

# BATTERY BACKED POWER SUPPLY

## RIP-12 mod.51

(RIP-12-3/17P1-R-RS)

ICO 9001



### INSTRUCTION MANUAL

#### 1 TECHNICAL DATA

##### 1.1 General

1.1.1 The battery backed power supply RIP-12 mod.51 (RIP-12-3/17P1-R-RS) (hereinafter referred to as the RIP) is designed to provide continuous operating power to a group of safety and security equipment, detectors and control and indicating equipment of a fire alarm system, access control equipment, and other devices that require 12 Volts of dc.

1.1.2 The RIP provides round-the-clock operation with specified output parameters and automatic monitoring and recharging of the sealed backup battery (hereinafter referred to as the battery). The RIP provides shutting off the battery from a load to avoid its unacceptable discharge.

1.1.3 The RIP provides light and sound indication of current conditions, including conditions of mains power, the battery charge, missed battery, shutting the battery off in case of its discharge, a short circuit failure, or an overload of the output.

1.1.4 The RIP provides protecting its output against overvoltage and short circuit failures with recovering output voltage automatically after repairing the failures.

1.1.5 The RIP provides protection against short circuit failures of battery leads keeping the output voltage if the RIP operates from mains power.

1.1.6 The RIP provides measuring mains voltage, output voltage, battery voltage, and output current (load current) (see Section 1.2.19).

1.1.7 The RIP provides transmitting measured values of voltage and current as well as messages about current conditions to the network controller (the connected S2000M panel or the connected PC with installed Orion Pro software) via the RS-485 interface.

1.1.8 The RIP also provides sending trouble messages to the output circuit of its solid state relay with galvanic isolation.

1.1.9 The RIP provides monitoring battery conditions and their connecting circuits (by comparing with maximum admissible internal resistance of these circuits).

1.1.10 The RIP should be operated at places protected against atmospheric fallouts and mechanical damage.

1.1.11 The RIP is designed for operating temperatures minus 10°C to +40°C and relative humidity up to 90 % at +25°C.

1.1.12 According to the resistance to mechanical shocks the RIP corresponds to the LX group in accordance with Russian Standard ГОСТ 12997-84 – vibration loads in the frequency range from 1 to 35 Hz at maximum acceleration of 4.9 m/s<sup>2</sup> (0.5 g).

## 1.2 Specifications

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

1.2.2 The backup power supply is a battery Delta DTM1217 (12 V, 17 Ah) or similar with expected lifetime of no less than 5 years.

The battery shall be marked with its type and a date of production (or a specification code for the date of production).

*Note: The RIP is supplied with no battery*

1.2.3 The rated output voltage is:

- (13.6±0.6) V in case of powering by mains power;
- (9.5 ... 13.5) V in case of powering by batteries.

1.2.4 The rated load current is 3 A.

1.2.5 The maximum load current is 4 A (for short-duration periods of about 10 minutes once per an hour, in case of normal mains power and operative battery). When an output current value exceeds 3.5 A the RIP disables the battery power charger. If an output current value exceeds 4 A the RIP shuts off output voltage.

1.2.6 The maximum power consumed from the mains at 220 V voltage and rated load current is 120 V·A.

1.2.7 The maximum consumed input current at 150 V and rated load current doesn't exceed 0.7 A.

1.2.8 The current consumed by the RIP itself from the battery doesn't exceed 40 mA.

1.2.9 Ripples of the output voltage (peak-to-peak) at normal load current don't exceed 0.12 V (Class VR1 according to GOST P 51179-98).

1.2.10 The low battery shutdown voltage is (10.2±0.6) V.

1.2.11 The backup operating time of the RIP in case of fully charged battery is at least 4 hours if the load current is 3 A and the ambient temperature is +25°C.

1.2.12 The time of full charging of the discharged battery doesn't exceed 48 hours.

1.2.13 The pre-operation time of the RIP after its powering up doesn't exceed 6 s.

1.2.14 The parameters of remote trouble output (solid state relay) are as follows:

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

1.2.15 The RIP provides monitoring against tampering its case by means of a tamper switch which contacts are closed when the RIP cover is closed and are open when the RIP case is open.

1.2.16 The RIP provides executing the following commands received via the RS-485 interface:

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

1.2.17 The RIP sends the following messages over the RS-485 interface:

- DEVICE RESTART (on turning on the RIP power);
- AC POWER FAILED (input AC voltage is less than 150 V or higher than 250 V);
- AC POWER RESTORED (input AC voltage has returned to a normal value between 150 V and 250 V);
- OVERCURRENT (the output current of the RIP has exceeded 3.5 A);
- CURRENT RESTORED (the output current of the RIP has dropped below 3.5 A);
- CHARGER FAILED (the battery power charger doesn't provide the specified current and voltage values to power the battery properly);
- CHARGER RESTORED (the battery power charger provides the specified current and voltage values to power the battery properly);

- POWER FAILED (the RIP fails to supply power in accordance with Section 1.2.3 when connected to the live AC);
- POWER RESTORED (when connected to the live AC, the RIP supplies power in accordance with Section 1.2.3);
- BATTERY FAILED (the battery voltage is below 7 V or there is no battery connected);
- BATTERY TEST ERROR (the internal resistance of the battery has exceeded an admissible limit value – the battery must be replaced or repaired, see Section 3 of Table 3);
- BATTERY DISCHARGE (in case of an AC failure the battery voltage has dropped below 11 V);
- SERVICE REQUIRED (the battery age has exceeded the programmed value; the battery must be replaced);
- BATTERY RESTORED (the battery voltage has exceeded 10 V; the battery can be charged);
- TAMPER ALARM (the RIP case has been open);
- TAMPER RESTORED (the RIP case has been closed);
- POWER OFF (the RIP has shut down its output power in case of mains failure and discharged battery).
- POWER ON (The RIP has started providing output voltage on mains voltage having applied to the RIP).

In case of a loss of communication with the network controller over the RS-485 interface at the moment of generating a message, the message is to be stored in the non-volatile memory of the RIP and will be transmitted on restoring communication along with the actual date of the event.

The capacity of the buffer in the RIP non-volatile memory is 95 events.

1.2.18 The RIP provides programming the following parameters stored in its non-volatile memory (see Appendix A):

**Table 1**

| Parameter                                  | Description   | Range          | Factory Value |
|--|---|----------------|---------------|
| 1 Network Address                          | The unique number of the RIP within the address space of the network controller   | 1...127        | 127           |
| 2 AC POWER FAILED Message Delay            | The time to delay transmission of this message when the mains power voltage has dropped below 150 V or has exceeded 250 V | 4...255 s      | 4 s           |
| 3 AC POWER RESTORED Message Delay          | The time to delay transmission of this message when the mains power voltage has returned to be within the normal range    | 4...255 s      | 4 s           |
| 4 Battery Age for Sending SERVICE REQUIRED | The battery age counter on elapsing which the RIP transmits SERVICE REQUIRED messages                                     | 1...7 years    | 5 years       |
| 5 Repeat SERVICE REQUIRED Every            | The time after elapsing which SERVICE REQUIRED messages will be repeated in case of the battery age counter has finished  | 1...255 hours* | 255 hours     |

\* If this parameter is set to zero, the event is to be sent once.

Programmed parameters of the trouble relay are as follows:

**Table 2**

| Parameter                 | Description   | Value   | Factory Value                                |
|---------------------------|---|---|--|
| 1 Executive Program       | The program to control the relay which is to be executed after powering the RIP on or resetting it  | Switch On<br>Switch Off<br>Switch On for a Time<br>Switch Off for a Time  | Switch Off                                   |
| 2 Activation Time         | The 'Time' value for the third and fourth executive program (see above)                             | 0...255 s   | 255 s  |
| 3 Relay Activation Events | The list of trouble events which can activate the relay to trigger remote indication of the trouble | All except RS-485 com. fault<br>RS-485 communication fault<br>Output overcurrent<br>DC or charger fault<br>Trouble/missing of batteries<br>AC voltage is out of 150-250 V<br>Tampering the case | All events except RS-485 communication fault |

1.2.19 The RIP provides measuring the following values and transmitting the measured values on a request of the network controller:

- 1) AC voltage in the range of (150...255) V;
- 2) Battery voltage in the range of (8...14.5) V DC;
- 3) Output voltage in the range of (8...14.5) V DC;
- 4) Output current (load current) in the range of (0.1...4) A.

**Note:** The engineers tried to provide high precision of measurements but the values measured by the RIP are only the estimated ones; neither absolute nor relative error of measurements is normalized. Please use certified instruments for precise measurements.

1.2.20 The RIP is equipped with a tamper switch which contacts are closed when the RIP cover is closed.

1.2.21 The overall dimensions of the power supply are no more than 230 mm × 320 mm × 110 mm.

1.2.22 The weight of the power supply along with the batteries doesn't exceed 7 kg.

1.2.23 The RIP provides immunity to electromagnetic interference of the third severity level according to Russian Standard ГOCT P 53325-2009.

1.2.24 Radio disturbances from the RIP operation do not exceed the values specified in ГOCT P 53325-2009.

1.2.25 The insulating strength of the live parts of the RIP is at least 1,500 V (50 Hz) between circuits connected to mains 220 V and any circuits not connected with the mains.

1.2.26 The electrical insulation resistance between circuits mentioned above is at least 20 mega ohms (in normal conditions in accordance with Section 2.16.6 of ГOCT 12997-84).

1.2.27 The average lifetime of the RIP is at least 10 years provided that the battery will be changed no less than once per 5 years.

1.2.28 The RIP is designed to provide its fire safety while emergency operating and on violations of operation rules in accordance with ГOCT 12.1.004-91.

1.2.29 The ingress protection rating of the RIP is IP30 in accordance with ГOCT 14254-96.

1.2.30 According to the content of precious materials the product does not require accounting for storage, writing-off, and/or disposal.

### **1.3 Standard Delivery**

- |   |          |
|---|----------|
| 1) Battery Backed Power Supply                                      | - 1 pc.  |
| 2) Instruction Manual   | - 1 pc.  |
| 3) AC Fuse Littelfuse 218002<br>(5×20 mm, 2 A, 250 V, T) or similar | - 1 pc.  |
| 4) Woodscrew  | - 4 pcs. |
| 5) Wall Plug 8×40 S   | - 4 pcs. |
| 6) Grommet GM-3   | - 2 pcs. |
| 7) Package  | - 1 pc.  |

*Note: No battery is included into the standard delivery*

## **2 OPERATIONAL INSTRUCTIONS**

### **2.1 Safety Precaution**

2.1.1 The current carrying circuits connected with mains power 220 V are a source of potential hazard. These circuits are covered by a protective housing on the RIP printed circuit board.

2.1.2 Please follow the safety precautions:

- 1) Be sure the AC fuse is operable and its amperage is valid in accordance with the specification in this manual;
- 2) Do always shut off mains utility power before opening the RIP;
- 3) Never remove the protective housing.

2.1.3 Do always shut off mains utility power before mounting, wiring, and maintaining the RIP.

2.1.4 Only qualified staff certified with the third or higher safety qualification level can mount and maintain the RIP.

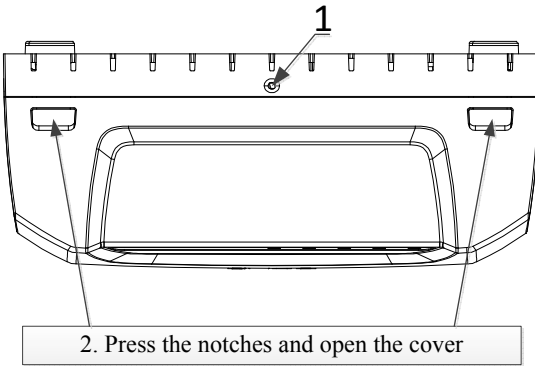
### **2.2 Mounting and Getting Started**

2.2.1 The RIP can be attached to a wall or another construction of the protected premises at a place protected against atmospheric fallouts, mechanical damage, and unauthorized access.

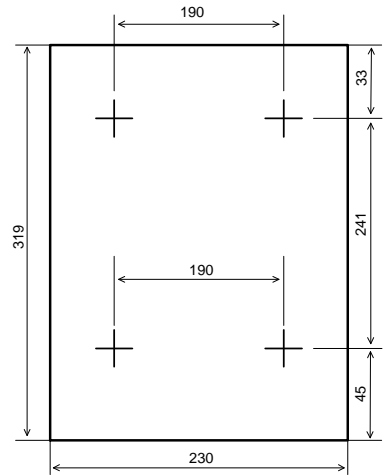
2.2.2 To open the RIP cover do the following:

- 1) Unscrew the screw keeping the cover at place on the upper side of the RIP;
- 2) Press the notches on the upper side of the RIP case and open the cover (see Figure 1).

2.2.3 Attach the RIP on the wall at a suitable place. The overall and mounting dimensions of the RIP are shown in Figure 2.



**Figure 1.** Top View



**Figure 2.** Overall and Mounting Dimensions

**WARNING:**

Connecting wires of external power 220 V to the live terminal block XT1 please connect Live, Neutral, and Earth contacts properly. Wire the RIP as shown in Figure 3. A connection diagram is located on the rear side of the RIP cover.

**2.3 Turning the RIP On**

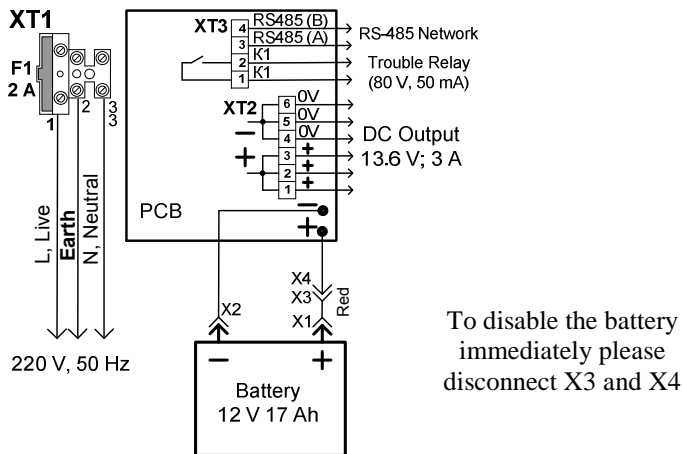
2.3.1 Ensure the RIP is mounted and wired properly in accordance with Figure 3.

2.3.2 Connect the battery to the battery terminals observing the proper polarity (the red wire is to be connected to the positive lead of the battery while the blue wire is to be connected to the negative lead of the battery).

**WARNING:** In order the RIP to provide the specified features it should be operated with an operative connected battery. If a battery is connected and the RIP while operating transmits BATTERY TEST ERROR messages than the battery shall be changed. A battery of the type specified in Section 1.2.2 must be also changed after five years of operation. The RIP supports programming the Battery Age counter (see Section 2.4.2). The time set by user must not exceed the battery age specified by the manufacturer of the batteries.

2.3.3 Insert the fuse F1.

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



**Figure 3.** Connection Diagram

## 2.4 Preparation for Use

2.4.1 Assign a network address to the RIP. This address must not be the same as the address of any device connected to the same RS-485 interface bus as the RIP (that is, the address must be unique; the factory value of the address is 127).

2.4.2 If necessary, change other parameter of the RIP in accordance with the way it is used (see Table 1).

To program the RIP, use an IBM compatible PC. Run the **UProg Configuration Tool** and connect the RIP to a COM port of the PC via one of the Bolid manufactured interface converters such as RS-232/RS-485 PI-GR or S2000-PI, or via an S2000 console of version 1.20 or higher which is switched to the interface converter mode. The program window is shown in Appendix A.

The last version of the UProg Configuration Tool is available in the Internet at the address of: <http://bolid.ru>.

2.4.3 When the RIP cover is open, by means of the tamper switch you can:

- **Turn off the sounder:** perform three short-duration presses and one long-duration press on the tamper switch (●●●—);

*Note: A long-duration press («—») means pressing the tamper switch and keeping it pressed for 1.5 – 3 s. A short-duration press («●») means pressing the tamper switch and keeping it pressed for 0.1 s to 0.5 s. Pauses between presses should be between 0.1 s and 1 s.*

- **Reset the network address** (set the factory value 127): (— — — ●);
- **Reset the counter of the battery age and the measured capacity of the batteries** (in case of changing the battery): (●●●— —)

2.4.4 If the network controller is connected to another power supply then couple the circuits 0 V of the RIP and the network controller.

2.4.5 Unless the RIP is the first or last device in the RS-485 interface bus, remove the jumper from the XP1 terminal block located on the RIP PCB closely to the output bus contacts A and B.

## 2.5 Operation of the RIP

2.5.1 After powering on, the RIP checks whether a battery is connected and whether data are communicated over the RS-485 interface. If the battery is available and charged (the

battery voltage exceeds 13.2 V) the BATTERY indicator shows solid light. If the battery is not charged, the RIP charges it up to the required level, with BATTERY blinking off for a short time once per 3 s. If the battery voltage has dropped below 7 V then BATTERY pulses once per second. If the battery is unhealthy (should be changed), the sounder issues five beeps, the BATTERY and TROUBLE indicators pulsing twice per second. If the battery charger has failed the RIP within 15 minutes transmits a CHARGER FAILED message and indicates the trouble as shown in Table 2.

When operating, the RIP periodically inspects:

- Input and output voltage;
- Availability of the battery (at least once per minute);
- Battery conditions (at least once per 15 minutes);
- Operability of the battery charger (at least once per 15 minutes).

2.5.2 In case of an outage of mains power the backup battery is activated to supply power to the load circuit; an interrupted sound signal goes off warning about discharging of the battery; POWER LED is off; 12 V LED is on. The RIP transmits an AC POWER FAILED message after a programmed delay (see Table 1, Str. 2).

2.5.3 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 DISCHARGE message. Immediate actions must be taken to provide mains power voltage.

2.5.4 If the battery voltage has dropped to 10 V, the RIP shuts the battery down to avoid its deep discharge. The 12 V LED is off; the RIP sounds continuously within two first hours. The RIP transmits a POWER OFF message. After two hours the RIP begins to operate in the economy mode: the RS-485 transceiver is off, the sounder and TROUBLE LED turn on for a short time every 10 s.

#### **WARNING:**

**If mains power 220 V is expected to be off for more than 10 days then disconnect the RIP from mains power to avoid battery discharge.**

*The sounder can be disabled by pressing on the tamper switch (see Section 2.4.3). You can activate sound signaling by repeated pressing on the tamper.*

2.5.5 If mains power is off and the battery is charged more than 80 % of its available capacity, the RIP runs the procedure of measuring the capacity of the battery. If the battery is discharged below 11 V, the RIP estimates the capacity of the battery, 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 operation time of the RIP the battery capacity has 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 17 Ah and the current value of the output current.

2.5.6 If an inadmissible overcurrent in the load circuit or a short circuit failure in the output circuit of the RIP has happened, the RIP starts applying voltage to the DC output only for a short time every 10 seconds until the trouble has been 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.

Table 2 describes the performance of the RIP indicators and the sounder for various conditions of the RIP.

Following is the list of notations used in Table 2.

«+»: Switched on; «-»: Switched off

«+/- 1 Hz»: Switches 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 2**

| Current RIP conditions   | Indicators   |              |              |                |              | Internal Sounder |
|--|--------------|--------------|--------------|----------------|--------------|------------------|
|  | POWER        | BATTERY      | TROUBLE      | RS-485         | 12 V         |                  |
|  | <i>green</i> | <i>green</i> | <i>amber</i> | <i>green</i>   | <i>green</i> |                  |
| 1. Mains utility power is starting up, no battery is connected   | +            | +/- 1 Hz     | —            | + <sup>1</sup> | +            | ON/0.4 s 3 times |
| 2. Mains power is OK, the battery is not charged   | +            | OFF/5 s      | —            | + <sup>1</sup> | +            | —                |
| 3. Mains power is OK, the battery is charged   | +            | +            | —            | + <sup>1</sup> | +            | —                |
| 4. DC Output overcurrent (the battery is available)  | +            | +            | +/- 2 Hz     | + <sup>1</sup> | ON/10s       | ON/0.8s          |
| 5. Mains power is disabled, the battery voltage exceeds 11 V   | —            | +            | —            | + <sup>1</sup> | +            | ON/5s            |
| 6. Mains power is disabled, the battery voltage is below 11 V  | —            | +            | —            | + <sup>1</sup> | +            | ON/0.4 s         |
| 7. Mains power is disabled, the battery voltage has dropped below 10.2 V (two first hours)               | —            | +/- 1 Hz     | —            | + <sup>1</sup> | —            | +                |
| 8. Mains power is shut down, the battery voltage has dropped below 10.2 V (upon the expiry of two hours) | —            | —            | ON/10s       | —              | —            | ON/10s           |
| 9. Mains power voltage has dropped below 150 V   | +/- 1 Hz     | +            | —            | + <sup>1</sup> | +            | ON/2s            |
| 10. Mains power voltage has exceeded 260 V   | +/- 1 Hz     | +            | —            | + <sup>1</sup> | +            | ON/1s            |
| 11. Dead battery (must be replaced)  | +            | +/- 1 Hz     | +/- 1 Hz     | + <sup>1</sup> | +            | 5 beeps          |
| 12. Battery power charger has hailed   | +            | +/- 4 Hz     | +/- 4 Hz     | + <sup>1</sup> | +            | ON/0.8 s         |
| 13. Output overvoltage   | +/- 1 Hz     | +/- 1 Hz     | +/- 1 Hz     | +/- 1 Hz       | —            | —                |

<sup>1</sup> In case of normal communication over the RS-485 interface. In case of a communication loss this one is off. If communication over the RS-485 interface was established but has been broken during operation then after elapsing 30 s since the loss RS-485 LED flashes once per second.

2.5.7 To request for the conditions of the RIP from the S2000M panel (please see Section 3.13 “Direct Control Functions of S2000M User’s Manual):

**Enter Code: \_**

Enter your password.

◆ **5 View Input Status**

Select *View Input Status* by «**▶**» or «**◀**» panel button and press «ENT», or use «5» panel button as a hot key.

◆ **51 Input Status**

Select *Input Status* by «**▶**» or «**◀**» panel button and press «ENT», or press «1» panel button as a hot key.

**Address: \_**

Enter the network address of the RIP or select its valid value by «**▶**» and «**◀**» panel buttons and press «ENT».

**Input#: \_**

Enter the input number (loop number) in accordance with the parameter to be requested or select the proper value by «**▶**» and «**◀**» panel buttons and press «ENT».

The RIP responds to the remote condition requests from the panel by transmitting the conditions of the inputs which are defined as follows:

# 0: Tamper switch

# 1: DC output voltage

# 2: DC output current

# 3: Battery voltage

# 4: Battery charger

# 5: AC input voltage

2.5.8 To receive measured values of voltage and current (please see Section 3.13 “Direct Control Functions of S2000M User’s Manual):

**Enter Code: \_**

Enter your password.

◆ **5 View Input Status**

Select the *View Input Status* command by «**▶**» and «**◀**» buttons and press «ENT» or use «5» panel button as the hot key.

◆ **52 Input ADC**

Select the *Input ADC* command by «**▶**» and «**◀**» panel buttons and press «ENT» or use «2» panel 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».

**Input#: \_**

Type the number of the input in accordance with the value to be requested or select the valid value by «**▶**» and «**◀**» buttons and press «ENT».

The data are given as text strings and specific ATD values:

a) *If the battery is available:*

- # 0 – None
- # 1 – Uout = 8...14.5V (ATD 114...208)
- # 2 – Iout = 0.1...4 A (ATD 5...204)
- # 3 – Ubat = 8...14.5V (ATD 114...208)
- # 4 – Battery Charge 100 %  
(the charger is OK)
- # 5 – Uin = 150...255 V (ATD 139...0)
- # 6 – Not Measured  
(capacity was not measured)
- # 7 – Tbackup = 03 h 50 m  
(3 A load current, 17 Ah bat.capacity)
- # 9 – Tremaining = 43800 h (5 years)
- # 10 – 17Ah/estimated 17.00Ah  
(battery capacity was not measured)
- or**
- # 6 – Capacity 17.00 Ah (the capacity value received in the last test)
- # 10 – 17Ah/measured 17.00Ah  
(the measured capacity value).
- # 8 – Ttest = 03 h 00 m  
(3A load current, 17 Ah capacity)
- or**
- # 8 – Battery charge <80%  
(if the bat.charge is less than 80%)

The first value (17 Ah) means the original capacity of the battery while the second value is estimated based on the grade of the charge of the batteries and their operation time

b) *If no battery is available:*

- # 0 – None
- # 1 – Uout = 8...14.5V (ATD 114...208)
- # 2 – Iout = 0.1...4 A (ATD 5...204)
- # 3 – Ubat = 00.00 V (no battery)
- # 4 – CG\_NORM (for the charger)
- # 5 – Uin = 150...255 V (ATD 139...0)
- # 6 – NO BATTERY
- # 7 – NO BATTERY
- # 8 – NO BATTERY
- # 9 – NO BATTERY
- # 10 – NO BATTERY

## 2.6 How to Switch the RIP Off

- 2.6.1 Shut down the external power 220 V.
- 2.6.2 Remove the fuse F1.
- 2.6.3 Disconnect the battery.

## 3 MAINTENANCE

3.1 To make sure the RIP keeps reliability and proper operation conditions, inspect it at least annually. In order to inspect the RIP:

- 1) Check the RIP for contaminations and mechanical damage;
- 2) Measure the output voltage in accordance with Section 1.2.3 of this Manual;
- 3) Inspect operation of the indicators and the sounder of the RIP in accordance with Table 2 of this Manual;
- 4) Verify the RIP for secure mounting, wire condition, and contact condition.

3.2 Measuring Capacity of the Battery within the RIP.

3.2.1 The capacity of the battery installed within the RIP can be measured only if the battery is charged more than 80%.

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

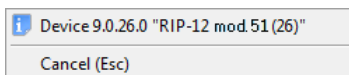
3.2.2 To measure the battery capacity by means of the S2000M panel use the Test System Components function (see Section 3.13 of S2000M User's Manual). Send a command to run testing with «0» for the component number and «0» for the test time. If the command was

received and executed successfully the RIP sends a Test ON message. The battery test is completed automatically. After completing the test the RIP sends a Test OFF message.

The test mode can be initiated / terminated by the following commands:

|                                    |  |
|------------------------------------|--|
| <b>Enter Code: _</b>               | Enter your password.   |
| <b>◆ 6 Service</b>                 | Select <i>Service</i> in the panel menu by « <b>▶</b> » or « <b>◀</b> » button and press «ENT», or use «6» panel button as a hot key.                |
| <b>◆ 63 Test System Components</b> | Select <i>Test System Components</i> in the panel menu by « <b>▶</b> » or « <b>◀</b> » button and press «ENT», or use «3» panel button as a hot key. |
| <b>◆ Test ON</b>                   | To initiate testing, select <i>Test ON</i> in the panel menu by « <b>▶</b> » or « <b>◀</b> » button and press «ENT».                                 |
| <b>Address: _</b>                  | Type the address of the RIP (in the range of 1 to 127), or select the required value by « <b>▶</b> » or « <b>◀</b> » button and press «ENT».         |
| <b>Component#: _</b>               | Type «0» for the component number and press «ENT».   |
| <b>Time, min: _</b>                | Type «0» for the test time and press «ENT».  |
| <b>◆ Test OFF</b>                  | To complete the mode of measuring the battery capacity, select <i>Test OFF</i> by « <b>▶</b> » and « <b>◀</b> » buttons and press «ENT».             |
| <b>Address: _</b>                  | Enter the RIP address (in the range of 1 to 127) or select the proper value by « <b>▶</b> » and « <b>◀</b> » buttons and press «ENT».                |
| <b>Component#: _</b>               | Enter «0» for the number of the component and press «ENT».   |

3.2.3 To measure the battery capacity using Orion Pro software (see Section “Obtaining Power Supply Details” of Part of Orion Pro User’s Manual), run Monitor and click on the RIP icon on the map by left or right mouse button. Then select the string marked by the “*i*” 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 battery.*

A window with information about the RIP shall be open.

This information window also provides tools for testing the battery of the RIP.

Click on the Capacity Test button at the left side of the window, and a panel for starting /completing testing shall appear.

Then, select the way for testing:

- *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 test duration depends on load current of the RIP*
- *Test Duration:* The test will be completed after elapsing of the time set below. 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 batteries are more than 80% discharged, the RIP will estimate the actual capacity of the batteries.

Finally, press Test button to start the test. If you then press Cancel, the test will be interrupted.

3.2.4 To measure the capacity of the battery of the RIP locally, without sending commands over the RS-485 interface do the following:

- 1) Ensure the battery is charged more than 80 % (the BATTERY LED shows solid light);
- 2) Turn off the AC power of the RIP;
- 3) After receiving a BATTERY DISCHARGE message turn on the AC power, and the RIP will estimate the resulting capacity.

## 4 TROUBLESHOOTING

Table 3

| № | Symptom  | Reason  | Human Action   |
|---|--|---|--|
| 1 | The RIP failed to be turned on, the mains power is on            | <ol style="list-style-type: none"> <li>1. Fuse F1 has burnt out.</li> <li>2. Faulty wiring.</li> <li>3. Long-duration overload at the RIP DC output</li> </ol>  | <ol style="list-style-type: none"> <li>1. Check the mains power voltage at XT1 block prior to the fuse F1 and after it, replace the fuse F1.</li> <li>2. Repair the wiring.</li> <li>3. Shut down the RIP. Wait for at least 2 min and then turn the RIP on again</li> </ol> |
| 2 | The RIP failed to be turned on being powered by batteries        | The battery voltage has dropped below 10 V  | Measure the battery voltage, charge or replace the battery   |
| 3 | The RIP sends a BATTERY TEST ERROR                               | <ol style="list-style-type: none"> <li>1. The battery has lost its capacity.</li> <li>2. The battery leads are corroded or connections between the battery and wire terminals are loosened</li> </ol> | <ol style="list-style-type: none"> <li>1. Replace the battery.</li> <li>2. Clean the battery leads and re-tighten hardware</li> </ol>  |
| 4 | The RIP sends a SERVICE REQUIRED                                 | Battery Age for Sending SERVICE REQUIRED has been elapsed   | Replace batteries and reset the Battery Age for Sending SERVICE REQUIRED counter   |
| 5 | Loss of communication between the RIP and the network controller | <ol style="list-style-type: none"> <li>1. The RIP is disconnected from the network controller.</li> <li>2. The communication line is connected to the contacts A and B improperly</li> </ol>          | <ol style="list-style-type: none"> <li>1. Re-establish the connection complying with the requirements of Sections 2.4.4, 2.4.5 of this Manual.</li> <li>2. Swap the wires connected to the contacts A and B of the RS-485 interface</li> </ol>                               |
| 6 | The network controller indicates DISCONNECTED RIP                | <ol style="list-style-type: none"> <li>1. Communication line breakdown.</li> <li>2. The RIP switched off the transceiver after discharge of the battery</li> </ol>                                    | <ol style="list-style-type: none"> <li>1. Re-establish connection.</li> <li>2. Take measures to recover mains power</li> </ol>   |

## 5 CERTIFICATES

5.1 Conformity Certificate No. C-RU.ПБ01.В.02443 approves that RIP-12 mod.51 (RIP-12-3/17P1-R-RS) Battery Backed Power Supply meets the requirements of Federal Law of the Russian Federation of July 22, 2008 No.123-FZ, ГОСТ Р 53325-2009.

5.2 Conformity Declaration EAЭС № RU Д-RU.МЛ66.В.02301 certifies that RIP-12 mod.51 (RIP-12-3/17P1-R-RS) Battery Backed Power Supply meets the requirements of Technical Reglements of Custom Union TR CU 004/2011, TR CU 020/2011.

5.3 Manufacture of RIP-12 mod.51 (RIP-12-3/17P1-R-RS) is approved by Conformity Certificate ГОСТ ISO 9001-2011 № РОСС RU.ИК32.К00153.



ZAO NVP Bolid, 4 Pionerskaya Str., Korolev 141070, Moscow Region, Russia

**Phone/fax:** +7 495 775-7155

**Email:** [info@bolid.ru](mailto:info@bolid.ru)

**Technical Support:** [support@bolid.ru](mailto:support@bolid.ru)

<http://bolid.ru>

# Appendix A

## The Window of UProg Configuration Tool for RIP

