

OPTICAL SMOKE POINT DETECTOR
Model: **SPD-3.10**



**USER'S
MANUAL**

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EN 54-7

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1. FUNCTIONS

1.1 The SPD-3.10 smoke optical point detector is designed to detect smoky fires indoors.

1.2 The detector sets off when small quantities of smoke appear indicating alarm condition and transmitting alarm signal to a control panel. The detector also has functions of standby mode indication and checking for proper operation.

1.3 The detector operates with 2-wire and 4-wire fire alarm and fire intruder alarm control panels all day long. You can connect detectors to a 2-wire CP using B01, B1 bases. You can connect the detector to a 4-wire CP using B2, B3, B4, and B5 bases. B6, B7, B8, and B9 are end-of-line bases installed by one at the end of each loop and used in 4-wire loops to control power voltage and circuit continuity.

1.4 The detector can also be connected to a 4-wire CP using B01, B1 bases as well as MUSH-1, MUSH-2 and other modules.

1.5 The compatible bases, their features and wiring can be found in Table 1.

Table 1

<i>Base</i>	<i>Remote indicator</i>	<i>Relay</i>	<i>Relay contacts of the base</i>	<i>Wiring</i>
B01	-	-	-	2-wire
B1	+	-	-	2-wire
B2	-	1	NC	4-wire
B3	-	1	NO	4-wire
B4	+	1	NC	4-wire
B5	+	1	NO	4-wire
B6 (EOL)	-	2	NO, NC	4-wire
B7 (EOL)	-	2	NO, NO	4-wire
B8 (EOL)	+	2	NO, NC	4-wire
B9 (EOL)	+	2	NO, NO	4-wire

Note: «+» denotes the presence of the function, «-» denotes its absence;

2 TECHNICAL SPECIFICATIONS

2.1 *Technical specifications of the SPD-3.10 with B01 base.*

- 2.1.1 Wiring.....2-wire
- 2.1.2 Supply voltage range, V.....10 - 30
- 2.1.3 Standby current consumption, mA.....0,10 max
- 2.1.4 Alarm current consumption, mA8 - 30
- 2.1.5 Internal resistance in alarm mode at 20 mA, Ohm.....500 max
- 2.1.6 Reverse current at minus 30 V voltage, µA.....5 max
- 2.1.7 Start-up time, sec.....30 max
- 2.1.8 Dimensions, mm.....Ø85x37
- 2.1.9 Weight, g.....150 g
- 2.1.10 Operating temperature range, °C.....from - 30 to 55
- 2.1.11 Meantime-between-failures, h.....60 000 min
- 2.1.12 Average lifespan, years.....10 min

2.2 *Technical characteristics of the SPD-3.10 detector with the B1-B9 bases.*

2.2.1 For technical characteristics of the SPD-3.10 detector with the B1-B9 bases please refer to the appropriate manuals.

3. ITEMS SUPPLIED WITH THE DETECTOR

3.1 The items supplied with the detector are shown in Table 2.

Table 2

<i>Name</i>	<i>Quantity</i>	<i>Note</i>
SPD-3.10 smoke optical detector	Up to 25 pcs.	B01 base included
Manual	1 pc.	
Package	1 pc.	Per 25 detectors
SPD-3.10 detectors can be completed with B1-B9 bases		
B1 base	Quantity and type of bases depend on the purchase order	The quantity of bases in one package corresponds with the quantity of the detectors. B1-B9 bases are supplied the appropriate manuals.
Manual		
B2 base		
Manual		
B3 base		
Manual		
B4 base		
Manual		
B5 base		
Manual		
B6 base		
Manual		
B7 base		
Manual		
B8 base		
Manual		
B9 base		
Manual		

3.2 You can order bases without detectors.

3.3 MUSH-1, MUSH-2 modules can be supplied to connect the detectors with B01 or B1 bases to a 4-wire control panel if specially ordered.

3.4 K-5 mounting rings can be supplied to install detectors onto suspended ceilings if specially ordered.

4. DESIGN AND PRINCIPLES OF OPERATION

4.1 The detector consists of the detector itself and the base. The optical system, the signal processing electronic unit and LED control circuit are in the plastic housing of the detector.

4.2 For the appearance, dimensions of the detector, dimensions of the B01 base please refer to Figure 1, Figure 2.

4.3 The principle of detector's operation is based on the control of optical medium density. When exceeding smoke density threshold, the electronic circuit shall issue the alarm signal.

4.4 The standby mode is indicated with the red flashing LED.

4.5 The indication of the fire mode depends on the AL the detector is connected to. The LED is steadily lit in DC AL, and flashes in AC AL.

4.6. The test button is used to check functions of the detector.

4.7 The B1-B9 bases are constructed the same as B01 base, with the same dimensions (see Figure 2). The only difference is that auxiliary screw contacts and coordination compartment (closed with the lid) are fitted on the on the bases for connection to AL. The purpose, view, screw contacts marking and wiring diagram are shown in the appropriate manuals for bases.

5. HOW TO PREPARE THE DETECTOR FOR OPERATING

5.1 Open the package after receiving detectors, check contents.

ATTENTION! If detectors were in below 0° C temperature conditions before opening the package, allow them to acclimatize inside the structure for at least 4 hours.

5.2 Test detectors for proper operating.

5.2.1 Connect a base to a DC power source of 20-30 V and ≥ 50 mA load current ("plus" connect to the contact "1", "minus" – to the contact "8"). Fit a current limiting resistor between contacts "8" and "7". The resistance value of the limiting resistor specifies the alarm current consumption in the detector circuit according to p. 2.6. The recommended resistance value is 100 Ohm for 12 V, and - 680 Ohm for 24 V.

ATTENTION! Connection to above 12 V power source without a resistor limiting current at 30 mA is PROHIBITED.

5.2.2 Connect the electronic unit to the base.

5.2.3 Energize the detector. The detector shall go to standby mode, the red LED flashes shall indicate about. Leave the detector in that condition for at least 30 sec.

5.2.4 Check the voltage on the contacts "1" and "2" of the base relatively to the contact "8" with a DC voltmeter. The difference of the voltages should not be more than 0.1 V.

5.2.5 Press the test button and keep it pressed for at least 10 sec. In not more than 10 sec the detector shall go to the alarm mode, steady light of the red LED indicates about.

5.2.6 Deenergize the detector for at least 3 sec. The red LED shall be off.

5.2.7 Repeat p.5.2.3.

5.2.8 Insert into the test hole on the detector's cover (a plastic or metal pin $\varnothing 0,9$ mm, 40-50 mm long) for at least 10 sec. In not more than 10 sec. the detector shall go to the alarm mode.

5.2.9 Deenergize the detector. The LED shall be on.

6. LOCATION AND INSTALLATION

6.1 You should install detectors in places with the following conditions:

- minimal vibrations of constructions;
- minimal illumination intensity;
- maximum distance from sources of electrical-magnetic interferences (electric wiring etc.), infra-red radiation (heat devices);
- elimination of water ingress on the case and penetration out of the base;
- no gas, steam, aerosol emission that can cause corrosion.

6.2 You should provide protection against construction debris and dusts when repairing lodgings.

6.3 Detectors are connected to a loop with the help of bases. It is possible to connect up to three $\leq 0,5$ mm² wires to one screw joint of the base.

6.4 It is recommended to install detectors onto suspended ceilings with K-5 mounting ring.

6.5 The wiring diagrams for detectors with B01 base to control panels are shown in Figure 3- Figure 6.

6.6 For wiring diagrams for detectors with the B1-B9 bases to control panels please refer to the appropriate manuals.

7. MAINTENANCE

7.1 Vacuum at least every six months to keep the unit working efficiently by turning off the mains supply first and vacuuming through the vents during one minute using a soft brush attachment or using another 0,5-3 kg/cm² compressor.

7.2 Then test detectors for proper operating.

7.3 The test can be made either by pressing the test button or inserting a tester-pin into the hole on the detector's head (see p. 5.2.8). The red LED will be lit when the detector operates properly, and the control panel will issue the alarm signal.

8. GUARANTEE

8.1 The detector is warranted by the manufacturer for 18 months upon the date of the detector's commissioning but not longer than for 30 months from the date of approval by the manufacturer's quality control department.

8.2 The manufacturer shall repair or replace detectors within the guarantee term provided that the rules of installation, timely maintenance, transportation and storage of detectors have been kept.

8.3 In the case faults according to a reclamation have been removed the guarantee term is prolonged for the while detectors were not in use because of faults.

QUALITY AND PACKING CERTIFICATE

Optical smoke detector, model SPD-3.10, serial numbers:

_____pieces

With B01 base _____pieces

With B__base _____pieces

Packed in compliance with the factory rules

Compliant with EN 54 – 7:2000/A1:2002/A2:2006

Manufacturing date _____.____.201_

Packing date _____.____.201_

Quality control mark _____

Figure 1

APPEARANCE AND DIMENSIONS OF SPD-3.10 DETECTOR

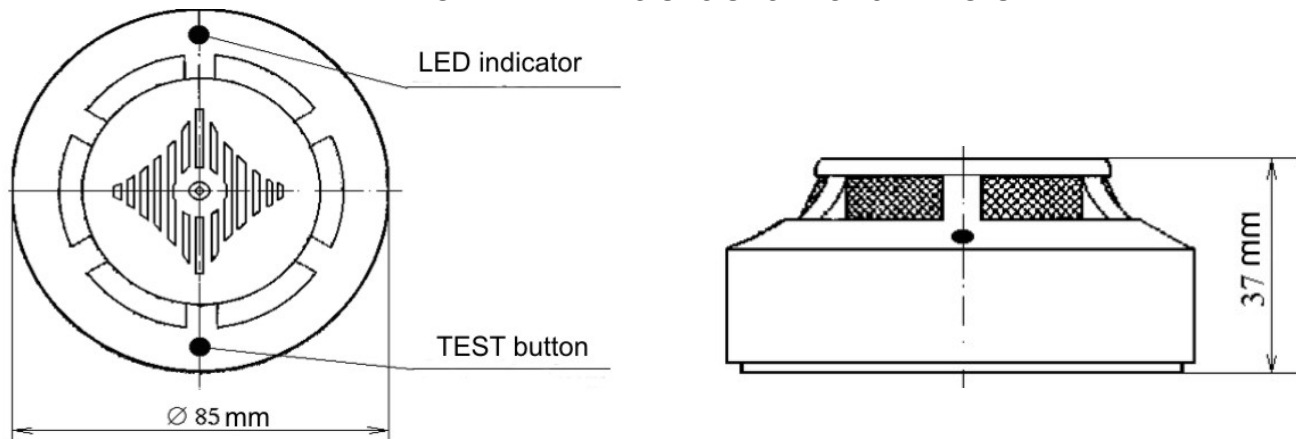


Figure 2

APPEARANCE, DIMENSIONS AND CONTACTS NUMERATION OF B01 BASE

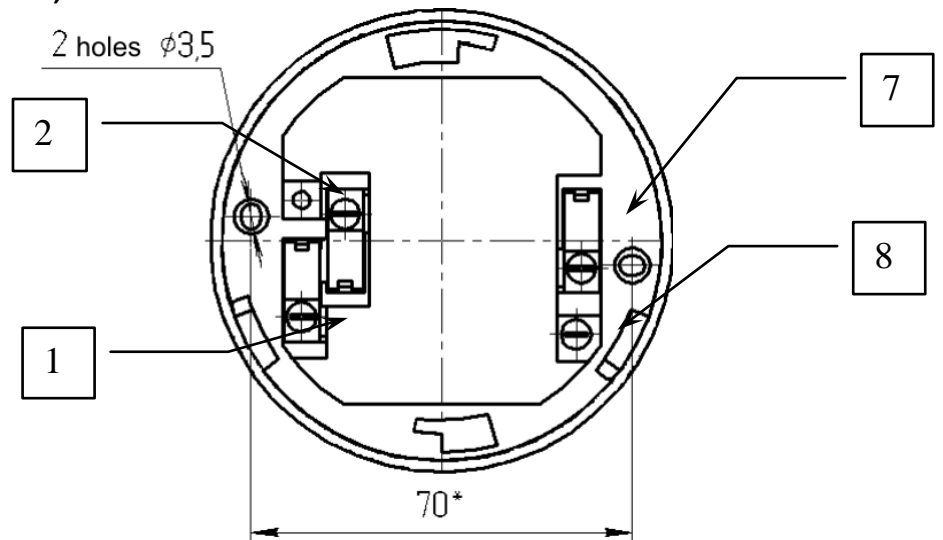
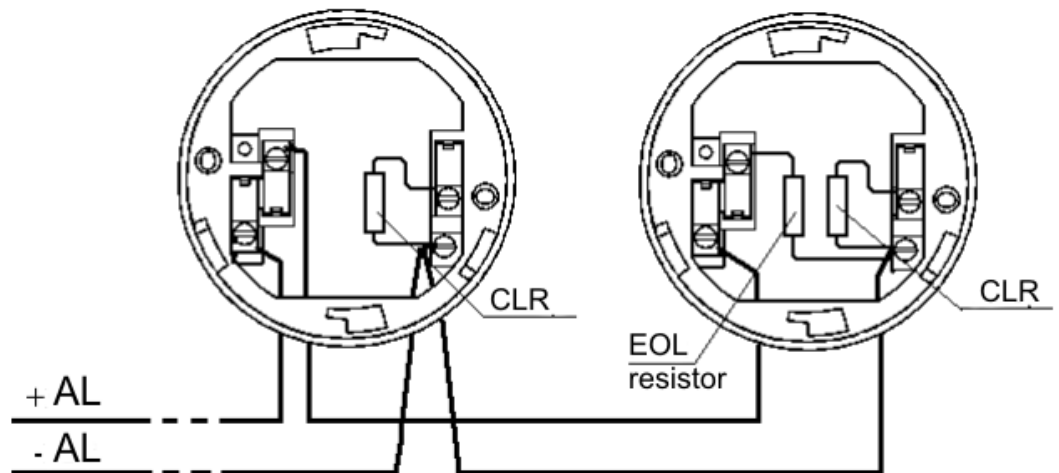


Figure 3

WIRING DIAGRAM FOR SPD-3.10 WITH B01 TO DC CONTROL PANEL

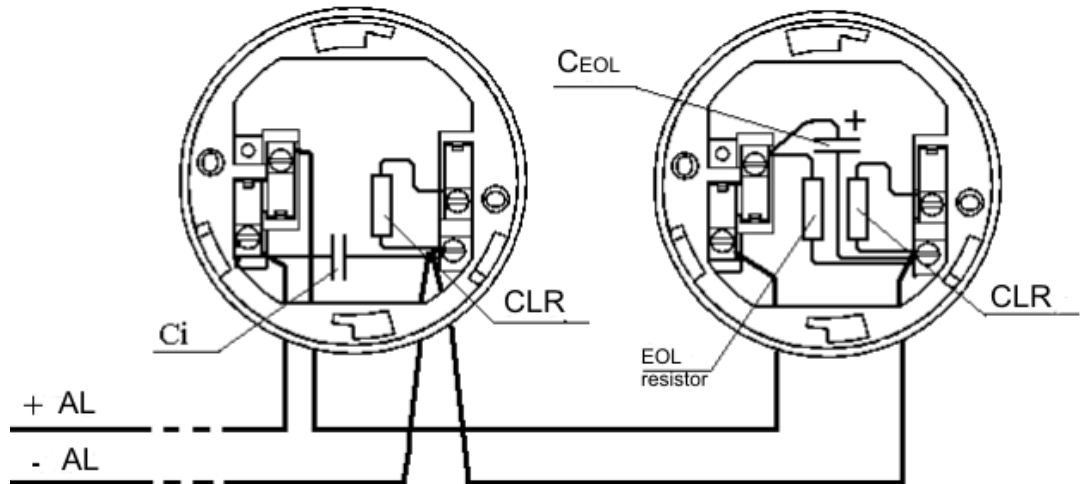


For 24 V: CLR = (0,36–2) kOhm, EOL resistor - from 2,4 to 10 kOhm depending on the control panel specifications.

For 12 V: CLR=≤620 Ohm, EOL resistor – from 1,2 to 6,2 kOhm.

Figure 4

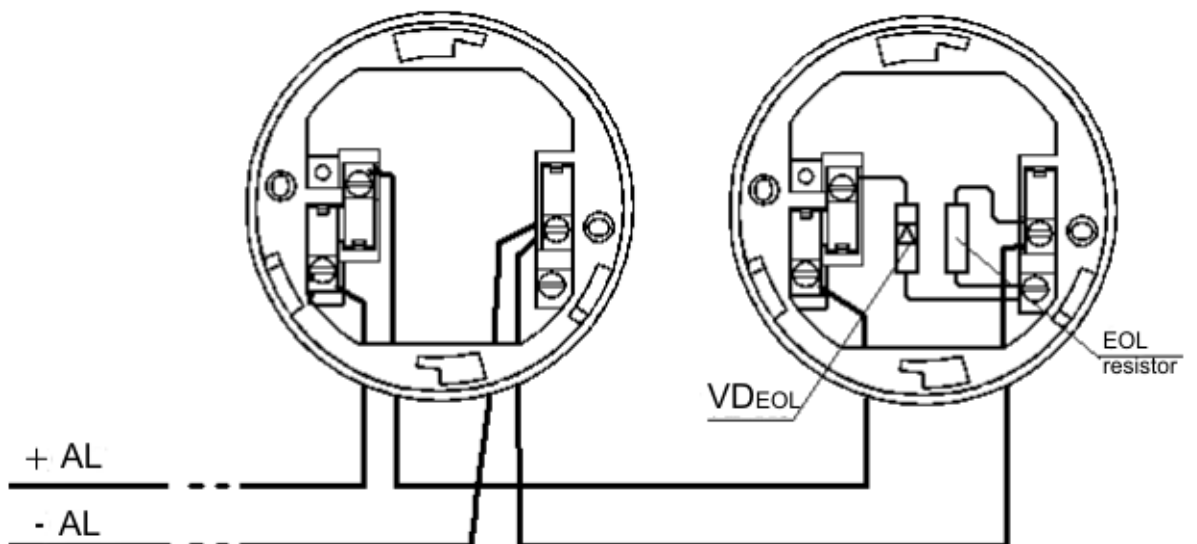
**WIRING DIAGRAM FOR SPD-3.10 WITH B01 TO CONTROL PANEL
TO INCREASE FALSE ALARM IMMUNITY**



EOL resistor and CLR correspond to Figure 1.
Capacitors C_i – ceramic 0,1 – 0,22 μF ; C_{EOL} – 22 μF 25 V

Figure 5

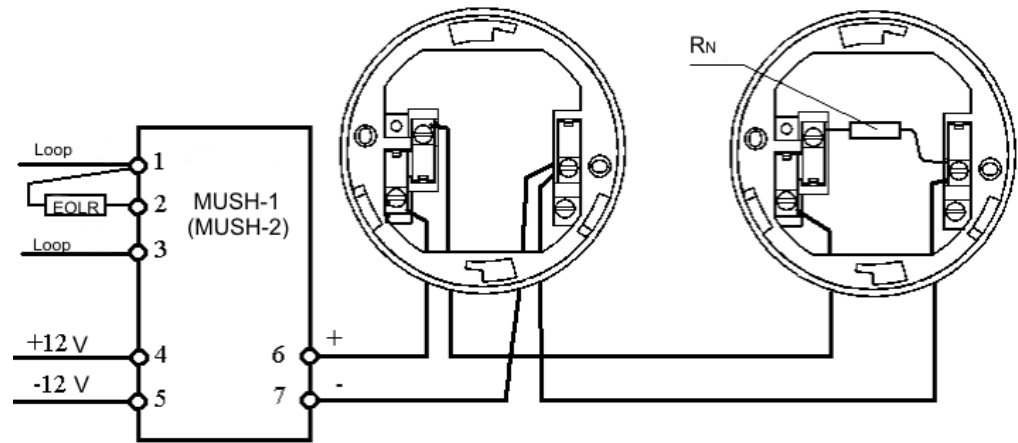
WIRING DIAGRAM FOR SPD-3.10 WITH B01 TO AC CONTROL PANEL



AL with current limited at 20 mA.
Diode VD_{EOL} type 1N4148, EOL resistor 3.9 kOhm 0,25 W

Figure 6

**WIRING DIAGRAM FOR SPD-3.10 WITH B01 TO FIRE-INTRUDER CONTROL PANEL
THROUGH MUSH-1 MODULE (MUSH-2)**



R_N resistor $-1,5 \text{ k}\Omega$ $0,25 \text{ W}$.

EOL resistor is specified by control panel specifications (from 1 to 10 $\text{k}\Omega$)