BATTERY BACKED POWER SUPPLY

RIP-24 mod.50

(RIP-24-2/7M4-R-RS)

INSTRUCTION MANUAL

1 BASIC TECHNICAL DATA

1.1 General

1.1.1 The battery backed power supply RIP-24 mod. 50 (RIP-24-2/7M4-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 24 Volts of DC.

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

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

1.1.4 The RIP provides protecting its outputs 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 Clause 1.2.18).

1.1.7 The RIP provides transmitting measured values of voltage and current as well as messages about current condition to the network controller (the connected S2000M console 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 repay with galvanic isolation.

1.1.9 The RIP provides monitoring battery condition 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. The RIP is not designed to be used within fire and explosion dangerous premises.

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.

1.2 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 two batteries Delta DTM1207 (12 V, 7 Ah) or similar with expected lifetime of no less than 5 years.

Notes: **The RIP is supplied with no batteries**

1.2.3 The rated output voltage is:

– 27.2 V ± 0.6 V in case of powering by mains power;

– 19 V to 27 V in case of powering by batteries.

1.2.4 The rated load current is 2 A.

1.2.5 The maximum load current is 2.5 A (short periods of about 10 minutes once per an hour, in case of normal mains power and operative batteries). When an output current value exceeds 2.2 A, the RIP disables the power charger (hereinafter referred to as the charger). If an output current value exceeds 2.5 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 0.6 A.

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

1.2.9 Ripples of the output voltage (peak-to-peak) at normal load current don't exceed 0.2 V (Class VR1).

1.2.10 The low battery shutdown voltage is (20.4±0.6) V.

1.2.11 The backup operating time of the RIP in case of fully charged batteries is at least 2 hours if the load current is 2 A and the ambient temperature is +25°C.

1.2.12 The time of full charging of discharged batteries doesn't exceed 24 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 100 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 executing the following commands received via the RS-485 interface:
- Assigning the network address;
- Synchronizing the internal clock of the RIP.

1.2.16 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 RESTORE (input AC voltage has returned to a normal value between 150 V and 250 V);
- OVERCURRENT (the output current of the RIP has exceeded 2.5 A);
- CURRENT RESTORE (the output current of the RIP has dropped below 2.2 A);
- CHARGER FAILED (the battery power charger doesn't provide the specified current and voltage values to power the batteries properly);
- CHARGER RESTORE (the battery power charger provides the specified current and voltage values to power the batteries properly);
- POWER FAILED (the RIP fails to supply power in accordance with its specification (see Clause 1.2.3) when connected to the live AC);
- POWER RESTORE (when connected to the live AC, the RIP supplies power in accordance with its specification (see Clause 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 batteries has exceeded an admissible limit value – the batteries must be replaced or repaired, see Clause 3 of Table 3);
- BATTERY DISCHARGED (in case of an AC failure the battery voltage has dropped below 22 V);
- SERVICE REQUIRED (the battery age has exceeded the programmed value; the batteries must be replaced;

- BATTERY RESTORE (the battery voltage has exceeded 20 V; the batteries can be charged);
- TAMPER ALARM (the RIP case has been open);
- TAMPER RESTORE (the RIP case has been closed);
- POWER OFF (the RIP has shut down its output power in case of mains failure and discharged batteries).

In case of a loss of communication with the network controller over the RS-485 interface in 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.

1.2.17 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 RESTORE 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 year
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 Switch Off Switch On for a Time 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

Parameter	Description	Value	Factory Value
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 RS-485 communication fault Output overcurrent DC or charger fault Trouble/missing of batteries AC voltage is out of 150-250 V Tampering the case	All events except RS-485 communication fault

1.2.18 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…260) V;
2) Battery voltage in the range of (16…29) V DC;
3) Output voltage in the range of (16…29) V DC;
4) Output current (load current) in the range of (0.1...3) 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.*

1.2.19 The RIP is equipped with a tamper switch which contacts are closed when the RIP door (cover) is closed.

1.2.20 The overall dimensions of the power supply are no more than 340 mm × 270 mm × 100 mm.

1.2.21 The weight of the power supply along with the batteries doesn't exceed 8 kg.

1.2.22 The RIP provides immunity to electromagnetic interference of the third severity level according to Russian Standard ГОСТ Р 53325-2009.

1.2.23 Radio disturbances from the RIP operation do not exceed the values specified in ГОСТ Р 53325-2009.

1.2.24 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.

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

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

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

1.2.28 The ingress protection rating of the RIP is IP30 due to ГОСТ 14254-96.

1.2.29 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 (2 A)   – 1 pc.
4) Woodscrew   – 3 pcs.
5) Wall Plug   – 3 pcs.
6) Plastic Bushing   – 2 pcs.
7) Mechanical Lock Key   – 2 pcs.
8) Package   – 1 pc.

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

2 OPERATIONAL INSTRUCTIONS

2.1 Safety Precautions

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 door;
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 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 Attach the RIP on the wall at a convenience place. The overall and mounting dimension of the RIP are shown in Figure 1.
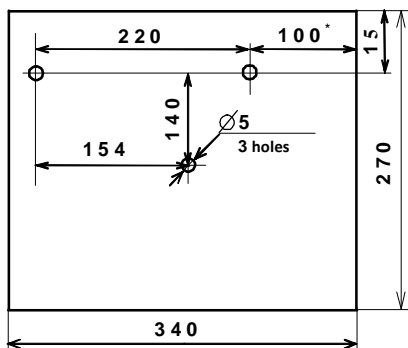
Figure. 1

WARNING:

Connecting wires of external power 220 V to the line terminal block please connect Line, Neutral, and Earth contacts properly. Wire the RIP as shown in Figure 2.

2.3 Turning the RIP On

2.3.1 Ensure the RIP is mounted and wired properly in accordance with Figure 2.

2.3.2 Connect the batteries to the battery terminals taking into account polarity (the red wire is to be connected to the positive lead of the first battery, the blue wire is to be connected to the negative lead of the second battery, while the white wire is to be connected to the negative lead of the first battery at one end and to the positive lead of the second battery at other end).

WARNING: In order the RIP to provide the specified features please use it with operative connected batteries. If the batteries are connected and the RIP transmits

SERVICE REQUIRED messages during operation then the batteries must be changed. Batteries of the type specified in Clause 1.2.2 must be also changed after five years of operation. The RIP provides programming the Battery Age counter (see Clause 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.
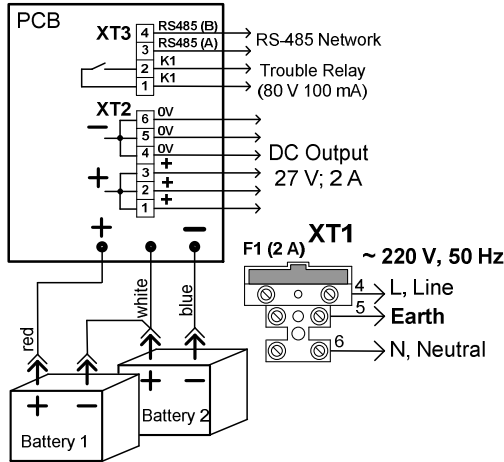
2.3.4 Turn on the mains power 220 V, 50 Hz.

Figure 2. Connection Diagram

2.4 Preparing to use

2.4.1 Program the network address of the RIP. This address must not be the same as an 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** (of version 4.1.0.32 or higher) 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 door is open, by means of the tamper switch you can:

– **Turn off the sounder**: press and hold the tamper three times for a short time and once for a long time   (● ● ● ━);
   Note: A long time («━») means a time between 1.5 s and 3 s. A short time («●») means a time between 0.1 s and 0.5 s. Pauses between pressings 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** (when you change the batteries):   (● ● ● ━ ━)

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

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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 batteries are connected and whether data are communicated over the RS-485 interface. If the batteries are charged (100% battery charge relative to the RIP charge scale), the BATTERY indicator is lit. If the batteries are not charged, the RIP charges them up to the required level, with BATTERY LED blinking off for a short time once per 3 s. If one battery is not connected (or if its voltage doesn't exceed 7 V), then BATTERY LED turns on once per second. If the batteries are inoperable (must be changed), the RIP sounder beeps 5 times while BATTERY LED and TROUBLE LED turn 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 2.

When operating, the RIP periodically inspects:
– Input and output voltage;
– Availability of the batteries (at least once per minute);
– Battery condition (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 batteries are activated to supply power to the load circuit; an interrupted sound signal goes off warning about discharge of the batteries; POWER LED is off; 24 V LED is on. The RIP transmits a POWER FAILED message after a programmed delay (see Table 1).

2.5.3 If the battery voltage has dropped to 22 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.

2.5.4 If the battery voltage has dropped to 20 V, the RIP shuts the batteries down to avoid their deep discharge. The 24 V LED is off; the sounder is on 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 7 days, then disconnect the RIP from mains power to avoid battery discharge.

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

2.5.5 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 22 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 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 battery capacity 7 Ah and the current value of the output current.

2.5.6 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 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 behavior 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»: 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 2

Current RIP Condition	Indicators					Internal Sounder
	POWER *green*	**BATTERY** *green*	**TROUBLE** *yellow*	**RS-485** *green*	**24 V** *green*	
1. Mains utility power is starting up, the batteries are not connected	+	+/─ 1 Hz	─	+ [1]	+	ON/0.4 s 3 times
2. Normal mains power, the batteries are not charged	+	OFF/5 s	─	+ [1]	+	─
3. Normal mains power, the batteries are charged	+	+	─	+ [1]	+	─
4. DC Output overcurrent (the batteries are available)	+	+	+/─ 2 Hz	+ [1]	ON/10s	ON/0.8s
5. Mains power is disabled, the battery voltage exceeds 22 V	─	+	─	+ [1]	+	ON/5s
6. Mains power is disabled, the battery voltage has dropped below 22 V	─	+	─	+ [1]	+	ON/0.4 s
7. Mains power is disabled, the battery voltage has dropped below 20.4 V (two first hours)	─	+/─ 1 Hz	─	+ [1]	─	+
8. Mains power is shut down, the battery voltage has dropped below 20.4 V (upon the expiry of two hours)	─	─	ON/10s	─	─	ON/10s
9. Mains power voltage has dropped below 150 V	+/─ 1 Hz	+	─	+ [1]	+	ON/2s
10. Mains power voltage has exceeded 260 V	+/─ 1 Hz	+	─	+ [1]	+	ON/1s
11. Dead batteries (must be replaced)	+	+/─ 1 Hz	+/─ 1 Hz	+ [1]	+	5 beeps
12. Battery charger trouble	+	+/─ 4 Hz	+/─ 4 Hz	+ [1]	+	ON/0.8 s
13. 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.

2.5.7 To request for the RIP conditions from the S2000M console (please see the console 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 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 the remote condition requests from the console by transmitting measured parameters of various zones which are defined as follows:

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

2.5.8 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 text strings and specific ADC values:

a) If the batteries are available:

0 – None

2 – Iout = 0,1…2,5 A **(ADC 5…129)**

4 – Battery Charge 100 %
     (the charger is ok)

6 – Not Measured
(the capacity was not measured) **or**

6 – Capacity 7.00 Ah

8 – Ttest = 02 h 10 m
(load current 2 A, capacity 7 Ah, the battery charge is more than 80%) **or**

8 – Battery charge <80%
(if the battery charge is less than 80%)

1 – Uout = 16…29 V **(ADC 94…170)**

3 – Ubat = 16…29 V **(ADC 94…170)**

5 – Uin = 150…255 V **(ADC 168…0)**

7 – Tbackup = 02 h 42 m
(load 2 A, battery capacity 7 Ah)

9 – Tremaining = 43800 h (**5 years**)

10 – 7Ah/est 07.00Ah
(battery capacity was not measured) or

10 – 7Ah/meas 07.00Ah
(the measured capacity value)
The first value (7Ah) means the original capacity of the batteries while the second value is calculated based on the grade of the charge of the batteries and their operation time.

b) If the batteries are not available:

0 – None

2 – Iout=0.1…2.5 A **(ADC 5…129)**

4 – CG_NORM (for the charger)

6 – NO BATTERIES

8 – NO BATTERIES

10 – NO BATTERIES

1 – Uout = 16…29 V **(ADC 94…170)**

3 – Ubat = 00,00 V **(no batteries)**

5 – Uin = 150…255 V **(ADC 168…0)**

7 – NO BATTERIES

9 – NO BATTERIES

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 batteries.

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 Clause 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 Batteries within the RIP
To measure capacity of batteries installed within the RIP, the batteries 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.

3.2.1 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 "*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 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:

- *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 real capacity of the batteries.

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

3.2.3 To measure capacity of the batteries of the RIP without commands transmitted via the RS-485 interface, do the following:

1) Be sure the batteries are charged more than 80 % (CHARGE LED is lit steady);
2) Turn off the AC power of the RIP;
3) After receiving a BATTERY FAILED 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	1. Fuse F1 has burnt out 2. Faulty wiring 3. Long-term overload at the RIP DC output	1. Check the mains power voltage at XT1 block prior to the fuse F1 and after it, replace the fuse F1. 2. Repair the wiring. 3. Shut down the RIP. Wait for at least 2 min and then turn the RIP on again.
2	The RIP failed to be turned on being powered by batteries	The battery voltage has dropped below 20 V	Measure the battery voltage, charge or replace the batteries
3	The RIP sends BATTERY TEST ERROR	1. The batteries have lost their capacity. 2. The battery leads are corroded or loose connection between the batteries and wire terminals	1. Replace batteries. 2. Clean the battery leads and re-tighten hardware
4	The RIP sends SERVICE REQUIRED messages	Battery Age for Sending SERVICE REQUIRED has been elapsed	Replace batteries and reset Battery Age for Sending SERVICE REQUIRED counter
5	Loss of communication between the RIP and the network controller	1. The RIP is disconnected from the network controller. 2. The communication line is connected to the contacts A and B improperly	1. Re-establish the connection complying with the requirements of Clause 2.4.4 and Clause 2.4.5. 2. Swap the wires connected to contacts A and B of the RS-485 interface
6	The network controller indicates DISCONNECTED RIP	1. Communication line breakdown. 2. The RIP switched off the transceiver after the batteries have been discharged	1. Re-establish connection. 2. Take measures to restore mains power.

5 CERTIFICATES

5.1 Conformity Certificate No. C-RU.ПБ01.В.02443 approves RIP-24 mod.50 Battery Backed Power Supply (RIP-24-2/7M4-R-RS) meets the requirements of Federal Law of the Russian Federation of July 22, 2008 No.123-FZ, ГОСТ Р 53325-2009.

5.2 Manufacture of RIP-24 mod.50 (RIP-24-2/7M4-R-RS) is approved by Conformity Certificate ГОСТ ISO 9001-2011 № РОСС RU.ИК32.К00153.

Appendix A

The Window of UProg Configuration Tool for RIP-24 mod.50