

ИСО 9001



BATTERY BACKED POWER SUPPLY

**RIP-12 Mod.14
(RIP-12-2/7P2-R)**

User's Manual

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This User's Manual explains the principles of operating RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply.

Only the personnel who have studied this manual are allowed to operation activities. All activities on mounting, programming and commissioning shall be performed in compliance with the requirements of the regulatory documentation in force at the place of operation.

1 Description and Operation

1.1 Purpose

1.1.1. RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply (hereinafter referred to as the RIP) is meant to provide continuous operating power to a group of fire protection equipment, detectors and control and indicating equipment in fire alarm and security systems as well as to other appliances that require backed power of 12 V dc.

1.1.2. The RIP is intended for round-the-clock operation with specified output parameters and automatic monitoring and recharging of the sealed backup battery (hereinafter referred to as the BAT). The RIP provides shutting off the battery from a load to avoid its unacceptable discharge. The RIP protects the battery circuit against open and short failures.

1.1.3. The RIP provides visual and audible indication of current conditions, including presence or absence of mains power voltage, battery charge, missed battery, shutting the battery off in case of its discharge, short circuit failures or overloads at the output.

1.1.4. The RIP protects its output against short circuit failures with recovering output voltage automatically after repairing the failures while powered by the mains or by the battery as well as protection against output overvoltage.

1.1.5. The RIP shall be operated at locations where it is protected against atmospheric precipitations and mechanical damage. The design of the RIP doesn't provide its operating in explosion-hazardous premises.

1.1.6. The RIP is classed as a repairable and periodically maintained item.

1.2 Specifications

Table 1

No.	Parameter	Value
1.2.1	Power inputs	2
1.2.2	Primary power supply: The mains utility AC power 50/60 Hz	150...253 V
1.2.3	Backup power supply: Bolid series battery AB 1207 (the type C or M)* or similar	12V, 7 A·h
1.2.4	Output voltage: while powered by	the mains: (13.6±0.6) V, by battery: (10...13.5) V
1.2.5	Rated / maximum load current	2 A / 2.5 A**
1.2.6	Maximum power / current consumed from the mains	90 V·A / 0.5 A
1.2.7	Current consumed from the battery by the RIP itself	30 mA max
1.2.8	Ripples of the output voltage (peak-to-peak) at rated load current	100 mV max (VR1 class as per GOST R 51179-98)
1.2.9	Low battery shutdown voltage	(10.4 ± 0.6) V
1.2.10	Time to charge a fully discharged battery	30 hours max
1.2.11	Maximum charging rate	0.5 A
1.2.12	Trouble outputs (solid state relays (80 V, 50 mA) max)	3
1.2.13	Electric shock protection class as per GOST 12.2.007.0-75	1
1.2.14	Enclosure protection degree as per GOST 14254-2015	IP30
1.2.15	Resistance to mechanical exposure as per OST 25 1099-83	Arrangement Category III
1.2.16	Vibration exposure: - Frequency range - Max acceleration	1-35 Hz; 0.5 g
1.2.17	Environmental category as per OST 25 1099-83	O3
1.2.18	Operating temperature range	Minus 10 through +40 °C

No.	Parameter	Value
1.2.19	Relative humidity	93 %
1.2.20	RIP weight without BAT / with BAT	1 kg / 3.5 kg
1.2.21	Overall dimensions	165 × 211 × 90 mm
1.2.22	MTBF	40,000 h
1.2.23	Survival probability	0.975 (within 1000 h)
1.2.24	Expected service life of the RIP	10 years

* The letters C and M define the battery service life as 12 and 15 years respectively.

** The maximum load current is 2.5 A (for short-duration periods of up to 10 minutes at intervals of at least one hour provided that the mains power is available and the battery is connected).

1.2.24. The RIP provides monitoring for mains power voltage, output voltage, and battery voltage and sending messages about presence of relevant voltages 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 states of output circuits being shown in Table 5 (see 2.3.3). 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.

1.2.25. The RIP provides monitoring for opening its enclosure with the tamper switch. When the RIP enclosure is open all the contacts of the solid state relays K1, K2, K3 are open. The time for relays' status to be reinstated after closing the RIP enclosure is at least 15 sek.

1.2.26. The RIP becomes ready for operation within 6 s max after applying power to it.

1.2.27. In terms of immunity to electromagnetic interference, the RIP meets the requirements of Test Severity Level II as per the relevant standards listed in Appendix 'B' to GOST R 53325-2012.

Performance criteria: A.

Note: Quality operation of the RIP cannot be guaranteed if electromagnetic environment at the place it is installed doesn't comply with the specifications stated in this document.

1.2.28. The RIP passes the industrial interference standards prescribed for Class 'B' equipment as per GOST R 30805.22.

1.2.29. 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.

1.2.30. The insulating strength of the live parts of the RIP is at least 2000 V (50 Hz) between circuits connected to mains 220 V and any circuits not connected with the mains.

1.2.31. The electrical insulation resistance between circuits mentioned in the para 1.2.30 is at least 20 mega ohms (in normal conditions as defined in Clause 5.14.6 of GOST 52931 2008).

1.3 Scope of Delivery

The scope of delivery for the RIP is as shown in Table 2.

Table 2

Item		Q-ty, pcs.
RIP-12 Mod.14 (RIP-12-2/7P2-R)		1
Accessory Kit:		
	Fasteners: (screw and wall plug)	4
	Fuse 218 002 (similar to 'BIIT6-10 2,0A')	1
	Grommet GM-3	2
Documentation		
RIP-12 Mod.14 (RIP-12-2/7P2-R) Operations Manual		1

Note: No battery is included in the standard delivery!

1.4 Measuring Instruments, Tools, and Accessories

While mounting, commissioning, and maintaining the RIP please use the instruments, tools, and accessories shown in Table 3.

Table 3

Instrument	Specifications
Digital multimeter	AC/DC voltage up to 500 V, AC/DC current up to 10 A, resistance up to 20M Ohm
Flat head insulated screwdriver	SL2.5 x 75 mm
Cross slot insulated screwdriver	PH1 x 75 mm
Side-cutting pliers	160 mm
Pliers	160 mm

1.5 Marking

1.5.1. Every RIP has a marking applied inside its enclosure.

The marking contains the name of the device, its decimal number, factory number, the year and quarter of production, and conformity marks.

1.6 Packing

The RIP along with accessory kit and operation documentation are packaged in a separate cardboard box.

2 Intended Use

2.1 Operating Restrictions

The RIP shall be operated at places protected against atmospheric precipitations and mechanical damage. The design of the RIP doesn't provide its operation in explosion hazardous premises.

2.2 Preparing for Use

2.2.1. Safety Measures During Preparation

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.

2.2.2. Safety Precautions:

- a) Be sure that the rating of the fuse is the same as stated in the operation documentation.
- b) Opening the RIP without prior shutting it off from the mains utility power is prohibited.
- b) Removing the protective housing from the PCB is prohibited.

2.2.3. RIP Design

2.2.2.1. The RIP is assembled into a plastic enclosure. The enclosure consists of a base and a front cover. There are LEDs on the cover for indicating RIP conditions. Within the RIP base there are the PC board and 220 V mains terminal block with F1 fuse holder embedded. The space at the bottom part of the RIP enclosure is meant for housing the battery.

2.2.2.2. To remove the RIP front cover, do the following:

- 1) Unscrew the bolt fastening the 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 (Appendix A).

2.2.4. Mounting

2.2.4.1. Installing, wiring, and maintenance can be carried out only when the RIP is disconnected from the mains. The equipment shall be mounted and maintained by persons qualified for Electrical Safety of Level III or higher.

2.2.4.2. Mounting and Preparing for use

The RIP is to be installed on a wall or another structure of the protected premises at places protected against exposure to atmospheric precipitation and mechanical damage (see 1.2.13-1.2.18).

Attach the RIP at a convenient place. Overall and mounting dimensions are shown in Appendix B.

2.2.5. Connecting the RIP

WARNING!



While connecting mains power 220 V to the XT3 input power terminal block, please observe correct polarity of connecting the Line and Neutral wires. Connect the circuits to the RIP as shown in the figure in Appendix C. The diagram for wiring the RIP is located on the inside of the RIP's cover

2.2.5.1. Install the battery.

2.2.5.2. In accordance with the connection diagram (see Appendix C):

a) Take the fuse F1 (2 A) out of its holder and then connect the mains wires to the input power terminal block of the RIP (**the Line wire (L) shall be connected to XT3:1, see Appendix C**).

b) Connect the load to the output power terminal block XT1 on the PC board observing polarity (the terminals XT1:1 and XT1:2 coupled on the PC board shall be connected to “+” circuit while the terminals XT1:3 and XT1:4 coupled on the PCB shall be connected to the “—” circuit).

Note: The rated load current is 2 A. It is acceptable for the RIP to operate for short times at load current up to 2.5 A (see 1.2.85) in case of activation of audible alarms, fire-fighting equipment, actuators etc.

Warning! In case of long-time operation with a load current above the rated value, charging the battery is terminated, and the battery starts to discharge even in presence of the mains voltage

b) In line with the system project connect the outputs of the solid state relays K1, K2, K3 to inputs of the devices responsible for monitoring the RIP for mains voltage presence, DC output voltage presence, and tampering its enclosure.

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

o To connect the RIP to mains power 220 V (the XT3 terminal block): 0.75...2.5 mm² for stranded wires or 1...2 mm in diameter for solid ones;

o To connect with relay outputs K1, K2, K3: 0.12...1 mm² for stranded wires or 0.4...1.1 mm in diameter for solid ones;

o To connect the load (the XT1 terminal block): 0.5...2.5 mm² for stranded wires or 1...2 mm in diameter for solid ones taking into account the voltage drop on wires at maximum load current (the minimum allowable voltage of the load).

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

2.2.5.4. 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 operation here means keeping the tamper switch pressed within a time between 1.5 s and 3 s. Short time operation 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.

2.2.5.5. The external protective circuit breaker can feature rated current at least 3 A and tripping characteristic of class C.

2.3 Usage

To be admitted to work with the equipment, the personnel are obliged to have studied this manual and to have a certificate of verification of knowledge of safety regulations.

2.3.1. Turning the RIP On

Important! Prior to turning the RIP on ensure that the mounting is carried out properly!

a) Connect the battery to the leads, observing polarity (with the red wire being connected to the positive lead of the battery).

b) Insert the fuse F1.

c) Switch mains power 220 V, 50 Hz on.

2.3.2. Operation of the RIP

a) After being powered on, the RIP microcontroller checks the presence of a battery. If the battery is available and charged, 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. 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.

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

d) 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 2.2.5.4). 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

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

f) 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 input circuits of control and indicating equipment. Conditions of the solid state circuits can be found in Table 5.

g) 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 shall pulse twice per second while the buzzer shall issue 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 4. If the combination of indicator states is not defined in Table 4 or other deviations in the RIP functionality are observed, please contact the technical support service of NVP Bolid (for contacts, see 4.5).

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 4

Current Conditions of the RIP	Indicators				Buzzer
	POWER	BAT	12 V	TROUBLE	
	<i>green</i>	<i>green</i>	<i>green</i>	<i>amber</i>	
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 not 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

Current Conditions of the RIP	Indicators				Buzzer
	POWER	BAT	12 V	TROUBLE	
	<i>green</i>	<i>green</i>	<i>green</i>	<i>amber</i>	
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

Note: ** Under overload, the 12 V indicator can illuminate for short time.

2.3.3. The RIP sends signals about presence / absence of mains power voltage, output voltage, and battery voltage to external circuits via three solid state relays. The output circuits of the solid state relays are field-effect transistors. 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 output circuits are shown in Table 5.

Table 5

Circuit	Purpose	Contact conditions	
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 voltage monitoring	When the RIP is fed by mains power 220 V 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.

2.3.4. The load and the RIP are protected against improper battery polarity and short circuit failures in the battery/load circuits with resettable fuses.

2.3.5. Turning the RIP Off

- a) Turn off the mains power 220 V.
- b) Take the F1 fuse out.
- c) Disconnect the battery.
- d) Disconnect the load.

2.3.6. Extreme Situation Actions



Warning!

If sparks, fire, smoke, or smell of burning is found at the installation site of the product, the product must be de-energized and sent for repair

2.3.7. Following are the troubles that may occur along with proposed solutions to repair them.

Table 6

Symptom	Possible Cause	Solutions
The RIP fails to be turned on, the mains power is on	1. Blown fuse F1	1. Check the mains power voltage at the XT3 terminal block before the F1 fuse and after it; replace the F1 fuse

Symptom	Possible Cause	Solutions
	2. Faulty wiring 3. Long-duration overload at the RIP DC output	2. Repair the wiring 3. Shut down the RIP. Wait for at least 2 min and then turn the RIP on again
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
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
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

3 Maintenance

3.1 General

The RIP is to be services according to a scheduled-preventive system which provides annual maintenance.

3.2 Safety Precautions

The RIP shall be maintained by personnel qualified for the Electrical Safety of Level III or higher.

3.3 Maintenance Procedures

Maintenance works are to be performed by a service company employee and include:

- 1) Inspecting exterior conditions of the RIP;
- 2) Checking the output voltage when the load is connected as per the section 1.2.4 of this manual and the output voltage while the RIP is powered by battery, testing functioning of the visual indicators and the buzzer (as described in Table 4 of this manual);
- 3) Ensuring the RIP is fastened properly and its connecting wires and contact joints are in good conditions;
- 4) Replacing the battery in proper time (when necessary but at least once per 5 years).

Note: Operating temperatures above 25 degrees C dramatically reduce battery service life (see specifications of the manufacturer of the battery installed).

3.4 Performance Testing

- 3.4.1. A full testing of the RIP performance is carried out only by the manufacturer or in special labs.
- 3.4.2. Turn the RIP on as discussed in 2.3.1.
- 3.4.3. Check operation of the RIP, its indicators and its buzzer against the Table 4.
- 3.4.4. Measure the output voltage of the RIP and verify it's falling in the range stated in 1.2.4.
- 3.4.5. Shut off the mains power and verify that the RIP has started to be powered by battery.
- 3.4.6. Verify that the indicators and the buzzer operate as stated in Table 4.
- 3.4.7. Turn the mains on and verify that the indicators and the buzzer operate as stated in Table 4.
- 3.4.8. The RIP is considered to be operational if the requirements of 3.4.2 – 3.4.7 are met.

3.5 Technical Examination

Technical examination is not applicable for this equipment.

3.6 Preservation

Preservation is not applicable for this equipment.

4 Routine Repair



ATTENTION!

The manufacturer accepts no claims unless a malfunction report is applied

4.1 A RIP's failure resulted from consumer's not observing rules of mounting and operation is not a reason for claims and warranty repair.



Warning!

Removing the RIP's PC board from its enclosure automatically voids the manufacturer's warranty

4.2 Routine repair of a defective product or updating firmware is to be performed by the manufacturer or in authorized repair centers. The product shall be sent for routine repair in compliance with Company Standard QMS 8.5.3-2015, which can be found online at our website <https://bolid.ru/support/remont/>.

**Attention!**

The equipment shall be submitted for repair being assembled and clean and along with all the parts listed in the documentation.

Claims are accepted only if a reclamation report describing the failure is applied to the submitted equipment.

4.3 A product's failure resulted from consumer's not observing rules of mounting and operation is not a reason for claims and warranty repair.

4.4 Claims should be submitted to the following address:

NVP BOLID, #4 Pionerskaya Str., Korolyov, Moscow Region, 141070, Russia
Phone/fax: +7 (495) 775-71-55 (PBX). E-mail: info@bolid.ru.

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

5 Storage

Storage in a transport container is permitted in unheated warehouses at ambient temperatures -30°C through +50°C and relative humidity up to 95% at +35°C.

In the consumer package the equipment can be stored only in heated storage facilities at ambient temperatures +5°C through +40°C and relative humidity up to 80% at +20°C.

6 Transporting

The RIP can be transported in a transport container at ambient temperatures minus 30 through +50°C and relative humidity up to 95 % at +35°C.

7 Disposal

7.1. The RIP is to be disposed of considering that there are no toxic components in it.

7.2. Batteries are classed as hazardous waste of Class II, so used up batteries shall be disposed of by a specialized company that is licensed for this activity.

7.3. The content of precious materials: doesn't require accountability for storage, retirement, and disposal (Clause 1.2 of GOST 2.608-78).

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

8 Manufacturer Warranty

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

8.2 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.

9 Certification Information

9.1 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply meets the requirements of TR EAEU 043/2017 'On Requirements for Fire Safety and Fire Extinguishing Equipment' and is covered by the conformity certificate No. EAЭC RU C-RU.ПБ68.B.00352/21.

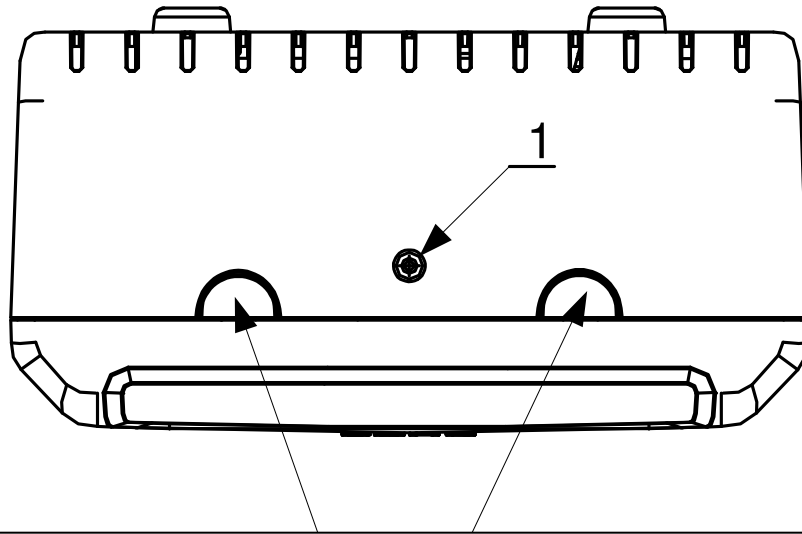
9.2 RIP-12 mod.14 (RIP-12-2/7P2-R) Battery Backed Power Supply meets the requirements of Technical Regulations of Custom Union TR CU 004/2011, TR CU 020/2011 and is covered by Conformity Declaration EAЭC № RU Д-RU.MJI66.B.02301.

9.3 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.

9.4 Production of RIP-12 mod.14 (RIP-12-2/7P2-R) is awarded with the conformity certificate GOST R ISO 9001-2015 No. РОСС RU.АБ66.К00003. The certificate can be found at the website <http://bolid.ru> in the section ABOUT COMPANY.

Appendix A

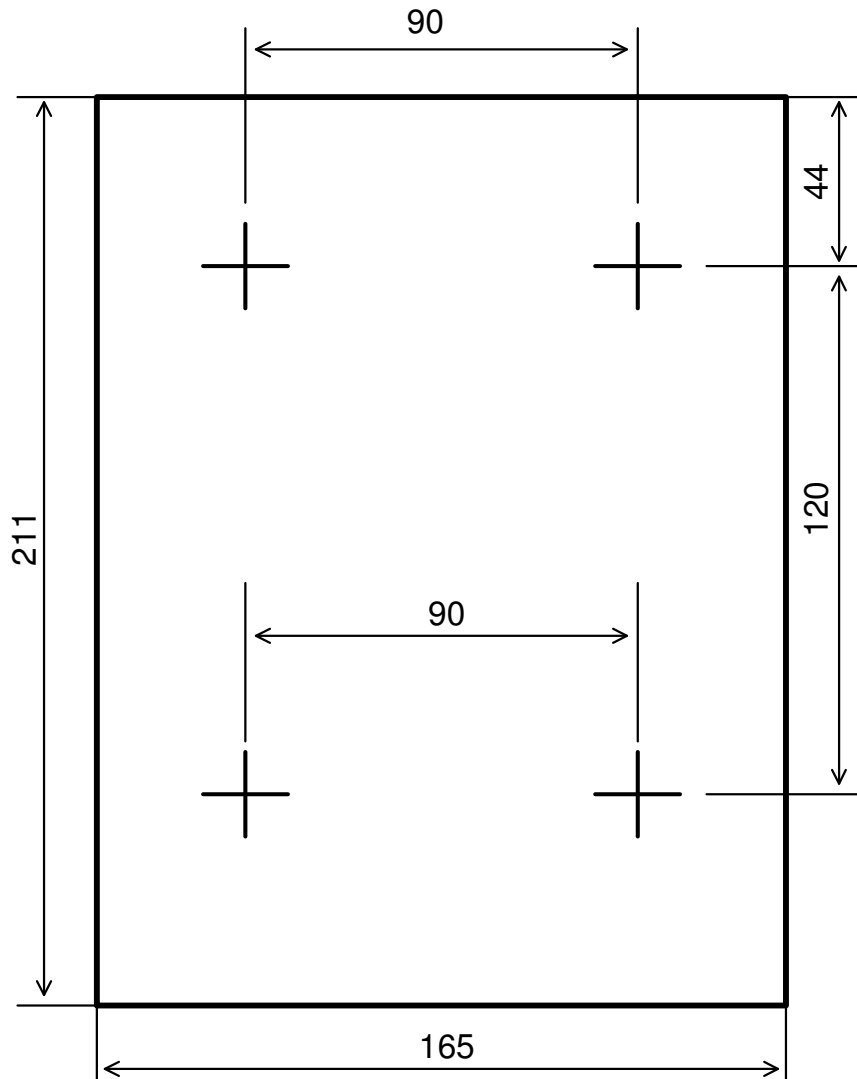
Top View



To open the cover, press on the notches on the top of the RIP

Appendix B

RIP Overall and Mounting Dimensions



Appendix C

RIP-12 Mod.14 (RIP-12-2/7P2-R) Connection Diagram

