

**ADDRESSABLE LIGHT AND SOUND ALARM
WITH BUILT-IN SHORT CIRCUIT ISOLATOR**

S2000-BOS

User's Manual



TABLE OF CONTENTS

1	Description and Operation.....	5
1.1	Purpose.....	5
1.2	Specifications	6
1.3	Scope of Delivery	7
1.4	Arrangement and Operation.....	7
1.5	Measuring Instruments, Tools, and Accessories	8
1.6	Marking and Sealing.....	8
1.7	Packaging	8
2	Intended Use	9
2.1	Operating Restrictions	9
2.2	Preparing for Use.....	9
2.2.1	Safety Precautions During Preparation.....	9
2.2.2	BOS Design.....	9
2.2.3	Mounting.....	11
2.2.4	Wiring	12
2.2.5	Programming.....	13
2.2.6	Using the BOS.....	14
2.2.7	Testing Operability	15
2.2.8	Extreme Situation Actions	15
2.2.9	Troubleshooting.....	16
3	Maintenance.....	17
3.1	General.....	17
3.2	Safety Precautions	17
3.3	Maintenance Procedures	17
3.4	Testing Operability	17
3.5	Technical Examination	17
3.6	Preservation (Depreservation, Represervation)	17
4	Repair	18
5	Storage.....	18
6	Transporting.....	18
7	Disposal	18
8	Manufacturer Warranty	18
9	Certification Information.....	19

This user's manual describes the functions of and explains principles of operating S2000-BOS Addressable Light and Sound Alarm with Built-in Short Circuit Isolator (hereinafter referred to as the BOS, sound alarm, device, unit, equipment, or product) of 1.00 firmware version.

Only the personnel who have studied this manual are allowed to operation activities. All activities on mounting, start-up, programming, and testing shall be performed in compliance with the requirements of the regulatory documentation in force at the place of operation.

Abbreviations:

AD: Addressable Device;
BOS: S2000-BOS Light and Sound Alarm;
PL: Polling Loop.

1 Description and Operation

1.1 Purpose

S2000-BOS Addressable Light and Sound Alarm with Built-in Short Circuit Isolator is used in fire detection & alarm systems for giving visual and audible fire and emergency alarms at various installations inside premises. It performs as a mounting base (base socket) for connecting such fire detectors as DIP-34A-03, DIP-34A-04, DIP-34A-05, S2000-IP-03, S2000-IPG, or similar.

The BOS operates under polling loop controllers S2000-KDL, S2000-KDL-2I, S2000-KDL-2I rev.01, S2000-KDL-S as a part of Orion Integrated Security System.

The BOS provides the following functions:

- Gives combined visual and audible signals;
- Performs as a mounting base (socket) for connecting compatible fire detectors;
- Sends messages to the polling loop controller;
- Stores its polling loop communication address in the non-volatile memory;
- Measures polling loop voltage at the point the BOS is connected;
- Disables segments of the polling loop with short circuit occurred;
- Measures voltage of the external power supply of the BOS;
- Indicates operation conditions with built-in light indicator.

The BOS is intended for round-the-clock operation.

The BOS is designed to be operated in residential, commercial, and industrial areas.

The BOS is classed as a restorable, regularly maintainable item.

The BOS is operated with the installed fire detector.

1.2 Specifications

Table 1.2.1

Parameter	Value
1.2.1. Input voltage of the BOS addressable part (from the polling loop), V	8 through 11
1.2.2. External power supply voltage, V	12 through 28
1.2.3. Current consumed from the polling loop, mA, max	0.6
1.2.4. Current consumed on short circuit isolator tripping, mA, max	3.3
1.2.5. Current consumed from the external power supply in alarm mode, mA 12 V power supply, mA, max 28 V power supply, mA, max	30 - 60 60 30
1.2.6. Current consumed from the external power supply in the quiescent mode, mA, max	1.1
1.2.7. Number of BOS units to be connected to a single polling loop, pcs.	Up to 127
1.2.8. Start-up time, s, max	15
1.2.9. Short circuit isolator, pc.	1
1.2.10. Maximum effective resistance of the polling loop wires, ohms, max	100
1.2.11. Minimum insulation resistance between the polling loop wires, kilo-ohms, min	50
1.2.12. Minimum insulation resistance between the wires of the external power supply, kilo-ohms, min	50
1.2.13. Maximum galvanic isolation voltage, V, max	500
1.2.14. Sound pressure level at the distance of 1 m in the frontal direction along the central axis, dB, at least	85
1.2.15. Enclosure protection degree as per GOST 14254-2015 (when a proper fire detector is mounted into)	IP41
1.2.16. Resistance to mechanical exposure as per OST 25 1099-83	Arrangement Category III
1.2.17. Vibration exposure: - Frequency range, Hz - Max acceleration, g	1-35; 0.5
1.2.18. Environmental category as per OST 25 1099-83	O3
1.2.19. Operating temperatures, °C	Minus 20 through + 55
1.2.20. Relative humidity, %, at +40°C	Up to 93
1.2.21. Weight, kg, max	0.3
1.2.22. Overall dimensions: - Diameter, mm, max - Height, mm, max	100 62
1.2.23. Non-stop operation	24/7
1.2.24. MTBF in the quiescent mode, hours, min	80,000
1.2.25. Survival probability after 1,000 hours	0.98758
1.2.26. Expected lifetime, years	10

1.2.27 As to immunity to man-made radio disturbance, the BOS meets the requirements for Test Severity Level III of the relevant standards listed in Appendix ‘A’ to GOST 34699-2020.

1.2.28 The BOS passes the industrial interference standards prescribed for Class ‘B’ equipment as per GOST R 30805.22.

1.3 Scope of Delivery

Deliverable parts of the BOS are as shown in Table 1.3.1.

Table 1.3.1

Item	Quantity
S2000-BOS Light and Sound Alarm	1 pc.
Documentation:	
S2000-BOS Addressable Light and Sound Alarm with Built-in Short Circuit Isolator. Operations Manual	1 pc.

1.4 Arrangement and Operation

1.4.1 The BOS is a unit which comprises a printed circuit board (PCB) with a piezo sounder control circuit mounted in a plastic structure which intensifies the sound pressure generated by sounder oscillations. The electrical circuit on the PCB integrates an addressable part responsible for communication with the polling loop controller over the polling loop and an actuating part responsible for generating sound signals. Addressable part of the BOS electrical circuit is galvanically isolated from its actuating part. The BOS itself can be used as a base (socket) for mounting compatible addressable fire detectors. The schematic for wiring the BOS is shown in Figure 2.2.4.1.

1.4.2 The BOS features a unique address for communicating data over the polling loop, this address being stored in the non-volatile memory and providing transmission of signals on the BOS status at the relevant address on requesting by the polling loop controller.

1.4.3 The BOS is supplied with power and communicates data over the polling loop. The BOS supports DPLS_v2.xx protocol and provides getting values of polling loop voltage at the point the BOS is located and those of external power supply voltage at the BOS terminals.

1.4.4 The BOS can operate in one of the five operation modes below:

- *Quiescent mode or Norm:* no alarms.
- *Alarm mode.*
- *Fault mode:* the BOS is faulty, or no power is applied to the actuating part of the BOS.
- *Setting address:* a set address command has been received from the polling loop controller via the polling loop, and an action to confirm setting address is being expected (see para 2.2.5.2).
- *Polling loop initialization:* communication between the polling loop controller and the BOS is being established.

1.4.5 The BOS supports requests for information parameters shown in Table 1.4.5.1.

Table 1.4.5.1.

Parameter	Description	Range	Factory Value
Device Type	The name in the Orion system	S2000-BOS	S2000-BOS
Firmware Version	Current firmware version	1.00... 2.55	1.00
Address	Polling loop address	1 ... 127	127
ADC	ADC code	0 - 255	192 ⁽¹⁾

Parameter	Description	Range	Factory Value
Indication mask	The number of the indication mask to be executed	1 - 31	2 ⁽²⁾
Input Voltage	Estimated value of external power supply voltage	12 - 28 V	–

(1) – An approximate value that corresponds to normal voltage.

(2) – In the Off conditions.

1.5 Measuring Instruments, Tools, and Accessories

While mounting, commissioning, and maintaining the equipment, please use the instruments, tools, and accessories shown in Table 1.5.1.

Table 1.5.1

Instrument	Specifications
Digital multimeter	AC/DC voltage up to 500 V, AC/DC current up to 5 A, resistance up to 2M Ohm
Flat head screwdriver	3.0×50 mm
Cross slot screwdriver	2×100 mm
Side-cutting pliers	160 mm
Pliers	160 mm
S2000-APA	Standalone Addressable Device Programmer (optional)

1.6 Marking and Sealing

Every BOS has a marking applied to the back of its enclosure.

The marking contains the name of the product, its decimal number, factory number, the year and quarter of production, and conformity marks.

Sealing the BOS is not supported.

1.7 Packaging

The BOS along with the accessory kit and operation documentation is packaged in a separate cardboard box.

2 Intended Use

2.1 Operating Restrictions

The design of the BOS doesn't provide its operation in aggressive environments as well as in explosion and fire hazardous premises.

Correct performance of the BOS cannot be guaranteed if electromagnetic environment does not meet the requirements defined in Section 1.2 of this manual.

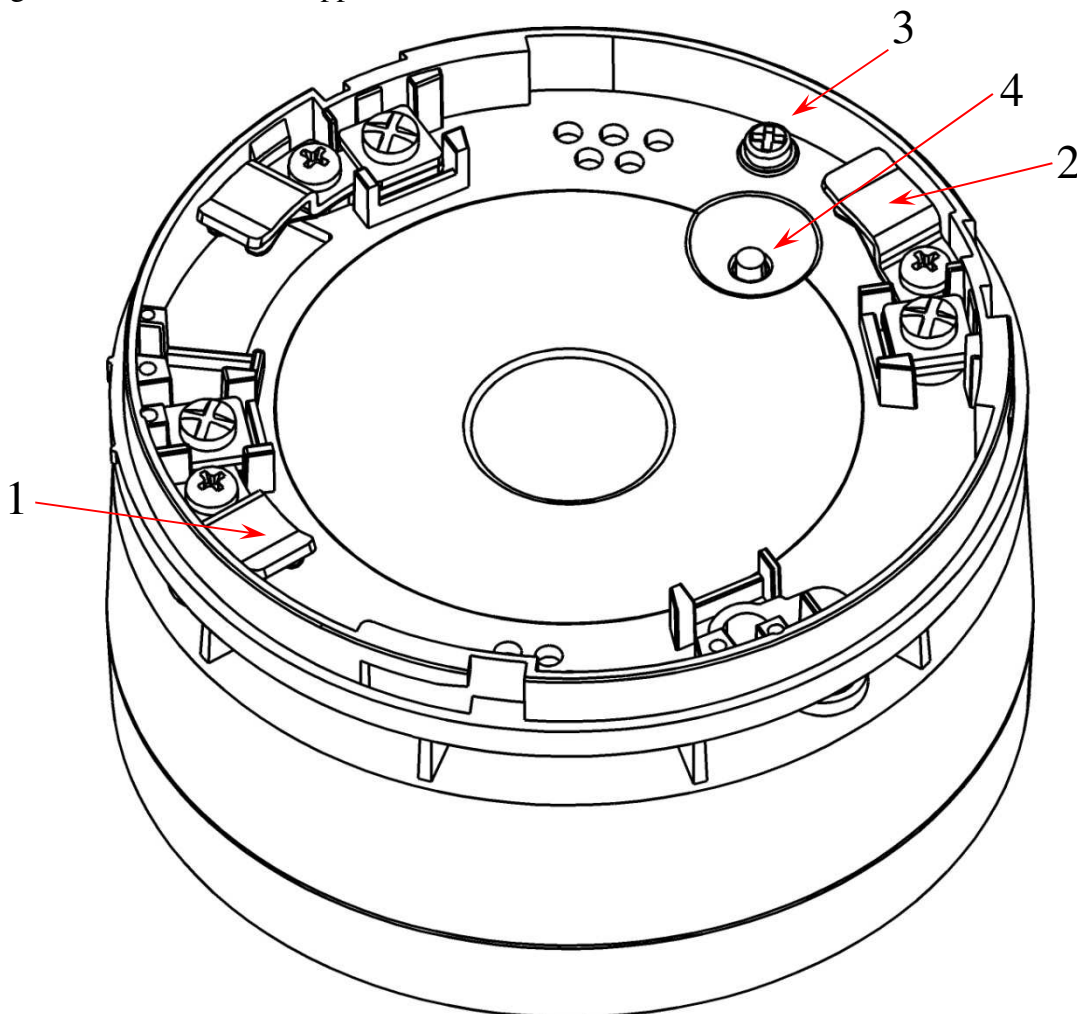
2.2 Preparing for Use

2.2.1 Safety Precautions During Preparation

- The BOS design meets the requirements of electric and fire safety including emergency operation in accordance with Russian standards GOST 12.2.007.0-75 and GOST 12.1.004-91;
- The BOS has no circuits under a hazardous voltage;
- Do SHUT OFF power from the equipment before mounting, installing, and maintaining this one;
- Installation and maintenance shall be carried out by professionals qualified for Accident Prevention of Class II or higher.

2.2.2 BOS Design

Figure 2.2.2.1 shows the appearance of the BOS.



1: for Terminal 5 "+PL", 2: for Terminal 2 "-PL", 3: for the lock screw, 4: for the tact switch

Figure 2.2.2.1 BOS Appearance

Figure 2.2.2.2 shows overall dimensions of the BOS.

Figure 2.2.2.3 represents the overall drawing for the BOS assembled with a fire detector and mounted into the base socket.

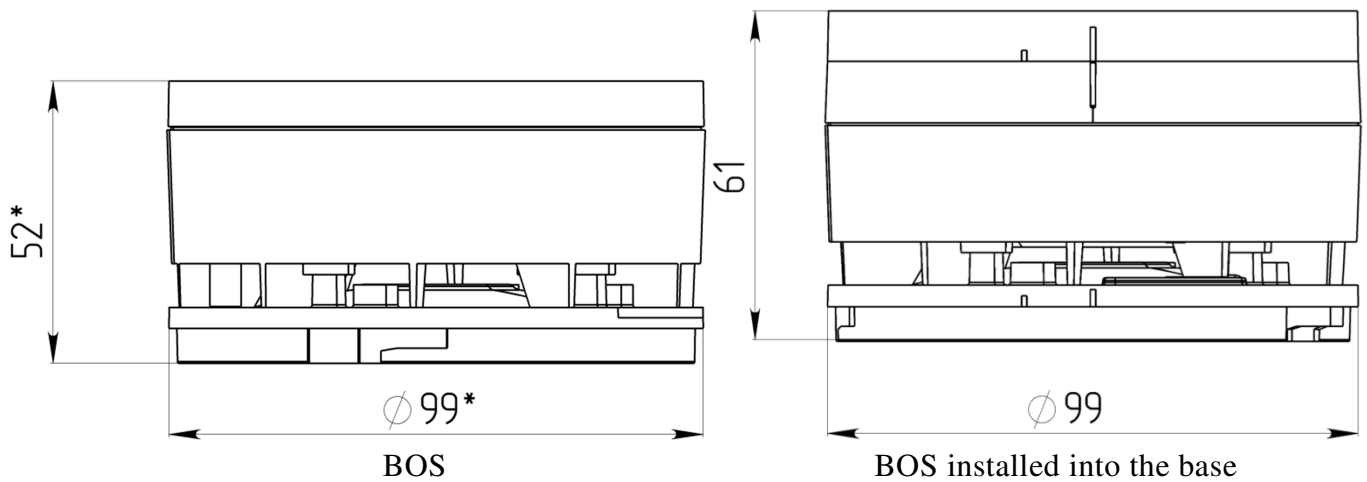
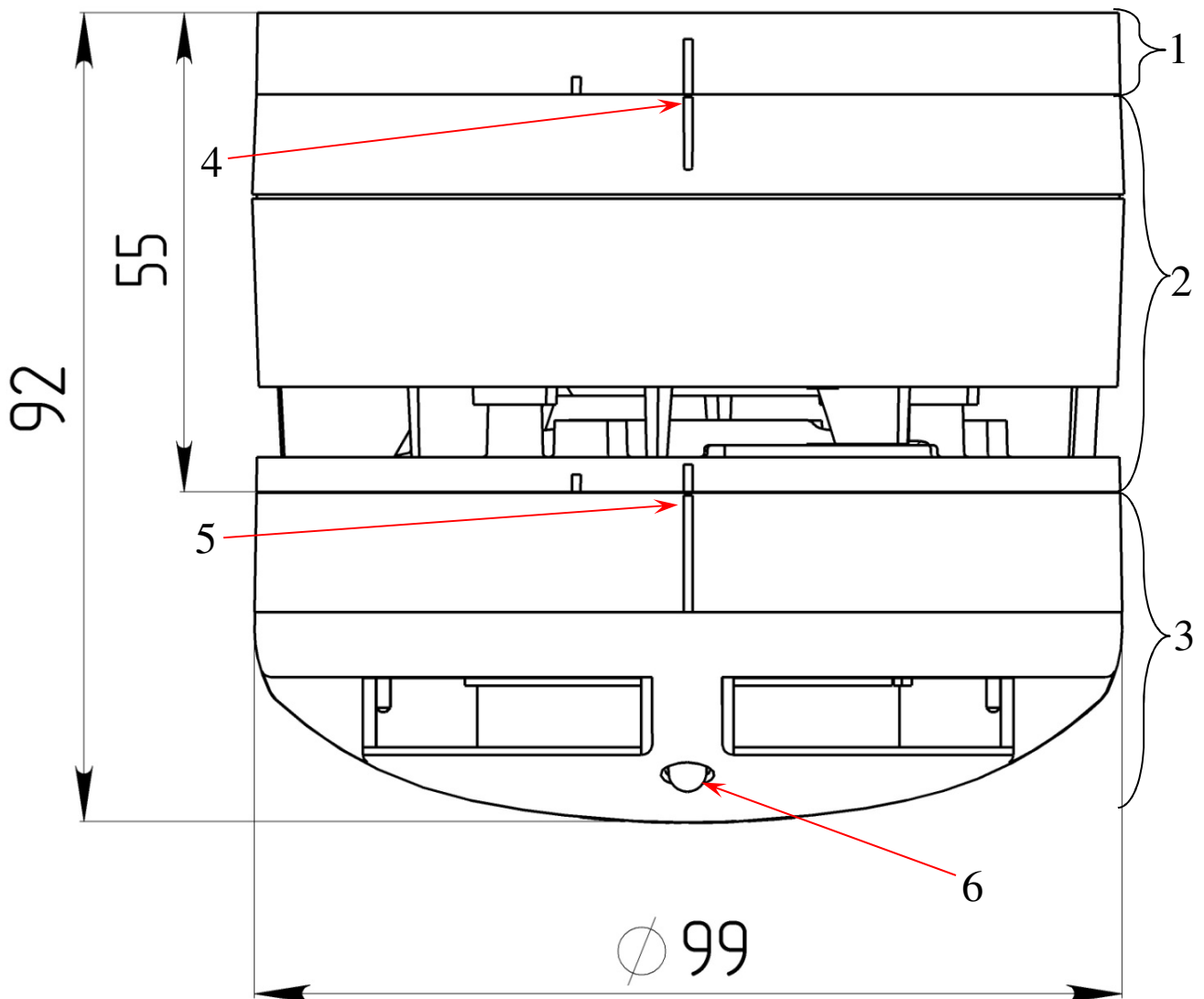


Figure 2.2.2.2. BOS Overall Dimensions



1 for the base; 2 for the BOS; 3 for the fire detector; 4 for BOS / base align guide;
5 for BOS / detector align guide; 6 for the fire detector lightpipe.

Figure 2.2.2.3

Overall Dimensions of the BOS Assembled with a Fire Detector and Installed into the Base

2.2.3 Mounting

The BOS is mounted on the installed base (see Figure 2.2.3.3), mounting dimensions of which are shown in Figure 2.2.3.1. The base is attached to the mounting surface (for example, to a ceiling) with two screws. The mounting drawing is shown in Figure 2.2.3.2. When the BOS is mounted into the socket, install the relevant addressable fire detector on the BOS (see Figure 2.2.3.3).

Attention:

To install the BOS on the mounting base, align the guide on the BOS with the short guide on the base plate and turn the BOS clockwise until the BOS guide is aligned with the guide 4 as shown in Figure 2.2.2.3.



To install a fire detector into the BOS, align the guide on the detector with the short align guide on the BOS and then turn the detector clockwise until the detector guide is aligned with the guide 5, as shown in Figure 2.2.2.3.

Prior to installing and /or removing the detector and /or the BOS, please disconnect power from the base plate.

After the BOS is installed into the base plate, it is recommended to be fixed with the lock screw (Position No.3 in Figure 2.2.2.1) to prevent removing the BOS from the base without unscrewing the lock screw.

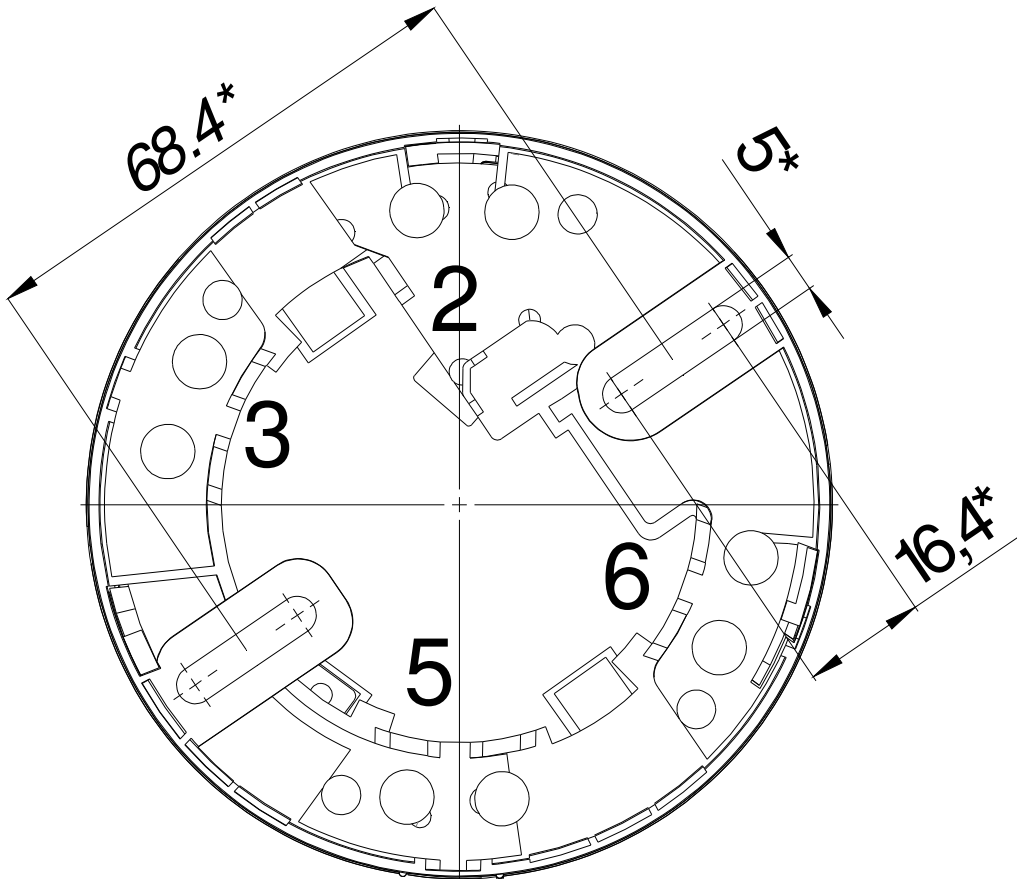


Figure 2.2.3.1. Mounting Dimensions of the Socket (Base Plate)

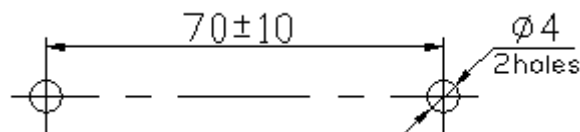


Figure 2.2.3.2. Drilling Template

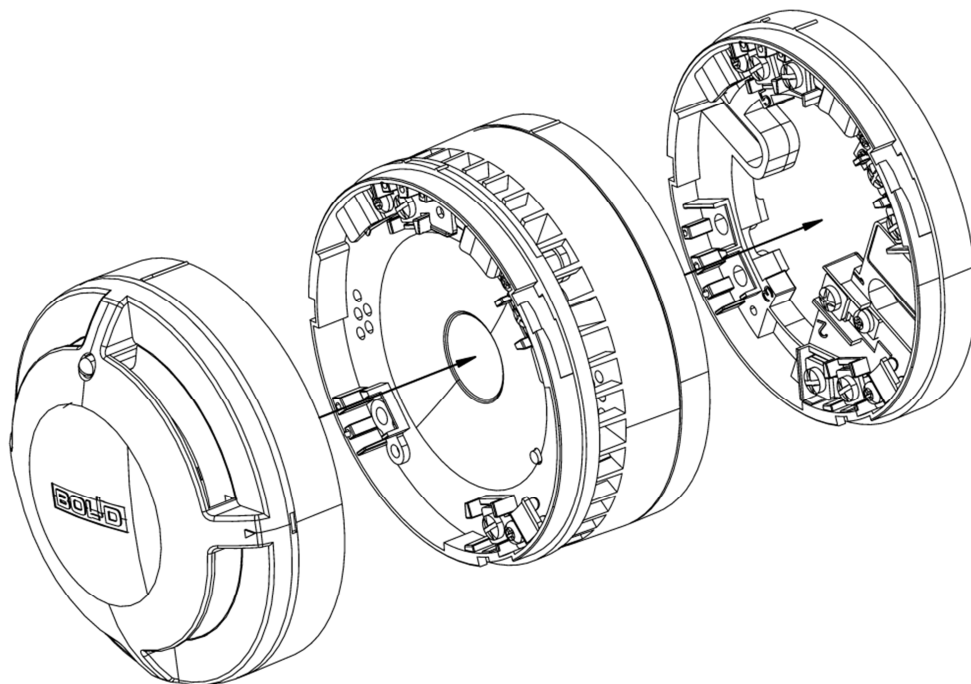


Figure 2.2.3.3 Installation Order

2.2.4 Wiring

Figure 2.2.4.1 shows a typical connection diagram for the sound alarm.

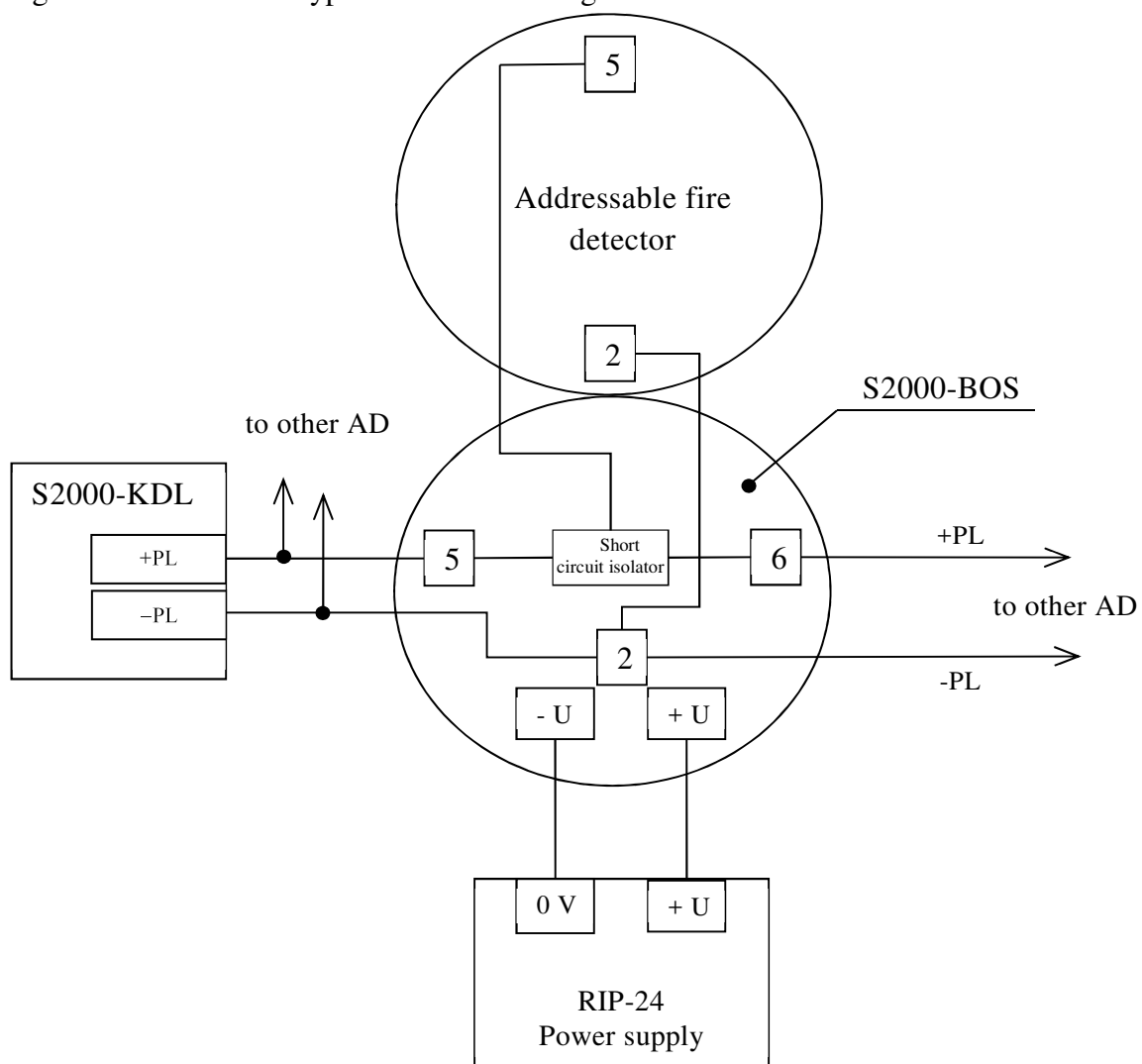


Figure 2.2.4.1. Connection Diagram

Figure 2.2.4.2 shows location of terminals for connecting an external power supply to feed executive part of the BOS.

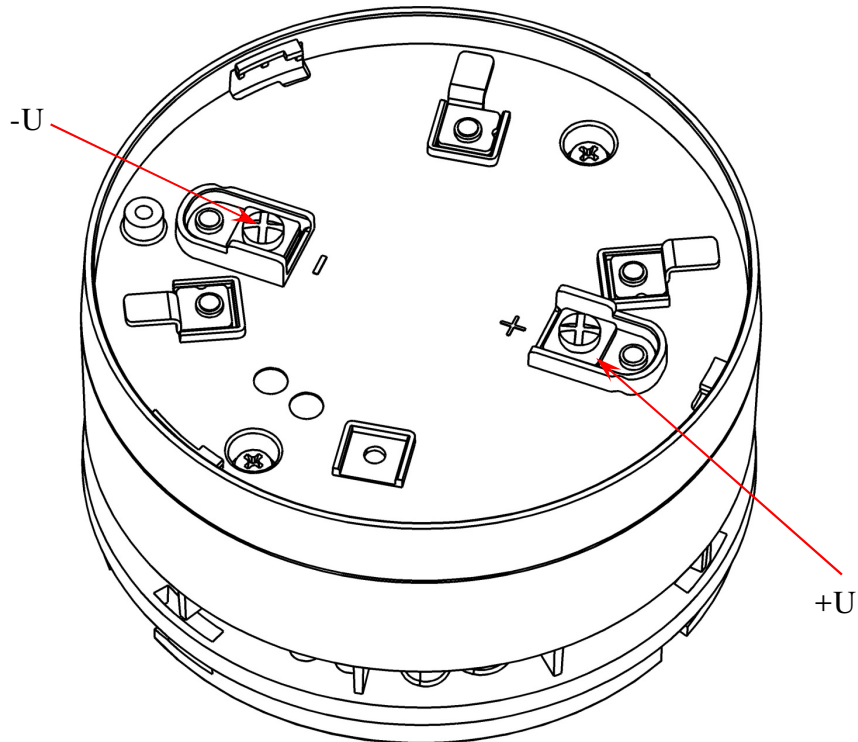


Figure 2.2.4.2. Terminals for Connecting External Power Supply

2.2.5 Programming

2.2.5.1. Configuring

The BOS is operated by the polling loop controller as a system output.

Configuring and controlling outputs are described in the operation documentation for the polling loop controller and the UProg utility.

2.2.5.2. Setting Address

The BOS provides storage of polling loop communication address in its non-volatile memory. The factory value of the address is 127. In order to assign a polling loop address to the BOS, send the polling loop controller one of the following commands from the network controller:

- *Set Device Address;*
- *Change Device Address.*

A *Set Device Address* command assigns an address to the BOS without regard to what address the BOS is assigned to at the time. This option can be used when the same address is erroneously assigned to two or more devices. For doing so, issue a command for programming the BOS with the required address from the control panel or the PC. Then within maximum 5 min push the tact switch (Position No.4 in Figure 2.2.2.1) and hold it pushed for a second, or light the indicator LED (see Figure 2.2.5.1) with the laser beam of a laser test tool, or bring a permanent magnet to the reed switch (see Figure 2.2.5.1) for one second. The network controller shall display events about loss of communication with the device with the old address and connecting with a device with the new address. For the case of two or more same-address devices, there will be no messages about missing a device with the old address. While using a laser test tool, please be careful not to expose the lightpipe of the fire detector (Position No.6 in Figure 2.2.2.3), otherwise only the fire detector address will be set, with the BOS address remaining the same.

If one needs to change the BOS address which is known, send the *Change Device Address* command from the control panel or the PC, specifying the current address and the new address as the parameters. The network controller shall display messages about disconnecting the device with the old address and then detecting the device with newly programmed address.

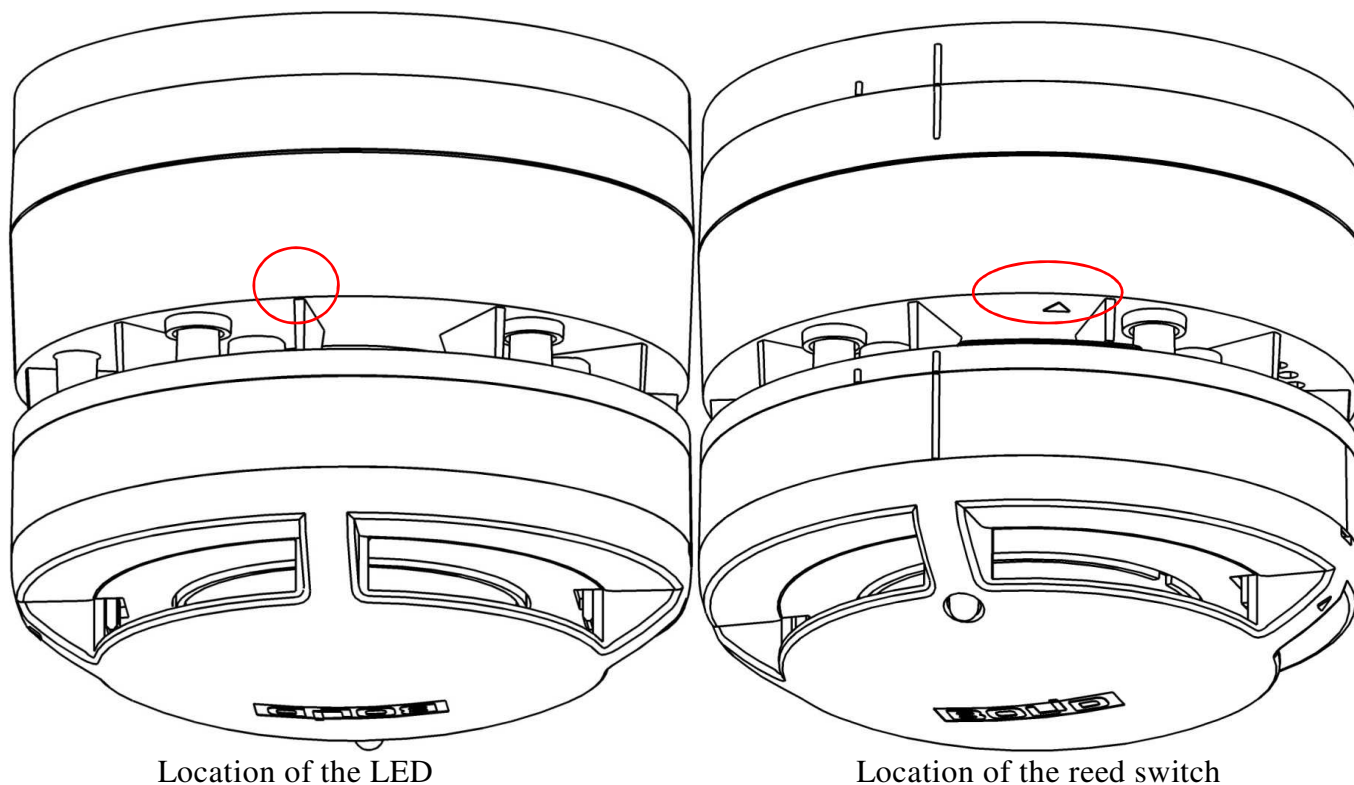


Figure 2.2.5.1. Location of LED Indicator and Reed Switch

2.2.6 Using the BOS

To be admitted to work with the product, the personnel are obliged to have studied this manual and to have an accident prevention knowledge assessment certificate.

The BOS is used under a polling loop controller within an Orion Integrated Security System. The BOS performs light and sound alarms under the given program in line with control commands received over the polling loop and monitors the external power supply. Light and sound signals are given synchronously. The BOS sound alarm always operates in two-tone mode.

The BOS being in the Fault status, alarm program (turning the alarm on and off) from the polling loop controller cannot be changed. Dead voltage of the external power supply is considered as a Fault.

The BOS also monitors the acoustical radiator for internal electrical voltage, and when this voltage drops below the normal value the BOS proceeds to the Fault status.

For more detailed description of operating the system, please refer to documentation for S2000M Control Panel, Orion Pro Software Suite, Sirius Fire Alarm Control Panel, and the polling loop controller.

The BOS PC board features a LED, which can be seen through the transparent part of the enclosure (see Figure 2.2.5.1). Modes of BOS operations and light indication specific for them are shown in Table 2.2.6.1.

Table 2.2.6.1

BOS Operation Mode	Description	Indication
Quiescent mode	No alarms	Blinks every 4 s
Alarm mode	Alarms have been activated	Blinks twice every 4 s
Fault	Technical malfunction or no external power supply is present	Blinks triply every 4 s
Setting address	A <i>Set Address</i> command has been given	Blinks four times every 4 s
Indication test	An <i>Indication Test</i> command has been given	Blinks five times every 4 s
Polling loop initialization	Waiting for establishment of communications with the polling loop controller	Solid light

2.2.7 Testing Operability

Perform functional testing as described in Section 3.4 of this manual.

2.2.8 Extreme Situation Actions



Warning!

If sparks, fire, smoke, or smell of burning is found at the installation site of the product, the product must be de-energized and sent for repair.

2.2.9 Troubleshooting

Table 2.2.9.1

Symptom	Possible Cause	Solutions
LED is off	No power is applied	Check the voltage at the BOS contacts “+PL”
No communications over the polling loop	The BOS has no connection with the polling loop controller	Check integrity of the cable and contact joints
	The BOS is too far from the polling loop controller	Reduce the polling loop distance to the BOS. Use the cable as per the required polling loop length (see documentation for the polling loop controller)
	Two or more addressable devices have the same polling loop address	Check addresses
The BOS is in the Fault conditions	No external power supply is connected to the actuating part	Check available voltage between “+U” and “-U” terminals. Check integrity of cable and cable connections
	BOS internal circuitry malfunction	Send the BOS for repair
Alarm does not light and / or does not sound	The BOS is in the Fault conditions	As described before
	BOS internal circuitry malfunction	Send the BOS for repair

3 Maintenance

3.1 General

Maintenance works are to be carried out subject to the following schedule:

Table 3.1.1

Task Description	Frequency
Visual checking	Monthly
Check for operability	Three-monthly

3.2 Safety Precautions

The BOS shall be maintained by personnel qualified for Electrical Safety of Level II or higher.

3.3 Maintenance Procedures

3.3.1 Visual checking of the BOS includes checks for no mechanical damages, fastening reliability, and proper condition of connecting wires and contact joints.

3.3.2 Operability of the BOS is to be tested in line with Section 3.4 of this manual.



Warning!

Removing the device's PC board from the device enclosure automatically voids the manufacturer's warranty

3.4 Testing Operability

3.4.1 For the time of testing the BOS, disable the outputs of the control and indicating equipment and control appliances that control fixed fire suppression systems and notify the proper authorities.

3.4.2 Activate the alarm mode by sending the BOS the relevant control command. Make sure the sound and light signals are synchronous and are given as programmed.

3.4.3 Issue a command to terminate alarms and make sure the BOS proceeds to the quiescent mode (see Table 2.2.6.1).

3.4.4 Make sure that no messages about external power supply faults are received during testing.

3.4.5 When testing is finished make sure the BOS is ready for normal operation. Restore all links between outputs of control devices and actuators with automated fire-fighting equipment and notify the proper authorities that the system is back in operation.

Conduct all tests with equipment known to be in good conditions!

3.5 Technical Examination

Technical examination is not applicable for this equipment.

3.6 Preservation (Depreservation, Represervation)

Preservation is not applicable for this equipment.

4 Repair

Repair of faulty equipment is to be conducted by the manufacturer or in authorized repair centers. The product shall be sent for repair in compliance with Company Standard QMS 8.5.3-2015, which can be found online at our website <https://bolid.ru/support/remont/>.



Warning!

The equipment shall be submitted for repair being assembled and clean and along with all the parts listed in the documentation.

Claims are accepted only if a reclamation report describing the failure is applied to the submitted equipment.

An equipment fault resulted from consumer's not observing rules of mounting and operation is not a reason for claims and warranty repair.

Claims shall be submitted to the following address:

NVP BOLID, #4 Pionerskaya Str., Korolyov, Moscow Region, 141070, Russia

Phone: +7 (495) 775-71-55, E-mail: info@bolid.ru.

In case of any issue related to use of the product, please contact the technical support:

+7 (495) 775-71-55 or e-mail: support@bolid.ru.

5 Storage

Storage in a transport container is permitted at ambient temperatures minus 20 through plus 50°C and relative humidity up to 95% at plus 35 °C.

Storage in the consumer package is permitted only in heated premises at temperatures plus 5 through plus 40°C and relative humidity up to 80 % at plus 20°C.

6 Transporting

The unit can be transported in a transport container at ambient temperatures minus 20 through plus 50°C and relative humidity up to 95 % at plus 35°C.

7 Disposal

The unit is to be disposed of considering that there are no toxic components in it.

The content of precious materials: doesn't require accountability for storage, retirement, and disposal (Clause 1.2 of GOST 2.608-78).

The content of non-ferrous metals: does not require accountability for retirement and further disposal.

8 Manufacturer Warranty

The manufacturer guarantees the product meets with technical requirements stated in the manuals if the user follows the instructions for transportation, storage, installation, and usage.

The warranty period is 18 months since putting the product into operation but no more than 24 months from the manufacturer's date of production.

9 Certification Information

S2000-BOS meets the requirements of Technical Regulations of Eurasian Economic Union EAEU TR 043/2017 'On Requirements for Fire Safety and Fire Extinguishing Equipment' and is covered by the conformity certificate EAЭC RU C-RU.ПБ68.B.02124/24.

S2000-BOS meets the requirements of Technical Regulations of Custom Union CU TR 020/2011 'Electromagnetic Compatibility of Technical Equipment' and is covered by the conformity declaration EAЭC N RU Д-RU.PA12.B.00224/24.

S2000-BOS meets the requirements of Technical Regulations of Eurasian Economic Union EAEU TR 037/2016 'On the restriction of the use of certain hazardous substances in electrical and electronic equipment' and is covered by the conformity declaration EAЭC N RU Д-RU.PA12.B.00230/24.

Production of S2000-BOS is awarded with the conformity certificate GOST R ISO 9001. The certificate can be found online at the website <https://bolid.ru> in the section ABOUT COMPANY.