

ShPS-24

Fire Equipment Mount Box with Backup Battery Power Supply

ShPS-24

ShPS-24 rev.01

ShPS-24 rev.02

ISO

Instruction Manual
ACDR.436534.009



1 Main Specifications

1.1 General

1.1.1 This Instruction Manual is applicable to ShPS-24, ShPS-24 rev.01, and ShPS-24 rev.02 Fire Equipment Mount and Backup Battery Boxes (hereinafter called ShPS-24).

The ShPS-24 rev.01 differs from ShPS-24 by a transparent window door; ShPS-24 rev. 02 differs from ShPS-24 by IP54 protection rating.

1.1.2 The ShPS-24 box is meant to provide power supply for installed fire control equipment, manual call points, alarm and control panel (modules), and other fire protection equipment requiring 24V/DC power supply.

The ShPS-24 can accommodate the following Orion ISS devices: Signal-10, Signal -20P, S2000-4, S2000-KDL, S2000-KPB, S2000-SP1, S2000-PI and other devices mountable on DIN-rack TN 35 in accordance with GOST R MEK 60715-2003.

1.1.3 The ShPS-24 box is designed for 24/7 continuous operation with intended output parameters, automatic monitoring and charging of sealed backup batteries. The ShPS-24 can disconnect backup batteries from load circuits to avoid unacceptable discharge.

1.1.4 The ShPS-24 provides visual and audible indication of the following: mains supply status, backup battery status, missing batteries, disconnection of low batteries, output short circuit or overvoltage.

1.1.5 The ShPS-24 provides overvoltage protection and short-circuit protection for 24V/DC outputs with voltage restoring automatically on the output after repairing an output short-circuit fault.

1.1.6 The ShPS-24 provides short-circuit protection for battery connection terminals with output voltage being still effective when working on mains power supply.

1.1.7 ShPS-24 carries out measurement of mains, output, and battery voltages, as well as output load current (see note 1.2.21).

1.1.8 The ShPS-24 transmits voltage and load current measurements and existing status to the network controller (S2000M panel or workstation with Orion Pro Suite) over the RS-485 interface.

1.1.9 The ShPS-24 can issue fault messages to a remote output – an optical relay output circuit with galvanic isolation.

1.1.10 The ShPS-24 can monitor the status of batteries and battery-connection circuits (comparing with maximal internal resistance of this circuit).

1.1.11 The ShPS-24 provides connection of additional loads with 220V/50Hz rated power. The short-circuit protection of these loads are provided by a circuit breaker.

1.1.12 The ShPS-24 shall be installed in location protected from atmospheric precipitation and mechanical damage. The ShPS-24 is not designed for installation in locations where it can be exposed to explosion and flammable hazards.

1.1.13 In terms of climate tolerance, the ShPS-24 box meets the conditions of moderately cold climate, installation Category III as per GOST 15150-69, but to be used within temperature ranges of 263 K to 313 K (-10°C to +40°C) and ambient humidity of up to 90 % at 298 K (25°C).

1.1.14 In terms of mechanical tolerance, the ShPS-24 corresponds to Category LX in accordance with GOST R 52931-2008 – vibration within 1Hz to 35 Hz when accelerated up to 4.9 m/s² (0.5 g).

1.2 Technical Parameters and Specifications

1.2.1 The mains power supply: 150-250 V/AC/50 Hz.

1.2.2 Backup power supply: two Delta DTM1217 rechargeable batteries (12 V, 17 Ah) or similar with the same parameters and five-year life time at least.

Note. **The batteries are not included in the standard delivery**

1.2.3 Rated output voltage:

- When the Mains supply is used: (27.2 ± 0.6) V;
- When the Backup battery supply is used: (19 - 27) V.

1.2.4 Outputs to connect RS-485 lines:

- Internal outputs x 7;
- External outputs x 1.

1.2.5 24V outputs for devices inside the box x 7.

1.2.6 Maximum current per one output 24V/DC: 0.4 A.

1.2.7 Total rated load current: 2 A.

1.2.8 Maximum total load current: up to 2.2 A (temporary up to 10 minutes with 1-hour interval at least provided that the mains power is available and batteries are connected. When the output current is over 2.2A, the ShPS-24 box turns off the charger. When the output current is over 2.2A, the ShPS-24 turns off the output voltage.

1.2.9 Maximum mains power consumption at 220V and rated load current: 120VA (without additional loads).

1.2.10 Maximum mains power consumption at 150V and rated load current: up to 0.6A (without additional loads).

1.2.11 Own ShPS-24's battery current consumption: up to 40 mA.

1.2.12 Maximum current of additional loads at 200V/50HZ: 10A.

1.2.13 Output voltage ripple (peak-to-peak) at rated load current: up to 200mV (Class VR1 as per GOST R 51179-98).

1.2.14 Low-battery shutdown voltage: (20.4 ± 0.6) V.

1.2.15 The ShPS-24 backup time with full-charged batteries, at 2A load current and temperature of 298 K (+25 °C): 8 hours at least.

1.2.16 Battery full charge time: up to 36 hours.

1.2.17 The built-in PSU of the ShSP-24 is ready to operate after 6 seconds upon powering up.

1.2.18 Remote *Fault Output* (Solid State Relay –SSR):

- Maximum switching voltage and current: up to 80 V and 100 mA respectively;
- Maximum resistance of closed relay circuit: 50 Ohm;
- Maximum open circuit leakage current at 80V: 1uA.

1.2.19 The ShPS-24 supports event sharing over RS-485 (see 4.3.7) and executing commands instructed over RS-485 (see 4.2.1). The non-volatile buffer capacity is up to 95 events.

1.2.20 The ShPS-24 has programmable parameters to be stored in nonvolatile memory (see 4.2.4).

1.2.21 The ShPS-24 supports measuring and transmission of measured values as requested by a network controller:

- 1) Input voltage in range of 150V to 255V AC
- 2) Battery voltage in range of 16V to 29V DC
- 3) Output voltage in range of 16V to 29V
- 4) Output current (load current in range of 0.1 to 2.5) A.

Note: *The engineers sought to achieve measurements of high precision; however the measured values are of an assessment nature with absolute and relative errors of measured values being not standardized. To carry out precise measurement, the certified instruments shall be used.*

1.2.22 The ShPS-24 has a tamper switch with contacts closed when the box door is closed.

1.2.23 The ShPS-24 ensures EMI immunity of Class III according to GOST R 53325-2012.

1.2.24 Radio interference resulted from the ShPS-24 operations does not exceed values as specified in GOST R 53325-2012.

1.2.25 Insulation strength of current-conducting part of the ShPS-24 box: at least 1.500V (50Hz) between circuits linked to 220V AC and between other circuits not linked to 220V/AC.

1.2.26 Insulation electrical resistance between circuits specified in 1.2.25: 20 MΩ. (In normal conditions according to GOST R 52931-2008).

1.2.27 In case of malfunction or misuse, the design of the ShPS-24 provides fire safety in accordance with GOST 12.1.004-91.

1.2.28 The life time of ShPS-24: 10 years at least, if the batteries are replaced every 5 years or more frequently.

1.2.29 The IP protection rating as per GOST 14254-2015 – IP40 (ShPS-24/ ShPS-24 rev.01), IP54 ShPS-24 rev.02.

1.2.30 Dimensions (max): 650×500×220 mm.

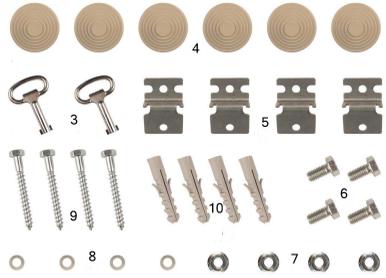
1.2.31 Weight with batteries: 30 kg (max).

1.2.32 Precious material content: not subject to inventory accounting in case of storage, disposal and recycling.

1.2.33 ShPS-24 rev.01 has a transparent door window as described in Appendix G.

1.3 Standard Delivery

	ShPS-24	ShPS-24 rev. 01	ShPS-24 rev. 02
1 Fire Equipment Mount Box	1	1	1
2 Instruction Manual	1	1	1
3 Key	2	2	2
4 Grommet	6	6	4
5 Staples	4	4	4
6 Bolt M8x16 GOST 7798-70	4	4	4
7 Nut M8 GOST 5915-70	4	4	4
8 Washer M8 GOST 11371-78	4	4	4
9 Screw 8x70 GOST 11473-75 (DIN 571)	4	4	4
10 Wall plug 12x60 S	4	4	4
11 Package	1	1	1



Note: Backup batteries are not included in standard delivery

2 Safety

2.1 The hazardous items of SHPS-24 are current-carrying circuits connected to 220V AC.

2.2 Precautions:

It is not allowed using the ShPS-24 box without earthing

a) Check regularly the ShPS-24's earthing.

b) Do not open the ShPS-24 enclosure unless it is disconnected from power supply.

c) Do not remove the MIP-24 cover.

2.3 Before the use, the ShPS-24 shall be grounded to avoid electrical shock. Protection Class 1 as per GOST MEK 60950-2002.

3 Installation

3.1 Installation, mounting, and maintenance shall not be carried out until the equipment mount box is disconnected from the power. The installation and maintenance shall be carried out by professionals qualified for Electrical Safety of Class III or higher.

Warning! When 220V feeding cable is connected to XT1 terminal, please be careful for the proper connection of Line and Neutral conductors. Please provide connections in accordance with Appendix A. The wiring diagram can be found inside on the door ShPS-24 box.

3.2 Mounting Equipment Inside Box

3.2.1 Mounting equipment into the box shall be carried out in accordance with SP 5.13130.2009 *Fire Protection Code. Fire Protection Systems. Automatic Fire Alarm and Extinguishing Installations* and project engineering documentation.

3.2.2 The Box is used to house and power Orion ISS equipment meant for DIN-rail installation. The Appendices B and C show options of how the equipment can be placed in the box. Rails can be moved to a required height for easy mounting. Unused rails can be removed.

The equipment also can be mounted on the box door (except for ShPS-24 ver.01). Please install additional rails using special pins (Appendix D). Additional rails are included in the MK1 ShPS mount kit (optional).

Examples of equipment mount can be downloaded at https://bolid.ru/files/373/566/raz_ob_shps_24.zip.

If necessary, the equipment can be installed on the rear side of the ShPS-24 box, please remove the unused rails for this purpose.

3.2.3 Devices are mounted in the box and connected to the BK-24 terminals by users themselves:

- Terminals marked as “0” and “+U” are used to connect power supply circuits, but care must be taken to observe the proper polarity;

- Terminals marked as “A1 B1”, “A2 B2”... “A7 B7” are used to connect the RS-485 circuits.

3.2.4 If needed, the user can use the XT2 earthing bus to ground additional devices powered from 220V /AC. The power circuits are protected by the QF1 circuit breaker.

3.3 Installing Box

3.3.1 Installation and connection of the box shall be provided in accordance with design documents developed as specified in effective regulatory documents and approved in the order as intended.

3.3.2 The ShPS-24 can be installed on the walls and other structures of protected premises to avoid exposure to the atmospheric precipitation, mechanical damage and unauthorized access.

3.3.3 Install the staple on the box using fasteners from mounting kit. Fasten SHPS-24 to the wall in easily accessible location. The box dimensions can be found in Appendix F.

3.4 Connecting Box

3.4.1 Wiring shall be provided in accordance with regulations: RD 78.145-93. *Intrusion and Fire Alarm System. Work Commissioning and Acceptance*; VSN 25-09.67-85, *Automatic Fire Extinguishing Installation. Work Commissioning and Acceptance*.

3.4.2 As specified in a wiring diagram (Appendix A):

a) QF1 and QF2 circuit breakers shall be set in the OFF position ;

b) **Provide earthing for the ShPS-24** by connecting XT1.3:2 «» contact of the XT1 terminal with the grounding loop;

c) Connect the interface bus and wires connected to devices mounted in the box;

d) Connect power wires to the ShPS-24 inlet terminal (**L line shall be connected to XT1.1:2, see Appendix A**);

e) Mount batteries and connect to terminals observing the polarity (a red wire shall be connected to “+” lead of the first battery, a blue wire shall be connected to lead “-” of the second battery, one end of white wire shall be connected to the “-” lead of the first battery, the second end of the wire shall be connected to “+” lead of the second battery)

Connect O-shape terminal of thermal sensor to the battery lead as shown in Figure 1, according to Appendix A.

f) Turn on the QF1 and QF2 circuit breaker.

Note: Rated load current is 2 A. The power supply may operate a short period under 2.2A (see 1.2.5) in case activation of sound alarm device, ASPT controller, actuating devices, etc.

Warning! In case of long operation at overload, the battery charging process is terminated and the battery starts discharging even if the mains voltage is available. If the total load current exceeds 2.5A, the power supply unit turns OFF output voltage and the equipment is left without the power.

3.4.3 Recommended cross sections of wires connected to the ShPS-24 box are as follows:

- 220V mains power (to XT1 terminal): multi stranded wire 1.5...2.5 mm² or solid wire of 1 to 2 mm²;

- RS485 line (BK-24): multi stranded wire of 0.12-2mm² or solid wire of 0.4 to 1.1mm²;



Fig. 1

- Loads (BK-24): multi stranded wire of 0.5-2 mm² or solid wire of 1 to 2 mm² taking into account voltage drops at maximum load current (minimal permitted voltage when loaded).

3.4.3 When installation is completed, run the test of system operations in the Fire Alarm condition during one hour to check where the ShPS-24 is capable to provide functionality of the installed equipment as specified in 1.2.7. The batteries shall be fully charged before the test (indicated by steady light of the Battery LED).

4 USAGE

4.1 Powering On

WARNING! Before turning the product on, please check whether the mounting and wiring is provided properly according to the wiring diagram (Appendix A).

WARNING! To obtain the functionality as claimed, please use the ShPS-24 box with connected batteries in a good condition. If the batteries are connected but the ShPS-24 issues the Battery Error status message, the replacement of batteries is required. The battery type specified in 1.2.2 shall be replaced each five years of operation. The ShPS-24 supports a battery life counters (see 4.2.2). Life time set for the counter by a user shall not be more than that specified by a battery manufacturer.

4.1.1 Turn on the mains power 220V, 50 Hz.

4.1.2 Turn on 220V using the QF1 and QF2 circuit breakers.

4.1.3 Monitor the ShPS-24 status against LED indicators

4.2 Getting Ready

4.2.1 Change the network address of the ShPS-24 box. The new address shall be unique and different from addresses of devices connected to the same RS-485 line where this ShPS-24 is connected (default address is 127).

4.2.2 If needed, change the rest configuration parameters according to your intended use of the ShPS-24 (see Table 1).

To change the ShPS-24 configuration parameters, please use an IBM-compatible computer with installed the **UProg** application. To connect the ShPS-24 to a PC COM Port, an interface converter shall be used such as RS-232/RS-485 PI-GR, S2000-PI, or S2000M panel set as interface converter. Appendix 3 shows the application window.

The **UProg** utility can be downloaded at: <http://bolid.ru>.

With the ShPS-24 door open, the tamper switch can be used for the following:

– **Turn off the buzzer:** three short and one long tamper button presses (● ● ● —);

Note: Holding the button down for 1.5 to 3 sec is long pressing (—). Holding the button down for 0.1 to 0.5 sec is short pressing (●). Pauses between presses shall not be shorter than 0.1 sec but no longer than 1sec.

– **Reset network address** (set default address – 127): (— — — ●);

– **Reset battery life counter and measured capacity** (when battery replaced) : (● ● ● — —)

4.2.3 If the network controller is powered from other power supply, the circuits “0 V” of the ShPS-24 box and the network controller shall be connected as a single circuit.

4.2.4 The programmable parameters are described in Tables 1 and 2 (see Appendix 3). The parameters are stored in the nonvolatile memory

Table 1

Parameter	Description	Programmable Values	Default Values
1 Network address	Device address in RS-485 network	1 to 127	127
2 Delay for the Mains Fault event	Delay time before transmitting the Mains Fault event via the RS-485 interface	4 to 255 s	4 s
3 Delay for the Mains Restored event	Delay time before transmitting the Mains Fault event via the RS-485 interface	4 to 255 s	4 s
4 Battery life counter	Time set for the battery lifetime counter. When this time expires, the ShPS-24 issues the Service Required message	1 to 7 years	5 years

Parameter	Description	Programmable Values	Default Values
5 Interval for repeating the Service Required message	Interval time for reissuing the Service Required message resulted due to expired battery lifetime as set in the counter	1 to 255 h *	255 h

* If "0" is set for this parameter, the message is issued one time only.

Programmable parameters for the Solid Sate Relay (SSR):

Table 2

Parameter	Description	Values	Default Values
1 Relay control program	Relay control program running right after powering on or rebooting the ShPS-24	Turn On Turn Off Turn On for a Time Turn Off for a Time	Turn Off
2 Relay action time	Relay action time for commands: Turn On for a Time/Turn Off for a Time	0...255 s	255 s
3 Parameters for optical relay monitoring	Selection of monitored parameters for relay control programs	1. All parameters below except for communications via RS-485 2. Communication failure on RS-485 3. Output overcurrent 4. RIP failure (charger or U _{out}) 5. Failure (missing) of one or two batteries 6. Mains supply voltage lower than 150V or higher than 250V 7. Enclosure tampering	All parameters but for RS-485

4.3 SHPS-24 Built-in Power Supply Unit (MIP-24)

4.3.1 When powered on, the ShPS-24 checks for the batteries and RS-485 communication. If the batteries are in a fully charged condition (100% charged against ShPS-24's charge scale), the BATTERY indicator is **On**. If the batteries are in the discharged condition, the ShPS-24 starts charging the batteries to the required level with the BATTERY indicator blinking once every three seconds. If one of the batteries is not connected (or its output voltage is lower than 7V), the BATTERY indicator starts flashing with 1Hz frequency. If the batteries are in a poor condition (subject to replacement), the buzzer beeps five times, and the BATTERY and FAULT indicators start flashing with 2 Hz's frequency. If the charger fails (stays failed during 15 seconds), the ShPS-24 issues the Charger Fault event and indicates the fault status according to Table 2.

During the ShPS-24 operation, the following is checked regularly:

- Input and output voltages
- Battery connection (every minute at least)
- Battery status (every 15 minutes at least)
- Charger functionality (every 15 minutes at least)

4.3.2 When the mains voltage fails, the batteries are connected to the load, the buzzer starts beeping to report on discharging, the POWER indicator is On, the 24V indicator is On, the ShPS-24 transmits the Mains Fault events when a delay time expires. (See 2 in Table 1).

4.3.3 When the battery voltage drops to 22V, the buzzer starts pulsing 10-15 times more frequently. The ShPS-24 issues the Battery Low event. Urgent measures shall be taken to recover the main power.

4.3.4 When batteries' voltage drops to 20V, they are switched off from the load to avoid being discharged heavily. The 24V indicator is off; the buzzer generates steady (continuous) beep during the further two hours. The ShPS-24 issues the Output Voltage Fault event. After two hours, the ShPS-24 goes into the mode of minimal consumption; the RS-485 transceiver is off, both the buzzer and the Fault indicator pulse once every 10 seconds.

WARNING! If the outage of mains power is expected for more than 7 days, the batteries should be disconnected from the MIP-24 to avoid their unacceptable discharging.

The buzzer can be muted (see 4.2.2). To unmute the buzzer, please use the same sequence of tamper button pressing.

4.3.5 When the mains power failed and the battery level is higher than 80% of its rated capacity, the ShPS-24 starts measuring the capacity of the installed batteries. When the batteries are lower than 22V, the ShPS-24 calculates the battery capacity, backup time, and approximate time for measuring the battery capacity. When the battery level is lower than 80% of rated capacity, the capacity measurement process does not start. If no measurement of battery capacity was carried out during the operation of the ShPS-24 box, it will calculate these details on the assumption of installed batteries of 17 Ah capacity and the current output values in response to the inquiry about backup operation and time to measure the capacity.

4.3.6 If an unacceptable output overload or short-circuit fault occurs, the ShPS-24 goes into the mode of short output pulsing every 10 seconds until the fault is repaired. The FAULT LED starts pulsing every 0.5 seconds; the buzzer starts intermittent beeping. The ShPS-24 recovers automatically if the output overload or short-circuit fault is repaired after 15 seconds or earlier.

Visual and audible indications are described in Table 3.

Indication status:

“+” ... On, “-” ... Off;

“+/-” **1Hz** – 1 Hz pulsing (On/Off);

ON/5 s – turns on every 5 second

OFF/3s -- turns off every 3 seconds

ON10s - pulses on during 10 seconds.

Table 3

Current Status of SHPS-24	LED Indication					Buzzer
	POWER	BATTERY	FAULT	RS-485	24 V	
	Green	Green	Yellow	Green	Green	
1. Powering on with no battery connected	+	+/- 1 Hz	-	+ ¹	+	ON/ 0.4 s 3 times
2. Mains voltage is normal; batteries are in discharged condition	+	OFF/5s	-	+ ¹	+	-
3. Mains voltage is normal; batteries are in charged condition	+	+	-	+ ¹	+	-
4. Output overload (batteries are available)	+	+	+/- 2 Hz	+ ¹	ON/10s	ON/0.8s
5. Mains voltage failed; batteries voltage is higher than 22V	-	+	-	+ ¹	+	ON/5s
6. Mains voltage failed; batteries voltage is lower than 22V	-	+	-	+ ¹	+	ON/0.4s
7. Mains voltage failed; batteries voltage is lower than 20.4 V (during first two hours)	-	+/- 1 Hz	-	+ ¹	-	+
8. Mains power failed; battery voltage is lower than 20.4V (after two hours)	-	-	ON10s	-	-	ON10s
9. Mains voltage is lower than 150 V or higher than 260 V	+/- 1 Hz	+	-	+ ¹	+	ON/0.8 s
10. Batteries are in poor condition (replacement required)	+	+/- 1 Hz	+/- 1 Hz	+ ¹	+	ON 5 times
11. Charger failure	+	+/- 4 Hz	+/- 4 Hz	+ ¹	+	ON/0.8s
12. ShPS-24' output overvoltage	+/- 1 Hz	+/- 1 Hz	+/- 1 Hz	+/- 1 Hz	-	-

¹ When communications over RS-485 in the normal condition. If communications fails, it is turned off. If initially normal communications over RS-485 fail, the RS-485 LED starts 1-Hz flashing after 30 seconds of a failure occurrence.

4.3.7 The ShPS-24 can transmit the following messages over RS-485:

- Device Reboot (when ShPS-24 is powered on);
- Mains Failed (the mains supply voltage is lower than 150 V or higher 250 V);
- Mains Restored (The mains supply voltage recovered to the range of 150V to 250V);
- Overload (The ShPS-24's output current exceeds 2.5 A);
- Load Restored (The ShPS-24's output current is normal (less than 2.2 A);
- Charger Failed (The charger fails to provide voltage and current as intended to charge batteries);
- Charger Restored (Charger provides voltage and current enough to charge batteries);
- Power Failed (The ShPS-24 does not provide functions according to 1.2.3);
- Power Restored (The ShPS-24 provided functions as described in 1.2.3);
- Battery Fault (Voltage of one of the batteries is lower than 7V or batteries are not connected);
- Battery Test Error (Battery internal resistance is higher than critical threshold – replacement or maintenance is required, see item 3 in Table 3);
- Battery Low (Battery voltage is lower than 22 V, mains power is not available);
- Service Required (Battery lifetime expired, subject to replacement);
- Battery Restored (Voltage produced by batteries is higher than 20V, the batteries can be charged);
- Tamper Alarm (The ShPS-24 enclosure is open);
- Tamper Restored (The ShPS-24 enclosure is closed);
- DC OFF/ Output Voltage Off (The ShPS-24 turns off the output voltage due to the mains failed and batteries discharged);
- DC ON/Output Voltage On (ShPS-24 turned on the output voltage when the mains power was restored after batteries discharging).

If in the moment of message generation there is no connection with a network controller over RS-485, the message is stored in nonvolatile memory of ShPS-24, and it will be transmitted as soon as the connection is recovered. The time stamp of message will get the actual time of the event occurrence.

The buffer (event log) in the nonvolatile memory of the ShPS-24 can store up to 95 events.

4.3.8 To request the status of the ShPS-24 using the S2000M panel (see S2000M User's Guide):

Code: _	Enter a passcode
◆ 5 View Input Status	Select the View Input Status using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow , or press 5 for quick navigation
◆ 51 Input Status	Select the Input Status item using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow or press 1 for quick navigation
Address: _	Enter a device address (1 to 127) or select it from the menu using the \blacktriangleright \blacktriangleleft and press \blackleftarrow .
Input#: _	Enter input number or select a required one using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow .

ShPS-24 Input States:

- | | |
|----------------------|-----------------------|
| # 0 – Tamper switch | # 1 – Output voltage |
| # 2 – Output current | # 3 – Battery voltage |
| # 4 – Charger | # 5 – Mains voltage |

4.3.9 To view the resulted voltage and current measurements (see S2000M Users' Guide):

Code: _	Enter your passcode
◆ 5 View Input Status	Select the View Input Status using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow , or press 5 for quick navigation
◆ 52 Input ADC	Select the Input ADC item using the \blacktriangleright \blacktriangleleft buttons and click \blackleftarrow , or click 2 for quick navigation
Address: _	Enter a device address (1 to 127) or select it from the menu using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow .
Input#: _	Enter the required input number or select it from the menu using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow .

The requested data are presented in the form of text and specific ADC values:

a) batteries connected:

- | | |
|---|--|
| # 0 – ТЕМПЕРАТУРА 25 °C | # 1 – Uout = 16...29 V (ADC 106...194) |
| # 2 – Iout = 0,1...2,5 A (ADC 3...77) | # 3 – Uакк = 16...29 V (ADC 106...194) |
| # 4 – Заряд АКБ 100 % (Charge OK) | # 5 – Uсети = 150...255 V* (ADC 168...0) |
| # 6 – Ёмкость не изм. (unmeasured capacity) or | # 7 – Трезерв = 02 ч 42 мин (2A load, 7Ah) |
| # 6 – Ёмкость 7,00 Ач (capacity measured value) | # 9 – Tнар_ост = 43800 ч (5 years) |
| # 8 – Ттеста = 02 ч 10 мин | # 10 – 7Ач/расч 07,00Ач |
| (2A load, 7 Ah, capacity, batt charged more than 80%) or | (unmeasured capacity) or |
| # 8 – Заряд АКБ <80% | # 10 – 7Ач/изм. 07,00Ач |
| (Battery charge less than 80%) | (measure capacity) |
| | The first item (7Ah) corresponds to ideal battery capacity of installed batteries, the second one is calculated taking into account the batteries charge level and actual time of usage. |
| # 11 – Uакк1 = 8...14,5 V (ADC 53...97) | # 12 – Uакк2 = 8...14,5 V (ADC 53...97) |

б) batteries not connected:

input 0 – ТЕМПЕРАТУРА 25 °C

input 2 – Iout = 0,1...2,5 A

(ADC 3...77)

4 – 3У_НОРМА (для 3У)

6 – АКБ ОТКЛЮЧЕН (Battery Disconnected)

8 – АКБ ОТКЛЮЧЕН

10 – АКБ ОТКЛЮЧЕН

12 – АКБ ОТКЛЮЧЕН

1 – Uout = 16...29 V (ADC 106...194)

3 – Uакк = 00,00 V (disconnected batteries)

5 – Усети = 150...255 V* (ADC 168...0)

7 – АКБ ОТКЛЮЧЕН

9 – АКБ ОТКЛЮЧЕН

11 – АКБ ОТКЛЮЧЕН

Note: * The mains voltage measured by the ShPS-24 can differ if compared to values measured with a RMS voltmeter. This may be due to distortion of mains power y-voltage, etc. The ShPS-24 can adjust the main voltage measurements with a 1V increment (in $\pm 20V$ range). To adjust the measurements, please run the UProg utility, select a MIP-24 with a corresponding network address, and select the values to be adjusted in the appeared dialog box. The ShPS-24 will adjust the selected values to the values of mains voltmeter after the configuration is saved and reset.

4.4 Powering OFF

4.4.1 Turn off the QF2 and QF1 circuit breakers.

4.4.2 Disconnect the input 220 V/AC.

4.4.3 Disconnect the batteries.

5 MAINTENANCE

5.1 The routine maintenance is carried out regularly every year. The maintenance work shall be provided by a maintenance company personnel and includes the following:

- 1) Exterior check of the ShPS-24 box;
- 2) Check of the output voltage according to 1.2.3 of this manual;
- 3) Check of LED and buzzer indication as specified in Table 2 hereto;
- 4) Check of ShPS-24 fastening, internal wiring conditions, and terminals.

5.2 ShPS-24's Batteries Capacity Measurement

To make the capacity measurement available, please make sure the battery charge level is more than 80%.

Note: *If the battery charge volume is less than 80%, the ShPS-24 cannot measure the capacity of installed batteries.*

5.2.1 To measure the ShPS-24 battery capacity using the S2000M panel, please use the Test Detector function (see S2000M Users' Guide). When initiating a testing command, please specify '0' for detector address and test duration. When this command is received and executed, the ShPS-24 issues the Test Starts event. The test will be completed automatically. With this test completed, the ShPS-24 issues the Test Ends event.

The test control procedure is as follows:

Code: _	Enter a pass code.
◆ 4 Control	Select the Control item using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow or press 4 for quick navigation.
◆ 43 Detector Test	Select the Detector Test item using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow or press 3 for quick navigation.
◆ Start	To initiate the test, please select the Start menu item using the \blacktriangleright \blacktriangleleft buttons and press \blackleftarrow .
Address: _	Enter the ShPS-24 address (1 to 127), or select a required one using the \blacktriangleright \blacktriangleleft keys and press \blackleftarrow .
Detector: _	Enter 0 for a detector address and press \blackleftarrow .

Time, min: _
◆ Abort
Address: _
Detector #: _

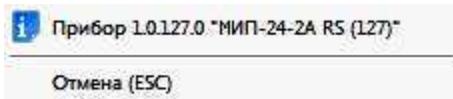
Enter 0 for the test duration time and press **↵**.

To abort the capacity measurement procedure, please select the Abort item and press **↵**.

Enter the ShPS-24 address (**1 to 127**), or select a required one using the **▶ ◀** keys, and press **↵**.

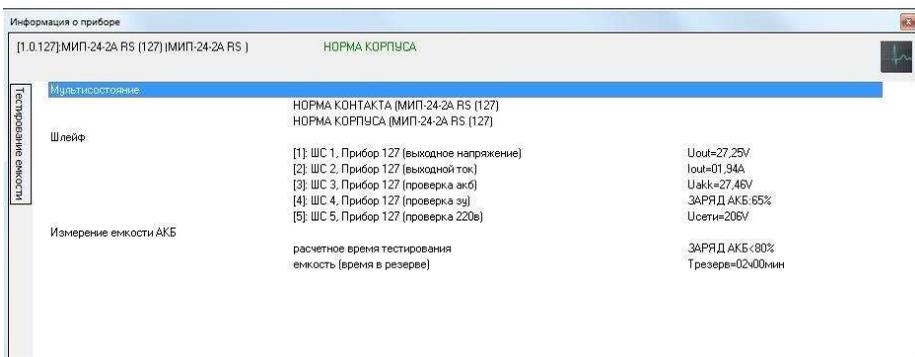
Enter **'0'** as a detector address and press **↵**.

5.2.2 To measure the ShPS-24' battery capacity using the Orion Pro tools (see Orion Pro User Guide), please click the ShPS-24 icon on the map in the Orion Pro Monitor module, select the item next to **i** icon (it shows the device's address and name):



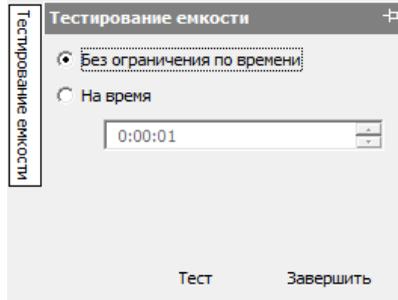
Note. The MIP-24-2A RS icon shall be added to the map.

The following info box will appear:



This information window provides access to the ShPS-24 battery measurement control.

Click the Capacity Measurement tab, the Capacity Measurement box will appear to start/abort measuring the ShPS-24 battery capacity.



Select the type of test:

1. **Без ограничения по времени** – No time limit. When this test completed, the ShPS-24 transmits the resulted capacity measurements. The elapsed test time is shown in the info box. The testing process ends automatically. *Note. The test duration depends on the load current.*
2. **На время** – Time limited. The test is to be completed within the period of time specified in the field. This test is recommended if you want to get info on the ShPS-24 functionality in the backup mode for the time specified. If batteries are discharged lower than 80% during the Time Limited test, the ShPS-24 can calculate the actual capacity of the batteries installed in the ShPS-24 box.

To start the test, please click the **Test** button. To end the test, please click the **Abort** button.

5.2.3 To measure the battery capacity without using commands over RS-485, please:

- 1) Make sure the batteries are charged higher than 80% (indicated by steady LED).
- 2) Turn off ShPS-24 input power.
- 3) When the Battery Low message is received, turn on the input power, and the ShPS-24 will calculate the resulted capacity.

6 Troubleshooting and Repair

Table 4

#	Faults	Causes	Corrective Actions
1	ShHPS-24 failed to be powered on	<ol style="list-style-type: none"> 1. The QF1 circuit breaker failed. 2. Wiring faults. 3. Long time load on the output of the ShPS-24/ 	<ol style="list-style-type: none"> 1. Measure the voltage on mains circuit before and after the QF1 circuit breaker. 2. Repair wiring faults. 3. Power off the ShPS-24 for two or more minutes, and power it on back.
2	ShPS-24 cannot be turned on, when back batteries power supply is used	The battery voltage is lower than 20V	Check the battery voltage. Charge or replace batteries as required,
3	ShPS-24 transmits Battery Test Error message	<ol style="list-style-type: none"> 1. Significantly reduced battery capacity. 2. Battery leads oxidation or loosened battery contacts 	<ol style="list-style-type: none"> 1. Replace batteries. 2. Clean leads; tighten wire connections of the battery
4	ShPS-24 issues the Service Required message	Battery lifetime expired	Replace the batteries and reset the lifetime counter
5	Lost communications between the ShPS-24 and controller	<ol style="list-style-type: none"> 1. Failed connection between the ShPS-24 and controller 2. Wrong connection of transmission path to A and B contacts. 	<ol style="list-style-type: none"> 1. Restore connection; meet the requirements as to 4.2.3 of this manual. 2. Swap the transmission path wires connected to A and B contacts of the RS485 interface.
6	The controller transmits the Communication Lost event	<ol style="list-style-type: none"> 1. Open-circuit failure on the transmission path. 2. The ShPS-24 has turned off the transceiver due to a low battery charge. 	<ol style="list-style-type: none"> 1. Recover connection 2. Take measures to recover mains supply.

7 MANUFACTURER WARRANTY

The manufacturer guarantees that the ShPS-24 box meets technical requirements specified in the manuals if the user follows the instructions for shipment, storage, installation, and usage.

Warranty period is 18 months but no more than 24 months from the manufacturer's date of issue.

In case of any issue related to setting and use of the product, please contact with the technical support: (495) 775-71-55 or e-mail: support@bolid.ru.

When submitting the product for repair, it shall be accompanied with descriptions of possible fault.

Claims shall be submitted to the following address:

NVP BOLID CJSC, Pionerskaya #4, Korolyov city, Moscow region, Russia, 141070.

Phone/fax: (495) 775-71-55 (multiline), 516-93-72.

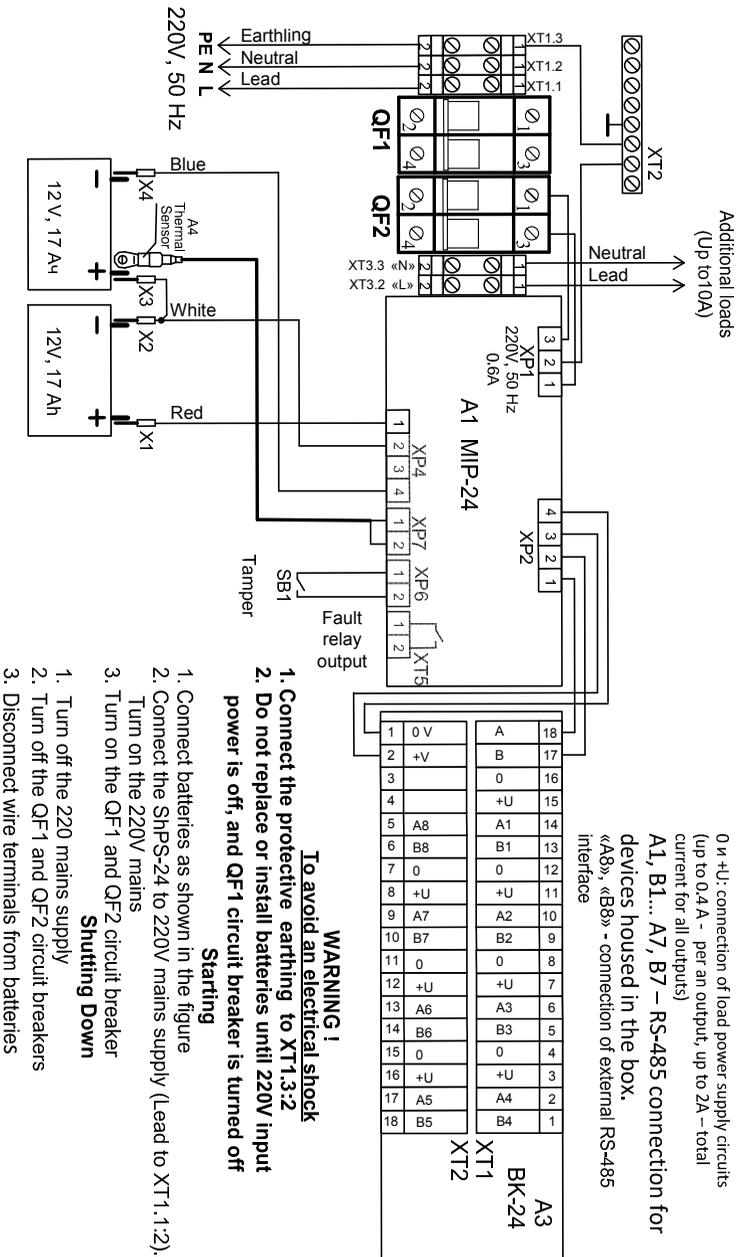
E-mail: info@bolid.ru; Support : support@bolid.ru, <http://bolid.ru>.

8 CERTIFICATION

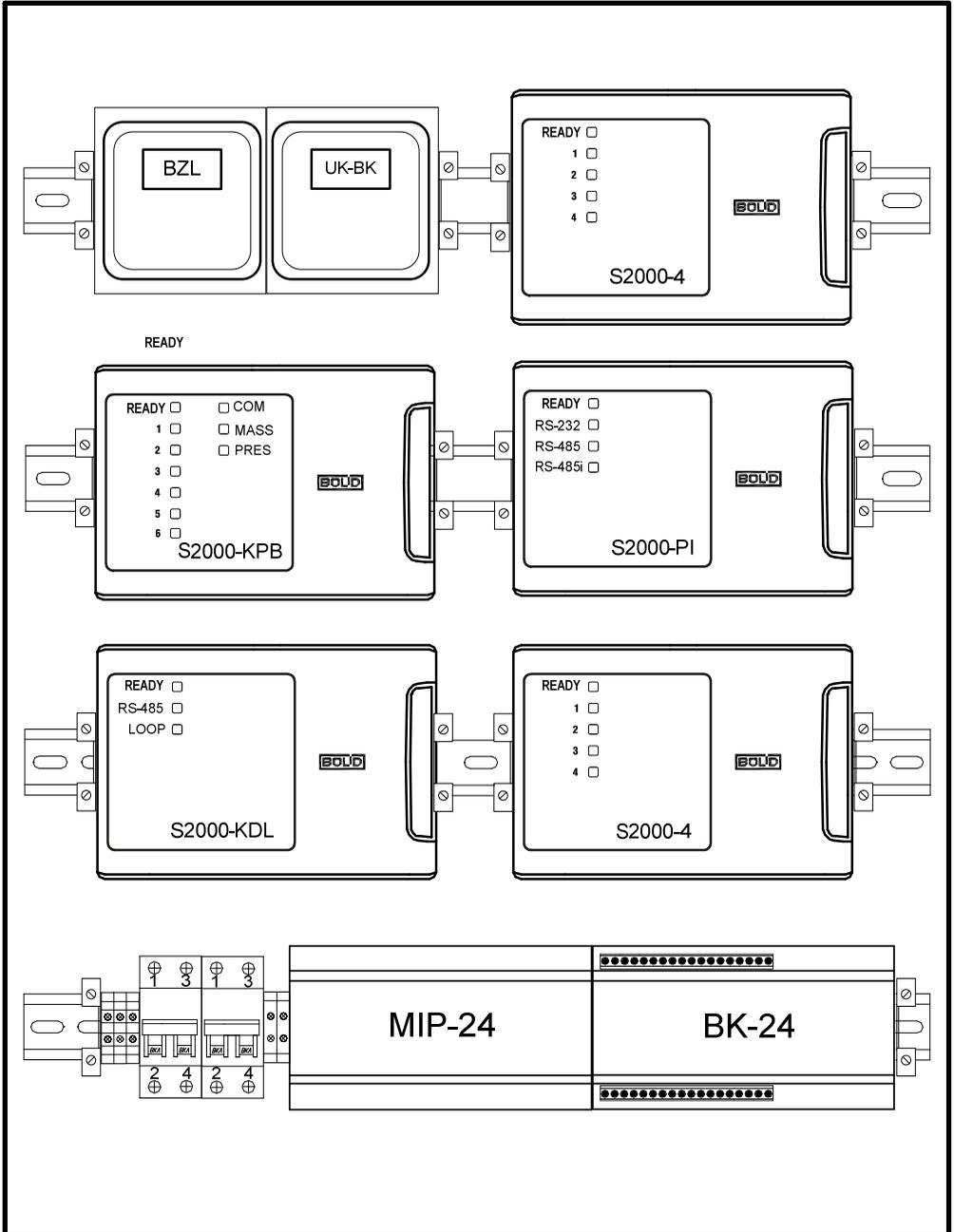
8.1 The ShPS-24 Fire Equipment Mount Box complies with requirements of Technical Regulations on Fire Safety Requirements (Federal Law No. 123-FZ dated July 22, 2008) and has Certificate of Conformity No. C-RU.ИБ01.В.03020.

8.2 The ShPS-24 box meets Customs Union Technical Regulations TP TC 004/2011; TP TC 020/2011. It has certificate of conformity No. TC RU C-RU.ME61.B.00995.

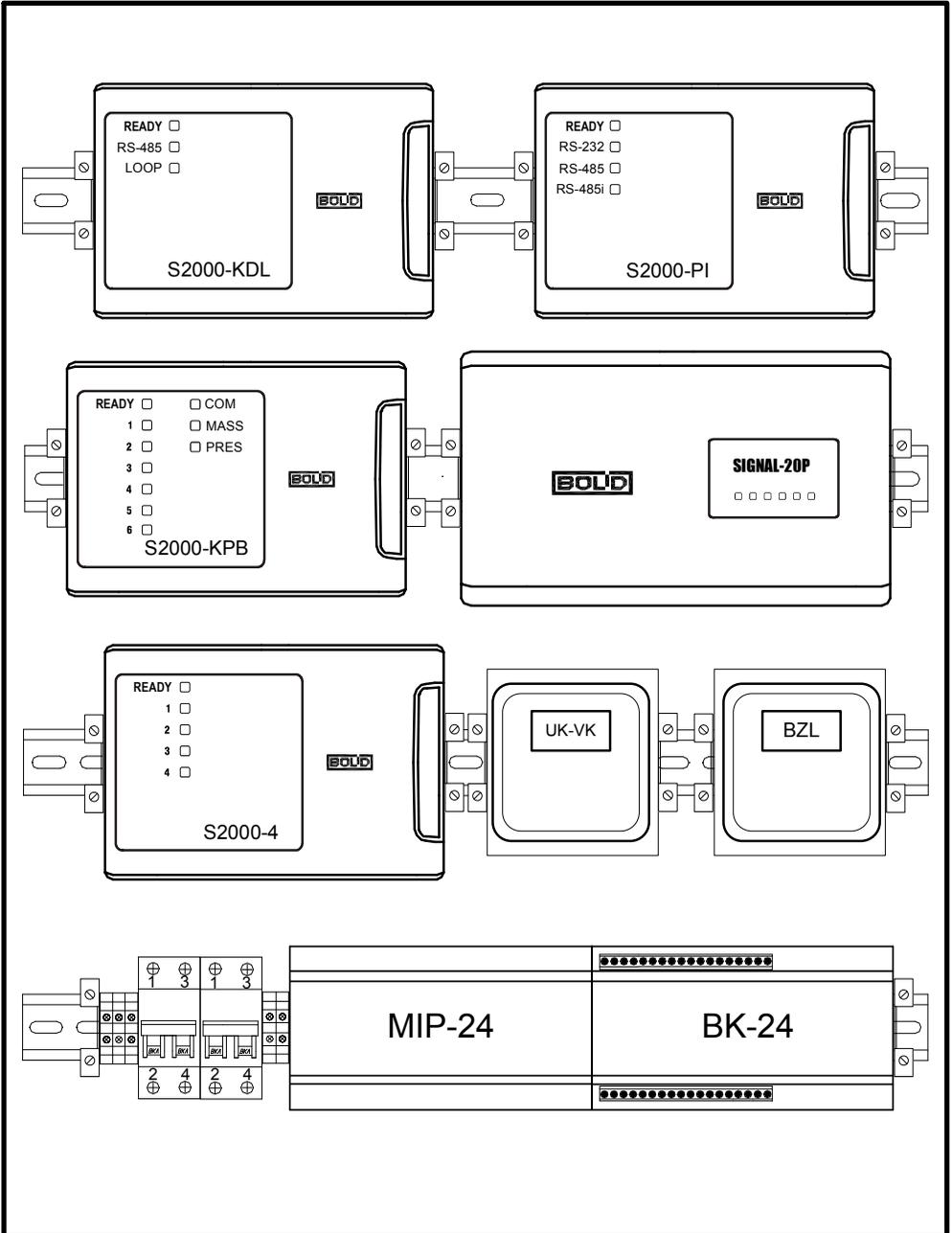
8.3 The ShPS-24 production is certified according to GOST ISO 9001-2011 No. ROSS RU.ИК32.К00153.



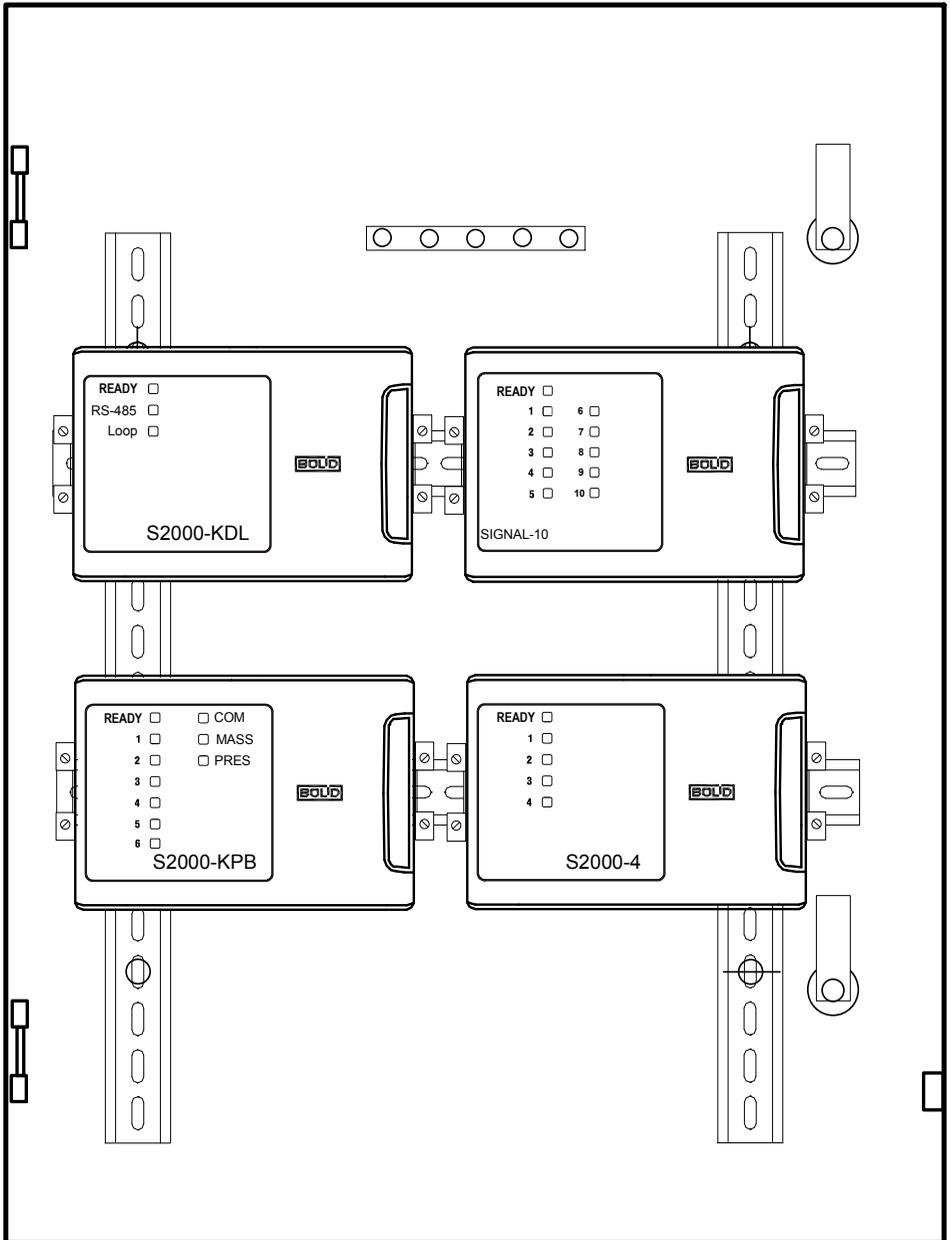
Appendix B (For reference)
Example No. 1 Equipment Layout inside ShPS-24



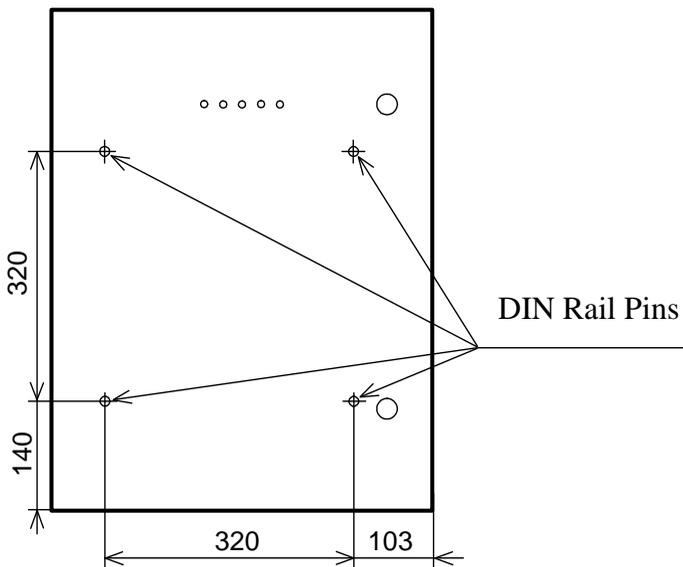
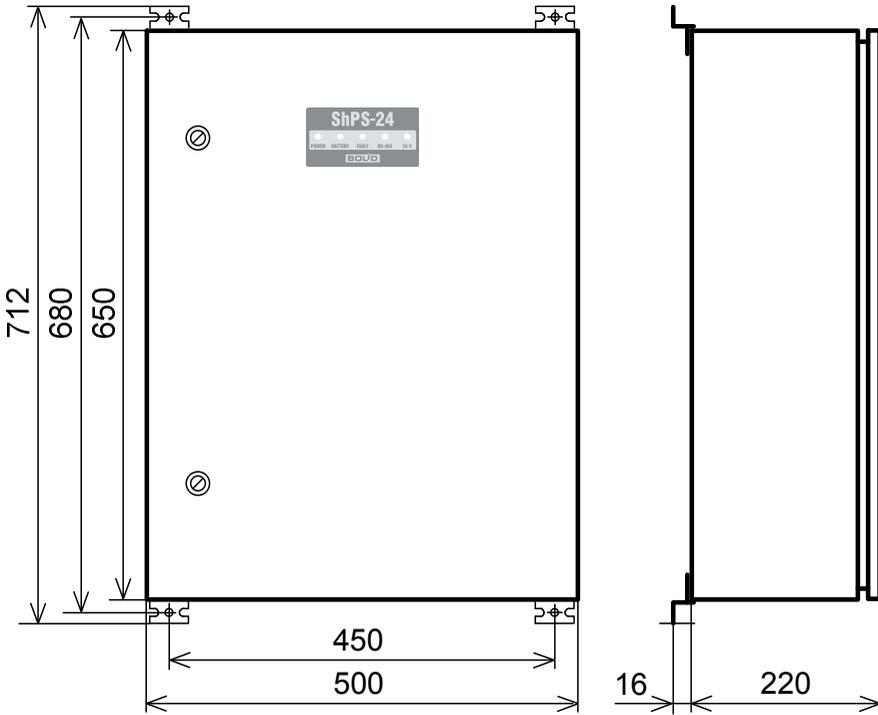
Appendix C (for reference)
Example No 2 Equipment Layout inside ShPS-24



Appendix D (for reference)
Equipment Layout on the door of the ShPS-24 and ShPS-24 ver.02

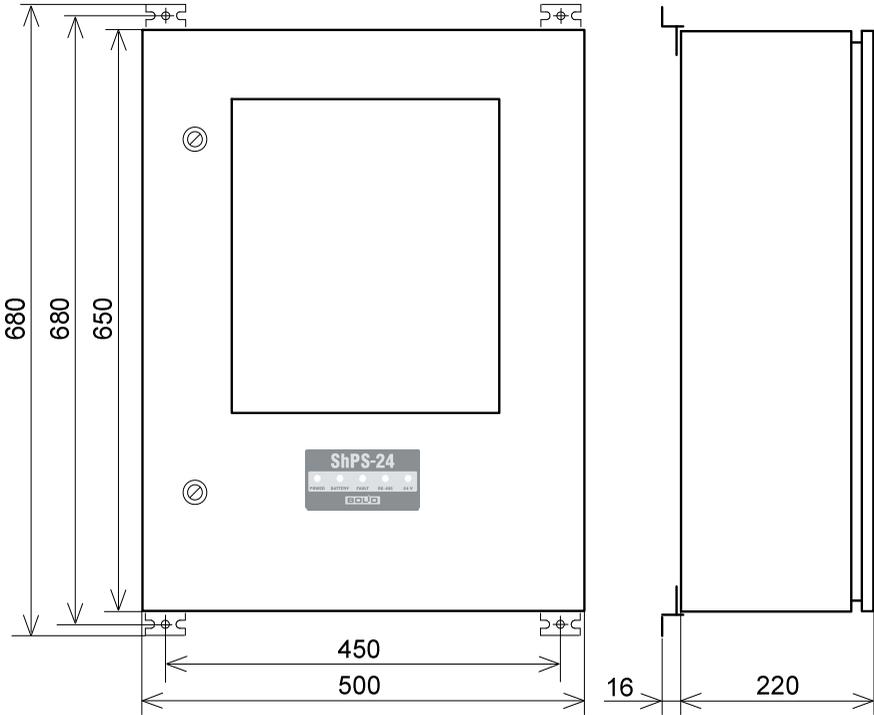


Appendix E
Installation Dimensions for ShPS-24 and ShPS-24 rev.02

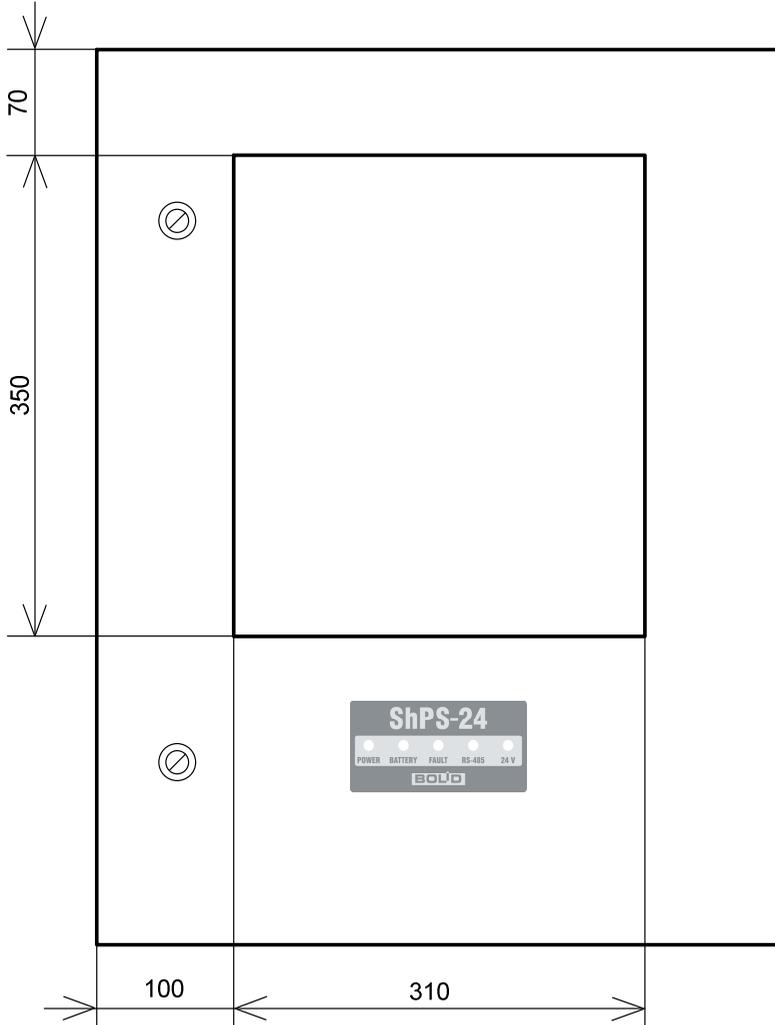


Appendix F

Installation Dimensions of ShPS-24 rev. 01



Appendix G (for information)
ShPS-24 rev 01
Door Window Dimensions and Layout



Appendix H (for reference)

Programming ShPS-24 in UProg

UPROG Address: 127 MIP-24 (ver. 1.00)

File Settings Device Language Help

Event Delays

Mains Restored Event: 4

Mains Failed Event: 4

Battery life left before the Service Required status: 5 Years

Service Required message repeats every: 255 Hours

Parameter	Value
Output Voltage	Uout=26,89V
Output Current	Iout=02,01A
Battery Voltage	Uakk=27,12V
Charger Condition	ЗАРЯД АКБ:63%
Mains Voltage	Усети=218V
Battery Life Counter	5 год 0 мес.
Backup Time	Трезерв=04ч28мин
Battery Capacity	Емкость не изм.

Read Parameters

SSR (maximum monitored 80V voltage and 100mA current)

Control Program: Turn Off If Failed

Relay Activation Time: 255,000

Select relay control options

All parameters but for communications	+
Communications fault	
Output current overload	+
RIP failure (charger, Uout)	+
Battery failure (missing)	+
Mains voltage is lower than 150V or higher than 260V	+
Tamper Alarm *	+

* This event specified time will be increased by 15 seconds

Mains Voltmeter Adjustment

Adjustment values, V: 0

Device

