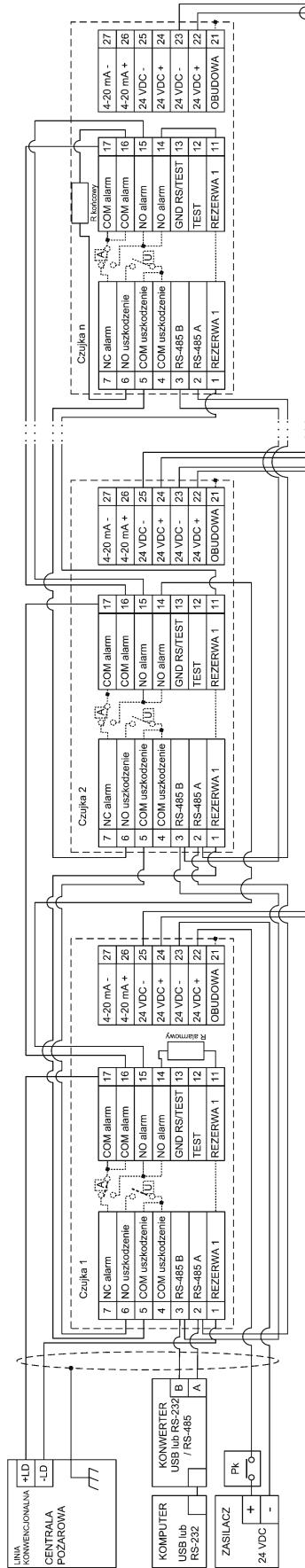


Fig. 10 Example of wiring between more then one detector and FACP

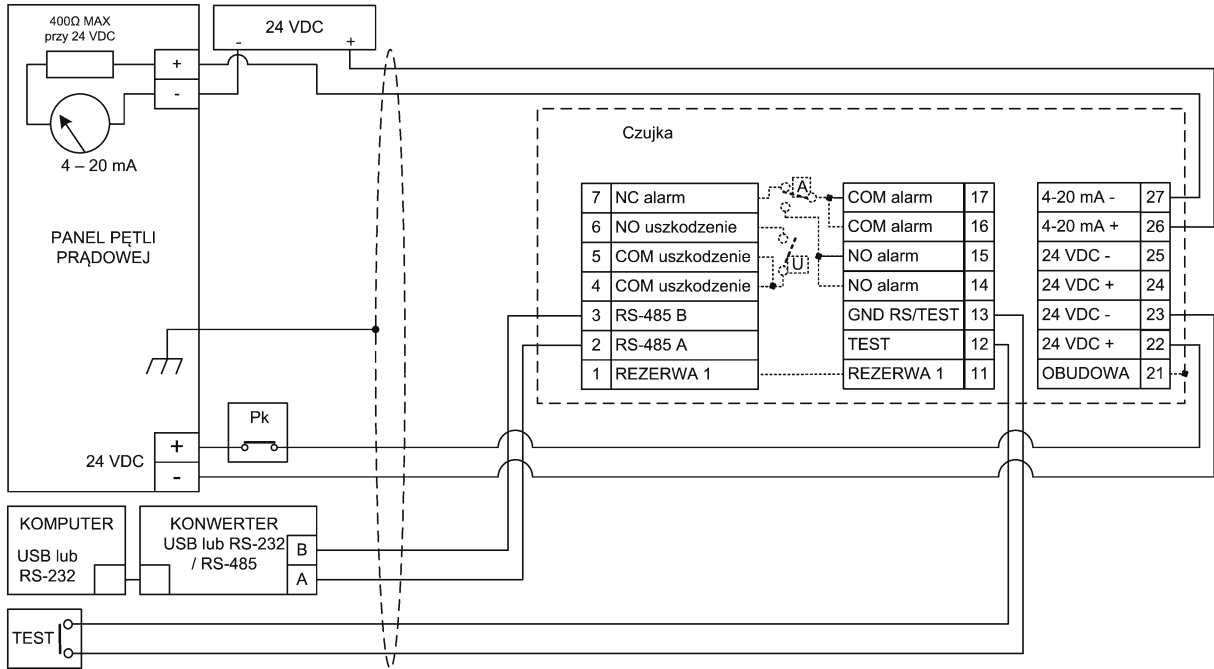


Fig. 11. Connecting one detector to the 4 – 20 mA current loop, method 1

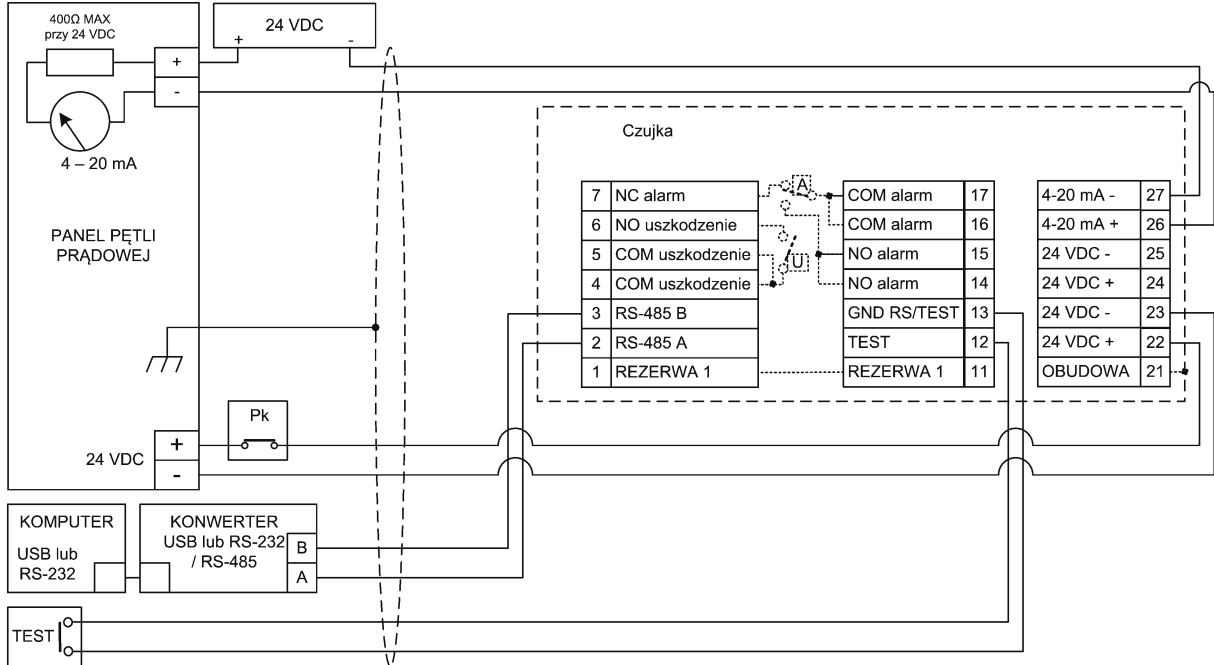


Fig. 12. Connecting one detector to the 4 – 20 mA current loop, method 2

9 CABLING REQUIREMENTS

Alarm system cables should be installed according to the codes for low voltage cables (below 42 V).

9.1 Cable types and sizes

For wiring detector use cables of $0.5\text{mm}^2 - 2.5\text{mm}^2$. The cable size should be appropriate to the distance, supply voltage and number of connected detectors. Supply voltage must not be lower than 18 VDC. Cables must be shielded to provide protection from interference. Typical cables (the values in brackets are conductor diameter and cross-section):

(0.8mm, 0.5mm^2)
(1.0mm, 0.8mm^2)
(1.4mm, 1.5mm^2)
(1.8mm, 2.5mm^2)

Recommended cable types:

HTKSHekw FE180/PH90 4 x 2 x 1.4mm
HTKSHekw FE180/PH90 5 x 2 x 1.4mm
HTKSHekw FE180/PH90 4 x 2 x 1.8mm
HTKSHekw FE180/PH90 5 x 2 x 1.8mm

Technical data of recommended cable (as relevant for correct installation):

DC loop resistance of twisted pair at 20°C (max.): 0.8mm - $75\Omega/\text{km}$

1.0mm - $48\Omega/\text{km}$

1.4mm - $26.6\Omega/\text{km}$

1.8mm - $14.96\Omega/\text{km}$

Effective capacitance of twisted pair at 1 kHz (max.):

Non-shielded cable: $120\text{nF}/\text{km}$

Shielded cable: $150\text{nF}/\text{km}$

Note: The detectors should be installed and wired by qualified technician.

9.2 Protection from moisture

During installation make sure that the detector base including the terminal strip and the detector head are protected from moisture. The detector head is fixed to base. Installation includes connection of external cable, tightening of the fixing ring and protection of the whole assembly from moisture. Additionally, the fixing ring must be locked with the hex screw to be tightened during installation with 1.5 Allen key. The locking screw prevents loosening of the fixing ring as shown in Fig. 3 below.

10 CONNECTION

The detector should be mounted on vibration-free base. The dimensions of detector/bracket assembly is presented in Fig. 4. Fig. 13 presents the layout of detector base and the terminal strip. The terminal strips includes contacts for connecting power supply, relay circuits, alarm and end-of-line resistor, current loop, RS-485. Terminal strip wiring diagram is presented in Fig. 6. Figs. 7-12 present typical detector/ FACP and detector/ control system wiring diagrams. Before connecting the detector head to the terminal strip in the detector base and energising the system make sure that all connections have been done as required.

Note: Use certified cable glands and stopping plugs of the types given in ACCESSORIES section. During installation the cable gland entries and stopping plugs must be secured with Loctite 222.

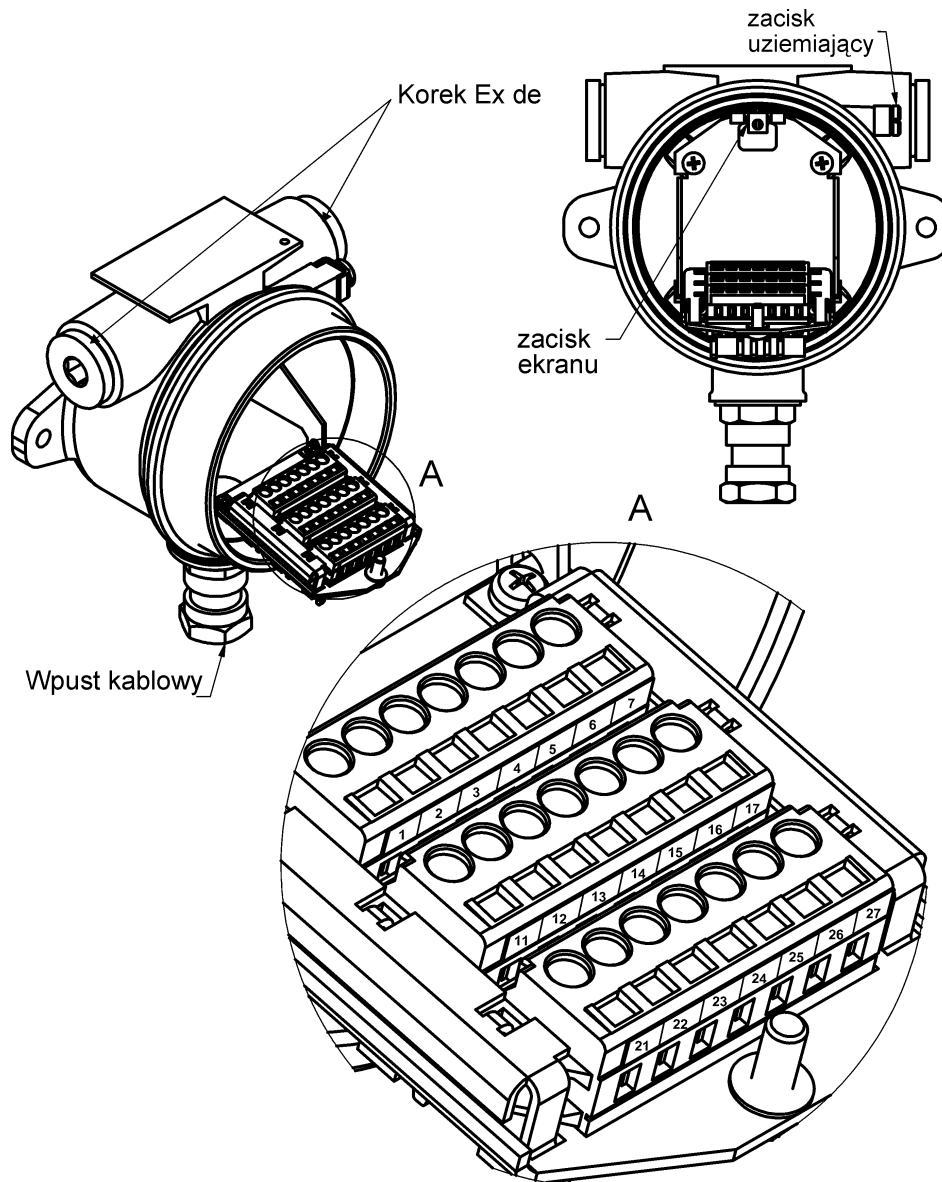


Fig. 13 Detector base and terminal strip layout

11 MAINTENANCE

During operation PPW-40REx should be inspected periodically in order to check its functioning on its own and when connected to the fire alarm control panel. Inspections should be carried out at least once every 6 months. On each occasion of refitting the detector head to base it is recommended to clean and apply silicon free grease on the cylindrical flameproof connection. The permanently sealed connection is completely maintenance-free.

Keep the optical surfaces clean at all times to ensure maximum sensitivity.

Note:

For removing the detector head use the special wrench supplied as part of delivery.

11.1 Fire alarm test feature

Disable fire suppression system.

Carry out the test using the manually activated self-test of optical surfaces (shorting terminals 12 and 13 for not shorter than 2 sec.) or the remote control software or a test fire. The test is passed when the ALARM relay is activated, the status indicator displays red colour and the current loop generates 20mA signal. The fire alarm test feature removes the need to check functioning of the detector with open flame or other source.

Remember to enable the fire suppression test after the test.

11.2 Cleaning of windows

For cleaning the windows use spirit and soft cloth.

The detector will by itself detect a drop in the detection range and generate fault signal received by the control panel. Then the fault condition persists after cleaning, remove and clean the reflector as described below.

11.3 Cleaning the reflector

Unscrew four screws and take out the reflector. Clean the reflective surfaces avoiding to touch them with fingers. Put the reflector back in place against matching surface, insert and tighten the four fixing screws.

If the reflective surface has much deteriorated under the effect of external factors the reflector must be replaced. Contact the manufacturer about replacing the reflector.

11.4 Battery

The detector is equipped with a monitored backup battery to supply the real time clock when detector is disconnected from regular power supply. Too low voltage of battery is recorded in the event log as "battery fault" and from that point any further entries may be made without date and time data. Battery fault does not impair the flame detection function of the detector. It is recommended to replace the battery every 6 years. Contact the manufacturer about replacing the battery.

NOTE:

Functional check of detectors installed in areas with potentially explosive atmospheres should be done by carrying out the fire alarm test using the manually activated self-test of optical surfaces or with the remote control software.

12 TECHNICAL DATA

Supply voltage	24 VDC nominal (18 VDC min., 36 VDC max)	
Power consumption		
without heating:	1 W, 24 VDC	
	1.3 W, 24 VDC during alarm	
	1.2 W, 36 VDC	
	1.6 W, 36 VDC during alarm	
with heating	max. 7 W	
Max. power requirement	9 W, 36 VDC during alarm and with heater on	
Start-up time	fully operational after 20 sec.	
Sensitivity or detection	class 1 in accordance with EN 54-10	
Angle of vision		
Horizontally H:	80°	
Vertically V:	75°	
Relay outputs		
Alarm:	5 A, 30 VDC, NO, NC contacts, in detection mode coil not energised	
Fault:	5 A, 30 VDC, NO contacts, in detection mode coil energised	
Current loop output		
4 ÷ 20 mA DC	400 Ω max. loop resistance for 18-36 VDC	
Alarm resistor	1 kΩ, 2 W for FACP by Polon-Alfa	
End-of-line resistor	5.6 kΩ, 0.25 W for FACP by Polon-Alfa	
Ambient temperatures		
Operating temperature:		
-40 to +75°C	Storage temperature:	
-40 to +85°C	Humidity	max. 95% relative humidity at 40°C
Dimensions	see Fig. 3.	
Housing material	aluminium	
Exterior finishing colour	black	
Cabling specification	0.5-2.5mm ² (0.8-1.8mm) shielded	
Cable gland entries	Maximum 3 No. M25	(see CONSTRUCTION)
Housing protection rating	IP66	
Weight	2.0 kg	

13 REPAIRING AND RETURNING

The user and technicians employed to install and maintain the detector are not allowed to dismount the detector head!

If the electrics are found to be faulty the detector must be returned to the manufacturer for servicing. The detector must be carefully wrapped in static dissipative film and accompanied with fault description.

14 ORDERING SPECIFICATION

PPW-40REx multi-spectrum flame detector + accessories

14.1 ACCESSORIES

Special wrench No. E326-05 00 00-1 to help detach the head from the base
(the special wrench is included as part of delivery)

Mounting bracket E326-03 00 00/1 required for mounting the detector

Cable gland entries:

CG-G-01	(11.0-14.0)mm	by Ex Solution
CG-G-02	(13.0-20.0)mm	by Ex Solution
501/421/B/M25/S NPB	(9.5-15.4)mm	by Hawke International
501/421/B/M25 NPB	(13.0-20.2)mm	by Hawke International
ADE 1F M25x1.5 type5	(6.0-12.0)mm	by Cooper Crouse-Hinds
ADE 1F M25x1.5 type6	(8.5-16.0)mm	by Cooper Crouse-Hinds
ADE 1F M25x1.5 type7	(12.0-20.5)mm	by Cooper Crouse-Hinds

Ex de rated stopping plug:

M25x1.5 L2177.1	by Limatherm
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Sealant:

Loctite 222	by Loctite
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RS-232 to RS-485 isolated converter:

JetCon 2201i-w	by Korenix	communication with detector
Transio TCC-100I	by Moxa	communication with detector

USB to RS-485 isolated converter:

UPort 1150I	by Moxa	communication with detector
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Power supply adapter KBZB-36-24V-2A-7Ah by KABE

14.2 REPLACEMENT PARTS

Reflector

15 ATTACHMENT A

15.1 RESPONSE PARAMETERS

Fuel	Size	Distance	Maximum response time
n-heptane	33 x 33 cm	25 m	5 sec.
Isopropanol	33 x 33 cm	25 m	3 sec.
Diesel oil	33 x 33 cm	25 m	5 sec.
Methanol	33 x 33 cm	25 m	5 sec.
LPG	60 cm flame	12 m	5 sec.
Jet fuel	33 x 33 cm	25 m	12 sec.
Aviation spirit	33 x 33 cm	25 m	3 sec.
Unleaded petrol (Pb95)	33 x 33 cm	25 m	3 sec.
PU foam	50 x 50 x 20 cm	25 m	5 sec.
Wood	50 x 50 x 20 cm	25 m	10 sec.
Cardboard, paper	50 x 50 x 20 cm	17 m	10 sec.

Measurement start one minute from ignition

15.2 IMMUNITY TO FALSE ALARM

Source of false alarm	Distance from source [m]	Modulated	Non-modulated
Direct sunlight, modulated, reflected	-	insensitive	insensitive
Arc welding	10	insensitive	insensitive
5 kW electric heater	2	insensitive	insensitive
300 W bulb	1	insensitive	insensitive
2kW quartz heater	2	insensitive	insensitive
500W halogen lamp	3	insensitive	insensitive
250W sodium lamp	2	insensitive	insensitive
250W mercury lamp	2	insensitive	insensitive

15.3 CONE OF VISION

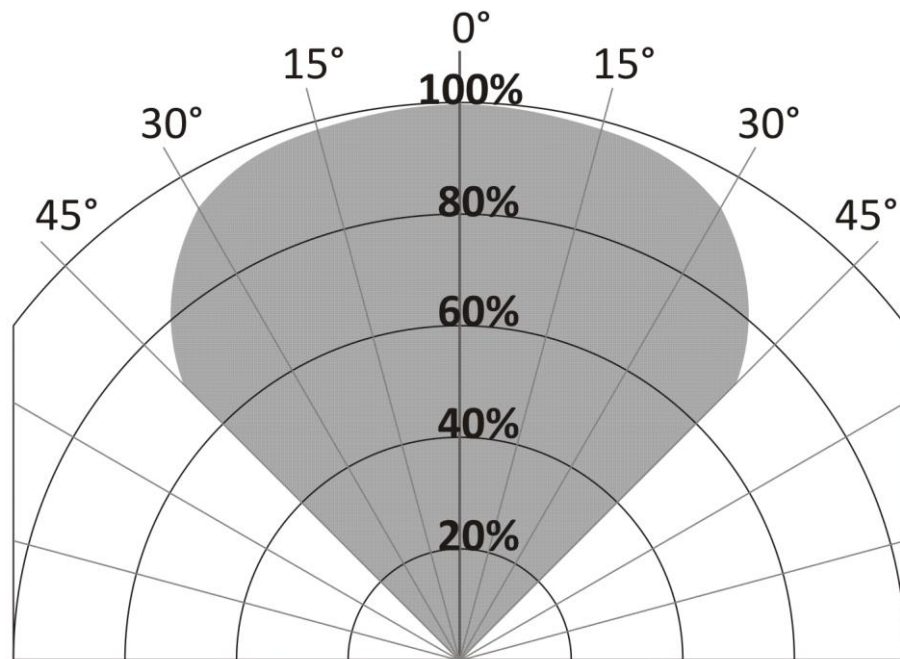


Fig. 14 Cone of vision, horizontal

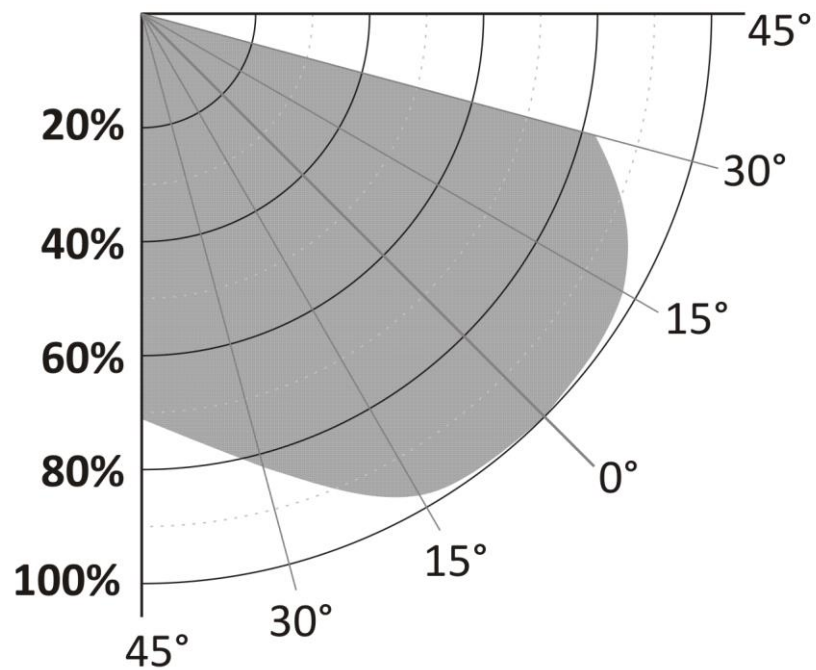


Fig. 15 Cone of vision, vertical