Optical-temperature sensor OSD63

Instruction manual – Technical Information

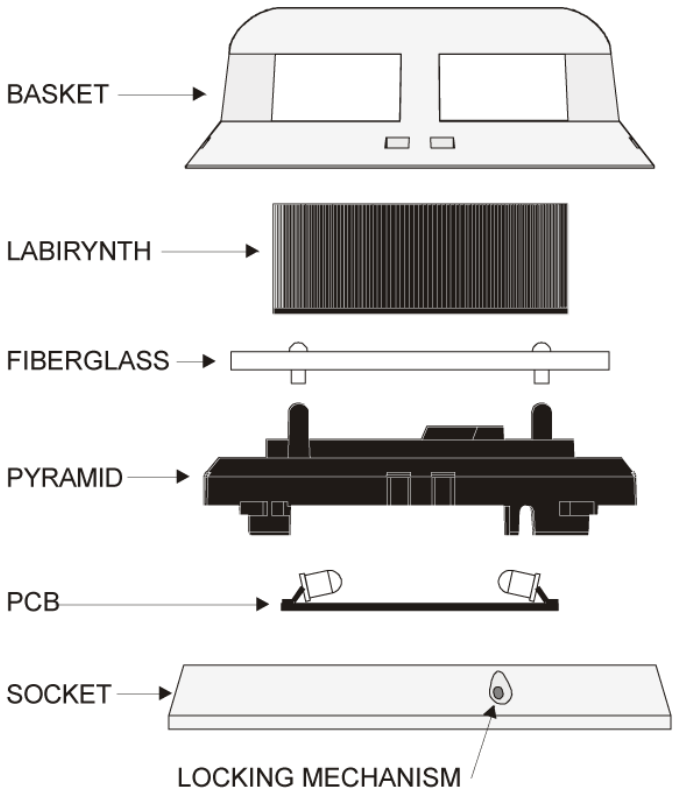


Fig. 1 Sensor construction

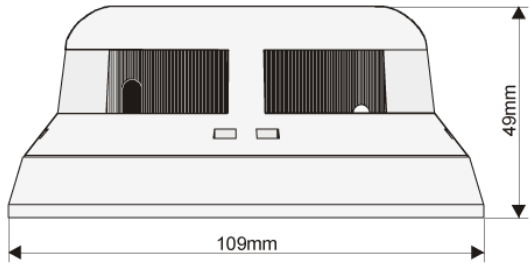


Fig.2 External dimensions

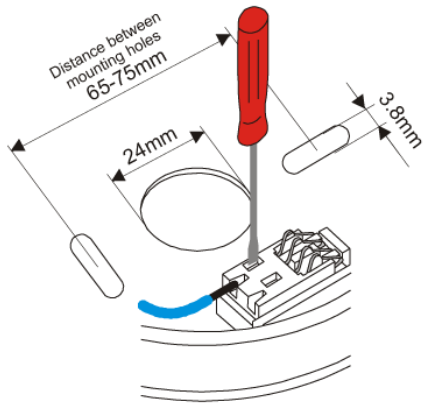
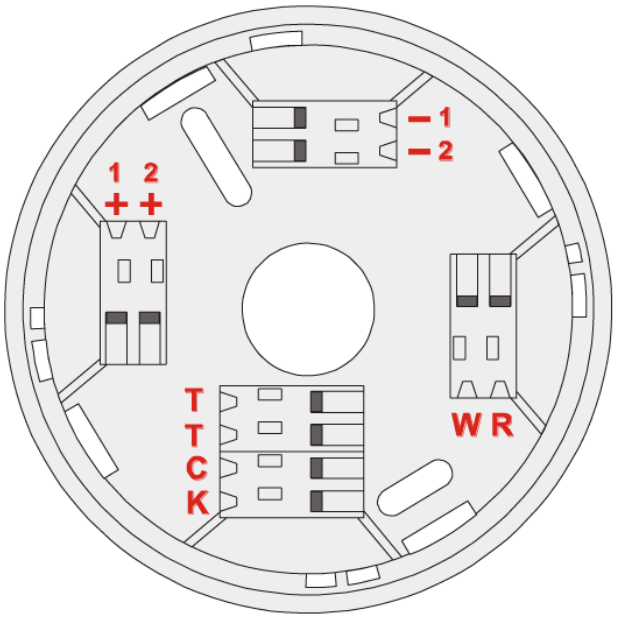


Fig.3 Fixing wires in contacts



Connectors labeling
+1 - DC power (+)
+2 - DC power (+)
-1 - DC power (-)
-2 - DC power (-)
T, T - TAMPER connectors
C,K - relay contacts
W - + for externalsignalling*
R - - for external signalling*

*otion needst to be discussed before ordering

Fig.4 Connector labelling

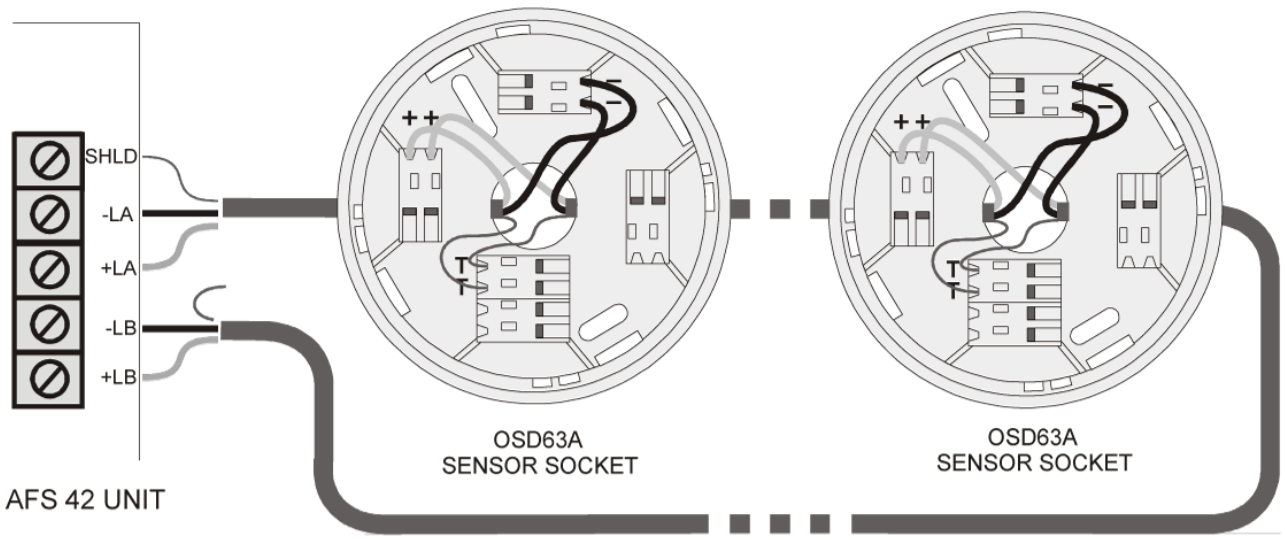


Fig 5. Connecting OSD63A sensors in AFS42 system

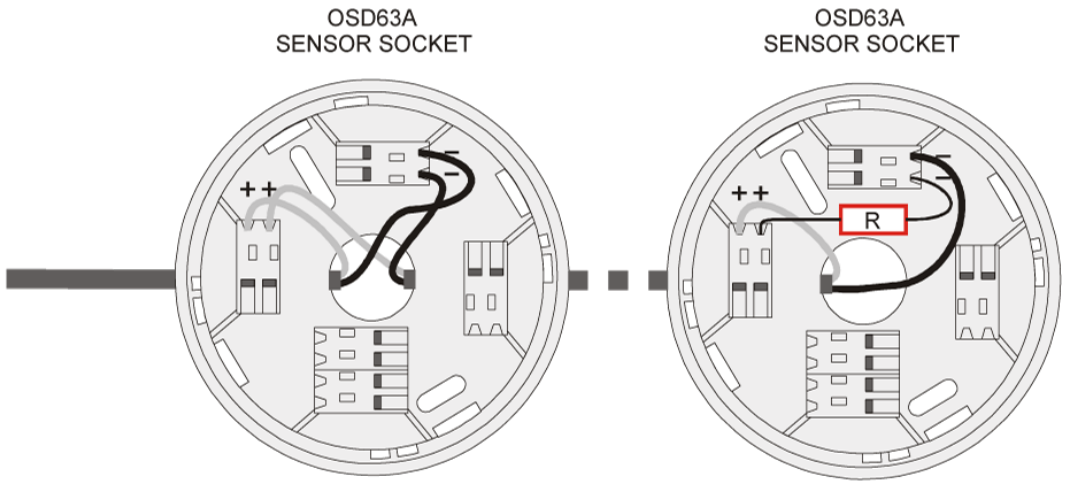


Fig 6. Connecting OSD63K sensors in conventional system w/parameter resistor

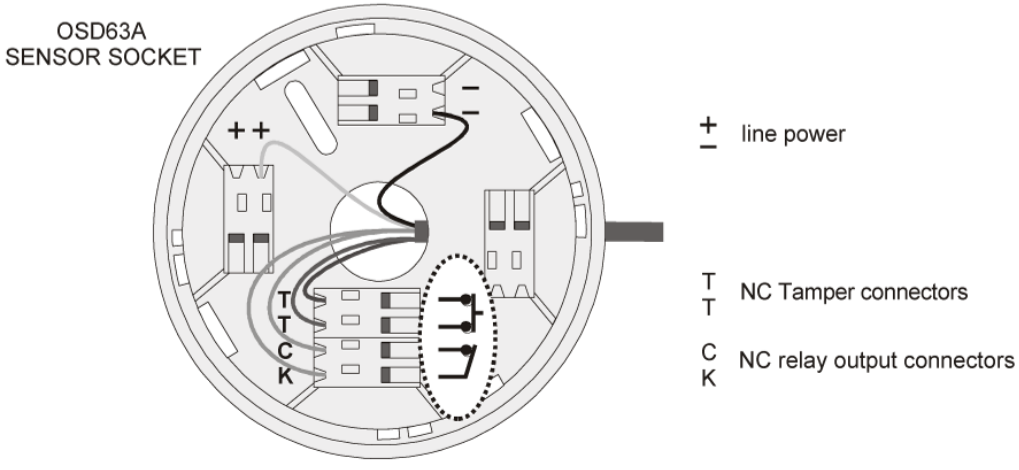
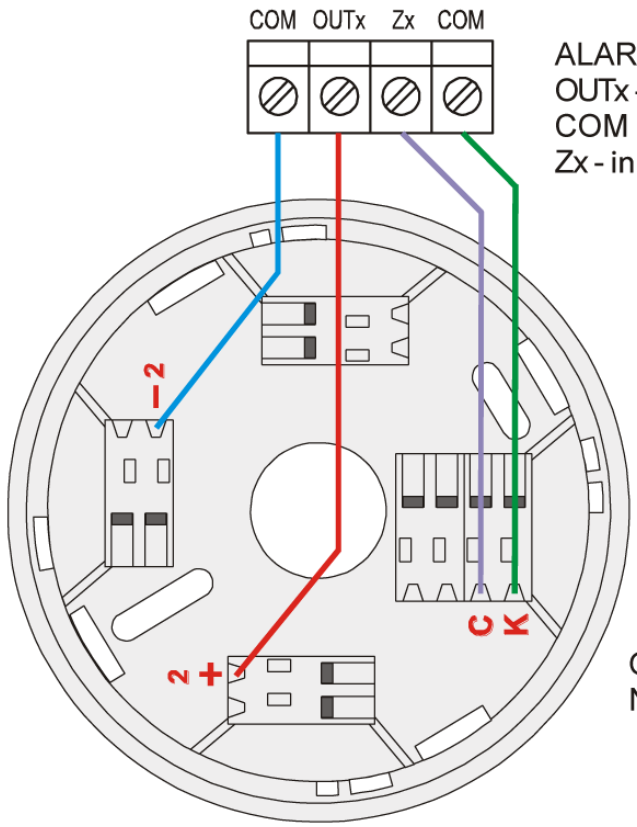


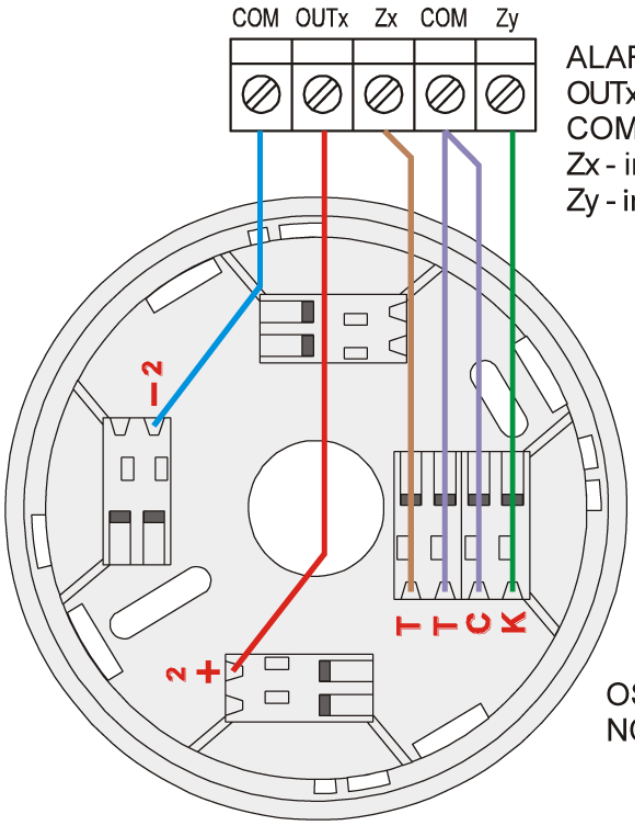
Fig 7. Connecting OSD63W sensor for intrusion detection / alarming system



ALARMING UNIT i.e. INTEGRA
OUTx - power output
COM - ground
Zx - input pre-programmed as fire alarm

OSD63W SENSOR SOCKET
NC (factory setting)

Fig. 8 Connecting OSD63W sensor for intrusion detection / alarming system



ALARMING UNIT i.e. INTEGRA
OUTx - power output
COM - ground
Zx - input pre-programmed as intrusion
Zy - input pre-programmed as fire alarm

OSD63W SENSOR SOCKET
NC (factory setting)

Fig. 8 Connecting OSD63W sensor for intrusion detection / alarming system w/ tamper detection.

INSTRUCTION MANUAL

1. PRODUCT DESCRIPTION

1.1 The OSD63 multisensor (optical and temperature) detector works in the detection lines of fire and burglar alarm control panels. It is designed to detect temperature changes in the air caused by fire and to detect smoke, which is a product of combustion or glowing of typical materials that make up construction elements or interior furnishings. The OSD63 detector is adapted to work in closed rooms, in which smoke and dust do not occur under normal conditions.

1.2 Variants:
OSD63 K - conventional, standard unit for fire extinguishing systems
OSD63 W - for intrusion detection / alarming systems (relay output)
OSD63 A - addressable, for AFS42 system

2. HOW TO USE

2.1 The OSD63 sensor can operate as a smoke detector, a temperature detector, or in a combination of both functions (multi-sensor operation). The operating status of the sensor is indicated by two LED indicators, the value of the current drawn by the sensor, and/or a change in the relay state. The operating parameters of the sensor can be set by the user or installer using the OSD63 computer program and a special connecting cable (described in the section: CONFIGURATION).

2.2 The natural presence of dust in the environment of a smoke detector, and consequently its accumulation inside the measuring chamber, leads to an increase in the optical background level of the measuring chamber. To a certain extent, contamination is reduced by the auto-compensation algorithm, which reduces the impact of contamination of the optical chamber on the sensitivity of the detector. After reaching a level of contamination that prevents further compensation and proper operation, the detector will signal a fault or, ultimately, report an alarm.
It is recommended to use the following maintenance periods for optical scattering smoke detectors, even once a month (in dusty rooms).
The OSD63 detector can be ordered with a mechanical lock to prevent the detector from being unscrewed. The lock consists of screwing in an M3 screw with a 1.5mm Allen key (hexagonal pin) available on the side wall of the socket.

3. CONSERVATION

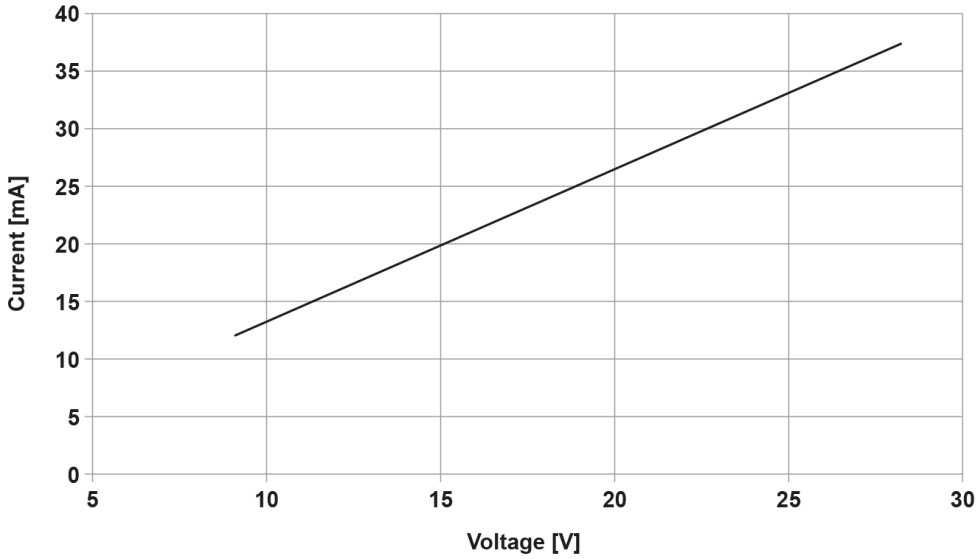
3.1 Cleaning the OSD63 sensor (see Fig. 1):
Unscrew the sensor from the socket. Rotate the sensor so that the electronic module is visible.
Separate the black pyramid with the installed electronic module from the white basket - pry the catches in four places with a flat screwdriver.
The removed black element (pyramid) contains the electronic part of the sensor, therefore, cleaning the optical elements should be carried out dry with a soft brush and a vacuum cleaner.
The white sensor housing (basket) and the black cylindrical element inside (labyrinth) should be separated. In the process of cleaning the sensor, the most important thing is to wash it with water with the addition of detergent and thoroughly rinse the labyrinth. It is not recommended to dry in too hot air (a hair dryer can be used).
Assemble the sensor elements in reverse order.
Care should be taken to ensure that there is no excessive dust in the place where the sensor is completely assembled. Especially dangerous during the assembly of the sensor are strands and particles of fabrics electrostatically attached to the plastic black elements of the sensor's measuring chamber (possibility of false alarms).
After assembly, mount the sensor in the socket. After a few minutes of normal power supply, check the operation of the sensor. For this purpose, the sensor should be subjected to a control smoke test.

TECHNICAL INFORMATION

4. TECHNICAL DATA

4.1 Technical data table

Norm	PN-EN 54-5:2000 + A1:2002, PN-EN 54-7:2000 + A1:2002 + A2:2006
Detector class	A1R
Certificate	no. 1438/CPR/0452,CNBOP-PIB
Supervision voltage	20V (12V – 28V)
Supervision current	35 µA
alarm current	according to the chart
Optical indicators	2 items red LED
Operating temperature range	-25°C to +70°C
Static response temperature	+54°C to +65°C
Storage temperature range	-30°C to +60°C
Relative humidity	95% at 40°C
Spacing of mounting holes	65 ÷ 75 mm
Detector weight	140g (± 5g)
Dimensions	49/109 mm



However, this current can be regulated in various ways:

- 50% (general current regulation)
- Additional 10mA
- Additional 20mA
- Additional 10mA along with the load percentage (20%–80%)
- An additional resistor at output W which allows adding 1-12mA

In the case of sensor version W, the current will also depend on the relay operating mode (additional +/- 10mA depending on NC/NO). This actually allows to obtain alarm currents in the range of 5mA - 75mA depending on the selected option and supply voltage.

4.2 Device capabilities

Thanks to the use of an advanced, energy-saving microcontroller in the OSD63 detector, it was possible to equip it with an extensive detection and control algorithm. This allows the following functionalities to be implemented in the OSD63 detector:

- Enable/disable optical detectors (heat detector)
- Enable/disable thermal detectors (optical detector)
- Enable/disable the dirt autocompensation algorithm
- Selection of the operating mode of the external operation indicator (NC/NO)
- Permanent additional current consumption (+10mA, +20mA)
- Possibility of operating an external conventional call point button (manual call point) with a separate AFS52 address and selection of response and alarm thresholds

- Select the alarm mode
  - snap
  - erasable
  - conjunction
  - AR mode (auto reset 1s/6s)
- Support built-in relay (NC/NO mode selection)
- Additional alarm currents (+10mA, +20mA) over standard 20mA
- Address configuration (AFS42, AFS42 ROP, WK address)
- LED signaling options (possibility to enable and disable each option independently)
  - surveillance signaling
  - contamination indicator
  - indication of damage (or critical contamination)
  - alarm source differentiation (smoke/heat)
  - constant alarm current when the option to distinguish the source of the alarm is selected
- Possibility to read the detector contamination status
- Support of communication through various intermediary devices
  - USB dongles OSD63 (5V)
  - power dongle USB OSD63 (24V)
  - AFS42 control panel and MCU42 module

5. THE CONSTRUCTION AND PRINCIPLE OF OPERATIONS

5.1 The detector consists of several plastic elements that can be disassembled without the use of special tools. This is to facilitate possible servicing (vacuuming, washing of elements) in the case of heavily soiled rooms where the autocompensation algorithm has exhausted its adaptability.
An integral part of each detector is the GN63 base. They have been designed with maximum simplification and shortening of the time needed to activate the detector in a given system in mind. Connecting the wires to the socket consists in inserting the insulated terminal into the side hole of the insert (according to the description on the socket). The connection takes place without the use of tools (e.g. screwdriver) and can be done with one hand. The socket has two mounting holes spaced 65÷75mm.

5.2 The electronic system of the detector ensures proper functioning of the measurement and logic system in a wide range of voltages in the detection line (from 12V to 28V) without changing the measurement parameters. The smoke density measurement process consists in detecting the light reflected from the smoke particles, which enters the measuring chamber through the slots in the basket and openings in a special optical labyrinth, which also prevents light and insects from getting inside. Such construction of the measuring chamber is intended to make the OSD63 detector immune to external light, insects and accidental irrelevant streaks of smoke, e.g. cigarette smoke.
The detector’s logic will not put the detector into alarm if the smoke threshold is exceeded only once. Disabling the detector from the alarm state is possible after completely blowing the detector and lowering the power supply below 1V for a minimum of 1sec. Selection of the measuring beam wavelength, beam geometry and the angle between the axes of the optical elements determine the particular suitability of the detector for detecting large-sized smoke particles, characteristic of low-energy fires – i.e. smoldering and glowing of materials in the initial phase of fire formation.
Elements for detecting temperature changes in the vicinity of the OSD63 detector (2 detectors) operate in the differential-excessive system – they identify a significant increase in temperature and/or exceeding the temperature limit value. Each detector is individually tested and calibrated to the desired smoke and temperature threshold. The sensitivity of each detector is set in a special smoke chamber while maintaining repeatable conditions of temperature, humidity and smoke.

6. CONFIGURATION

The sensor parameters can be changed using the free "OSD63 Configurator" computer program with the USB converter - DONGLE 63.

7. INSTALLATION

7.1 Connection

Connecting the OSD63 detector to fire alarm or burglar alarm lines should be done using a mounting element (socket) equipped with contact terminals (see Fig. 4-8).
The connecting wire should be stripped to a length of at least 10mm. The wire should be inserted into the hole shown in the figure (when using wires with small cross-sections or stranded wires, press the clamping spring with a flat screwdriver during wire insertion).
Removing the wires from the terminals requires the use of a screwdriver.

7.2 Connecting conventional elements

The OSD63A sensor operating in the AFS42 system can, under a separate address, handle a conventional ROP (or another conventional element).
1. The conventional element should be connected to the W and R terminals of the socket: the negative wire of the conventional element to the R terminal, the positive to the W terminal.
2. The OSD63A sensor should be properly configured - the following parameters should be set:
   - Use ROP input
   - ROP ANS value 10
   - WZ NC (W powered during supervision)
   - Additional address (select a value greater than the base address)
   - The additional address operates in the AFS42 control panel
3. The ROP on the terminals connected to WR must have a 100k resistor connected in parallel
4. If, due to long cables in the line, there is a problem with the absence of the additional address in the AFS42 control panel (no response from the address), the configuration parameter value in the sensor should be reduced: ROP ANS to a value of 5 and/or change the resistor to a value of 50k, 10k ...

7.3 Placement

The information presented in point 7.3 is for informational purposes only - the quantity, type, and placement of detectors are determined in each case by a qualified designer in accordance with applicable law (building law, fire protection regulations) and in accordance with the guidelines of the Association of Fire Engineers and Technicians "SITP WP-02".

When determining the number and placement of OSD63 optical-temperature smoke detectors, the geometry of the room (area, ceiling shape, height, etc.), purpose, and environmental conditions in the monitored room should be considered. They should be placed in such a way as to enable early fire detection while ensuring a minimum number of false alarms.
Enclosed spaces in which the detectors can be installed should be free of smoke, excessive dust, fumes of corrosive substances. During operation, the formation of dew or frost on the detector surfaces is unacceptable. Monitored buildings should have lightning protection.
The number of OSD63 detectors should be selected so that the maximum monitoring area and the maximum horizontal distance between the most distant point on the ceiling in all protected rooms for each detector are not exceeded (Table I).
A - Maximum monitoring area,
D - Maximum horizontal distance between the furthest point on the ceiling and the detector.

Table I

Monitoring area	Height of monitored area	Ceiling angle < 15°		15° - 30°		> 30°	
		A	D	A	D	A	D
OPTICAL DETECTOR							
< 80 m^2	< 12 m	80 m^2	6.7 m	80 m^2	7.2 m	80 m^2	8.0 m
> 80 m^2	< 6 m	60 m^2	5.8 m	80 m^2	7.2 m	100 m^2	9.0 m
	6 - 12 m	80 m^2	6.7 m	100 m^2	8.0 m	120 m^2	9.9 m
TEMPERATURE DETECTOR							
< 30 m^2	< 7.5 m	30 m^2	4.4 m	30 m^2	4.9 m	30 m^2	5.5 m
> 30 m^2		20 m^2	3.6 m	30 m^2	4.9 m	40 m^2	6.3 m

The necessary distances of the optical detector from the ceiling or roof result from its shape and the height of the room (Table II).

Table II

Height of monitored area	Ceiling angle < 15°		15° - 30°		> 30°	
	Detector spacing 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

An OSD63 sensor operating solely as a temperature sensor should be placed on the ceiling.
It should be noted that the distance of the sensors from the walls cannot be less than 0.5m.
Depending on the height of the room, when positioning the sensors, beams and other ceiling beams should be taken into account. If there are beams, girders, or ventilation ducts running under the ceiling at a distance of less than 15cm from the ceiling, the distance of the sensors from these elements should also not be less than 0.5m. The horizontal and vertical distance of the sensors from equipment or stored materials cannot be less than 0.5m.
Sensors cannot be placed in the air stream of air conditioning, supply or exhaust ventilation systems. Perforated ceilings through which air is supplied to the room should be covered within a radius of 1m. In the case of corridors, ducts and similar parts of buildings with a width of less than 1m, the sensors should be placed in the middle of the ceiling. In rooms with a width of less than 3m (corridors), the distance between sensors with optical detectors should not exceed 15m and 7.5m from the walls, while with temperature detectors, 10m and 5m respectively. Sensors should be placed at bends and intersections of corridors.