



RCB24V

v.1.0

**Battery controller 24VDC/10A/4x17Ah
for RACK 19" cabinets**

EN

Edition: 2 from 25.11.2022

Supersedes edition: from 09.02.2018

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The battery controller features:

- Microprocessor-based automation system
- Automatic battery test every 5 min.
- The measurement of the resistance of the battery circuit
- Monitoring of the continuity of the battery circuit
- Battery Detection
- Low battery voltage indication - DC operation
- Battery output protection against short-circuit and reverse polarity connection
- Battery compartment for 2÷4 7 Ah / 17 A h / 12 V (SLA) batteries
- Technical output of failure - relay type
- Optical indication of failure (LED)
- Acoustic indication of failure
- "Test" button is at the front panel
- Designed to operate with a 27,6 V uninterruptible power supply unit
- Warranty: 2 years from production date

An example of use of the RACK battery controller.

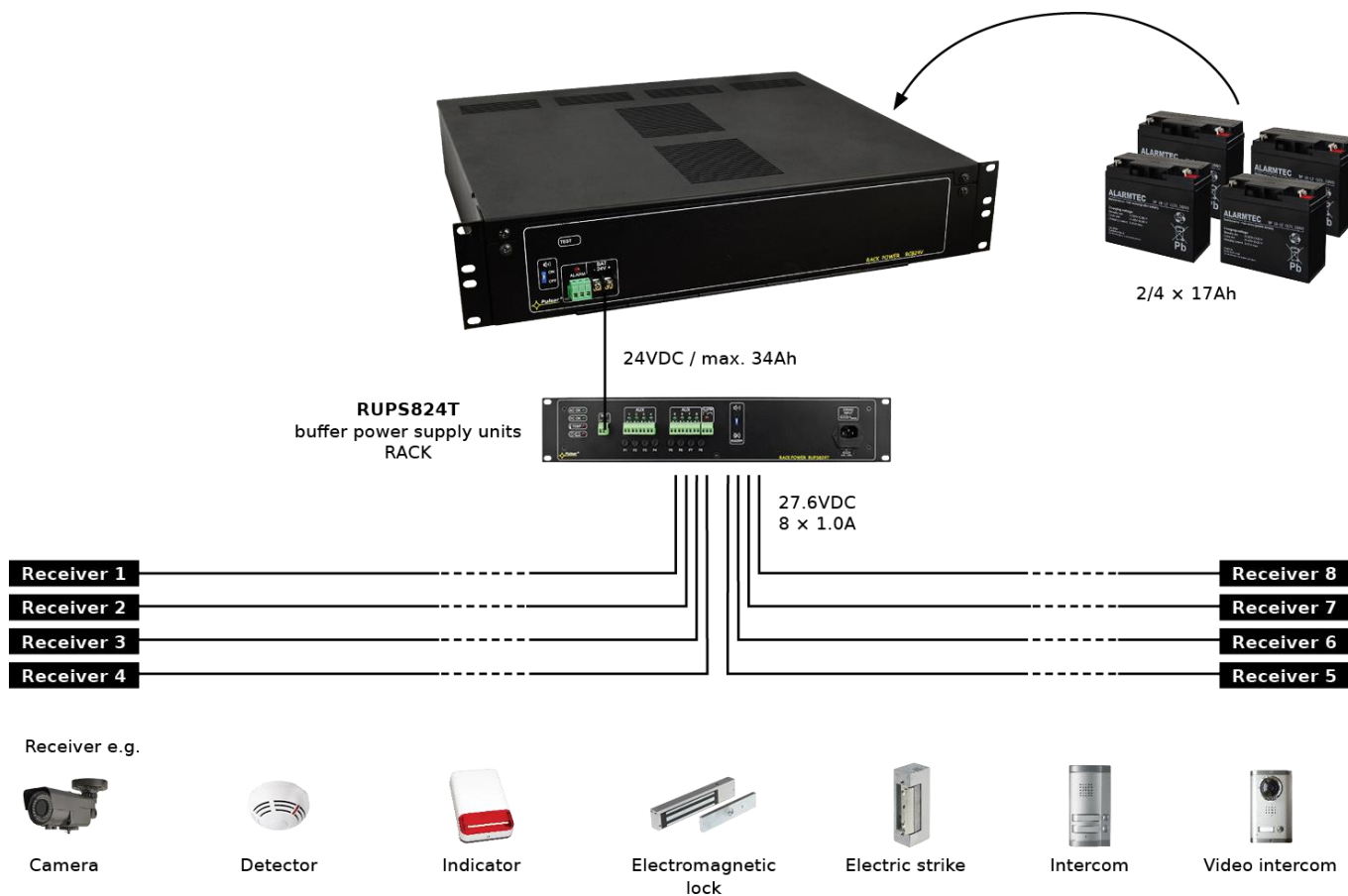


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1. Technical description.

1.1. General description.

The RCB24V battery controller is designed for monitoring the status of the 4 x 17 Ah / 12 V (SLA) battery pack based on the measurements of resistance, continuity of the battery circuit, voltage, and the charge level. It is also protected against reverse connection and short circuit in the charging circuit. In the case of failure, a LED light is activated, which is accompanied by switching of relay contacts and acoustic indication.

1.2. Block diagram.

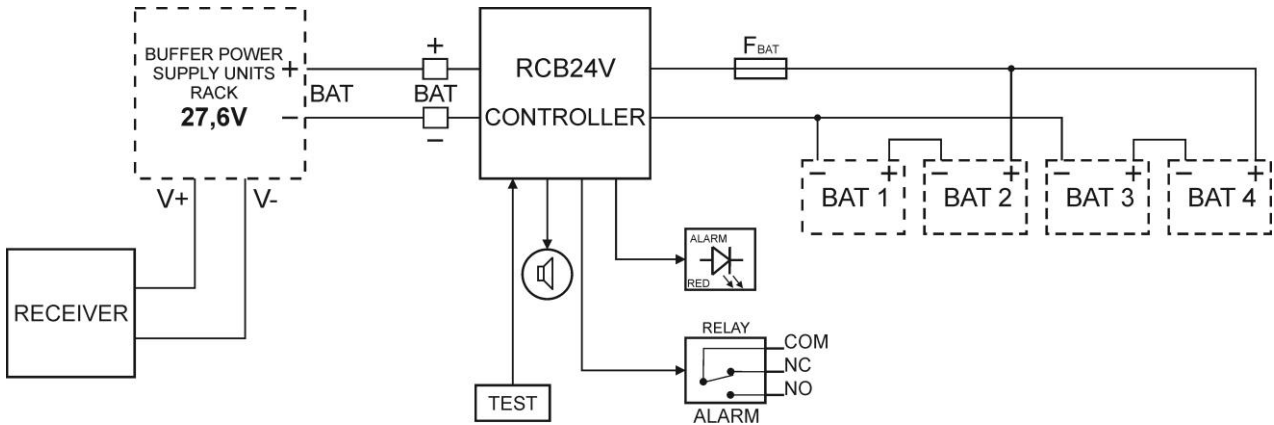



Fig.1. The block diagram of the controller.

1.3. Description of elements and connectors of the controller

Table 1. Elements of the front panel of the controller.

Component No. [Fig. 2]	Description
①	BUZZER, micro switch , enable/disable the acoustic indication  Switch in the upper position, the indication is ON Switch in the lower position, acoustic indication is OFF
②	ALARM – Technical output of collective failure - relay type
③	LED ALARM – red LED indicating failure
④	TEST – test button
⑤	BAT – connector of the charging circuit
⑥	A battery compartment for BAT1 battery
⑦	A battery compartment for BAT2 battery
⑧	A battery compartment for BAT3 battery
⑨	A battery compartment for BAT4 battery
⑩	Battery cables (+ BAT red, -BAT black)
⑪	Mounting brackets (adjustable)

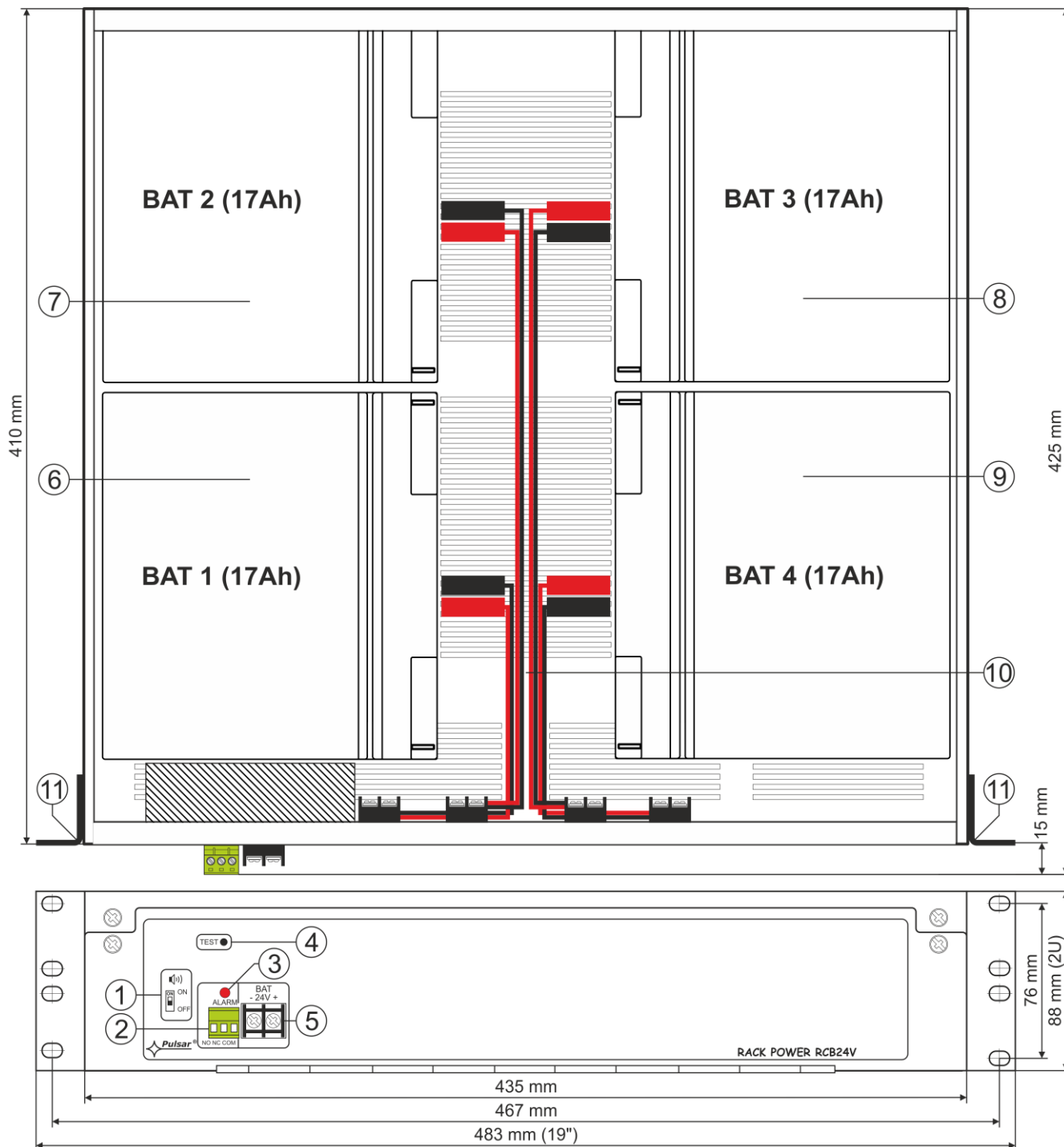


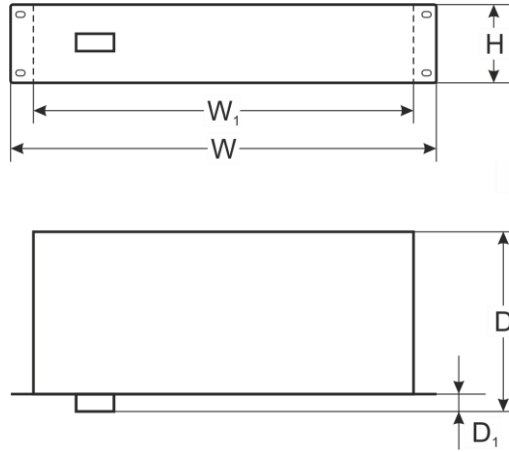
Fig. 2. General view.

1.4. Technical parameters.

- Electrical parameters (Table 2)
- Mechanical parameters (Table 3)
- Operation safety (Table 4)
- Operation parameters (Table 5)

Electrical parameters (Table 2).

Battery compartment	4 x 17 Ah / 12 V (SLA) max.
The BAT output current	10 A max.
The BAT output voltage	27,6 V DC max.
Battery output protection against short-circuit and reverse polarity connection	15 A (19 mm) time-delay fuse
Optical indication of operation	ALARM LED
Acoustic indication of operation:	Piezoelectric indicator ~75 dB / 0.3 m
ALARM – technical output of collective failure indication	Relay type: 1 A @ 30 V DC / 48 V AC



Mechanical parameters (Table 3).

Mounting dimensions	$W=19"$, $H=2U$, $D=425$
Dimensions	$W=483$, $W_1=435$, $H=88$, $D=425$, $D_1=15$ [+/- 2mm]
Mounting	Six-point butt mounting to RACK profiles - a set of 6 M6 screws + cage nuts included
Net/gross weight	5,2 / 5,9 [kg] (without batteries)
Enclosure	Steel plate 1,2 mm, color RAL 9005
Connectors	Battery inputs: 6,3F-2,5 BAT output: $\Phi 0,63 \pm 2,50$ (AWG 22-10) 0,5-2,5mm ² The ALARM output: $\Phi 0,5-2,1$ (AWG 24-12) 0,5-1,5mm ²

Operation parameters (Table 5)

Operation temperature	-10°C...+40°C, ensure free air flow around the enclosure
Storage temperature	-20°C...+60°C
Relative humidity	20%...90%, no condensation
Sinusoidal vibrations during operation:	Unacceptable
Surges during operation	Unacceptable
Direct insolation	Unacceptable
Vibrations and surges during transport	According to the PN-83/T-42106 standard

2. Mounting.

2.1. Requirements.

The enclosure should be mounted by a qualified installer, holding relevant (applicable and required for a given country) permits and licenses for low-voltage installations. Unit should be mounted in confined spaces with normal relative humidity (RH=90% maximum, without condensing) and temperature from -10°C to +40°C. In order to meet the requirements of LVD and EMC directives, the rules for power supply, enclosures, shielding, and cable routing, depending on application, must be observed.

2.2. Installation procedure.

1. Mount the battery controller inside a RACK 19" cabinet as shown in the figure below:



Fig. 3 Mounting the controller in a RACK cabinet.



Fig. 4 The battery mounting method.

Is possible to adjust the mounting brackets so that the front panel extends beyond the RACK rails. To do this, remove the cover and adjust the handles that are inside the cabinet.

2. Remove screws securing the front panel



Due to the high weight of batteries, they should be mounted in the front part of the housing. The housing cover must be tightened with screws.

3. Connect the batteries with the battery wires paying attention to the polarity (+ BAT red, -BAT black) and the numbering of wires. The connections between the batteries were factory made, as shown in Fig. 5.

4. Mount the batteries (see Fig.4) paying attention to the correct order and position (See Fig. 2).

5. Close the front panel, screw the locking screws.

6. Connect the battery controller to the uninterruptible power supply with the appropriate battery and charging circuit protection.

7. Close the enclosure, cabinet, etc. once the tests and operation control are completed.



Due to the risk of combustible gas generation during charging, the RACK cabinet and the mounting space must be properly ventilated.

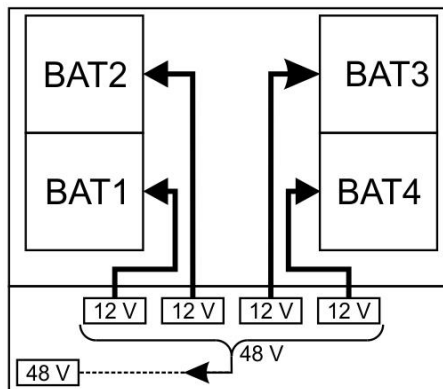


Fig. 5. Battery connection.

3. Indication of operation of the battery controller.

3.1. Optical indication.

The controller is equipped with LED light at the front panel:



RED LED:

- ON/blinking – Indicates a failure (Table 6)
- OFF – No errors/normal operation

3.2. Technical output.

The controller is fitted with the **ALARM** technical output of collective failure. The collective failure can be triggered by the events presented in Table 6.

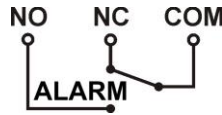


Fig. 6. The electrical diagram of the ALARM output of collective failure.



CAUTION! In Fig. 6 the set of contacts shows a potential-free status of the relay which corresponds to a failure.

3.3. Acoustic indication.

The failure status is also signaled acoustically by means of a piezoelectric indicator (in accordance with Table 6). Acoustic indication can be disabled with an ON/OFF switch (»).



Switch in the upper position, the indication is ON

Switch in the lower position, acoustic indication is OFF

Table 6. Table of errors

State, failure	Optical indication	Acoustic indication	Technical output	Causes, comments
The start of the test	Absence	2 short beeps	INACTIVE	- Start of the battery test
High resistance of the BAT circuit	Blinks	1 beep every 10 seconds	ACTIVE	- Batteries worn out - Loose connectors
Undercharged battery	Blinks	1 beep every 10 seconds	ACTIVE	- Undercharged battery
No battery	Blinks	1 beep every 10 seconds	ACTIVE	- Blown F _{BAT} fuse - No battery
Low battery voltage (DC operation)	Lit	2 short beeps every 10 seconds	ACTIVE	- The batteries voltage has dropped below 23 V during battery (assisted operation)
Low battery voltage - disconnection (DC operation)	Absence	2 beeps every 10 seconds (without repeat)	ACTIVE	- The batteries voltage has dropped below 21 V during battery (assisted operation)

4. Maintenance and operation.

4.1. Automatic battery test

The battery controller performs a battery test every 5 minutes, temporarily stopping the charge process, while measuring voltage at the battery terminals and the resistance of the battery circuit. The test can also be started manually by pressing the "TEST" button on the front panel, but not more often than once every 1 minute. The activation or deactivation of the test will be confirmed acoustically (see Table 6).

4.2. Short circuit of the controller output/reverse connection.

The BAT controller output is additionally protected against short circuit by a fuse (box); in the case of damage, it should be replaced with a fuse of the same type. The fuse is located inside the unit.

4.3. Maintenance.

The battery controller does not require any specific maintenance; however, it should be cleaned with compressed air if used in dusty conditions.



WEEE LABEL

Waste electrical and electronic equipment must not be disposed of with normal household waste. According to the European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.

Controller is adapted for lead-acid battery (SLA). After operation period they must not be thrown but recycled according to applicable law.

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