Qoltec®

INSTRUCTION MANUAL

12 V DC-DC Automatic Charger with MPPT controller

MODEL : 51920, 51921

EN

Introduction

Thank you for your trust and for choosing our battery charger. We are convinced that the product will meet your expectations and will be an indispensable tool in your daily work. This user manual has been prepared to make the installation process and the use of the device easier for you. It includes detailed steps and instructions for the correct use of our product. If you have any questions after reading the manual, please contact the NTEC sp. z o.o. service department.

About the product

DC-DC charger with isolated circuit, equipped with automatic voltage regulation function and MPPT technology. It has a battery type switching button, allowing up to 5 different battery types to be charged. A dual input is used: one for solar charging (default priority), the other for charging from a car generator. The charger is equipped with a delayed start function ACC, which means that it starts 10 seconds after receiving the engine start signal.

Product features

- ✓ MPPT function - optimises solar charging, increasing efficiency.
- ✓ The electrical circuit is separated from other circuits or power sources (isolated circuit), providing additional safety and stability of operation.
- ✓ Battery type change button - supports up to 5 different battery types.
- ✓ Dual input - one for solar charging (priority), the other for charging from a car generator.
- ✓ Delayed ACC start - charger starts 10 seconds after receiving engine start signal.
- ✓ Protection against overheating and short circuits - ensures safe operation of the charger.
- ✓ Automatic charging start - when the battery is connected, the charger automatically starts charging.
- ✓ Automatic switch-off when the battery is fully charged - When the battery is fully charged (when the voltage reaches the maximum value for the battery type and the current drops to 1/10 of the charger's maximum value), the charger automatically switches off and resumes operation every 90 seconds.

- ✓ LED indicators - provide information on battery and power status.
- ✓ Correct connection of input and output terminals. The charger requires at least 9 volts at the output terminals (battery) and a correct voltage connection at the input terminal for it to operate correctly.
- ✓ The product has an on/off button.
- ✓ Battery type switching mode - quickly switch between battery types using the MODE button.

Input voltage range

1. For an automotive generator, it is 12.0 V-15.8 V ± 0.2 V. When the input voltage is between 12 V and 13 V, the charger needs the generator trigger signal (10-16 V) to operate correctly.

Figure 1 in the appendix

2. For solar power, it is 12.0 V-30.0 V ± 0.2 V. The charger operates normally in this range. When the voltage drops to 11 V, the charger switches off automatically. (Note: Exceeding a solar voltage of 40 V may damage the charger).

Illustration 2 in the appendix

Safety instructions

1. Do not use the charger in damp, hot or flammable areas.
2. Do not open the case while the charger is in operation.
3. Avoid touching exposed parts of the charger during charging to avoid electric shock.
4. Use original power cords to prevent damage resulting from the use of faulty or unsuitable cords.
5. Do not exceed the maximum voltage or current values for the inputs and outputs.
6. When connecting or disconnecting cables, make sure the charger is switched off and has cooled down.

7. Regularly check the cables and connections of the charger to ensure that they are not damaged or loose.
8. If the charger overheats, emits smoke or smells, switch off the unit immediately and stop using it.

Anderson connector

1. Connect the red wire to the positive terminal of the battery and the black wire to the negative terminal.
2. Connect the yellow wire to the positive terminal of the car generator and the black wire to the negative terminal.
3. Connect the green wire to the positive pole of the solar panel and the black wire to the negative pole.
4. Connect the blue wire to the 10-16 volt trigger line (ACC line) of the car generator.

Note: The black wire is the common negative wire.

Illustration 3 in the appendix

Operating the unit

1. **Preparation for use:**
   A. Make sure the charger is switched off before installing and connecting.
   B. Install the charger in a well-ventilated, dry place, away from heat sources.
2. **Connecting the power source:**
   A. Connect the solar charging cable (green and black) to the solar panel.
   B. Connect the generator charging cable (yellow and black) and trigger cable (blue) to the car generator.
   C. Ensure that the input voltage and polarity are correct to prevent damage to the charger.
3. **Connecting output devices:**

A. Connect the output leads (red and black) to the battery you wish to charge.

B. Before connecting, make sure that the voltage and current required by the battery are within the output range of the charger.

C. Check that all connections are secure to avoid short circuits or interruptions.

4. **Switching on the charger:**

   A. Connect the battery to the charger - the charger will automatically start charging.

   B. Select the appropriate charging mode for the type of battery.

   C. Monitor the indicators to confirm that the charger is working properly.

   D. When the battery is charged, the charger will automatically stop charging.

5. **Monitoring and adjustment:**

   A. Depending on the battery type, the output voltage can be adjusted using the MODE button.

   B. Regularly monitor the temperature and output status of the charger to ensure safe operation.

   C. Respond quickly to short circuits to keep the charger operating safely.

LEDs

1. When a battery is connected (no input connected), the corresponding battery LED flashes.
2. When there is no battery on the output but input power is connected, both the battery LED and the input LED flash simultaneously.
3. When both the input and output are powered, the battery diode lights steadily and the input diode also remains on.

Battery maintenance

1. Check the battery charge level regularly to ensure it is in good condition.
2. Follow the battery manufacturer's charging and maintenance recommendations.
3. Avoid overcharging or over-discharging the battery for long periods of time.
4. Store batteries in a dry, cool place, away from heat sources.

Technical specifications

<table>
<tr><th colspan="2">MODEL</th><th colspan="2">51920</th><th colspan="3">51921</th></tr>
<tr><td rowspan="2">Input voltage range</td><td>MPPT solar charging</td><td colspan="5">12V-30V±0.2V</td></tr>
<tr><td>Charging from vehicle generator</td><td colspan="5">12V-15.8V±0.2V</td></tr>
<tr><td colspan="2" rowspan="3">Output voltage in battery mode (depending on battery type</td><td colspan="5">Battery type</td></tr>
<tr><td>GEL</td><td>CAL</td><td>AGM</td><td>STD</td><td>LiFePO4</td></tr>
<tr><td>14.2V±0.2 V</td><td>15.2V±0.2 V</td><td>14.8V±0.2 V</td><td>14.4V±0.2 V</td><td>14.6V±0.2 V</td></tr>
<tr><td colspan="2">Output current</td><td colspan="2">25A±0.5A</td><td colspan="3">40A±0.5A</td></tr>
<tr><td colspan="2">Maximum charging current</td><td colspan="2">25A</td><td colspan="3">40A</td></tr>
<tr><td colspan="2">Maximum input current</td><td colspan="2">32A</td><td colspan="3">50A</td></tr>
<tr><td colspan="2">Maximum PV panel power</td><td colspan="2">385W</td><td colspan="3">620W</td></tr>
<tr><td colspan="2">Efficiency</td><td colspan="5">97%</td></tr>
<tr><td colspan="2">Connector type</td><td colspan="5">Anderson</td></tr>
<tr><td colspan="7">Other parameters</td></tr>
<tr><td colspan="2">Operating temperature</td><td colspan="5">0°C-45°C</td></tr>
<tr><td colspan="2">Storage temperature</td><td colspan="5">-20°C-45°C</td></tr>
<tr><td colspan="2">Humidity</td><td colspan="5">45%-75% RH</td></tr>
<tr><td colspan="2">Dimensions</td><td colspan="2">230x105x55 mm</td><td colspan="3">230x130x60 mm</td></tr>
</table>

Protection

Short-circuit protection	When a short circuit occurs at the output, the fault light remains on; in the event of a prolonged short circuit, the charger restarts every 90 seconds; once the short circuit has been removed, the charger will resume operation after 90 seconds.
Protection against overheating	When the internal case temperature exceeds 70°C, the fault light starts flashing; the charger will

	automatically adjust the output to maintain a constant temperature of 70°C inside and outside the unit.
Reverse polarity protection	When the polarity of the input and output terminals is reversed, the charger does not operate; when the polarity is corrected, the charger returns to normal operation.

Troubleshooting

Problem	**Solution**
Charger does not start	A. Check that the input power source is correctly connected and that the voltage and polarity are correct. B. Ensure that the charger switch is turned on. C. Check that the charger fuse is not faulty.
Unstable output voltage or incorrect current	A. Check that the load of the device is within the output range of the charger. B. Check that the output circuit is properly connected and there are no short circuits.

Environmental and recycling information

1. Take the product to a recycling company.
2. Avoid throwing away the charger to prevent environmental pollution.
3. The housing of the charger is made of environmentally friendly materials that can be recycled.

Warranty and service

The charger is covered by the manufacturer's warranty. If you have any problems with the product, please contact the service centre for assistance.

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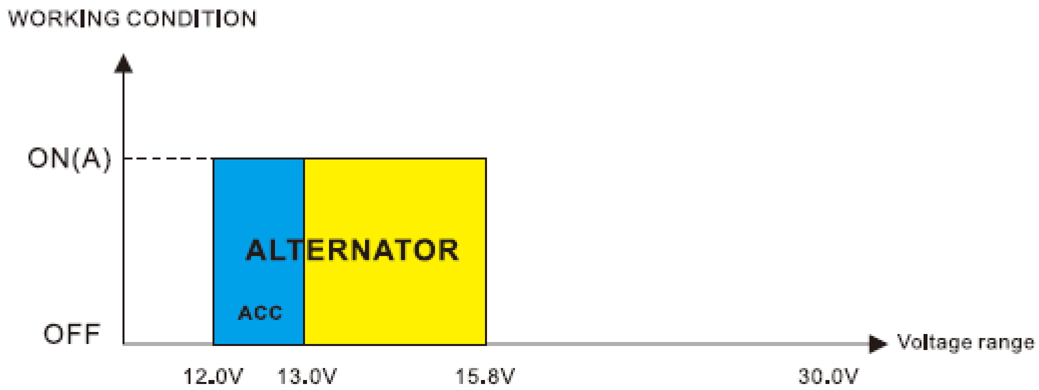
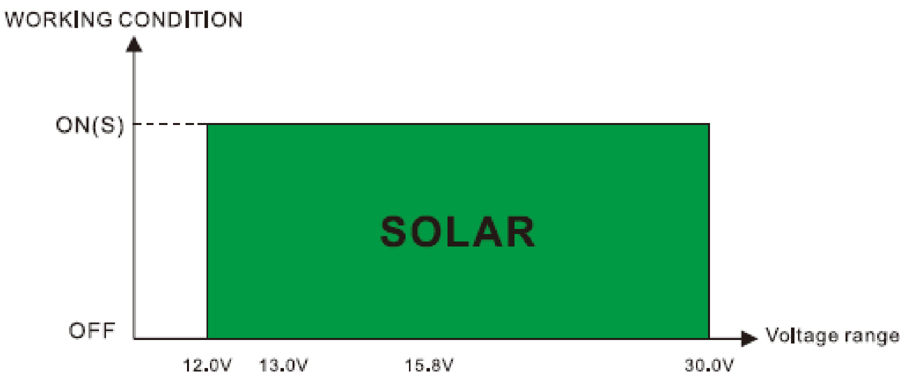
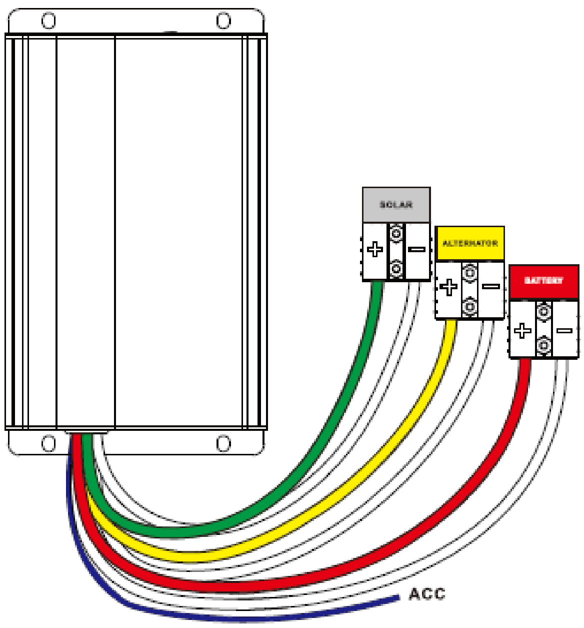

WORKING CONDITION
ON(A)
OFF
ALTERNATOR
ACC
Voltage range
12.0V
13.0V
15.8V
30.0V

2


WORKING CONDITION
ON(S)
OFF
SOLAR
Voltage range
12.0V
13.0V
15.8V
30.0V

3


SOLAR
ALTERNATOR
BATTERY
ACC