



ISO 9001



## Uninterrupted Power Supply

# RIP-12 RS

*User's Manual*

This User's Manual is intended to help for studying operability principles and maintenance of RIP-12 RS Uninterrupted Power Supply of version 1.02.

**Please read the instructions completely before connecting, operating, adjusting or maintaining this product.**

The following terms are used throughout the Manual

**Zone:** a minimal part of the security and safety installation that can be monitored and controlled independently. Depending on the context, the term 'zone' can imply an alarm loop, an addressable detector, a hardware component and so on.

**Partition:** A set of zones that can be user controlled as a whole. As a rule, zones fall into partitions depending on their location (e.g., one partition can involve all zones at one individual area)

**Network Address (Address):** – a unique number of the device (from 1 to 127) within the Orion ISS local RS-485 network

## Table of Contents

<b>Features and Design</b> .....	<b>5</b>
<b>Specifications</b> .....	<b>9</b>
<b>Operation</b> .....	<b>13</b>
<i>Operation Principles</i> .....	14
<i>Trouble Output Relay</i> .....	15
<i>RIP-12 RS Indication</i> .....	16
<i>Data Communications via RS-485 Interface</i> .....	18
Condition Message Transmission	18
Remote Control via RS-485 interface	20
<i>S2000M Console Remote Requests for RIP-12 RS Conditions</i>	20
<i>S2000M Console Requests for Remote Reading of RIP-12 RS Parameter Values</i>	21
<b>Installation</b> .....	<b>23</b>
<i>Accessories</i> .....	24
<i>Safety Precautions</i> .....	24
<i>Mounting the Cabinet</i> .....	25
<i>RIP-12 RS Wiring</i> .....	25
RIP-12 RS to RS-485 Interface Line Connection	26
RIP-12 RS Starting Up	27
<i>RIP-12 RS Shut Down</i> .....	28
<b>Programming</b> .....	<b>29</b>
<i>UPROG Configuration Tool Operations</i> .....	30
<i>RIP-12 RS Configuration Parameters</i> .....	32
<i>RIP-12 RS Network Address Programming</i> .....	32
<i>AC Condition Message Delay Programming</i> .....	33
<i>Trouble Relay Programming</i> .....	33
<b>Maintenance</b> .....	<b>35</b>
<i>Troubleshooting</i> .....	36
<i>RIP-12 RS Inspection Check-off</i> .....	37
<b>Appendix Bolid RIP Uninterrupted Power Supplies and Accessories</b> .....	<b>39</b>



# FEATURES AND DESIGN

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RIP-12 RS Uninterrupted Power Supply with the RS-485 communication port (hereinafter referred to as RIP-12 RS) is designed to provide continuous operating power to a group of security and safety electronic equipment that require 12 Volt of DC.

RIP-12 RS provides round the clock operation with specified voltage output and automatic monitoring and recharging of sealed backup battery (hereinafter referred to as "battery"). RIP-12 RS also features:

- Extended input voltage range of 150 to 250 Volt AC
- Monitoring and indication for troubles of mains input voltage, backup battery and battery power charger
- Automatic battery shutoff to prevent battery down
- Output short-circuit protection with automatic voltage recovering after repair, along with output overvoltage protection
- Battery protection against short circuit failures between terminals, output voltage being kept up upon operating from mains power
- Temperature compensation for battery power charger within operating temperature range, as well as monitoring for charger output voltage and current to provide optimal battery charging
- Monitoring for conditions of the battery and its connection circuits by means of comparison with maximum allowable internal resistances of these circuits



RIP-12 RS is equipped with five LED indicators to provide local condition and trouble indication. POWER Indicator (4), CHARGE Indicator (3) and 12V Indicator (5) are intended to display conditions of input mains power, battery power charger and DC output. FAULT Indicator (8) signalizes all kinds of occurring internal troubles, while RS-485 Indicator (6) indicates communication condition between RIP-12 RS and a network controller via RS-485 interface line.

RIP-12 RS has a built in sounder to alert personnel of detected faults. The sounder can be deactivated if desired.

RIP-12 RS is equipped with RS-485 communication port, through which it can be connected to the Orion system RS-485 local network in order to communicate data with an Orion network controller. The Orion network controller can be either Bolid manufactured S2000M/S2000 ver.1.10+ Fire & Alarm Console or Orion Workstation Software set on a PC. In such a case RIP-12 RS additionally provides:

- Centralized remote RIP-12 RS parameter setting from the location of the Orion network controller
- Synchronizing of its internal clock with the clock of the network controller
- Transmitting the network controller various types of messages when some troubles occur. If a temporary communication loss happens to be during trouble occurring these messages are stored within RIP-12 RS nonvolatile memory (up to 29 messages), and then after RS-485 communications resuming the stored messages are transmitted to the network controller along with actual event data and time in accordance with internal RIP-12 RS clock.
- Upon a request of the network controller reading and transmitting of input and output electrical parameters or tamper switch conditions. This allows using RIP-12 RS as an additional source of information for analysis of current system events, as well as a mean for continuous on-line monitoring of mains utility power parameters and quality. ARM S2000 Engineer Package Software, for example, provides on-line displaying of the information being received in the form of scalable diagrams.

Moreover, RIP-12 RS is equipped with opto-relay output with galvanic isolation enabling remote transmission of trouble messages without regard to communication conditions between RIP-12 RS and a network controller or network controller inoperability. The operating tactics is variable and user selectable as one of the four available executive programs with the execution time also programmable by a user.

RIP-12 RS is housed in a tamper proof steel cabinet that consists of a wall mountable base (2) and key lock (7) protected door (1).

RIP-12 RS Uninterrupted Power Supply is suited for indoor applications and must be protected from water, ice, snow as well as mechanical damage.



# SPECIFICATIONS

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➤	<b>RS-485 Communication Port</b>	Yes
➤	<b>Visual Trouble Indicators</b>	AC Power Battery Charge Condition Fault RS-485 Communication Fault Backup Battery Power
➤	<b>Trouble Relay</b>	Commutation Voltage 80 V max Switched Current 100 mA max Resistance for a Closed Relay Circuit 50 Ohm max Open Circuit Leakage Current 1 $\mu$ A @ 80V
➤	<b>Input Voltage</b>	150 V AC to 250 V AC at 50 Hz
➤	<b>Input Current</b>	0.7 A max at 150 V AC
➤	<b>Power Consumption</b>	110 VA max
➤	<b>AC Fuse</b>	2 A
➤	<b>Backup Battery Type</b>	12 V Sealed Lead Acid Rechargeable Battery, 17 Ahr
➤	<b>Low Battery Shutdown Voltage</b>	10.2 $\pm$ 0.6 V
➤	<b>Battery Full Charge Time</b>	48 hours max
➤	<b>Battery Space (WxDxH)</b>	181 $\times$ 77 $\times$ 167 mm
➤	<b>Backup Operating Time</b>	at least 4 hours from fully charged battery at 3-A load current and 25°C
➤	<b>Output Voltage</b>	13.6 V DC $\pm$ 0.6 V DC at Mains Power On 9.5 V DC to 13.5 V DC at Mains Power Off
➤	<b>Output Voltage Ripple</b>	0.12 V DC peak-to-peak max at rated load current
➤	<b>Output Current Rating</b>	3 A

- **Maximum Load Current** 4 A (short periods of about 10 minutes once per an hour).  
*NOTES:* When an output current value has exceeded 3.5 A RIP-12 RS shuts down the battery charger.  
When an output current value has exceeded 4 A RIP-12 RS shuts down the power outputs.
- **Operating Temperatures** –10 to +40°C
- **Humidity** up to 90% at +25 °C
- **Overall Dimensions** 255 × 310 × 95 mm
- **Weight (with a Battery)** about 8.5 kg
- **Average Lifetime** 10 years  
*NOTE:* Every five years a backup battery must be replaced.
- **Readiness Period** 6 s max



# OPERATION

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## OPERATION PRINCIPLES

**After powering on**, RIP-12 RS checks for backup battery presence and normal RS-485 communications with a network controller.

If the battery

- Is connected and its voltage exceeds 13.2 V — the CHARGE indicator is lit,
- Is not properly charged — RIP-12 RS charges it, CHARGE LED being out periodically once per 3 seconds,
- Is not connected or its output voltage is lower than 7 V — CHARGE LED is off,
- Is dead and needs to be replaced — CHARGE and FAULT LEDs flashes twice per a second, the internal sounder producing pulsed sounds for 10 seconds.

If a battery power charger trouble occurs, RIP-12 RS detects its within 15 minutes, indicating this event as described in Table 1 and transmitting the CHARGER FAILED message to a net controller.

**When operating**, RIP-12 RS periodically inspects:

- The battery presence (at least every minute)
- The battery condition (at least once per 15 minutes)
- The charger operability (at least once per 15 minutes)

**In case of mains power outage,**

- The backup battery is activated to supply power to the load circuits
- The interrupted sound signal goes off warning about battery discharge
- The POWER LED is off
- The 12 V LED is lit
- Once a pre-programmed delay (see p.33) has elapsed the RIP-12 RS transmits the AC POWER FAILED message to the net controller

**If the battery output voltage drops to 11 V**, the sounder begins to play interrupted sounds more frequently and the BATTERY FAILED message is transmitted to the Orion network controller. Immediate actions must be taken to provide mains power voltage.

**If the battery output voltage drops to 10 V**, the battery is shut down to prevent its deep discharge.

In this case

- The 12 V LED is off
- The sound alarms go off continuously for the first two hours and then once per 10 s

- RIP-12 RS transmits the POWER OFF message to the Orion network controller




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NOTE: RIP-12 RS sound alarms can be disabled by means of special pressing on the RIP-12 RS tamper switch (see *RIP-12 RS Indication* Section, p.16). The repeated pressing on the tamper switch will enable RIP-12 RS sound alarms.

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#### **If an inadmissible load circuit over-current or short load circuit failure occurs, RIP-12 RS**

- Applies a DC voltage to its outputs for a short time period every 10 seconds to detect current conditions
- The FAULT LED flashes twice per a second
- The RIP-12 RS sounder plays interrupted alarm sounds

Within 15 seconds after the malfunction has been repaired the DC output proper operation is resumed automatically.

### **TROUBLE OUTPUT RELAY**

RIP-12 RS has a built-in 'trouble output' relay which is operated by one of several trouble conditions, including RS-485 communication fault, RIP-12 RS enclosure tampering, both mains and backup input power troubles, DC power and charger faults, as well as DC output overcurrent. This relay is intended to transmit troubles remotely, for example, to a central station, without regard to RS-485 communication condition. The actual trouble events that will be transmitted by means of the relay can be selected by user from pre-determined list of events.

The relay can be programmed to operate in accordance with one of the four available executive programs defining behavior of the relay upon trouble event occurring, among them

<i>Switch OFF</i> (by default)	The relay is switched off when a selected trouble condition exists, being switched on otherwise
<i>Switch ON</i>	The relay is switched on when a selected trouble condition exists, being switched off otherwise
<i>Switch ON for a Time</i>	When a selected trouble has occurred the relay is switched on for a specified time, then or otherwise the relay is switched off
<i>Switch OFF for a Time</i>	When a selected trouble has occurred the relay is switched off for a specified time, then or otherwise the relay is switched on

The execution time expressed by the *Time* parameter in two last executive programs is also programmable within the range of 0 to 255 seconds, the factory value being 255 s.

## RIP-12 RS INDICATION

RIP-12 RS indicates its operation conditions and troubles by means of five LEDs and internal sounder as described in Table 1. Following is the list of notations used in Table 1.

<b>+</b>	Switched ON
<b>—</b>	Switched OFF
<b>+/- 1 Hz</b>	Switches on and off alternately every second
<b>+/- 2 Hz</b>	Switches on and off alternately twice per a second
<b>+/- 4 Hz</b>	Switches on and off alternately four times per a second
<b>OFF / 3s</b>	Turns off every 3 seconds
<b>ON / 0.4s</b>	Turns on every 0.4 seconds
<b>ON / 0.8s</b>	Turns on every 0.8 seconds
<b>ON / 5s</b>	Turns on every 5 seconds
<b>ON / 10s</b>	Turns on every 10 seconds

**The sound signaling of RIP-12 RS can be hardware disabled** if necessary. This is doing by making short-short-short-long pressing on RIP-12 RS tamper switch on the top left side of the enclosure just under the RIP-12 RS door. The term 'long' means more than 1.0 s, while the term 'short' means less than 0.5 s. The pauses between pressings must not exceed 0.5 s. The repeated pressing will enable the sound signaling mode again.

Table 1. RIP-12 RS Light and Sound Indication

RIP-12 RS Condition	Indicator lights					Internal Sounder
	POWER	CHARGE	FAULT	RS-485	12 V	
	<i>green</i>	<i>green</i>	<i>yellow</i>	<i>green</i>	<i>green</i>	
Mains utility power is starting up, the battery is not connected	+	—	—	+ <sup>1</sup>	+	ON / 0.4 s 3 times
Mains utility power is supplied to the RIP-12 RS and the battery is not charged	+	OFF / 3s	—	+ <sup>1</sup>	+	—
Mains utility power is supplied to the RIP-12 RS and the battery is charged	+	+	—	+ <sup>1</sup>	+	—
DC output overcurrent (a battery is available)	+	+	+/- 2 Hz	+ <sup>1</sup>	ON / 10s	ON / 0.8s
Mains power is disabled, the battery voltage exceeding 11 V	—	+	—	+ <sup>1</sup>	+	ON / 5 s
Mains power is disabled, the battery voltage dropping below 11 V	—	+	—	+ <sup>1</sup>	+	ON / 0.4 s
Mains power is shut off and battery voltage is lower than 10.2 V, within first two hours	—	+/- 1 Hz	—	+ <sup>1</sup>	—	+
Mains power is shut off and battery voltage is lower than 10.2 V, after two hours expiring	—	+/- 1 Hz	—	—	—	ON / 10 s
Mains power voltage is lower than 150 V or higher than 250 V (the battery is available)	+/- 1 Hz	+	+/- 1 Hz	+ <sup>1</sup>	+	See Note 2
Dead battery (must be replaced)	+	+/- 2 Hz	+/- 2 Hz	+ <sup>1</sup>	+	5 beeps
Battery charger fault	+	+/- 4 Hz	+/- 4 Hz	+ <sup>1</sup>	+	ON / 0.8s
Output overvoltage	+/- 1 Hz	+/- 1 Hz	+/- 1 Hz	+/- 1 Hz	—	—

NOTES: 1. If RIP-12 RS is connected to a network controller communicating data with it via RS-485 interface. If RS-485 data communications have been lost for more than 30 s the RS-485 LED begin flashing once per a second, while if RIP-12 RS is disconnected from the network controller the RS-485 LED is off.

2. Upon mains power troubles the behavior of the internal sounder depends on backup battery voltage and is similar to its behavior in case of mains power outage – see four previous conditions.

## DATA COMMUNICATIONS VIA RS-485 INTERFACE

The RIP-12 RS Power Supply connected to an Orion network controller via RS-485 interface transmits condition and trouble messages to the net controller, enabling remote indicating of various troubles. These messages can be redirected by the network controller to other devices of the Orion system, such as indicator modules (this possibility is reserved for future use) or relay modules, for centralized remote both indication and notification as well as executive program's activation.

Moreover, S2000/S2000M console and a number of software tools are capable of sending remote requests to RIP-12 RS devices asking them for their operation conditions and for their electrical parameters values. These features enable using RIP-12 RS devices as a mean of continuous on-line monitoring for electric power parameters and quality.

### ***Condition Message Transmission***

If connected RIP-12 RS automatically transmits a network controller a number of its condition messages. These messages are displayed by the network controller together with an indication of the RIP-12 RS network address and a logical zone or 'loop' number which corresponds to a separate hardware zone of RIP-12 RS (see below). If the network controller is properly adjusted the messages are displayed with partition names instead of network addresses. The message type depends on zone ('Loop') number as follows.

**'Loop' # 0** – messages from the RIP-12 RS itself (the number 0 is not displayed)

DEVICE RESTART	RIP-12 RS power has just been turned up
TAMPER ALARM	RIP-12 RS enclosure has just been opened
TAMPER RESTORE	RIP-12 RS enclosure has just been closed

**'Loop # 1** – DC output voltage zone messages

POWER FAILED	RIP-12 RS fails to supply power in accordance with its specification when connected to the live AC line
POWER RESTORE	RIP-12 RS has just begun to supply power in accordance with its specification after its failure
POWER OFF	RIP-12 RS output voltage has shut off because AC power and backup battery have failed
POWER ON	RIP-12 RS has just begun to operate normally after failure

**'Loop' # 2** – DC output current zone messages

OVERCURRENT	RIP-12 RS output current has exceeded 4 A
CURRENT RESTORE	RIP-12 RS output current has just dropped below 3.5 A

**'Loop' # 3** – battery zone messages

BATTERY FAILED	The battery voltage is below 7 V, or there is no battery connected, or the internal battery resistance is less than the admissible value and the battery must be replaced
BATTERY RESTORE	The battery voltage has exceeded 10 V so the battery can be charged

**'Loop' # 4** – power charger zone messages

CHARGER FAILED	The battery power charger doesn't provide specified voltage and current values to charge a battery
CHARGER RESTORE	The battery power charger operability has just been restored

**'Loop' # 5** – AC power zone messages

AC POWER FAILED	Input AC voltage is less than 150 V or more than 250 V
AC POWER RESTORE	Input AC voltage has just been returned to a normal value (between 150 V and 250 V)

**NOTES**

1. RIP-12 RS provides buffering of events that should be transmitted to a network controller. If a temporary communication loss happens to be during generating of a message then the messages are stored within RIP-12 RS nonvolatile memory (up to 29 last messages can be stored at once). Then, after RS-485 communications resuming, the stored messages are transmitted to the network controller along with actual event data and time in accordance with internal RIP-12 RS clock.
2. AC POWER FAILED and AC POWER RESTORE messages are transmitted to an Orion network controller after *AC POWER FAILED Message Delay* and *AC POWER RESTORE Message Delay* seconds correspondently. By default these values are equal to 3 seconds each and can be incremented up to 255 seconds upon RIP-12 RS configuring by means of UPROG Configuration Tool (see *AC Condition Message Delay Programming* Section of this Manual).

## Remote Control via RS-485 interface

RIP-12 RS responds to commands received via RS-485 interface line from a network controller or supervisory Orion application software, such as S2000(M) console, ARM Orion Pro, ARM S2000, or UPROG Configuration Tool. These commands include:

- RIP-12 RS with a net controller clock synchronization
- RIP-12 RS parameter values remote reading and writing
- Remote requests for the conditions of RIP-12 RS power inputs and outputs as well as battery charger and tamper switch conditions.
- Remote requests for reading input and output electrical parameters for continuous on-line monitoring of electrical power parameters and quality.

The specific list of enabled commands depends on the type of the network controller or the type and version software being in use — see the corresponding Manual for the description of remote requests mentioned above.

The remote parameter setting is implemented by means of UPROG Configuration Tool which will be described in the *Programming* Section.

Following is the description of remote requests for RIP-12 RS condition and parameter reading sent by a S2000M console.

### S2000M Console Remote Requests for RIP-12 RS Conditions

RIP-12 RS responds to the remote condition requests from a S2000M console by transmitting measured parameters of various zones which are defines as follows:

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

To request for a RIP-12 RS condition from the S2000M console:

<b>ENTER CODE: _</b>	Enter your PIN-code
<b>◆ 5 REQUEST INFO</b>	Select REQUEST INFO command by ◀ or ▶ console button and press <b>ENTER</b> , or use <b>5</b> console button as the hot key.
<b>◆ 51 ZONE STATE</b>	Select ZONE STATE command by ◀ or ▶ console button and press <b>ENTER</b> , or use <b>1</b> console button as the hot key.
<b>ADDRESS: _</b>	Enter RIP-12 RS network address or select the valid value by ◀ or ▶ console button and press <b>ENTER</b> .

**ENTER LOOP#:\_** Enter the zone number (or 'LOOP#') in accordance with the parameter to be requested (see above) or select the proper value by  or  console button and press **ENTER**.

The responses from RS-RIP zone conditions are treated similarly RIP-12 RS condition messages described in the *Condition Message Transmission* Section of this Manual.

### S2000M Console Requests for Remote Reading of RIP-12 RS Parameter Values

RIP-12 RS provides reading and transmitting the S2000M console the values of such electrical parameters as:

- Mains utility voltage within the range of 150 to 260 V AC
- Battery output voltage within the range of 8 to 14.5 V DC
- DC output voltage within the range of 8 to 14.5 V DC
- DC output current (load current) within the range of 0.1 to 4 A

*NOTE:* All these reading are estimations rather than precise values. Use certified instruments to measure electrical parameters more accurately.

To request for reading RIP-12 RS electrical parameters from the S2000M console:

**ENTER CODE:\_** Enter your PIN-code

**◆ 5 REQUEST INFO** Select REQUEST INFO command by  or  console button and press **ENTER**, or use **5** console button as the hot key.

**◆ 51 ZONE ADC** Select ZONE ADC command by  or  console button and press **ENTER**, or use **2** console button as the hot key.

**ADDRESS:\_** Enter RIP-12 RS network address or select the valid value by  or  console button and press **ENTER**.

**ENTER LOOP#:\_** Enter the zone number (or 'LOOP#') in accordance with the value to be requested (#0 is disabled for remote reading) or select the proper value by  or  console button and press **ENTER**.

The responses from RS-RIP can be as follows:

- For zone 1 – **Vout = 8...14,5V**, or  
**Vout = 0** meaning that the DC output is shut down
- For zone 2 – **Iout = 0,1...4A**, or  
**Iout = 0** meaning that the load current is more than 4 A or there is no load
- For zone 3 – **Vbat = 8...14,5V**, or  
**Vbat = 0** meaning that there is no battery
- For zone 4 – **CG\_NORM / CG\_FAIL** (is the battery power charger working or not)
- For zone 5 – **Vin =150...260V**, **Vin < 150V**, or **Vin > 260V**



# INSTALLATION

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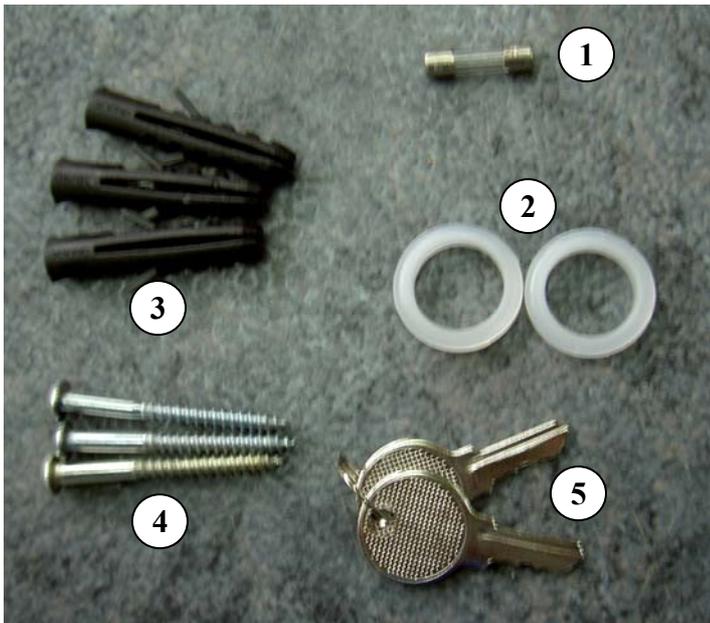
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## ACCESSORIES

Find the following when unpacking the RIP-12 RS:

- RIP-12 RS Uninterrupted Power Supply housed in a grey steel, powder-coated Cabinet. The Cabinet consists of a Base and a key lockable Door
- This User's Manual
- RIP-12 RS Accessories (see Figure 1), among them



1. AC Fuse
2. Two Plastic Bushings
3. Three Wall Plugs
4. Three Woodscrews
5. Two Mechanical Lock Keys

Figure 1. RIP-12 RS Accessories



Please take into account that RIP-12 RS comes without a backup battery which should be purchased separately (see Section *Specifications*).

## SAFETY PRECAUTIONS

The RIP-12 RS Power Supply's sources of potential hazard are current carrying circuits which are covered by a yellow protective housing to prevent electrical shock damage.

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**NEVER REMOVE THE YELLOW PROTECTIVE HOUSING FROM RIP-12 RS BASE**

**DO ALWAYS SHUT OFF MAINS UTILITY POWER BEFORE MOUNTING, WIRING OR MAINTAINING OF RIP-12 RS**



**BE SURE THE RIP-12 RS IS PROPERLY GROUNDED**

**BE SURE THE AC FUSE IS OPERABLE AND ITS AMPERAGE IS VALID IN ACCORDANCE WITH THE SPECIFICATION IN THIS MANUAL**

**DO ALWAYS SHUT OFF MAINS POWER AND REMOVE AC FUSE WHEN SETTING OR REPLACING THE BACKUP BATTERY**

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## MOUNTING THE CABINET

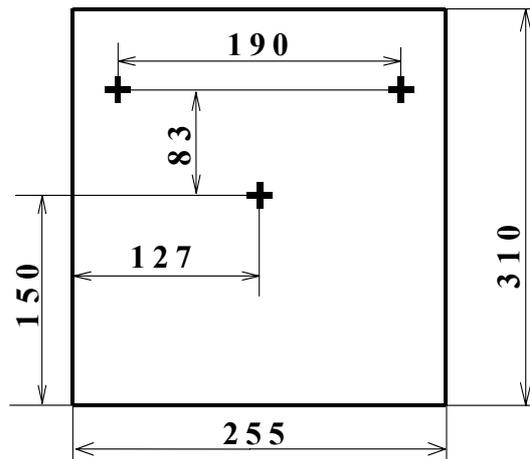


Figure 2. RIP-12 RS Cabinet Drilling Pattern

RIP-12 RS power supply is mounted at the places protected from atmospheric fallout, mechanical damage and unauthorized access.

S2000-R overall and mounting dimensions are shown in Figure 2.

Attach the RIP-12 RS cabinet to a wall or other constructions surface by means of three screws provided. The cabinet is hinged and pushed to put on two top screws, then it is fixed by tightening central screw.

## RIP-12 RS WIRING

The top view of the RIP-12 RS base is shown in Figure 3. Mounting and wiring of electrical wires are implemented in accordance with the drawing of electrical connections shown in Figure 4.

The installation and wiring must be performed by a competent engineer.

Route all cables through the knock out holes on the right hand side of the enclosure base protecting them by means of plastic bushings provided.




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**CAUTION! Remove the Fuse Holder from the Fuse Terminal Block (see Figure 3) before starting to wire in order to avoid premature connecting of mains utility power to the RIP-12 RS PCB**

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**CAUTION! Pay special attention connecting Line and Neutral wires and correctly**

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**CAUTION! Never use RIP-12 RS if it is not grounded properly**

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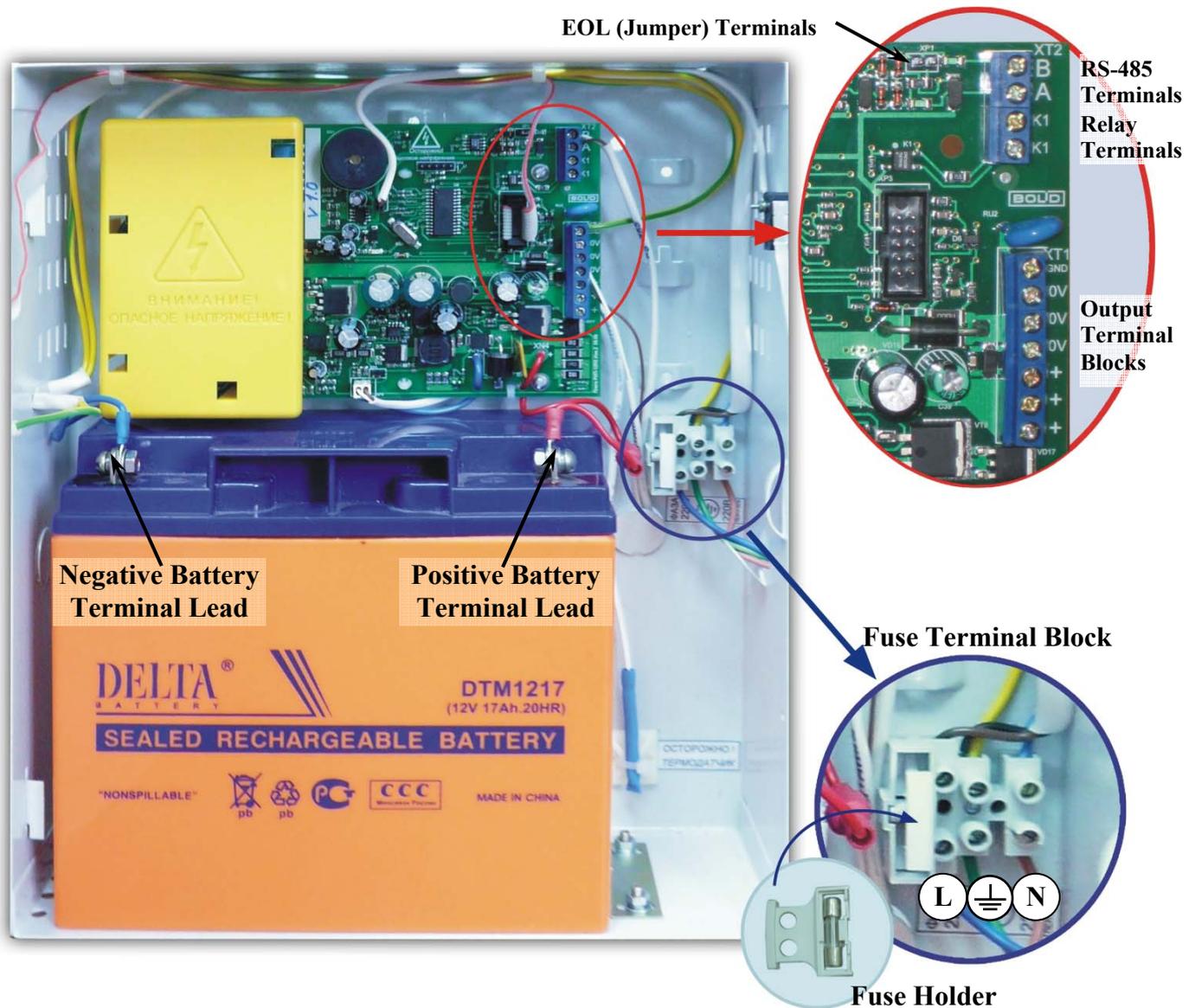


Figure 3. RIP-12 RS Base — Top View

**RIP-12 RS to RS-485 Interface Line Connection**

To connect RIP-12 RS to a net controller via RS-485 interface line couple **B** and **A** contacts of XT2 terminal block (see Figure 4) with **B** and **A** wires of RS-485 line respectively.

If RIP-12 RS is not the first or the last device in the RS-485 interface line remove EOL Jumper from XP1 Terminals located close to **B** and **A** contacts of XT2 (see Figure 3).

If the network controller is supplied by other power supply, not by the RIP-12 RS, couple **0 V** circuits of the network controller and the RIP-12 RS.

In order to communicate with the network controller the RIP-12 RS power supply shall be assigned with a unique network address (see Section *RIP-12 RS Network Address Programming*). The default factory address value of any RIP-12 RS is 127.

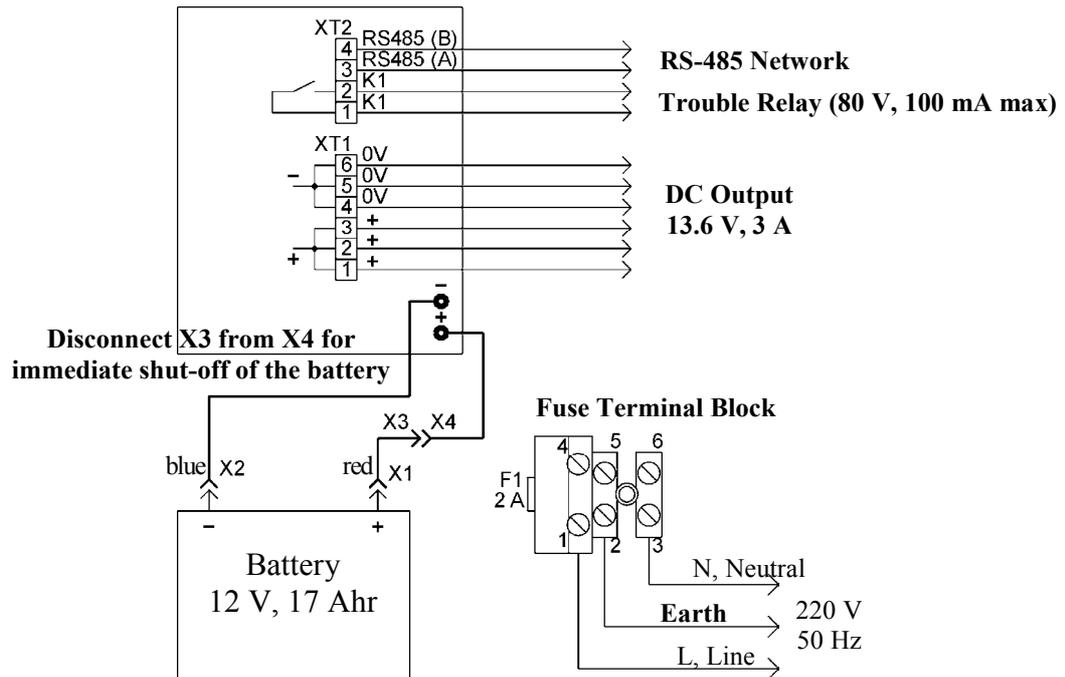


Figure 4. Drawing of RIP-12 RS Electrical Connections

### RIP-12 RS Starting Up

RIP-12 RS electrical wiring and turning on is implemented as follows (see Figure 4).

1. **Connect protective ground to the terminal 2 of the Fuse Terminal Block.**
2. Remove the F1 Fuse Holder from the Fuse Terminal Block, then couple RIP-12 RS terminal 1 with the *Live* wire and RIP-12 RS terminal 3 with the *Neutral* wire. **Do not** switch the mains ON.
3. Connect load circuits to the DC outputs (terminals 1 to 6 of the XT1 terminal blocks).
4. Connect the backup battery coupling the blue battery lead with the negative battery contact and the red battery lead with the positive battery contact. In order to disconnect the battery immediately there is the removable connection blocks X3-X4 within the red wire.
5. Insert F1 Fuse to the Fuse Holder and put the Fuse Holder to the Fuse Housing at the Fuse Terminal Block.
6. Turn mains utility power on.



**WARNING!** To ensure specified features the backup battery must be always connected and operable. If during RIP-12 RS operating the battery is connected but inoperable and the RIP-12 RS indicates a battery fault this battery must be replaced immediately. In any case replace a battery every 5 years.

## **RIP-12 RS SHUT DOWN**

Shut off RIP-12 RS by doing the following.

1. Shut off mains utility power.
2. Remove the AC Fuse Holder from the Fuse Terminal Block.
3. Disconnect the backup battery.
4. Disconnect load circuits.

# PROGRAMMING

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If RIP-12 RS is connected to an Orion network controller via RS-485 interface line it is necessary to set some its configuration parameters, first of all its network address (all Orion system devices are shipped with factory set address values of 127).

**To program RIP-12 RS** connect it to a personal computer (PC) via one of such RS-485/RS-232 interface converters as S2000-PI, PI-GR or S2000(M) in the specified mode. The Orion devices' configuration tool — **UPROG Configuration Tool** version of 4.0.0.914 and above — must be setup on the PC. The network address can be assigned to RIP-12 RS or changed also by means of S2000(M) console tools in accordance with S2000(M) User's Manual.

The most up-to-date version of UPROG.EXE can be found on the web site of the Bolid Company at the address [www.bolid.com](http://www.bolid.com), in DOWNLOAD section.

In some cases in order to implement centralized remote trouble indication from all system power supplies it can be necessary to change settings of a network controller database. These changes are made by means of *PPROG Programming Tool* (if a S2000/S2000M console plays the role of the network controller) of *Orion Database Administrator* (if Orion Workstation Software controls the system). An explicit description of the adjusting procedure can be found in a network controller user's manual.

## UPROG CONFIGURATION TOOL OPERATIONS

Program the RIP-12 RS by doing the following.

1. Connect the RIP-12 RS to the PC via an interface converter and run UPROG Configuration Tool.
2. Select **Device→Read Device Configuration** menu command (or use **Ctrl-F3** key, or select  toolbar icon). The Search Device Window will appear and you will be prompted for the number of the COM port (Serial port) of the PC which the RIP-12 is connected to. Enter the valid COM port number and press the Search button.
3. When a list of found devices with their addresses and version numbers will be shown select the required RIP-12 RS and press the Select button.
4. The window displaying current RIP-12 RS settings will be opened (see Figure 5). You can program the device as necessary.

You can also program the device by loading device configuration from a file of internal UPROG format by means of **File→Load Configuration File** command (or pressing **F3**, or selecting  toolbar icon).

Moreover, you can create a new configuration by means of **File→New configuration** command (or pressing **Ctrl-N** key, or selecting  toolbar icon).

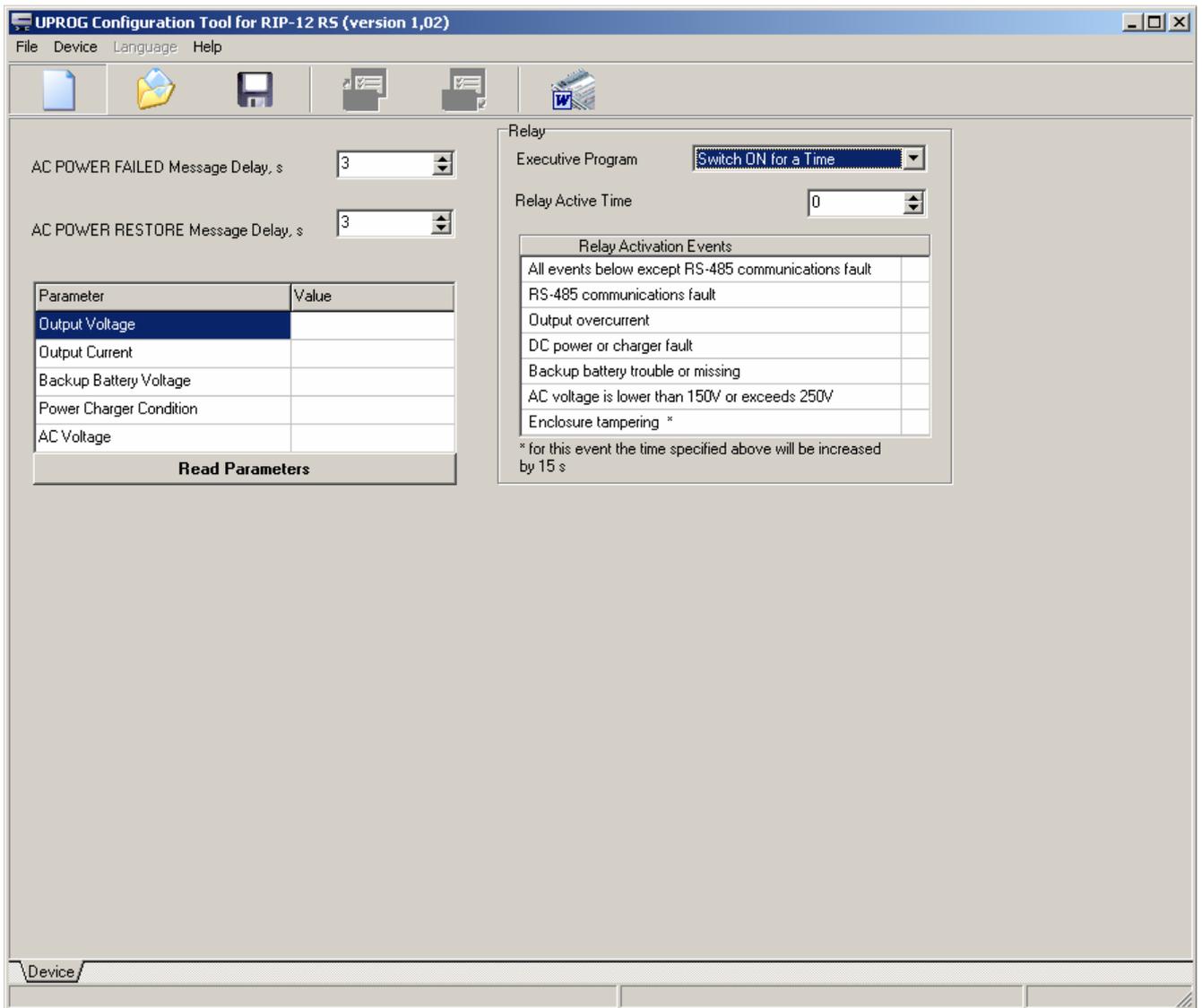


Figure 5. RIP-12 RS Programming Window

The newly created or changed configuration can be:

Written to the memory of the current device

 , «Device»→«Write Configuration To This Device»

Written to the memory of any other similar device with specified address connected to the computer

«Device»→« Write Configuration To Another Device...»

Written to a file in UPROG internal format with **.cnu** extension

 , <F2>, «File»→«Save Configuration To File»

Written as a text to a MS Word file

 , «File»→«Export Configuration To MS Word»

## RIP-12 RS CONFIGURATION PARAMETERS

The set of parameters that are programmed by means of UPROG Configuration Tool and stored in RIP-12 RS non-volatile memory is as follows.

Parameter	Description	Range	Factory Value
<b>Network Address</b>	The unique number of RIP-12 RS within address space of a network controller	1...127	127
<b>AC POWER FAILED Message Delay</b>	The time period to delay this message transmission after mains power voltage has dropped below 150 V or exceeded 250 V	3...255 s	3 s
<b>AC POWER RESTORE Message Delay</b>	The time period to delay this message transmission after mains power voltage has returned to be within 150 V to 250 V range	3...255 s	3 s
<b>Trouble Relay Parameters</b>			
<b>Executive Program</b>	Describes the type of relay behavior upon a trouble listed below having occurred. A program can be implemented only if either mains or backup power is supplied	Switch OFF Switch ON Switch ON for a Time Switch OFF for a Time (see below)	Switch OFF
<b>Relay Active Time</b>	The 'Time' value in third and fourth executive programs (see above)	0...255 s	255 s
<b>Relay Activation Events</b>	The list of trouble events which can activate the relay triggering remote trouble indication	All except RS-485 com.fault RS-485 communication fault Output overcurrent DC or charger fault Battery trouble/missing AC voltage is out of 150-250V RIP-12 RS tampering	+ + + + +

## RIP-12 RS NETWORK ADDRESS PROGRAMMING

To assign a unique RS-485 network address to RIP-12 RS select **Device**→**Change Device Address** menu command and specify the required address value in the address field of the window having been opened. The address value can range from 1 to 127, but it must not match with any address of another Orion system device connected to the same network controller.

RIP-12 RS devices provide hard reset of the network address to a factory value of 127. For doing this, open the RIP-12 RS door and sequentially make long-long-long-short pressing on the tamper switch. The term 'long' means more than 1.0 s, while the term 'short' means less than 0.5 s. The pauses between pressings must not exceed 0.5 s.

## AC CONDITION MESSAGE DELAY PROGRAMMING

When AC voltage is lower than 150 V or exceeds 250 V, RIP-12 RS starts to be supplied by the backup battery, transmitting network controller an AC POWER FAILED message. By default this message is transmitted to the network controller after 3 seconds since switching from mains power to backup power supply. Similarly, within some seconds (3 by default) after AC power having been returned an AC POWER RESTORE message is transmitted to the network controller. These time delays are defined by the AC POWER FAILED Message Delay and AC POWER RESTORE Message Delay correspondently and can be increased up to 255 seconds. If necessary, increment the default values or insert the desired value in the specified fields as shown in Figure 6.

The image shows a programming interface with two rows of controls. Each row consists of a text label followed by a numeric input field with up and down arrows. The first row is labeled 'AC POWER FAILED Message Delay, s' and the input field contains the number '3'. The second row is labeled 'AC POWER RESTORE Message Delay, s' and the input field also contains the number '3'.

Figure 6. Programming AC Condition Message Delays

## TROUBLE RELAY PROGRAMMING

RIP-12 RS is equipped with its own trouble relay to notify the system when a trouble condition has occurred. This relay can be programmed to operate in accordance with one of the four available tactics (executive programs), which describes the behavior of the relay upon trouble conditions, among them:

<i>Switch OFF</i> (by default)	The relay is switched off when a selected trouble condition exists, being switched on otherwise
<i>Switch ON</i>	The relay is switched on when a selected trouble condition exists, being switched off otherwise
<i>Switch ON for a Time</i>	When a selected trouble has occurred the relay is switched on for a specified time, then or otherwise the relay is switched off
<i>Switch OFF for a Time</i>	When a selected trouble has occurred the relay is switched off for a specified time, then or otherwise the relay is switched on

The Time parameter in two last executive programs is also programmable in the interval from 0 to 255 seconds, the factory value being 255s.

Relay Activation Events	
All events below except RS-485 communications fault	<input type="checkbox"/>
RS-485 communications fault	<input type="checkbox"/>
Output overcurrent	<input type="checkbox"/>
DC power or charger fault	<input type="checkbox"/>
Backup battery trouble or missing	<input type="checkbox"/>
AC voltage is lower than 150V or exceeds 250V	<input type="checkbox"/>
Enclosure tampering *	<input type="checkbox"/>

\* for this event the time specified above will be increased by 15 s

**Figure 7. Programming the Trouble Relay**

In order to program the trouble relay, select the suitable Executive Program from the list (see Figure 7) and define Relay Active Time value, if necessary. Note that the specified time will be automatically increased by 15 seconds for the 'Enclosure tampering' event. It means that if the relay must be activated for Relay Active Time seconds and if the enclosure tampering is selected to activate the relay then after enclosure tampering having been detected the relay will be activated in accordance with the executive program specified for Relay Active Time + 15 seconds.

Finally, specify trouble conditions that will be indicated by relay activation. To do this, click at right field on the line containing that event which should cause the relay switching, and this event will be marked by '+' sign. You can select all these events or specify only those you require in. Note that all events are selected separately, except of the first line which enables selecting all troubles of RIP-12 RS at once by a single click.

To remove an event from the list of selected ones click on the respective '+' sign repeatedly.

# MAINTENANCE

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**TROUBLESHOOTING**

? RIP-12 RS is not turning on when connected to the AC line	Check for AC line good condition Check for AC fuse condition and replace the fuse if necessary
? RIP-12 RS is not turning on when connected to the backup battery	Check for battery output voltage. Charge or replace the battery if the measured voltage is lower than 10 V
? RIP-12 RS transmits BATTERY FAILED message	Check battery age and replace the battery if it is old or dead  Check condition of the battery leads for contamination or loose connection. Clean the leads and re-tighten hardware
? RIP-12 RS communications are lost	Check RS-485 line connections and cable condition  Check if RS-485 cable is connected properly. If A line is connected to the B terminal of the RIP-12 RS PCB or B line is connected to the A terminal (see Figure 3) correct improper polarity.  Inspect XP1 terminals on the RIP-12 RS PCB. If RIP-12 RS is the first or last device brought to RS-485 interface line then the jumper must be plugged in, otherwise it must be removed  If the network controller is connected to another power supply rather than to RIP-12 RS, check if the 0 V circuits of the RIP-12 RS and the network controller are coupled

## RIP-12 RS INSPECTION CHECK-OFF

To make sure the RIP-12 RS keeps reliably and proper operation condition, inspect it at least annually.

The RIP-12 RS must be tested under the following ambient conditions:

- Temperature 25 C
- Relative humidity 45 ÷ 80 %
- Atmospheric pressure 630 ÷ 800 mm Hg

In order to inspect RIP-12 RS:

- Check RIP-12 RS for contaminations and mechanical damage
- Verify security of RIP-12 RS mounting, connecting wire conditions and external connections
- Inspect RIP-12 operability for proper output voltage in accordance with RIP-12 RS specifications (see *Specifications* Section of this Manual) and for proper indication (see *RIP-12 RS Indication* Section of this Manual).



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**CAUTION! Shut off mains utility power before disconnecting and connecting wires while condition inspecting**

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Appendix

## **Bolid RIP Uninterrupted Power Supplies and Accessories**

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Bolid Company manufactures a wide range of uninterruptible power supplies designed to supply voltage to a group of Orion detectors or other electronic devices. Their specifications are shown in the table below.

### CLASSIC UNINTERRUPTED POWER SUPPLIES

<b>12 V Output Voltage</b>			
Model	Output Current, rated/max for 2 min	Backup Battery	Overall Dimensions
<b>RIP-12-1A-1.2Ahr</b>	1 A / 1.5 A	1.2 Ahr	120×220×65 mm
<b>RIP-12-1A-1.2Ahr Protection</b>	1 A / 1.5 A	1.2 Ahr	120×220×65 mm
<b>RIP-12-1A-7Ahr Protection</b>	1 A / 1.5 A	7 Ahr	200×220×80 mm
<b>RIP-12 rev.03</b>	1 A / 2 A	7 Ahr	200×220×80 mm
<b>24 V Output Voltage</b>			
<b>RIP-24-0.8A-4Ahr Protection</b>	0.8 A / 1.5 A	2×4 Ahr	200×220×80 mm

### INTELLIGENT UNINTERRUPTED POWER SUPPLIES

<b>12 V Output Voltage</b>			
RIP-12 rev.01	3 A / 4 A	17 Ahr	255×310×85 mm
RIP-12 rev.04	2 A / 5 A	7 Ahr	255×310×85 mm
RIP-12 rev.02	2 A / 5 A	7 Ahr	200×220×80 mm
RIP-12 rev.05	8 A / 10 A	7 Ahr	255×310×85 mm
<b>24 V Output Voltage</b>			
RIP-24 rev.01	3 A / 6 A	2×7 Ahr	340×270×95 mm
RIP-24 rev.02	1 A / 3 A	2×7 Ahr	340×270×95 mm
RIP-24 rev.04	1 A / 3 A	2×4 Ahr	200×220×80 mm

Moreover, Bolid Company provides a number of RIP accessories.

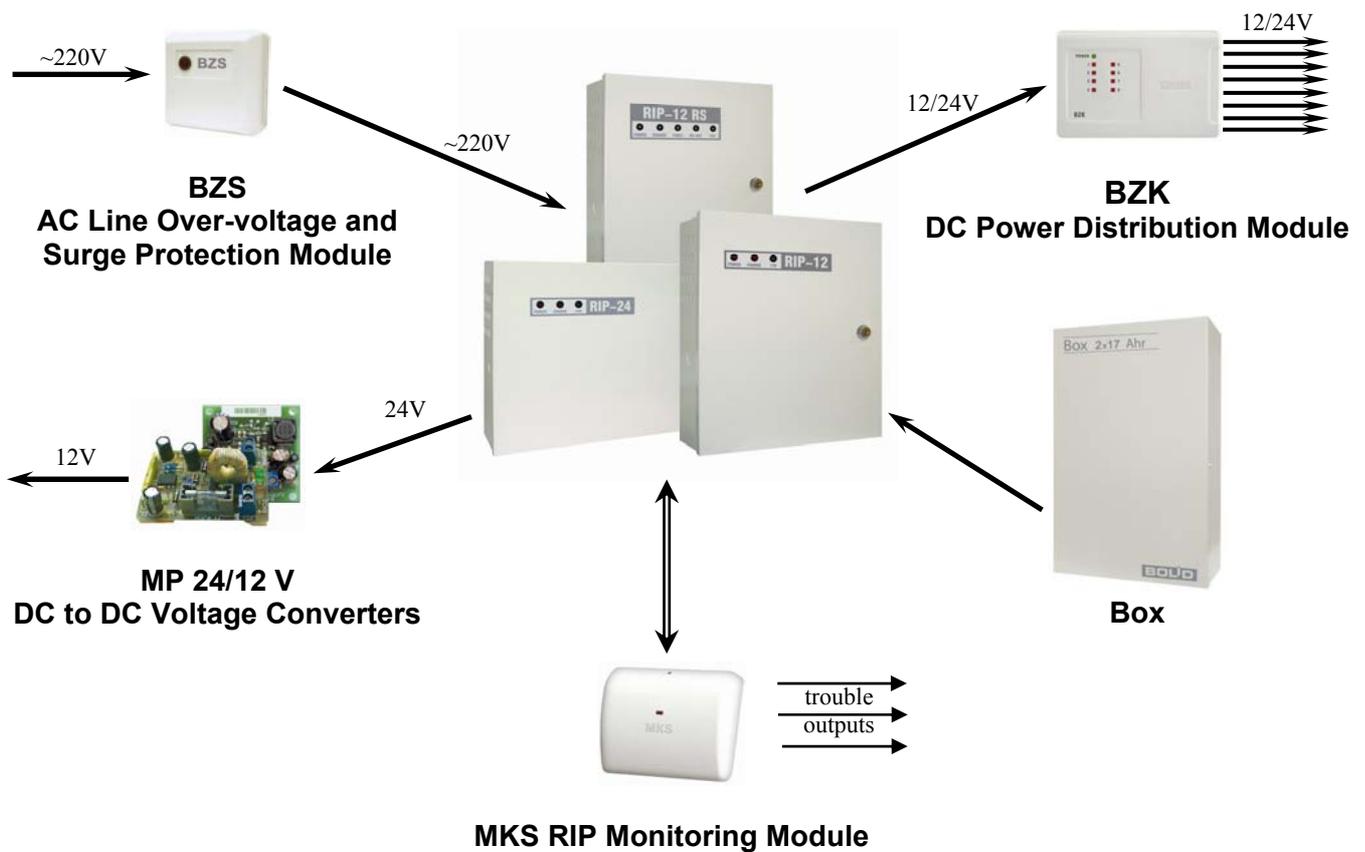
In order to provide input AC line over-voltage and surge protection in case of natural or technological disasters we recommend using of our **BZS AC Line Protection Module**.

For some RIP models without RS-485 communication port **MKS RIP Monitoring Module** provides light indications for three types of faults and transmits trouble signals to a net controller. It is equipped with three trouble output relays to give warnings in cases of input and output voltage troubles and backup battery voltage troubles.

In order to distribute RIP power to supply several electronic devices **BZK DC Power Distribution Modules** are used which convert a single DC input into six or eight individually-fused and noise suppressed outputs, each equipped with its own power LED indicator.

Finally, Bolid manufactures special over-voltage and improper polarity protected **Boxes** to contain two extra batteries, and some models of **MP 24/12 V DC to DC Converters** which supply power from higher voltage sources to electronic devices that require 12 Volt.

### BOLID RIP ACCESSORIES





## **BOLID ONE YEAR LIMITED WARRANTY**

Bolid Company and its divisions and subsidiaries («Seller»), 4 Pionerskaya Str., Korolev 141070, Moscow Region, Russia warrants its security equipment (the «product») to be free from defects in materials and workmanship for one year from date of original purchase, under normal use and service. Seller's obligation is limited to repairing or replacing, at its option, free of charge for parts or labor, any product proven to be defective in materials or workmanship under normal use and service. Seller is not responsible for results where the product is used improperly, where it is used for any application it is not intended for, used under unacceptable environmental conditions and mishandled or stored under improperly. Seller shall have no obligation under this warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than the Seller. In case of defect, contact the security professional who installed and maintains your security equipment or the Seller for product repair.

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**4 Pionerskaya Str., Korolev 141070,  
Moscow Region, Russia  
Phone/fax: +7 495 513-32-35  
Email: [info@bolid.ru](mailto:info@bolid.ru)**

**[www.bolid.com](http://www.bolid.com)**

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