

Qoltec®



USER MANUAL

24V VOLTAGE BALANCER

51097

Introduction

Thank you for purchasing our battery voltage balancer. The product has been designed to ensure the optimal operation of battery banks connected in series by automatically balancing the voltage between 12V batteries in 24V systems. Please read the user manual carefully before using the device to ensure the safe and correct operation of the system. If you have any questions after reading this manual, please contact our Customer Service Department.

About the product

1. Designed for automatic voltage equalisation between two 12V batteries connected in series in a 24V system to maintain a balance of charge and discharge between each of them.
2. It monitors the voltage of both batteries and, if a difference exceeding the permissible threshold is detected, automatically equalises the voltage when there is a 20 mV voltage difference between the two batteries, transferring current from the battery with the higher voltage to the one with the lower voltage.
3. Using a balancer helps to extend battery life, improve the efficiency of the entire system and minimise the risk of damage caused by uneven discharge.
4. When batteries are connected in series, differences in the chemical composition and temperature of the battery cells can lead to variations in the charging and discharging of the two batteries.
5. Even when a battery is idle, varying rates of self-discharge can cause an imbalance between batteries connected in series. The maximum equalisation current is 5A.
6. device is equipped with reverse polarity protection, which protects both the equaliser itself and the batteries from damage.
7. The maximum equalisation current is 5A.

Product features:

- High-precision integrated circuits reduce component variations
- LED indicator showing the device's operating status
- Fast balancing speed
- Fire-resistant housing for easy installation

- Suitable for 2 series of 12V lead-acid or lithium batteries; Support: 2 x 12V batteries – both lead-acid (AGM, GEL) and LiFePO₄ and lithium (LFP, NCM, LTO)
- Recommended battery capacity 20Ah – 200Ah
- Powered directly from the batteries – no need to connect to the 230V AC mains
- Built-in reverse polarity protection
- 35 cm extension cable with M8 ring

Safety instructions

Note: Please read the user manual before installing the device! Before connecting the battery charger, check the positive and negative terminals of the battery to avoid short circuits and reverse connections between the battery charger terminals.

1. Do not allow the cables to come into contact with each other or with conductive parts. This may lead to a short circuit and damage to the system.
2. Before starting installation or maintenance of the equaliser, disconnect the batteries from the system.
3. The equaliser is not designed to operate with damaged, deformed or very low-voltage batteries.
4. It is designed to work with 12V AGM GEL lead-acid batteries connected in series. Do not use it with other voltages or types of batteries unless recommended by the manufacturer.
5. Install the equaliser in a dry, clean and well-ventilated place, away from water, oils and dust.
6. Do not open the housing or attempt to repair it yourself. In the event of damage, contact the service department.
7. The device should operate within the temperature range specified by the manufacturer. Avoid installing it in locations with high temperatures or without adequate ventilation.
8. The device operates automatically – do not attempt to manually force voltage changes or interfere with its operation.
9. Check the condition of the cables, connections and battery voltages from time to time to ensure the system is working properly.

10. Please read the user manual before installing the device! Before connecting the battery charger, check the positive and negative terminals of the battery to avoid short circuits and reverse connections between the battery charger terminals.

Technical specifications

Feature	Value
Nominal battery voltage	2 x 12V
Optimisation current	0–5A
Standby current	<3mA
Low-voltage cut-off	10V
Dimensions	70x70x27mm

LED indicator

	LED A	LED B
$U(A) = U(B)$	Off	Off
$U(A) > U(B)$	Off	Flashing
$U(A) < U(B)$	Flashing	Off
$U(A) < 10V$	Off	On
$U(B) < 10V$	On	Off
$U(A/B) < 10V$	On	On

Battery installation

5 tips before connecting

1. Fully charge each battery
2. Use only batteries of the same type.
3. Batteries in the same group should have the same capacity.
4. The voltage difference between individual batteries should be less than 0.2 V.
5. Before starting the installation, ensure that the batteries are correctly connected in series and that the total voltage of the set is approximately 24 V.

Connecting the equaliser cables

Black cable: 24V negative terminal

Red cable: positive terminal 24V of the entire battery set

White cable: to the centre between the batteries, negative terminal of battery A or positive terminal of battery B

Once connected, the device will start operating automatically – LEDs A and B indicate equalisation activity.

Figure 1 in the appendix to the manual

How it works

Note: For a 24V installation, 1 balancer is sufficient; for 36V, you need 2; and for 48V, you need 3.

24V: Requires 2 x 12V cells (2 x 12V), giving a total of 6 cells (2 x 6 x 12V cells). In this case, 1 balancer is sufficient to monitor and balance the voltage in the 24V system.

36V: This system has 3 groups of 12V cells, totalling 18 cells (3 x 6 12V cells). In this case, 2 balancers are required to balance the voltage in the 36V system.

48V: A 48V system consists of 4 groups of 12V cells, totalling 24 cells (4 x 6 12V cells). In this case, 3 balancers are required to monitor and balance the voltage.

Maintenance

1. Use a dry cloth or compressed air to clean the device of dust and dirt. Avoid using damp materials, which may cause a short circuit or damage the electronics.
2. The device should be used in well-ventilated areas.
3. Avoid charging batteries in extremely low or high temperatures.
4. Check cables and connectors regularly for damage.

Disposal

Dispose of the end-of-life device at an e-waste collection point. Do not dispose of the device with household waste.

Warranty

The device is covered by a 24-month warranty from the date of purchase, which covers repairs or replacement in the event of manufacturing defects. To claim under the warranty, you must present proof of purchase (receipt or invoice). The warranty does not cover damage resulting from improper use, incorrect

installation or tampering by unauthorised persons. If you require servicing, please contact an authorised customer service centre, which will provide professional diagnostics and repairs. All servicing work should be carried out exclusively by qualified personnel to ensure the safety and proper functioning of the device. If you have any questions regarding the warranty or servicing, please contact our customer service department.

Attachment 1

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