

Qoltec®



USER MANUAL

48V VOLTAGE BALANCER

Model: 51098

Introduction

Thank you for purchasing our battery voltage balancer. This product has been designed to ensure the optimal operation of battery banks connected in series by automatically balancing the voltage between 12V batteries in 48V 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

A voltage balancer for 48V systems, designed to automatically balance the voltage between 12V batteries connected in series in a 48V system, in order to maintain a balance of charge and discharge between each of them. When batteries are connected in series, differences in the chemical composition and temperature of the battery cells may result in variations in the charging and discharging of the two batteries. Even when a battery is idle, varying rates of self-discharge can cause an imbalance between batteries connected in series. The device activates when the battery voltage exceeds 7V, meaning it can be used in systems with a single battery ranging from 7V to 18V. The maximum equalisation current is 10A. The unit is fitted with reverse polarity protection, which protects both the equaliser itself and the batteries from damage. Ideal for electric vehicles, solar systems, forklift trucks, boats and other 48V installations. 16 AWG 50 cm extension cable with M8 ring

- High-precision integrated circuits minimise component variations
- Fast balancing speed
- Fire-resistant casing facilitates installation
- Suitable for lead-acid (VRLA), lithium iron phosphate (LFP), nickel-cadmium (Ni/Cd) and nickel-metal hydride (Ni/MH) batteries.
- It activates when the voltage exceeds 2.4V, meaning it can be used with individual cells ranging from 2.4V to 12V.

Safety instructions

CAUTION: 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 a short circuit or reverse connection between the charger's terminals.

1. Do not allow the cables to come into contact with each other or with any conductive parts. This may lead to a short circuit and damage to the system.
2. Before starting installation or maintenance of the battery equaliser, disconnect the batteries from the system.
3. The battery equaliser is not designed to operate with damaged, deformed or very low-voltage batteries.

4. It is designed to operate with lead-acid (VRLA), lithium iron phosphate (LFP), nickel-cadmium (Ni/Cd) and nickel-metal hydride (Ni/MH) batteries. 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 casing or attempt to repair the unit 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 correctly.
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 a short circuit or reverse connection between the charger's terminals.

Technical specifications

Feature	Value
Nominal battery voltage	4x (2.4V/3.6V/6V/9V/12V)
Compatibility	LiFePO4 VRLA AGM GEL Ni/CD Ni/MH
Optimisation current	0–10A
Maximum input current	10A (from a single battery)
Battery capacity	20Ah–200Ah
Standby current	5mA (12V) 1.2mA (2.4V)
Low-voltage cut-off	1.8V
Turn-on threshold	10mV
Material	ABS
Operating temperature	-20°C to +60°C
Dimensions	62x124x27mm

Battery installation

5 tips before connecting the battery charger

1. Fully charge the battery
2. Use the same type of battery
3. Ensure all batteries in the battery bank have the same capacity
4. The voltage difference between each battery 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 is approximately 48V

Connecting the cables

1. Black cable: negative terminal
2. Red cable: positive terminal
3. Connect multiple batteries as follows (the order of connection is irrelevant).
4. Remove any unused battery leads to avoid a short circuit

Figure 1 in the appendix to the manual

4x12V ($4 \times 12\text{V}$ batteries connected in series = 48V)

8x12V (You still get: voltage: 48V, capacity: 2× greater / With 8 x 12V batteries, if the configuration is 4 in series and 2 in parallel, you still have a 48V system, only with greater capacity. In this case, a single 48V balancer can operate on such a bank, provided that the parallel connections are made as shown in the diagram.

Maintenance

1. Use a dry cloth or compressed air to clean dust and dirt from the device. 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 the batteries at extremely low or high temperatures.
4. Check the 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 make a claim under the warranty, you must provide proof of purchase (receipt or invoice). The warranty does not cover damage resulting from misuse, incorrect installation or tampering by unauthorised persons. Should 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 customer services.

USER MANUAL

48V Battery Balancer

51098

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INTRODUCTION

Thank you for purchasing our battery voltage balancer. The product has been designed to ensure the optimal operation of battery packs connected in series, by automatically equalising the voltage between 12V batteries in 48V installations. Please read the user manual carefully before using the device to ensure the safe and proper operation of the system. If you have any questions after reading this manual, please contact our Customer Service Department.

ABOUT THE PRODUCT

A voltage balancer for 48V systems, designed to automatically equalise the voltage between 12V batteries connected in series within a 48V installation, in order to maintain a balance of charge and discharge between each battery. 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 rates of the batteries. Even when the battery is idle, varying degrees of self-discharge can cause an imbalance between batteries connected in series. The maximum equalisation current is 10A. The device is equipped with reverse polarity protection, which protects both the equaliser itself and the batteries from damage. Ideal for electric vehicles, solar systems, forklift trucks, boats and other 48V installations.

- 16AWG 50CM Extension Cable with M8 Ring
- High-precision ICs minimise component variation
- Fast balancing speed
- Fire-resistant housing for easy installation
- Suitable for lead-acid (VRLA), lithium iron phosphate (LFP), nickel-cadmium (Ni/CD) and nickel-metal hydride (Ni/MH) batteries
- It starts operating when the voltage exceeds 2.4V, meaning it can be used with individual cells ranging from 2.4V to 12V.

SAFETY INSTRUCTIONS

NOTE: Please read the user manual before installing the unit! Before connecting the battery equaliser, check the positive and negative terminals of the battery to avoid a short circuit and reverse connection between the battery equaliser terminals.

1. Do not allow wires to come into contact with each other or with conductive components. This can 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 work with damaged, deformed or extremely low-voltage batteries.
4. It is designed to work with lead-acid (VRLA), lithium iron phosphate (LFP), nickel-cadmium (Ni/CD) and nickel-metal hydride (Ni/MH) batteries. Do not use it with other voltages or types of batteries unless the manufacturer recommends it.
5. Install the equaliser in a dry, clean and well-ventilated area, away from water, oils and dust.
6. Do not open the casing or attempt to repair the unit yourself. In the event of damage, contact the service department.
7. The appliance should operate within the temperature range specified by the manufacturer. Avoid installing it in high-temperature locations or where there is insufficient 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 battery cables, connections and voltages periodically to ensure the system operates correctly.
10. Please read the user manual before installing the device! Before connecting the battery equaliser, check the positive and negative terminals of the battery to avoid short circuits and reverse connections between the battery equaliser terminals.

TECHNICAL SPECIFICATIONS

Feature	Value
Nominal battery voltage	4 x (2.4V/3.6V/6V/9V/12V)
Optimising current	0–10A
Standby current	5mA (12V) 1.2mA (2.4V)
Low-voltage cut-off	1.8V
Activation threshold	10mA
Dimensions	62x124x27mm

INSTALLATION

5 Tips Before Connecting the Battery Equaliser

1. Fully charge the battery
2. Use the same type of battery
3. Batteries in the same group should have the same capacity
4. The voltage difference between each battery should be less than 0.2V.

5. Before starting the installation, ensure that the batteries are correctly connected in series and that the total voltage is approximately 48V

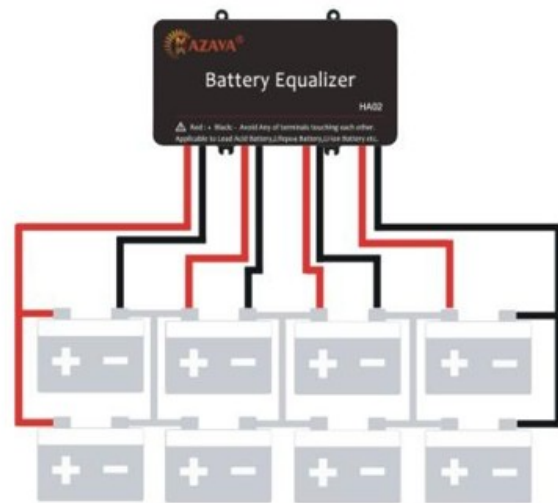
Connecting the wires

1. Black cable: Negative terminal
2. Red cable: Positive terminal
3. Connect multiple batteries as shown below (the order of connection is irrelevant).
4. Remove any unused battery wires to prevent short circuits

Connecting the equaliser wires



4x12V Battery



8x12V Battery

MAINTENANCE

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

DISPOSAL

The used device should be handed over to an e-waste collection point. Do not dispose of the appliance 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 (a receipt or invoice). The warranty does not cover damage resulting from misuse, 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. Any servicing work should only be carried out by qualified personnel to ensure the safety and proper functioning of the appliance. If you have any questions regarding the warranty or servicing, please contact customer service.