victron energy
BLUE POWER

# Manual

EN

## IMPORTANT

- **Always connect the battery first, in order to allow the Controller to recognize system voltage**
- **Use a 12V (36 cells) solar array for a 12V system.**
- **Use a 24V (72 cells) solar array for a 24V system.**

**BlueSolar PWM-Pro Charge Controller**

12V | 24V - 5A **SCC010005010**
12V | 24V - 10A **SCC010010010**
12V | 24V - 20A **SCC010020110**
12V | 24V - 30A **SCC010030010**

## 1. General Safety Information

Read all instructions and cautions in the manual before starting the installation.

Keep the controller away from rain exposure, severe dust, vibration, corrosive gas and intense electromagnetic interference.

Do not allow water to enter the controller.

There are no user serviceable parts inside the controller. Do not disassemble or attempt to repair it.

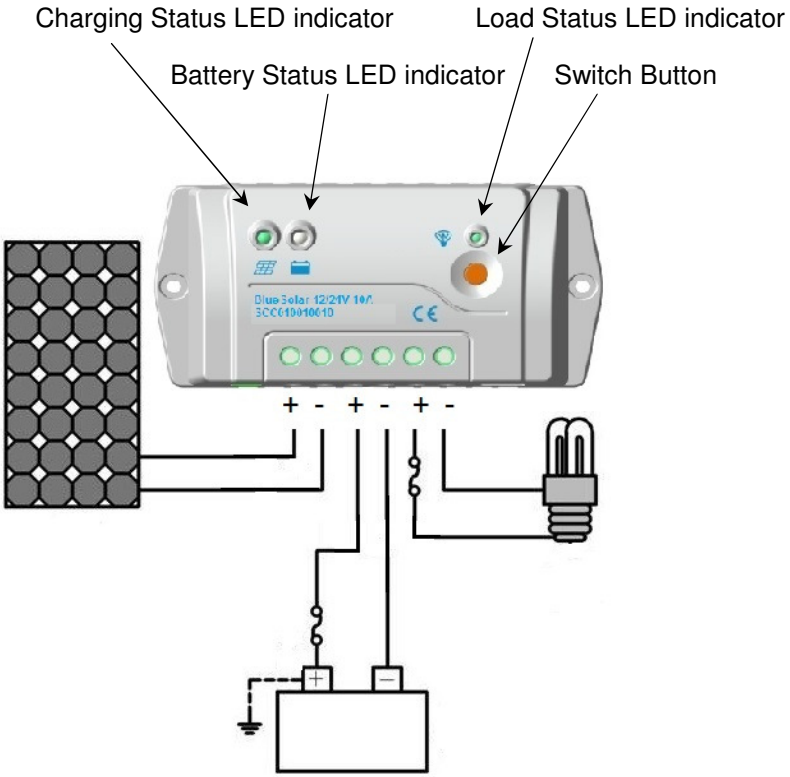
## 2. Features

- Integrated battery monitor function (optional remote panel needed to display state of charge).
- Fully programmable lighting control (programming tools: Remote Panel or free of charge PC software).
- Three stage battery charging (bulk, absorption, float), fully programmable with the Remote Panel.
- Load output with low voltage disconnect and manual control (default setting).
- Optional external temperature sensor.
- Load output protected against over load and short circuit.
- Protected against reverse polarity connection of the solar panels and/or battery.

## 3. Intallation and operation

Important note: always connect the battery first, in order to allow the controller to recognize system voltage.

- The controller is a common positive controller.
- If system grounding is required, preferably the positive pole of the battery should be grounded.
- Use one system ground only.



**Indicator Status Description:**

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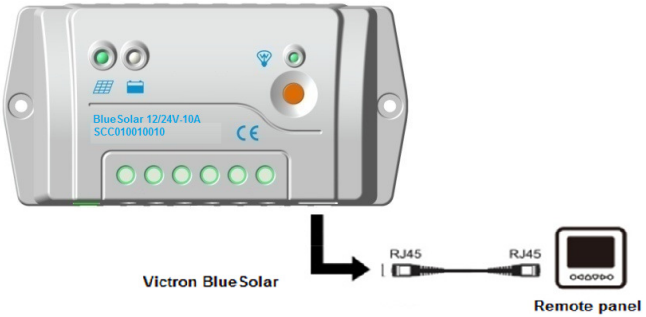
| | | | |
|---|---|---|---|
|  | Green | Off | No voltage from solar array (night time) |
| | Green | On Solid | Low voltage from solar array (low irradiance) |
| | Green | Slowly Flashing | Charging |
|  | Green | On Solid | Normal (Vbat > 12,1V resp. 24,2V) |
| | Green | Fast Flashing | Over voltage (Vbat > 15V resp. 30V) |
| | Orange | On Solid | Under voltage (Vbat <12,5V resp. 23V) |
| | Red | On Solid | Battery over discharged (Vbat < 10V resp. 20V) |
| | Red | Flashing | Battery over temperature (if temp. sensor installed) (Tbat > 45°C) |
|  | Red | On Solid | Normal |
| | Red | Slowly Flashing | Overload |
| | Red | Fast Flashing | Short circuit |
| Charging, load and battery indicator (red) flashing simultaneously | | | System voltage error |
| Charging, load and battery indicator (orange) flashing simultaneously | | | Over temperature |

**Switch Button Functions:**
Manual ON/OFF load control.
Resume to normal operation after a fault has been cleared.

## 4. Programming the controller

The default settings (see specifications) can be modified with help of the remote panel. The panel must be connected to the controller with a standard RJ45 UTP cable.




Use remote panel SCC900300000 to program the controller

**Possible settings** (please see the manual of the remote panel for details):

**Load programs:**

- Manual Control (default)
- Light ON/OFF
- Light ON + Timer
- Time Control

**Battery Type:**

- Gel
- Sealed AGM (default)
- Flooded
- User defined

## 5. Protection

**Load Overload**
If the load current exceeds the rated current of controller (≥1.05 times rated discharge current), the controller will disconnect the load. Overloading must be cleared, then press the switch button.

**Load Short Circuit**
Fully protected against load wiring short-circuit (≥2 times rated discharge current). After one automatic load reconnect attempt, the fault must be cleared by restarting the controller or pressing the switch button.

**PV Reverse Polarity**
Full protection against PV reverse polarity, no damage to the controller will result. Correct the wiring to resume normal operation.

**Battery Reverse Polarity**
Full protection against battery reverse polarity, no damage to the controller will result. Correct the wiring to resume normal operation.

**Damaged Temperature Sensor**
If the temperature sensor short-circuited or damaged, the controller will be charging or discharging at the default temperature (25℃).

**Overheating Protection**
If the temperature of the controller heat sink exceeds 85°C, the controller will stop charging and discharging. When the temperature is below 75°C, the controller will restart.

**High Voltage Transients**
Limited internal transient protection.
In lightning prone areas, additional external suppression is recommended.

## 6. Troubleshooting

| Faults | Possible reasons | Troubleshooting |
|---|---|---|
| Charging LED indicator off during daytime when sunshine falls on PV modules | PV array disconnected | Check that PV and battery wire connections are correct and tight. |
| Green Battery LED indicator fast flashing | Battery voltage higher than over voltage disconnect voltage | Check battery voltage. If too high, disconnect the solar module immediately and replace the controller. |
| Battery LED indicator orange | Battery under voltage | Load output is normal. Charging LED indicator will return to green automatically when fully charged. |
| Battery LED indicator RED and loads not working | Battery over discharged | The controller did cut off the output automatically. The LED indicator will return to green when fully charged. |
| Load status indicator red and slow flashing | Overload | Remove or cut out the additional load and press the button. The controller will restart after 3s. |
| Load status indicator red and fast flashing | Short circuit | Clear short circuit and press the button, the controller will resume to work after 3s |
| Charging, load and battery indicator (orange) flashing simultaneously | Over temperature | When the heat sink of the controller exceeds 85℃, the controller will automatically shut down. When the temperature has decreased to less than 75℃, the controller will restart.. |
| Charging, load and battery indicator (red) flashing simultaneously | System voltage error | Check whether the battery voltage matches with the controller working voltage. Please change to a suitable battery or reset the working voltage. Press load button to clear the malfunction. |

# 7. Technical specifications

| | BlueSolar PWM-Pro charge controller 12/24V | | |
|---|---|---|---|
| | **5 A /10 A** | **20 A** | **30 A** |
| Battery voltage | 12/24V Auto Select | | |
| Rated charge current | 5 A / 10 A | 20 A | 30 A |
| Automatic load disconnect | Yes | | |
| Maximum solar voltage | 28 V / 55 V (1) | | |
| Self-consumption | 8 mA | | |
| **DEFAULT SETTINGS** | | | |
| Absorption charge | 14,4 V / 28,8 V | | |
| Float charge | 13,8 V / 27,6 V | | |
| Equalization charge | 14,6 V / 29,2 V | | |
| Low voltage load disconnect | 11,1 V / 22,2 V | | |
| Low voltage load reconnect | 12,6 V / 25,2 V | | |
| Load output | Manual control + low voltage disconnect | | |
| **ENCLOSURE & ENVIRONMENTAL** | | | |
| Battery temperature sensor | Optional | | |
| Temperature compensation | -30 mV / ℃ resp. -60 mV / ℃ (if temperature sensor installed) | | |
| Operating temperature | -35℃ to +50℃ | | |
| Cooling | Natural convection | | |
| Humidity | ≤95% (non condensing) | | |
| Enclosure | IP30 | | |
| Grounding | Positive grounding | | |
| Overall dimensions | 138x70x37 mm 5.4x2.7x1.4 inch | 160x82x48 mm 6.3x3.2x1.9 inch | 200x100x57 mm 7.9x4.0x2.3 inch |
| Mounting hole size | Φ 4,3 mm | Φ 4,3 mm | Φ 4,5 mm |
| Terminal size | 4 $mm^2$ | 10 $mm^2$ | 10 $mm^2$ |
| Weight | 0,13 kg | 0,3 kg | 0,5 kg |
| Mounting | Vertical wall mount, indoor only | | |
| **STANDARDS** | | | |
| Safety | IEC 62109-1 | | |
| EMC | EN 61000-6-1, EN 61000-6-3, ISO 7637-2 | | |

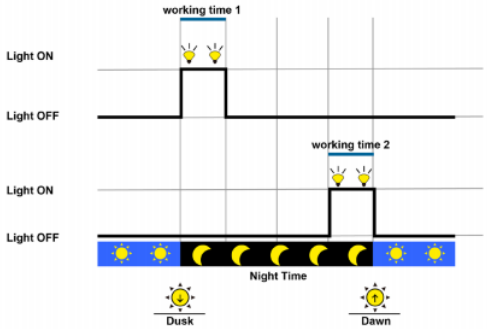
**1) For 12 V use 36 cell solar panels**
**For 24 V use 72 cell solar panels, or 2x 36 cell in series**

## 8. Battery related programming options
**(see remote panel manual for details)**

| Battery related programming options | Gel | Sealed (default setting) | Flooded | User defined |
|---|---|---|---|---|
| Battery capacity setting (needed for the internal battery monitor) | 200Ah | | | 1~9999 |
| Over voltage load disconnect | 16.0V | | | 9~17V |
| Charge limit | 15.0V | | | 9~17V |
| Over voltage reconnect | 15.0V | | | 9~17V |
| Equalize | —— | 14.6V | 14.8V | 9~17V |
| Absorption | 14.2V | 14.4V | 14.6V | 9~17V |
| Float | 13.8V | 13.8V | 13.8V | 9~17V |
| New charge cycle trigger voltage | 13.2V | | | 9~17V |
| Low voltage load reconnect | 12.6V | | | 9~17V |
| Under voltage warning reset | 12.2V | | | 9~17V |
| Under voltage warning | 12.0V | | | 9~17V |
| Low voltage load disconnect | 11.1V | | | 9~17V |
| Discharge limit | 10.6V | | | 9~17V |
| Equalize duration | —— | 2 hrs. | 2 hrs. | 0~3 |
| Absorption duration | 2 hrs. | 2 hrs. | 2 hrs. | 0~3 |

**Multiply voltages by 2 for a 24V system**

## 9. Day/night timing options **(see remote panel manual)**



# Victron Energy Blue Power

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Serial number:

Version : 01
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