FIRE ALARM SYSTEM CABINET

SHPS

ИСО 9001

INSTRUCTION MANUAL

1 TECHNICAL DATA

1.1 General

1.1.1 SHPS Fire Alarm System Cabinet (hereinafter referred to as the SHPS or the cabinet) is designed to create a hardware component set for fire and intrusion alarm systems, fixed fire-fighting systems as well as to control technological equipment.

1.1.2 The cabinet is intended to house such Orion system devices as S2000-KDL, S2000-4, S2000-KPB, S2000-SP1, S2000-PI, etc. which cases are to be mounted on a DIN-rail. The cabinet is equipped with its own battery backed 12 V dc power supply unit made based on a RIP-12 RS power supply. The high-voltage circuits ~220 V are protected by a circuit breaker. Also two 12 V, 17 Ah batteries can be installed inside the cabinet (no batteries are included in the standard delivery).

Warning: *Having connected two 12 V ×17 Ah batteries, you should amend the configuration of the RIP-12 RS unit by means of the UProg Configuration Tool. The last version of the* ***«UProg*** *is available at* ***http://bolid.ru****.*

1.1.3 The cabinet is intended to be installed within protected premises for operating 24/7. The cabinet must not be used in aggressive medium or dust condition or in explosion-hazardous premises.

1.1.4 The cabinet can be used at ambient temperatures from minus 10°C to +50°C.

1.2 Specifications

1.2.1 The cabinet is to be powered from a single-phase alternating-current electric network with the rating voltage of (220^{+30}_{-70}) V and the frequency of (50±1) Hz.

1.2.2 The consumed power of the cabinet is 110 VA max.

1.2.3 The rating output voltage is:

- (13.6±0.6) V when powered by mains;
- (9.5…13.5) V when powered from battery.

1.2.4 The rated total load current is 3 A.

1.2.4.1 The number of 12 V dc outputs to connect devices is 6.

1.2.4.2 The maximum current for a 12 V output is 1 A.

1.2.5 The overall dimensions are 600 mm x 400 mm x 240 mm max.

1.2.6 The weight of the cabinet doesn't exceed 25 kg (with batteries).

1.2.7 The value of Ingress Protection Rating is IP40.

1.2.8 The pre-operation time of the built-in power supply after having powered up before operation doesn't exceed 15 s.

1.3 Standard Delivery

Table 1. SHPS Standard Delivery

Item	Qty
SHPS Fire Alarm System Cabinet	1
Instruction Manual	1
Woodscrew	4
Wall Plug 12×60	4
Key 407R	2
Package	1

1.4 Operation

1.4.1 POWER LED indicates whether there is a mains power voltage at the cabinet power input. If the mains power voltage has dropped below 150 V or shut off of the mains power voltage has exceeded 260 V, an AC Power Failed message is sent. When the parameters return to their normal values, an AC POWER RESTORE message is sent.

1.4.2 BAT LED indicates the current condition of the battery:

- The battery is not connected;
- The battery is unhealthy;
- The battery charge.

1.4.3 TROUBLE LED indicates the condition of the power supply. The LED behavior is changed in case of output overcurrent, mains power failures, battery power charger failures; battery internal resistance's having increased the normal value.

1.4.4 RS-485 LED displays the current communication condition.

1.4.5 12V LED displays whether there is power voltage at the 12 V output of the SHPS power supply. If no fault has occurred, 12V LED shows solid light.

1.4.6 To get more information about operating the built-in power supply and operation mode of LEDs, refer to Appendix A "Operation of the RIP-12 RS Board as Part of the SHPS".

2 OPERATION INSTRUCTIONS

2.1 Safety Precautions

2.1.1 The cabinet is connected to supplies energized with the hazardous voltage of 220 V. Please observe your applicable local standards, codes, regulations, and ordinances while mounting and operating the cabinet. Do always shut off mains utility power before mounting, wiring, or maintaining the cabinet. The maintenance staff must be qualified and properly trained.

2.1.2 During operation the cabinet case must be properly grounded.

WARNING: Connecting the mains utility power terminals 220 V to the input terminals of the cabinet please be careful to couple «L», «N», and «PE» wires properly in accordance with the picture located on the internal surface of the door.

2.2 Installation and Preparing for Use

2.2.1 The cabinet is to be mounted on a wall or another structure within the premises at a place protected against atmospheric fallouts, mechanical damage, and unauthorized access.

2.2.2 The cabinet shall be mounted as specified in the project designed based on regulatory documents and approved according to established procedure.

2.2.3 All the wires shall be wired in accordance with your applicable local standards, codes, regulations, and ordinances.

2.2.4 To install the cabinet:

1) Open the cabinet's door.
2) Using the four woodscrews provided attach the cabinet to a wall at a service-friendly height.

3) Connect the cabinet with the mains utility power wires, the interface bus, and the wires to be connected to the devices which will be installed into the cabinet.

4) Mount and connect, observing polarity, one or two backup batteries 12 V × 17 Ah (the second battery can be installed to enlarge the time of backup operation; the red wire should be connected to the positive lead of the battery).

WARNING: By default, a RIP-12 RS is programmed to use a single 12 V × 17 Ah battery. *If you have connected two 12 V × 17 Ah batteries, you should change the RIP-12 RS configuration be means of UProg Configuration Tool. The pane for selecting Two 17 Ah Batteries option in the UProg is shown in Figure 1.*

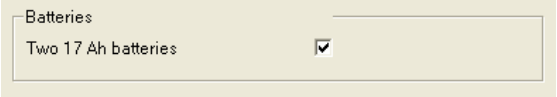


Figure 1. Selecting the Option of Two 12 V ×17 Ah Batteries in UProg.

The last version of UProg Configuration Tool is available at http://bolid.ru.

5) Switch the protective circuit breakers BA1 and to the «On» position.

6) Close the cabinet door.

Note: **The power circuits 220 V («L», «N») as well as ground the circuits should be mounted using copper wires with a cross section at least 1.5 mm^2.**

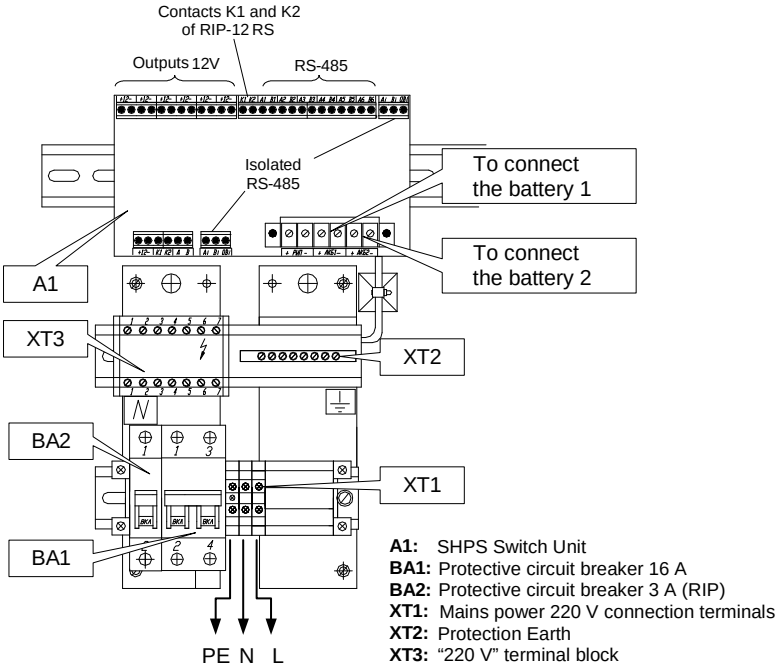


Figure 2. Principal Elements of the SHPS

2.3 Using the SHPS

2.3.1 The cabinet is to be used to arrange closely and to supply power to the Orion system devices or other DIN rail mountable devices installed within the cabinet. An example of using the SHPS is shown in Figure 2.

2.3.2 Devices are installed into the cabinet and connected to the terminals of the SHPS Switch Unit by user himself in accordance with the design drawings for the system in the following way:

- The power supply circuits of the devices are connected to the terminals marked with «+12-»;
- The RS-485 interface bus circuits of the devices are connected to the terminals marked with «A1 B1», «A2 B2»…«A6 B6»;
- If an S2000-PI interface converter is used as a component of the SHPS, the circuit of isolated RS-485 interface is connected to the terminal marked as «Ai Bi OBi»;
- The terminals marked as «K1 K2» duplicate outputs of the relay of the RIP-12 RS board.

Backup batteries are connected using the wires with terminals to the «BAT1» and «BAT2» terminals of SHPS Switch Unit. While connecting, it is necessary to observe polarity: the red wire is connected with the «+» of the battery.

2.3.3 If necessary, you can use **decoupled buses** XT3 with protective housing which are supplied with mains voltage in order to connect other electric devices requiring 220 V.

The terminal block XT2 is intended to connect protective ground circuits.

3 MAINTENANCE

3.1 General

To make sure the SHPS keeps proper operability, it must be inspected by a competent specialist at least annually. The inspection works shall include:

- Visual checking the SHPS for contaminations and mechanical damage;
- Inspecting operability of the cabinet in accordance with Clause 3.2.2 of this Manual;
- Verify security of mounting the cabinet, conditions of connecting wires and contacts.

3.2 Inspecting Operability of the Cabinet

3.2.1 Preparing for Inspection:

а) Check the state of the package and unpack the cabinet;
б) Review the delivery set for compliance with Clause 1.3 of this Manual;
в) Ensure the cabinet case is free from mechanical damage;
г) Ensure there are no foreign particles within the cabinet;
д) Check fastening of the terminal blocks;
е) Review the cabinet number and the production date for compliance which these ones specified in the Instruction Manual.

3.2.2 Operability Inspection:

а) Connect one or two backup batteries 12 V × 17Ah;
б) Apply power to the cabinet and switch the protective circuit breakers (BA1, BA2) to ON position;
в) The indicator POWER shall switch on, inspect the conditions of other indicators;
г) Check the voltage on power outputs of SHPS Switch Unit.

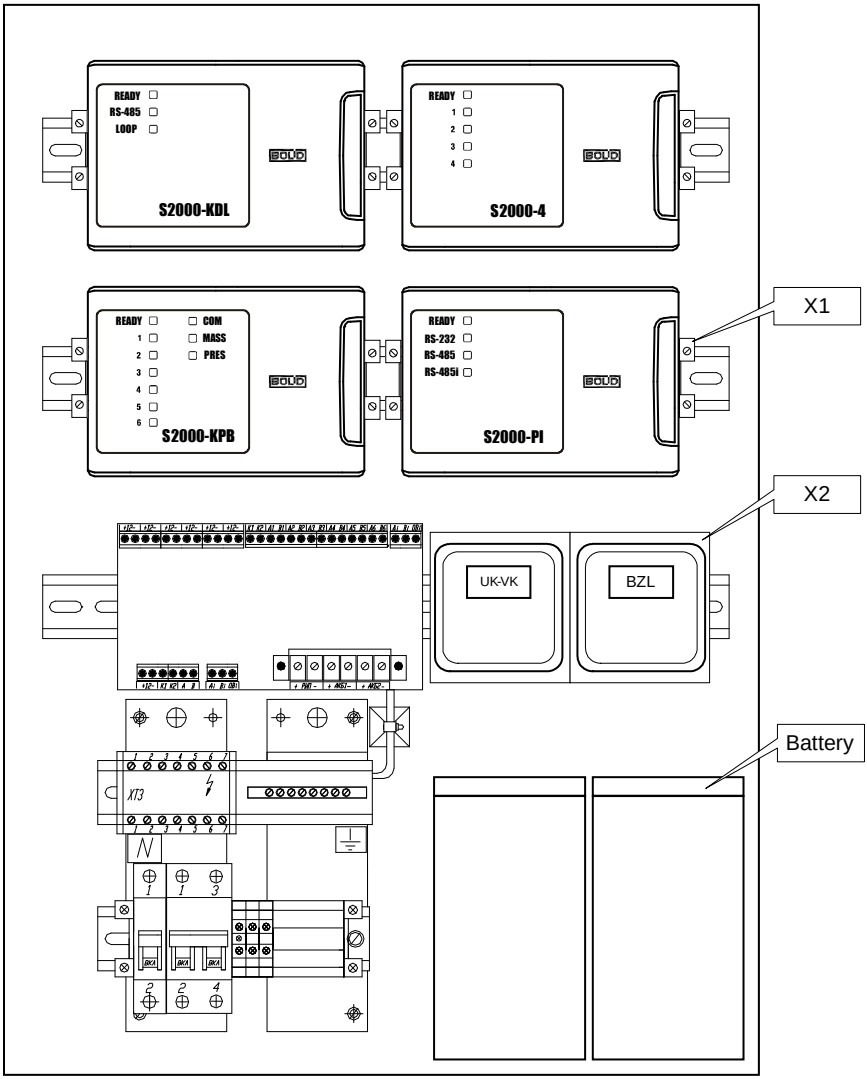
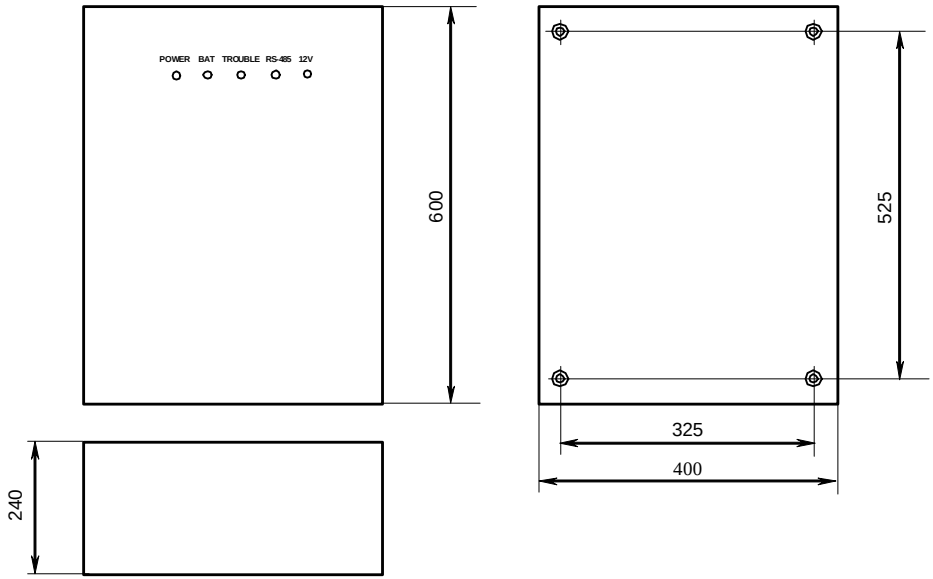


Figure 3. An Example of Arrangement of the SHPS

Note: The following equipment is available on request:

- DIN rail end stops X1 to prevent side-to-side movement of device cases along DIN rails;
- DIN rail holders X2 to mount cases of such devices as UK-VK on DIN rails.
- Backup batteries 12 V × 17Ah (DELTA DTM1217 or similar).

4 OVERALL AND MOUNTING DIMENSIONS



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APPENDIX A

Operation of the RIP-12 RS Board as Part of the SHPS

A.1 TECHNICAL DATA

A.1.1 GENERAL

A.1.1.1 The board of RIP-12 RS power supply (hereinafter referred to as the RIP) is designed to operate as a component of SHPS Fire Alarm System Cabinet.

A.1.1.2 The RIP provides round-the–clock operation with given output parameters and with automatic monitoring and recharging of sealed backup battery (hereinafter referred to as the battery). The RIP also provides disconnecting the battery from the load to avoid its inadmissible discharge.

A.1.1.3 The RIP provides visual indication and sound signaling of current conditions of mains input voltage, of battery charge, missing, or shutting off due to discharge, of short circuits failures or overload at the output.

A.1.1.4 The RIP protects its output against short circuit failures with recovering output voltage automatically after repairing the failures and against overvoltage at its output.

A.1.1.5 The RIP provides protecting the battery connection terminals against short circuit failures with keeping the output voltage steady while being powered from the mains.

A.1.1.6 The RIP provides measuring the mains voltage, the output voltage, the battery voltage, and the output current (load current) (see Note in Clause A.1.2.16).

A.1.1.7 The RIP provides transmitting measured values of voltage and current as well as messages about its states to the network controller (S2000M console or PC with Orion Pro software installed) over the RS-485 interface.

A.1.1.8 The RIP provides output of trouble messages to the remote trouble output – output circuit of its galvanically isolated solid state relay.

A.1.1.9 The RIP provides monitoring of battery conditions and conditions of circuits the battery is connected (by comparing with maximum allowed internal resistance of this circuit).

A.1.2 Specifications

A.1.2.1 The main power supply is the mains utility power 150 V to 250 V, 50 Hz.

A.1.2.2 The backup power supply is a backup battery «Delta» DTM1217 12 V, 17 Ah or similar (with a lifetime at least 5 years).

Attention! By default a RIP-12 RS is set to operate with a single battery 12 V ×17 Ah. *To extend the time of operation in backup mode, two batteries 12 V ×17 Ah can be used simultaneously provided that the configuration of the RIP-12 RS is amended using UProg.*

The last version of **UProg** Device Configuration Tool is available in the Internet at **http://bolid.ru.**

A.1.2.3 The rated output voltage is:

- (13.6±0.6) V while powered from mains;
- (9.5 – 13.5) V while powered from batteries.

A.1.2.4 The rated load current is 3 A.

A.1.2.5 The maximum load current is 4 A (no longer than within 10 min at intervals of one hour). If the output current exceeds 3.5 A, the RIP disables the battery power charger. If the output current exceeds 4 A, the RIP shuts off the output voltage.

A.1.2.6 The maximum AC mains power at rated voltage doesn't exceed 110 WA.

A.1.2.7 The maximum current consumed from the mains doesn't exceed 0.7 A (provided that the minimum mains voltage is 150 V).

A.1.2.8 The DC voltage ripples (peak-to-peak) at rated load current doesn't exceed 120 mV.

A.1.2.9 The battery voltage at which it is disconnected from the load is (10.2±0.6) V.

A.1.2.10 The time of continuous working of the RIP from the fully charged battery at 3 A load current is at least 4 hours at the temperature of 25°C.

A.1.2.11 The time for a discharged battery to be charged completely doesn't exceed 24 hours.

Note: The Values in Clause A.1.2.10 and Clause A.1.2.11 are relating to the case when a single backup battery is in use.

A.1.2.12 The parameters of the remote trouble output (the solid state relay):

- The maximum switched voltage and current are 80 V and 100 mA respectively;
- The maximum resistance of the closed relay circuit is 50 Ohm;
- The maximum leakage current of the open circuit at the voltage of 80 V is 1 microampere.

A.1.2.13 The RIP provides executing the following commands received over the RS-485 interface:

- Assigning a network address;
- Synchronizing the internal clock of the RIP.

A.1.2.14 The RIP transmits over the RS-485 interface the following messages:

- DEVICE RESTART (upon switching on the RIP);
- AC POWER FAILED (the mains voltage has dropped below 150 V or has exceeded 250 V);
- AC ROWER RESTORE (the mains has returned in 150 V to 250 V range);
- OVERCURRENT (the output current of the RIP has exceeded 3.5 A);
- CURRENT RESTORE (the output current of the RIP is lower than 3.5 A);
- CHARGER FAILED (the battery power charger doesn't provide the specified voltage and current to charge the battery properly);
- CHARGER RESTORE (the battery power charger provides the specified voltage and current to charge the battery properly);
- POWER FAILED (the RIP connected to the mains fails to supply power in accordance with Clause A.1.2.3);
- POWER RESTORE (the RIP connected to the mains has just begun to supply power in accordance with Clause A.1.2.3);
- BATTERY FAILED (the battery voltage has dropped below 7 V or no battery is connected);
- BATTERY TEST ERROR (the internal resistance of the battery has exceeded a threshold value; service or replacement is required);
- BATTERY DISCHARGED (the battery voltage has dropped below 11 V due to mains power shut off);
- SERVICE REQUIRED (the battery lifetime is over and the battery must be replaced);
- BATTERY RESTORE (the battery voltage has exceeded 10 V, so the battery can be charged);
- TAMPER ALARM (the cabinet has been open);
- TAMPER RESTORE (the cabinet has been closed);
- POWER OFF (The RIP has shut off the output voltage due to mains power outage and battery discharge);
- POWER ON (The RIP has applied power to its output after mains power was reapplied).

If there was a loss of communication with the network controller over the RS-485 interface in the moment of generation of a message, the message is stored in the non-volatile memory of the RIP and

will be sent to the network controller on repairing of the communications with specifying the actual time when the message was occurred.

The RIP can store up to 20 events in its non-volatile memory.

A.1.2.15 The RIP provides programming the following parameters stored in the RIP's non-volatile memory:

Table A.1

Parameter	Description	Range	Factory Value
Network Address	The address of the device in the RS-485 interface bus	1…127	127
AC POWER FAILED Message Delay	A pause for transmission of an AC Power Failed event over the RS-485 interface	3 s…255 s	3 s
AC POWER RESTORE Message Delay	A pause for transmission of an AC Power Restore event over the RS-485 interface	3 s…255 s	3 s

The programmable parameters for the trouble relay are the following:

Table A.2

Parameter	Description	Range	Factory Value
Executive Program	A program which defines the behavior of the relay after applying power to or restarting the RIP	Switch On Switch Off Switch On for a Time Switch Off for a Time	Switch Off
Relay Active Time	The "Time" value in third and fourth executive programs (see above)	0 s…255 s	255 s
Relay Activation Events	The list of troubles which can activate the relay triggering remote trouble indication	All the events except Com Fault RS-485 Communication fault Output Overcurrent DC of charger fault Battery fault / No Battery AC voltage is out of 150 V to 250 V Tampering	All the events except RS-485 communication fault

A.1.2.16 The RIP provides measuring and transmitting the following measured values on request to the network controller:

1) The mains voltage in the range of (150…255) V ac;
2) The battery value in the range of (8…14.5) V dc;
3) The output voltage of the RIP in the range of (8…14.5) V dc;
4) The output current (load current) in the range of (0.1...4) A.

Note: *The measured values are estimation values; and neither absolute nor relative accuracy is normalized. To provide precise measurement, certified measurement appliances must be used.*

WARNING: ***To provide performance specified above, the RIP must be operated with a connected non-faulty battery. If a battery is connected and the RIP and the RIP transmits battery faults messages during operation, then the battery must be replaced immediately. Anyway, a battery must be replaced when it is of 5 year age.***

A.2 OPERATION INSTRUCTIONS

A.2.1 Connecting Batteries to the RIP

A.2.1.1 Connect the battery to the terminals observing polarity (the red wire is to be connected to the positive lead of the battery). If a single battery is installed, then disconnect the unused wires for connecting the second battery from the switch board or take measures to prevent coupling of unused wires between each other and with the SHPS enclosure.

A.2.1.2 If you need to provide a maximum operation time in case of a mains failure, connect a second backup battery changing the RIP configuration by means of UProg. The last version of UProg Configuration Tool can be downloaded for free at the address of **http://bolid.ru**. The pane for selecting to use two batteries in UProg is shown in Figure 1.

Note: If two backup batteries are connected, the charge time increases up to 48 hours.

A.2.2 Preparing for Use

A.2.2.1 Change the network address of the RIP. This address must not be the same as the address of another device connected to the same RS-485 interface bus as the RIP (i.e. this address must be unique; the factory value of the address is 127).

A.2.2.2 If necessary, in accordance with the specific operation of the RIP, change other configuration parameters (see Table A.1, Table A.2).

To change configuration parameters of the RIP, please use an IBM compatible personal computer. Configuration parameters of the RIP are to be set by means of the program **uprog.exe**, while the RIP are to be connected to a COM port the PC by means one of Bolid manufactured RS-232/RS-485 interface converters such as PI-GR, S2000-PI, or an S2000 console of versions 1.20+ in the mode of interface converter.

The last version of UProg device configuration tool in available in the Internet at the address of **http://bolid.ru.**

A.2.2.3 With the help of the tamper switch of the RIP you can:

- **To disable the sounder**: Press the tamper switch three times for a short time and then once for a long time (● ● ● ▬);
  Note: A long time pressing («▬») means holding the tamper switch pressed for at least 1.5 s but no more than 3 s. A short time pressing («●») means holding the tamper switch pressed for a time between 0.1 s and 0.5 s. A pause between pressings should be no less than 0.1 s and no more than 1 s.
- **To reset the network address** (to set the factory value of 127): (▬ ▬ ▬ ●);
- **To reset the battery age counter and the measured battery capacity** (on replacing the battery): (● ● ● ▬ ▬).

A.2.2.4 If the network controller is connected to another power supply, please couple the circuits "0 V" of the RIP and of the network controller.

A.2.2.5 Unless the RIP is the first of the last device in the RS-495 interface bus, remove the jumper from the XP1 terminal block located at the RIP board near the "A" and "B" interface output contacts.

A.2.3 RIP Operation

A.2.3.1 After powering up, the microcontrollers checks whether a battery is connected and the state of communications over the RS-485 interface. If the battery has been detected and is charged (the battery voltage exceeds 13.2 V) BAT LED is on. If the battery is not charged, the RIP charges it up to the required level of voltage, BAT LED shutting off for a short time every 3 s. If no battery is connected (or if the battery voltage is below 7 V), BAT LED is off. If the battery is unhealthy (the battery is to be replaced), the sounder turns on in interrupted mode for 10 seconds while BAT LED and TROUBLE LED turns on twice per second. If the battery charger has failed (within 15 minutes since the charger failed) the RIP transmits a CHARGER FAILED message and indicates the trouble as shown in Table A.3.

In operation the RIP periodically inspects:

- Presence of a battery (at least once per a minute);
- Condition of the battery (at least once per 15 minutes);
- Proper operability of the power charger (at least once per 15 minutes).

A.2.3.2 In case of an outage of mains power, the backup batteries are activated to supply power to the load circuit; an interrupted sound signal goes off warning about discharge of the batteries; POWER LED and the indicator on the board are off; 12 V LED is on. The RIP transmits a POWER FAILED message after a programmed delay (see Table A.1, Clause A.2).

A.2.3.3 If the battery voltage has dropped to 11 V, the RIP begins to play interrupted sounds 10 to 15 times more frequently. The RIP transmits a BATTERY FAILED message. Immediate actions must be taken to provide mains power voltage.

A.2.3.4 If the battery voltage has dropped to 10 V, the RIP shuts the batteries down from the load to avoid their deep discharge. The 12 V LED is off; the sounder is on continuously within two first hours. The RIP transmits a POWER OFF message. After two hours the sounder turns on for a short time every 10 s.

WARNING!

If you expect a delay in powering from mains 220 V for more than 10 days then to avoid deep discharge of the battery disconnect it from the RIP board.

The sounder can be disabled by pressing the tamper switch (see Clause A.2.2.3*). The sounder can be activated again by repeating presses on the tamper switch.*

A.2.3.5 If mains power is off and batteries are charged more than 80 % of their available capacity, the RIP runs the procedure of measuring the capacity of the batteries. If the batteries are discharged below 11 V, the RIP estimates the capacity of the batteries, the operation time in the backup mode, and an approximate time of measuring battery capacity.

If the battery charge falls to 80 % of their available capacity or less, the procedure of measuring the capacity is not run.

If during an operation time of the RIP the battery capacity was not been measured, then on receiving a request for the time of operation in the backup mode and the time for measuring the battery capacity the RIP will estimate the time based on the battery capacity of 17 Ah and the current value of the output current (while operating with a single battery).

If an inadmissible overcurrent of the load circuit or a short circuit failure of the output circuit of the RIP has happened, the RIP applies DC voltage to the output for a short time every 10 seconds until the trouble is repaired. TROUBLE indicator turns on twice per second, the sounder sounds in interrupted mode. The RIP automatically puts itself into normal operation within 15 seconds after having the malfunction repaired.

Behavior of the indicators and the sounder in various conditions are shown in Table A.3.

Following is the list of notations used in Table A.3.

«+»: Switched on

«—»: Switched off

«+/— 1 Hz»: Switched on and off alternately every second

«+/— 2 Hz»: Switched on and off alternately twice per second

«+/— 4 Hz»: Switched on and off alternately four times per second

«ON/0.4 s 3 times»: Turns on every 0.4 seconds three times

«OFF/5 s»: Turns off every 5 seconds

«ON/10s»: Turns on every 10 seconds

«ON/5s»: Turns on every 5 seconds

«ON/2s»: Turns on every 2 seconds

«ON/1s»: Turns on every second

Table A.3

RIP Conditions	Indicators					Internal Sounder
	POWER	BAT	TROUBLE	RS-485	12 V	
	green	*green*	*yellow*	*green*	*green*	
1. Mains utility power is starting up, no battery is connected	+	—	—	+ [1]	+	ON/0.4s 3 times
2. Normal mains power, the battery is not charged	+	OFF/3s	—	+ [1]	+	—
3. Normal mains power, the battery is charged	+	+	—	+ [1]	+	—
4. DC output overcurrent (the battery is available)	+	+	+/— 2 Hz	+ [1]	ON/10s	ON/0.8s
5. Mains power is disabled, the battery voltage exceeds 11 V	—	+	—	+ [1]	+	ON/5s
6. Mains power is disabled, the battery voltage has dropped below 11 V	—	+	—	+ [1]	+	ON/0.4s
7. Mains power is disabled, the battery voltage has dropped below 10.2 V (the first two hours)	—	+/— 1 Hz	—	+ [1]	—	+
8. Mains power is shut down, the battery voltage has dropped below 10.2 V (upon expiration of two hours)	—	+/— 1 Hz	—	—	—	ON/10s
9. Mains power voltage has dropped below 150 V or has exceeded 260 V (provided that the battery is available)	+/— 1 Hz	+	+/— 1 Hz	+ [1]	+	According to Clauses 5 to 8
10. Dead battery (must be replaced)	+	+/— 2 Hz	+/— 2 Hz	+ [1]	+	5 beeps
11. Battery charger fault	+	+/— 4 Hz	+/— 4 Hz	+ [1]	+	ON/0.8s
12. Output overvoltage	+/— 1 Hz	+/— 1 Hz	+/— 1 Hz	+/— 1 Hz	—	—

[1] In case of normal communication over the RS-485 interface. In case of a communication loss this one is off. If the communications over the RS-485 interface was established but was broken during operation, then after elapsing 30 s since the loss RS-485 LED flashes once per second.

A.2.3.6 To request for a condition of the RIP-12 RS from the S2000M console (See S2000M User's Manual):

ENTER CODE:_	Enter your PIN code.
▲▼5 REQUEST INFO	Select REQUEST INFO by «▶» or «◀» console button and press «ENT», or use «5» console button as a hot key.
▲▼51 ZONE STATE	Select ZONE STATE by «▶» or «◀» console button and press «ENT», or press «1» console button as a hot key.
ADDRESS:_	Enter the network address of the RIP (in the range of 1 to 127) or select its valid value by «▶ and «◀» console buttons and press «ENT».
ENTER LOOP#:_	Enter the zone number (loop number) in accordance with the parameter to be requested or select the proper value by «▶» and «◀» console buttons and press «ENT».

The RIP responds to remote condition requests from the console by transmitting measured parameters of various zones which are defined as follows:

LP 0: Tamper switch
LP 1: DC output voltage
LP 2: DC output current
LP 3: Battery output voltage
LP 4: Battery power charger
LP 5: AC input voltage

A.2.3.7 To receive measured values of voltage and current (see Clause 2.2.3.6 of the S2000M Manual):

ENTER CODE:_	Enter your PIN code.
▲▼5 REQUEST INFO	Select REQUEST INFO command by «▶» and «◀» buttons and press «ENT» or use «5» console button as the hot key.
▲▼52 ZONE ADC	Select ZONE ADC command by «▶» and «◀» console buttons and press «ENT» or use «2» console button as the hot key.
ADDRESS:_	Enter the network address of the RIP (in the range of 1 to 127) or select the valid value by «▶» and «◀» buttons and press «ENT».
ENTER LOOP#:_	Type the zone number (or LOOP#) in accordance with the value to be requested or select the valid value by «▶» and «◀» buttons and press «ENT».

The data are given as a text string and specific ADC values:

0: None
1: Uout = 8…14.5V **(ADC 114…208)**
2: Iout = 0.1…4A **(ADC 5…204)**
3: Ubat = 8…14.5V **(ADC 114…208)**
4: _NORM_ (for the battery charger)
5: Uin =150…260V **(ADC 139…0)**

A.3 MAINTENANCE

A.3.1 To make sure the RIP keeps reliability and proper operation conditions, inspect it at least annually. The maintenance operations should be carried out by a maintaining specialist. This work includes:

1) Checking the RIP for contaminations and mechanical damage;
2) Measuring of the output voltage in accordance with Clause A.1.2.3 of this Manual;
3) Inspection of operation of the indicators and the sounder of the RIP in accordance with Table A.3 of this Manual;
4) Verifying the RIP for secure mounting, wire conditions, and contact conditions.

A.3.2 Measuring Capacity of the Battery Installed in the RIP.

A.3.2.1 To measure capacity of the battery installed within the RIP, the battery must be charged more than 80%.

Note: If the battery charge is below 80%, the RIP doesn't measure capacity of the batteries installed into it.

A.3.2.2 To measure the battery capacity using Orion Pro software, run Monitor and click on the RIP icon on the map by left or right mouse button. Then select the string marked by the sign  in the context menu (this string contains the address and the name of the RIP).

Note: ***The icon of the RIP must be added on the map before measuring the capacity of the batteries.***

Next, when the RIP information window has been open select Capacity Test.

The panel for testing batteries shall appear.

Then, select the way for testing:

1. *No Time Limitations:* The test on completing which the RIP transmits measured value of the capacity of the batteries. The estimated time of test duration is shown in the information window. The test will be completed automatically.

Note: ***The duration of the test depends on the value of the load current of the RIP.***

2. *Test Duration*: The test will be completed after elapsing of the time specified in the field. This test is recommended to be performed for estimation of RIP operability in the backup mode for the given time. If, during the test, the battery is more than 80% discharged, the RIP will estimate the real capacity of the battery.

To start the test, push the button Test. If you then press Cancel, the test will be aborted.

A.3.2.3 To measure the capacity value of the RIP batteries without sending commands over the RS-485 interface, do the following:

1) Check if the batteries are charged more than 80 % (BAT LED shows solid light);
2) Turn off the mains power of the RIP;
3) A BATTERY FAILED message having been received, turn on the mains, and the RIP will estimate the found capacity value of the batteries.

A.4 TROUBLESHOOTING

Question	Reasons	Corrective Measures
The RIP-12 is not switching on when connected to the mains	1. The protective circuit breaker BA 2 is off or out of order 2. Faulty wiring 3. A long-term overload at the RIP output	1. Switch on or replace the protective circuit breaker BA 2 2. Repair electric wiring 3. Shut off the RIP from the mains for at least 2 minutes, then switch on again
The RIP-12 is not switching on when connected to the backup battery	The battery voltage is below 10 V	Measure the battery voltage, charge or replace the battery
The RIP-12 has sent a BATTERY FAILED message	1. The battery is old or dead. 2. The battery leads are corroded or the connection between the battery and wire terminals is loosened	1. Replace the battery. 2. Scrape off the corrosion; connect the battery with the wire terminals properly
Communication between the RIP-12 RS and the network controller has been lost	1. The RIP is disconnected from the network controller. 2. The communication line is improperly connected to the A and B contacts of the interface bus	1. Repair the connection; ensure the requirement of Clauses A.2.2.4 and A.2.2.5 of this manual is met. 2. Reverse the wires which are connected with A and B contacts of the RS-485 interface bus