

# SMOKE DETECTOR

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## ZFD



<b>RULES OF OPERATION</b>	<b>3</b>
<b>TERMINAL MARKING</b>	<b>3</b>
<b>DETECTOR CONNECTION</b>	<b>4</b>
<b>MAINTENANCE</b>	<b>5</b>
<b>USE</b>	<b>5</b>
<b>WARRANTY</b>	<b>6</b>

Dear Sir/Madam! Thank you for purchasing FAKRO product. We do hope that it will meet your expectations. To ensure appropriate functioning of the product, please peruse this User Manual.

## DETECTOR DESCRIPTION

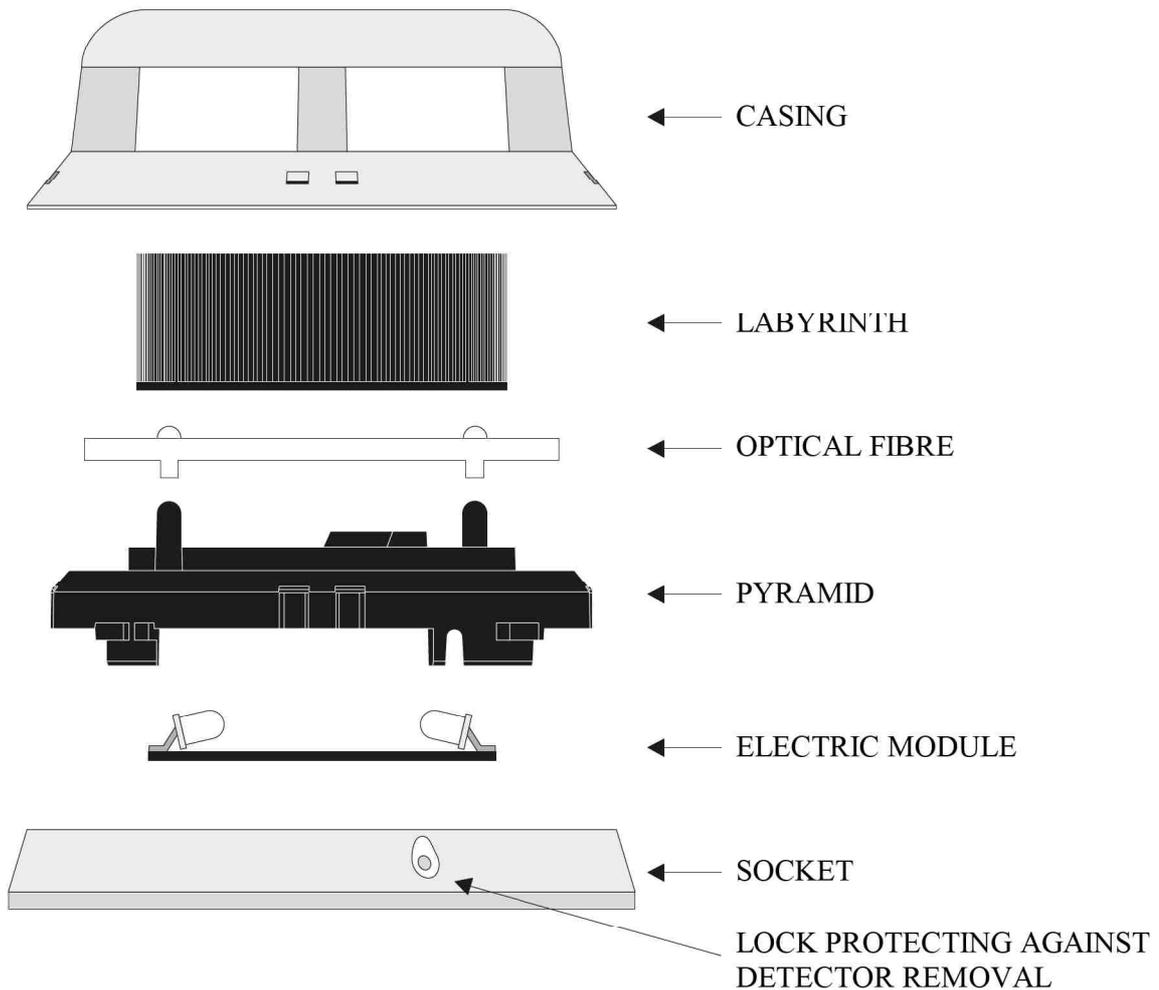
The ZFD detector is used to detect the presence of smoke in case of burning of typical materials that are structural elements or part of the interior design. In addition, the detector detects an increase in air temperature. The device is designed to work in confined spaces where normally there is no smoke or dust.

The ZFD detector cooperates, inter alia, with the ZWMP weather module.

Work status of the detector is signaled by two LED controls and change of the relay status. The detector is equipped with galvanically isolated relay contacts and TAMPER. The detector is set in auto-reset mode, that is automatic return to protection mode once the cause of alarm is removed.



**Note!!!** The ZFD detector is connected to cooperation with the ZWMP module which in the event of fire opens the roof window, but does not create smoke ventilation system under the provisions of fire protection. It only provides an additional protection for the user.



## TECHNICAL SPECIFICATION

### Certificate

CNBOP-PIB 1438-CPR-0452

### Standard

PN-EN 54-5:2000 + A1:2002,  
PN-EN 54-7:2000 + A1:2002 + A2:2006

### Detector class

A1R

### Surveillance voltage

12V DC - 28V DC

### Quiescent current

(Average, after stabilization)

35  $\mu$ A

### Alarm current

30 mA

### Optical indicator (FIRE)

Red LED - enter into alarm status

### Static operating temperature

From +54°C to +65°C

### Working temperature range

From -25°C to +70°C

### Storage temperature range

From -30°C to +60°C

### Relative humidity

95% at +40°C

### Detector weight

Approx. 140g +/- 5g

### Dimensions

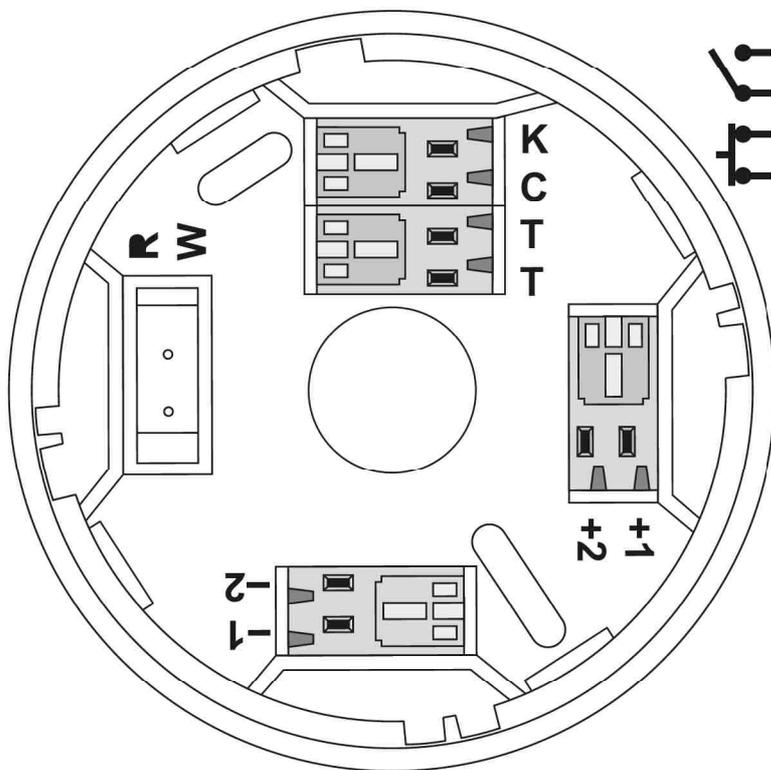
Height - 49mm

Diameter - 109mm

## RULES OF OPERATION

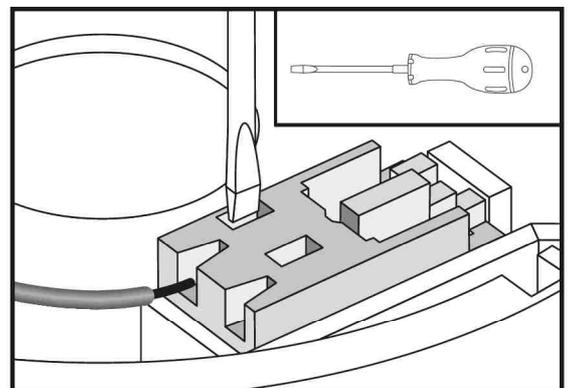
Electronic circuit of the detector ensures the proper functioning of the measuring and logic system in a wide range of voltage in the detection circuit (12V – 28V) without changing measurement parameters. The smoke density measurement process consists in detecting light reflected from the smoke particles entering the measuring chamber through holes in the casing and openings in a special optical labyrinth, which at the same time prevents light and insects from entering the interior. This design of the measuring chamber is intended to make the ZFD detector resistant to external light, insects and accidental and irrelevant smoke smudges, e.g. cigarette smoke. Logic circuit of the detector will not put it into alarm status if the smoke threshold is exceeded only once. Disabling the detector from the alarm status is possible once the detector was completely blown through and the power supply reduced to less than 1V for at least 1 second. Selecting wavelength of measurement beam, beam geometry and the angle between axis of the optical elements determine the particular suitability of the detector to detect large particles of smoke characteristic for low-energy fires, that is smouldering and glowing of materials in the initial phase of fire. Detection elements of the temperature changes in the surroundings of the ZFD detector (2 detectors) operate in differential and redundant system – they identify a significant temperature increase and/or exceeding temperature limit value. The sensitivity of the ZFD detector is set in the smoke chamber where each detector is subjected to testing.

## TERMINAL MARKING



### TERMINAL MARKING

-  **K** Relay contacts normally open
-  **C**
-  **T** Tamper contacts normally closed
-  **T**
- +** Circuit power supply
- 



Detector terminals

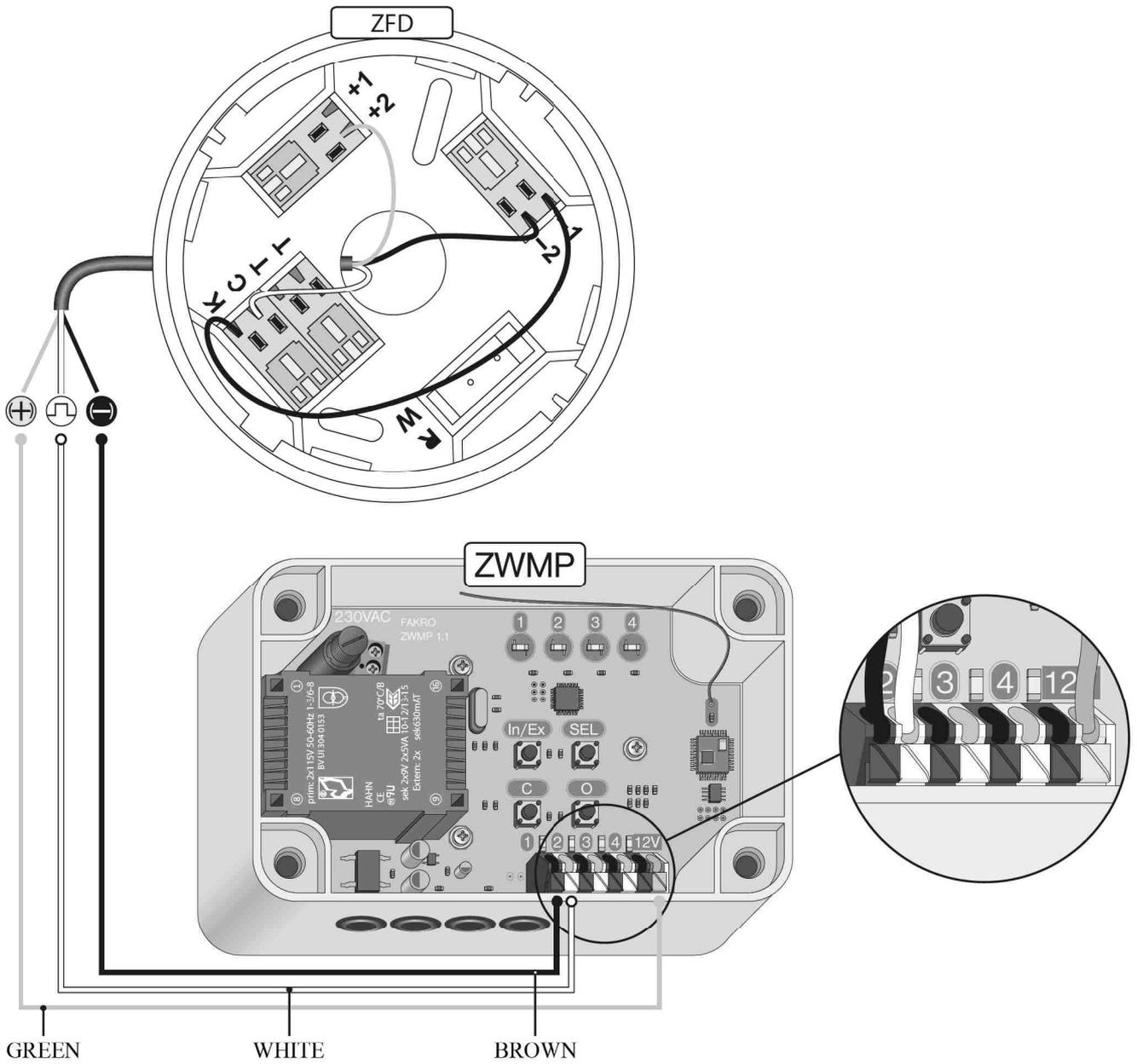
Cable connection method



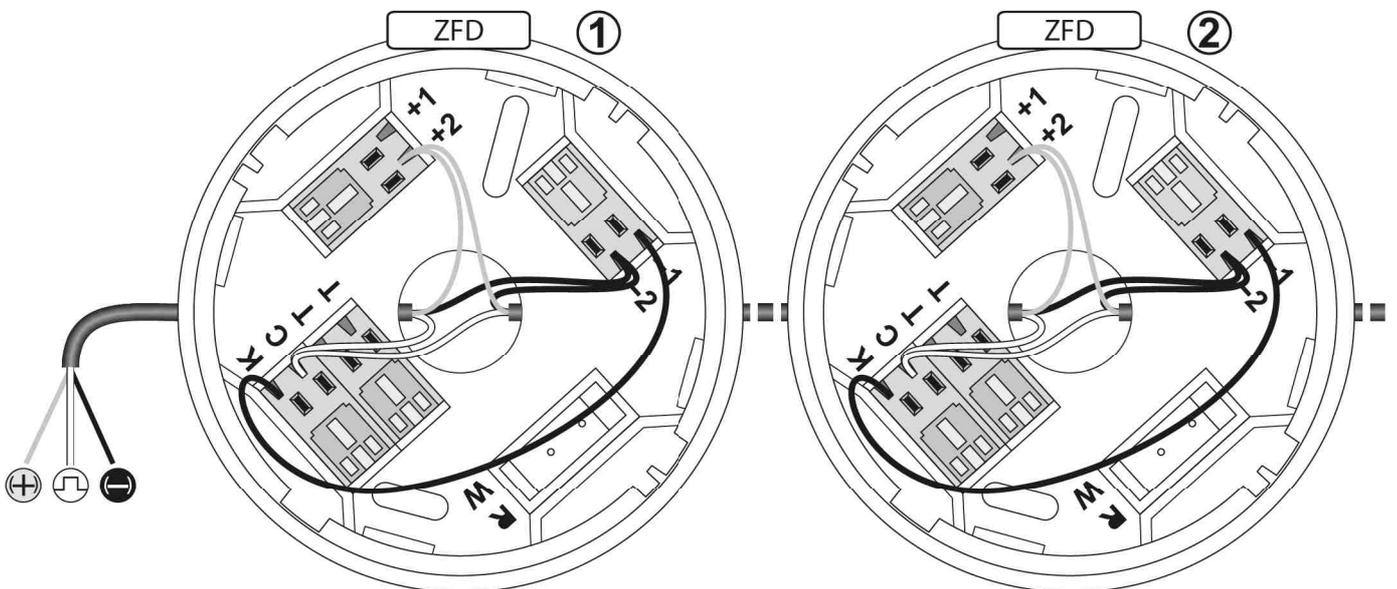
Cable must be isolated over the length of minimum 10mm.

# DETECTOR CONNECTION

Sample diagram of connecting the detector to the ZWMP weather module.



In case of greater number of detectors, connect according to the following diagram.



## MAINTENANCE

Normal presence of dust in the environment surrounding of the smoke detector, and thus its accumulation inside the measuring chamber, leads to raising the level of optical background of the measuring chamber. To some extent, the auto-compensation algorithm reduces the impact of dirt of the measuring chamber on the detector sensitivity. Once the dirt level preventing further compensation and proper operation of the detector is reached, it will signal a failure or eventually report an alarm.

In dusty rooms, it is recommended to carry out the maintenance of the detector even once a month.

### CLEANING THE ZFD DETECTOR:

Remove the detector from the socket. Turn the detector so that the electronic module is visible. Tilt four terminals visible on the perimeter of white external element of the detector casing. Separate the pyramid with installed electronic module from the casing, which contains inside black element (the so-called labyrinth) – using a flat screwdriver lever up terminals in four places. Removed black element (pyramid) contains electronic element of the detector, therefore cleaning optical elements should be carried out with a dry brush and a vacuum cleaner. Separate white casing of the detector and black cylindrical element which is inside (labyrinth). It is advisable to clean these elements using widely available detergent agents (dish-washing liquids) and then rinse in the open stream of water. It is recommended to carry out final rinse of these elements using anti-electrostatic liquid and then dry them. It is not recommended to dry in the hot air. Assemble detector elements in the reverse order. Ensure that there is no excessive dust in the area where the detector is fully assembled. Particularly dangerous when assembling the detector are strands and fabric particles electrostatically attached to black plastic elements of the detector's measuring chamber (false alarm may occur). Once assembled, put the detector in the socket. After a few minutes of normal power supply check the operation of the detector. For this purpose, subject the detector to controlled smoke.

## USE

The information presented is for illustrative purposes only – the amount and location of detectors is specified each time by an authorized designer in accordance with applicable law (construction law, fire protection regulations).

### PRINCIPLES FOR THE LOCATION OF THE DETECTOR OPERATING IN OPTICAL-TEMPERATURE MODE

In determining the amount and location of the ZFD optical-temperature smoke detectors one must be guided by the geometry of the room (area, ceiling shape, height, etc.), its purpose and the environmental conditions inside. They should, however, be mounted in such a way as to allow early detection of fire, while ensuring minimal false alarms. Enclosed spaces in which the detectors can be installed should be free of smoke, dust, vapours or corrosive substances. During operation it is unacceptable for dew or frost to form on the surface of the detector. All buildings using the detectors should have a lightning protection system installed.

### COVERAGE AREA

Protected room area	Room height	Ceiling inclination					
		<15°		15° – 30°		>30°	
		A	D	A	D	A	D
<b>OPTICAL DETECTOR</b>							
≤ 80 m <sup>2</sup>	≤ 12 m	80 m <sup>2</sup>	6,7 m	80 m <sup>2</sup>	7,2 m	80 m <sup>2</sup>	8,0 m
> 80 m <sup>2</sup>	≤ 6 m	60 m <sup>2</sup>	5,8 m	80 m <sup>2</sup>	7,2 m	100 m <sup>2</sup>	9,0 m
	6 – 12 m	80 m <sup>2</sup>	6,7 m	100 m <sup>2</sup>	8,0 m	120 m <sup>2</sup>	9,9 m
<b>TEMPERATURE DETECTOR</b>							
≤ 30 m <sup>2</sup>	≤ 7,5 m	30 m <sup>2</sup>	4,4 m	30 m <sup>2</sup>	4,9 m	30 m <sup>2</sup>	5,5 m
> 30 m <sup>2</sup>		20 m <sup>2</sup>	3,6 m	30 m <sup>2</sup>	4,9 m	40 m <sup>2</sup>	6,3 m

The number of ZFD smoke detectors should be selected so that the maximum coverage area for each detector and the maximum horizontal distance between the most distant point on the ceiling in all protected rooms are not exceeded.

A - maximum coverage area,

D - maximum horizontal distance between the most distant point on the ceiling and the detector.

### DISTANCE FROM THE CEILING OR ROOF

Room height	Ceiling inclination					
	<15°		15° – 30°		>30°	
	Detector distance from the ceiling or roof					
	min	max	min	max	min	max
< 6 m	30 mm	200 mm	200 mm	300 mm	300 mm	500 mm
6 – 8 m	70 mm	250 mm	250 mm	400 mm	400 mm	600 mm
8 – 10 m	100 mm	300 mm	300 mm	500 mm	500 mm	700 mm
10 – 12 m	150 mm	350 mm	350 mm	600 mm	600 mm	800 mm

Required optical detector distance from the ceiling or roof is due to its shape and height of the room.

### WARRANTY

The manufacturer guarantees correct device functioning. It also undertakes to repair or replace faulty device if damage is a result of material or structural faults. The warranty period is 24 months from the date of purchase, fulfilling the following conditions:

- Installation has been performed as per manufacturer recommendations.
- Seals remain intact and no authorised structural changes have been made.
- The device has been used in accordance with its intended use as per user manual.
- Damage is not a result of improperly made electrical system or atmospheric phenomena.
- The manufacturer is not liable for damage which occurred as a result of improper use or mechanical damage.

In case of failure, the device must be submitted for repair with a Warranty Card. Defects revealed within the warranty period will be removed free of charge no longer than 14 days after accepting the product for repair. Warranty and post-warranty repairs are performed by the manufacturer i.e. FAKRO PP. Sp. z o.o.

#### FAKRO Sp. z o.o.

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Quality certificate:

Device \_\_\_\_\_

Model \_\_\_\_\_

Serial number \_\_\_\_\_

Seller \_\_\_\_\_

Address \_\_\_\_\_

Purchase date \_\_\_\_\_

Signature (stamp) of person installing a device



