BATTERY BACKED POWER SUPPLY
RIP-12 mod.14
(RIP-12-2/7P2-R)

ИСО 9001

INSTRUCTION MANUAL

1 TECHNICAL DATA

1.1 General

1.1.1 The battery backed power supply RIP-12 mod.14 (RIP-12-2/7P2-R) (hereinafter referred to as the RIP) is intended to provide continuous operating power to a group of detectors and control and indicating equipment in fire alarm systems, security systems, access control systems as well as to other appliances that require backed power of 12 V 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 protecting its output against short circuit failures with recovering output voltage automatically after repairing the failures as well as protection against output overvoltage.

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

1.1.5 The RIP provides light and sound indication of current conditions, including presence or absence of mains power voltage, the battery charge, a short circuit failure or an overload at the output, missed battery, shutting the battery off in case of its discharge as well as indication of possible RIP faults during operation (see Table 2).

1.1.6 The RIP provides limiting of the battery charger voltage and current depending on the temperature within the device enclosure.

1.1.7 The RIP provides monitoring battery conditions and its connecting circuit (by comparing with maximum admissible internal resistance of this circuit).

1.1.8 The RIP design does not imply using this power supply in explosion-hazardous premises.

1.1.9 In terms of environmental conditions, the RIP complies with the climatic modification ‘УХЛ’ (NF, for temperate and frigid climate zones) and the arrangement category 3 as per GOST 15150-69 but for operation at the temperature range 263 ÷ 313 K (minus 10 through +40°C) and relative humidity up to 90 % at 298 K (+25 °C).

1.1.10 In terms of resistance to mechanical exposure, the RIP meets the requirements of the arrangement group ‘LX’ as per GOST 12997-84 withstanding vibrations in the frequency range 1 through 35 Hz at 4.9 m/s^2 (0.5 g) acceleration.

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 Delta battery DTM1207 (12 V, 7 Ah) or similar one with equivalent parameters (with battery life at least 5 years).

**The battery to be supplied separately.*

1.2.3 The rated output voltage while powered by mains is (13.6±0.6) V.

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

1.2.5 The rated load current is 2 A.

1.2.6 The maximum load current is 2.5 A (for short-duration periods of up to 10 minutes at intervals of at least one hour).

1.2.7 The startup time upon which the RIP is ready for operation after applying power to it does not exceed 6 s.

1.2.8 The current consumed by the RIP itself from the battery doesn't exceed 30 mA.

1.2.9 The power consumed from the mains does not exceed 60 V·A.

1.2.10 The maximum current consumed from the mains is:

- 0.4 A at minimum mains utility voltage of 150 V;
- 0.2 A at maximum mains utility voltage of 250 V.

1.2.11 Ripples of the output voltage (peak-to-peak) at rated load current don't exceed 100 mV.

1.2.12 The time of continuous operation of the RIP powered by the fully charged battery is at least 2.5 hours at the ambient temperature of +25°C.

1.2.13 The time of charging a fully discharged battery doesn't exceed 30 hours. The maximum charging rate is 0.5 A.

1.2.14 The RIP provides monitoring for output voltage, battery voltage, mains power voltage and sending messages about voltage presence / absence using the galvanically isolated solid state relays K1, K2 and K3. The maximum switched voltage and current are 80 V and 50 mA respectively. The resistance of output circuits in 'closed' condition does not exceed 50 Ohm. The time for sending messages (closed / open state of the circuits) is at least 3 s. The time of delay for messages sent by the relays K1, K3 is 3 s. The time of delay for messages 'Battery Low' sent by the K2 relay does not exceed 1 min.

States of the solid state relay circuits are shown in Table 1.

Table 1

Circuit	Purpose	Contact State	
K1	Output voltage monitoring	In case of normal output voltage[1)] the contact is closed	In case of an out-of-range[2)] output voltage the contact is open
K2	Battery voltage monitoring	In case of normal[1)] battery voltage the contact is closed	When the battery voltage is out of range [2)] ("Battery Disconnected") the contact is open
K3	Mains power monitoring	When mains power 220 V is applied to the RIP the contact is closed	If mains power voltage is below 150 V or above 250 V the contact is open

Notes:

[1)] Normal output voltage is within the range of 10…14.5 V;

[2)] "Out-of-range" means that the voltage exceeds or is below the values specified in the note 1 above or the battery has discharged below 11 V with mains power being off.

1.2.15 The RIP features a tamper switch. At a time when the RIP enclosure is open, all the solid state relays K1, K2, K3 are open. The relays are reinstated after at least 15 seconds upon the enclosure is closed.

1.2.16 The RIP provides immunity to electromagnetic interference of Test Severity Level II as per GOST R 53325-2012.

1.2.17 Radio noise generated by the RIP during operation does not exceed the values specified in GOST R 53325-2012.

1.2.18 The insulating strength of the live parts of the RIP is at least 1500 V (50 Hz) between circuits connected to mains 220 V and any circuits not connected with the mains.

1.2.19 The electrical insulation resistance between circuits mentioned above is at least 20 mega ohms (in normal conditions as per with GOST 12997-84).

1.2.20 The average service life of the RIP is at least 10 years provided that the battery is to be replaced at least once per 5 years.

1.2.21 The design of the RIP provides its fire safety in case of emergency operation and upon the breach of operational regulations in accordance with GOST 12.1.004-91.

1.2.22 Enclosure protection degree: IP30 as per GOST 14254-96.

1.2.23 The overall dimensions of the RIP are 165×211×90 mm max.

1.2.24 The weight of the RIP with the battery doesn't exceed 3.5 kg.

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

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

1.3 Standard Delivery

1) Battery Backed Power Supply* – 1 pc.
2) Instruction Manual – 1 pc.
3) Fuse (2 A) – 1 pc.
4) Woodscrew 1-4x30.20.019 GOST 1144-80 – 4 pcs.
5) Wall Plug 8x30S – 4 pcs.
6) Cable Grommet GM-3 – 2 pcs.
7) Package – 1 pc.

**no battery is included into the delivery*

2 OPERATING 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 The safety precautions are as follows:

1) The fuse shall always be good and its rating shall be as stated in the operation documentation;
2) Do always shut off mains utility power before opening the RIP;
3) Do NOT remove the protective housing from the PCB.

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 Preparing for Use

2.2.1 The RIP is to be installed on a wall or another structure of the protected premises at places protected against exposure to atmospheric precipitation, mechanical damage, and unauthorized access.

2.2.2 To open the RIP enclosure, do the following:

1) Unscrew the bolt fastening the front cover on the top side of the RIP enclosure;
2) Press on the notches on the top side of the RIP enclosure and open the cover (Figure 1).

2.2.3 Prior to attaching the RIP to a surface and connecting it to power wires, install the GM -3 grommets provided into the enclosure holes.

2.2.4 Fasten the RIP at the selected place. The overall and mounting dimensions are shown in Figure 2.

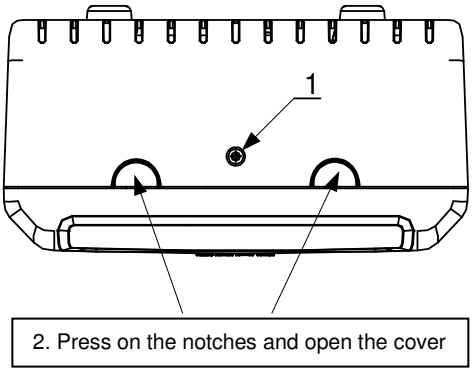

Figure 1. Top View

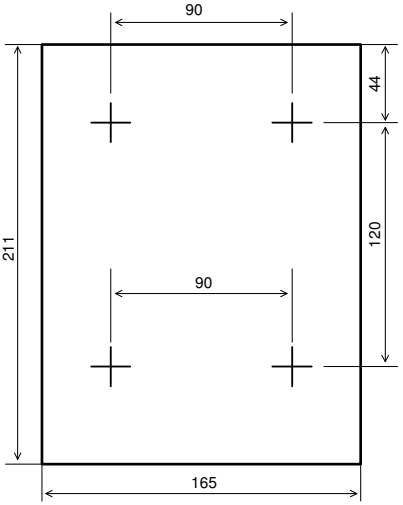

Figure 2. Overall and Mounting Dimensions

WARNING!

While connecting mains power wires 220 V to the input terminal block, please observe correct polarity of connecting the Line and Neutral circuits. Connect the circuits to the RIP as shown in Figure 3.

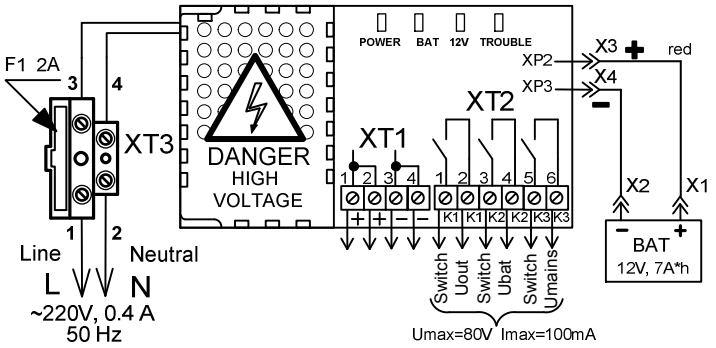

Figure 3. RIP-12 mod.14 (RIP-12-2/7P2-R) Connection Diagram

2.2.5 Following are the recommended cross section areas of the wires to be connected to the RIP:

1) To connect the RIP to mains power 220 V (the XT3 terminal block): 0.75…2.5 mm^2 for stranded wires or 1…2 mm in diameter for solid wires;

2) To connect the load: 0.5…2.5 mm^2 for stranded wires or 0.8…2 mm in diameter for solid wires taking into account the maximum voltage drop on wires at maximum load current (the minimum allowable voltage at the load).

2.2.6 If several load circuits are to be connected, it is recommended to use Bolid manufactured BZK rev.01 power distribution module.

2.2.7 The tamper switch of the RIP can be used to mute the buzzer.

WARNING!

As soon as the RIP enclosure is open all solid state relays become open.

To mute the RIP buzzer, open the RIP cover and operate the tamper switch three times for a short time each and then for a long time once.

'Long time' here means keeping the tamper switch pressed within a time between 1.5 s and 3 s. 'Short time' means keeping the tamper switch pressed within 0.1 to 0.5 s. Pauses between presses should be at least 0.1 s not exceeding 1 s.

2.3 Turning the RIP On

2.3.1 Make sure that the mounting is performed correctly and as shown in the RIP-12 mod.14 (RIP-12-2/7P2-R) (see Figure 3).

2.3.2 Connect the battery to the relevant terminals observing polarity (the red wire is to be connected to the positive lead of the battery).

2.3.3 Insert the fuse F1.

2.3.4 Switch mains power 220 V, 50 Hz on.

2.4 Operation of the RIP

2.4.1 After being powered on, the RIP microcontroller checks the presence of a battery. If the battery is available, the BAT indicator shows solid light. If the battery is not charged, the RIP will charge it until its voltage reaches the required value, the BAT indicator switching off for a short time once every 3 s. If no battery is connected (or its output voltage is less than 7 V) then the BAT indicator is off.

2.4.2 While operating, the RIP periodically inspects:

- Availability of a 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);
- Presence of mains voltage;
- No overload and no short circuit conditions at the output.

2.4.3 If no mains power is applied then the load starts to be powered by the battery, the buzzer periodically emitting low battery warning beeps, the POWER LED being off, and the BAT LED and 12 V LED illuminating.

2.4.4 If the battery voltage has dropped down to 11 V, the RIP starts playing interrupted beeps 10 to 15 times more frequently. Immediately actions must be taken to repair mains power voltage.

2.4.5 If the battery voltage has dropped down to 10 V, the RIP disconnects the battery from the load to avoid deep discharge. In this case the 12 V indicator switches off while the buzzer sounds continuously within two first hours. Upon expiration of two hours the buzzer issues a quick sound every 10 s.

The buzzer can be disabled by pressing on the tamper switch (see Section 2.2.7). Turning the buzzer on is performed by repeating the same combination of presses on the tamper switch.

ATTENTION!

In case of opening the RIP housing all the solid state relays enter the open state.

2.4.6 If mains power 220 V is expected to be off for a time longer than 7 days, then to avoid deep discharge disconnect the battery from the RIP PCB.

2.4.7 For remote indication of availability of mains power voltage, output voltage, and battery voltage connect the outputs of the solid state relays K1, K2, and K3 to the alarm detection circuits of control equipment as shown in Figure 3. Conditions of the solid state circuits can be found in Table 1.

2.4.8 If a prohibitive overload or short circuit failure occurs at the RIP output during operation then the RIP enters the mode of short-time operating with pauses of 15 to 60 s until the malfunction is repaired. The TROUBLE indicator pulses twice per second while the buzzer issues two beeps with 1.5 s between them. The RIP automatically recovers its operability after eliminating the overload or short circuit failure within 60 seconds max.

Indicator's and buzzer's performance for various RIP conditions are shown in Table 2.

Conditions:

"**+**" … Turns on, "**—**" … Turns off;

"+/— 1 Hz": Turns on and then off once per second;

"ON/5 s": Turns on for a short time once every 5 s;

"OFF/3 s": Turns off for a short time every 3 s;

"ON 10 s": Turns on for a short time within 10 s.

Table 2

Current Conditions of the RIP	Indicators				Buzzer
	POWER	BAT	12 V	TROUBLE	
	green	*green*	*green*	*amber*	
1. Mains utility power is starting up, no battery is connected	+	—	+	—	ON/0.4 s 8 times
2. Mains power is OK; the battery is nor charged	+	OFF/3 s	+	—	—
3. Mains power is OK; the battery is charged	+	+	+	—	—
4. DC output overcurrent (The battery is available)	+	+	ON/ 15…60 s	+/— 2 Hz	ON/1.5 s 2 times
5. Mains power is off; the battery voltage exceeds 11 V	—	+	+	—	ON/5 s
6. Mains power is off; the battery voltage is below 11 V	—	+	+	—	ON/0.4 s
7. Mains power is off; the battery voltage has dropped below 10.2 V (for the first two hours)	—	+/— 1 Hz	—	—	+
8. Mains power is off; the battery voltage has been still below 10.2 V (upon the expire of two hours)	—	—	—	ON/10 s	ON/10 s
9. The mains power voltage has dropped below 150 V or exceeded 260 V (the battery is available)	+/— 1 Hz	+	+	+/— 1 Hz	ON/ 5 s
10. Dead battery (must be replaced)	+	+/— 2 Hz	+	+/— 2 Hz	ON 2 times
11. Charger fault	+	+/— 1 Hz	+	+/— 1 Hz	ON 3 times
12. Overvoltage at the RIP output	+/— 4 Hz	+/— 4 Hz	—	+/— 4 Hz	ON/0.8 s

2.5 Turning the RIP Off

2.5.1 Turn off the mains power 220 V.
2.5.2 Take the F1 fuse out.
2.5.3 Disconnect the battery.

3 MAINTENANCE

The RIP shall be maintained according to a scheduled-preventive system which provides annual service. Maintenance works are to be performed by a service company employee and include:

1) Inspection of exterior condition of the RIP;
2) Checking the output voltage (with the load being connected to the RIP) in accordance with Section 1.2.3 of this Manual and checking the output voltage when the RIP is powered by the battery;
3) Checking operation of the light indicators in line with Table 2 of this Manual;
4) Verifying the RIP for secure mounting, wire conditions, and contact conditions;
5) Replacing the battery in proper time (when necessary but at least once per 5 years).

Maintenance of fire alarm systems and public address / general alarm systems of the types 1-2 comprising the RIP-12 mod.14 (RIP-12-2/7P2-R) is to be arranged taking into account the technical guide “Maintenance of fire alarm systems and public address and general alarm systems of Types 1-2 in Orion ISS” developed by the NVP Bolid Company.

4 TROUBLESHOOTING

No	Symptom	Cause	Action
1	The RIP fails to be turned on, the mains power is on	1. Blown fuse F1. 2. Faulty wiring 3. Long-duration overload at the RIP DC output	1. Check the mains power voltage at the XT3 terminal block before the F1 fuse and after it; replace the F1 fuse. 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 fails to be turned on being powered by battery	The battery voltage has dropped below 10 V	Measure the battery voltage, charge or replace the battery
3	The TROUBLE indicator blinks	Overload or short circuit failure at the RIP output	Check the current consumed by load. Rectify the overload / clear the short circuit
4	The TROUBLE and BAT indicators blink	1. The battery leads are corroded or connections between the battery leads and wire terminals are loosened. 2. The battery has essentially lost its capacity	1. Inspect the battery leads and clean them if necessary. 2. Replace the battery

5 MANUFACTURER WARRANTY

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

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

5.3 In case of any issue related to setting and use of the product, please contact the technical support: +7 (495) 775-71-55 or e-mail: support@bolid.ru.

5.4 When the unit is submitted for repair, it shall be mandatory accompanied with a report describing the potential failure.

Claims shall be submitted to the following address: NVP BOLID, #4 Pionerskaya Str., Korolyov, Moscow Region, 141070, Russia.

Tel./fax: +7 (495) 775-71-55 (PBX), **777-40-20**, **516-93-72**.

E-mail: info@bolid.ru, **http://bolid.ru**.

6 CERTIFICATION

6.1 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply meets the requirements of "Technical Regulations on Fire Safety Requirements" (Federal Law No.123-FZ of July 22, 2008, GOST R 53325-2012) and is covered by Conformity Certificate No. C-RU.ЧС13.B.00703.

6.2 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply meets the requirements of Technical Regulations of Custom Union TR CU 004/2011, TR CU 020/2011 and is covered by Conformity Declaration ЕАЭС № RU Д-RU.МЛ66.B.02301.

6.3 RIP-12 mod.14 (RIP-12-2/7P2-R) is covered by the certificates of conformity of transport safety technical arrangements with their functional properties No. МВД РФ.03.000035, No. МВД РФ.03.000036, and No. МВД РФ.03.000037, issued by Federal Scientific-Production Association "Special Equipment and Communications" of the Ministry of Internal Affairs of the Russian Federation.

6.4 Production of RIP-12 mod.14 (RIP-12-2/7P2-R) is awarded with conformity certificate GOST R ISO 9001-2015 No. РОСС RU.АБ66.К00003.

7 ACCEPTANCE AND PACKAGING CERTIFICATE

7.1 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply with the factory number_____ is manufactured and accepted as per mandatory requirements of national standards and applicable technical documentation, approved as serviceable.

7.2 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply is packaged by NVP Bolid in line with requirements stated in applicable technical documentation.

Responsible for acceptance and packaging

QCD _____ _____

Name Date, Month, Year