

# BlueSolar Charge Controllers MPPT 100/30 & 100/50

## Ultrafast Maximum Power Point Tracking (MPPT)

Especially in case of a clouded sky, when light intensity is changing continuously, an ultra-fast MPPT controller will improve energy harvest by up to 30% compared to PWM charge controllers and by up to 10% compared to slower MPPT controllers.

## Advanced Maximum Power Point Detection in case of partial shading conditions

If partial shading occurs, two or more maximum power points may be present on the power-voltage curve. Conventional MPPTs tend to lock to a local MPP, which may not be the optimum MPP. The innovative BlueSolar algorithm will always maximize energy harvest by locking to the optimum MPP.

## Outstanding conversion efficiency

No cooling fan. Maximum efficiency exceeds 98%.  
The full output current up to 40°C (104°F).

## Flexible charge algorithm

Fully programmable charge algorithm (see the software page on our website), and eight pre-programmed algorithms, selectable with a rotary switch (see manual for details).

## Extensive electronic protection

Over-temperature protection and power derating when temperature is high.  
PV short circuit and PV reverse polarity protection.  
PV reverse current protection.

## Internal temperature sensor

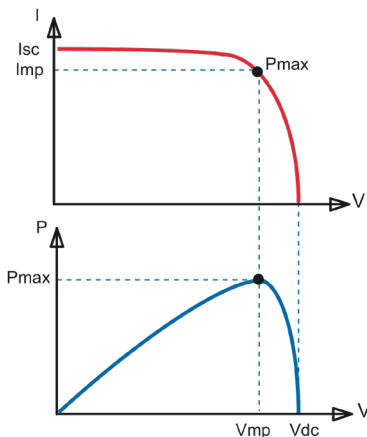
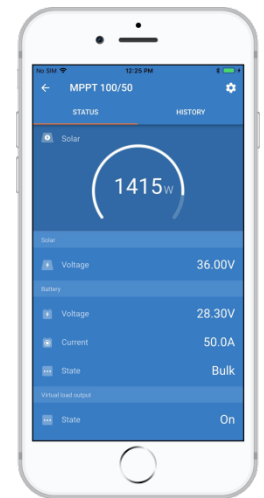
Compensates absorption and float charge voltage for temperature.

## Real-time data display options

- ColorControl GX or other GX devices: see the **Venus** documents on our website.
- A smartphone or other Bluetooth-enabled device: VE.Direct Bluetooth Smart dongle needed.



**BlueSolar Charge Controller  
MPPT 100/50**



## Maximum Power Point Tracking

### Upper curve:

Output current (I) of a solar panel as function of output voltage (V).  
The Maximum Power Point (MPP) is the point Pmax along the curve where the product I x V reaches its peak.

### Lower curve:

Output power P = I x V as function of output voltage.

When using a PWM (not MPPT) controller the output voltage of the solar panel will be nearly equal to the voltage of the battery, and will be lower than Vmp.

| BlueSolar Charge Controller                                                                                                                                                                                                                                                   | MPPT 100/30                                                        | MPPT 100/50       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------|
| Battery voltage                                                                                                                                                                                                                                                               | 12/24V Auto Select                                                 |                   |
| Rated charge current                                                                                                                                                                                                                                                          | 30A                                                                | 50A               |
| Nominal PV power, 12V 1a,b)                                                                                                                                                                                                                                                   | 440W                                                               | 700W              |
| Nominal PV power, 24V 1a,b)                                                                                                                                                                                                                                                   | 880W                                                               | 1400W             |
| Maximum PV open circuit voltage                                                                                                                                                                                                                                               | 100V                                                               | 100V              |
| Max. PV short circuit current 2)                                                                                                                                                                                                                                              | 35A                                                                | 60A               |
| Maximum efficiency                                                                                                                                                                                                                                                            | 98%                                                                | 98%               |
| Self-consumption                                                                                                                                                                                                                                                              | 12V: 30 mA 24V: 20 mA                                              |                   |
| Charge voltage 'absorption'                                                                                                                                                                                                                                                   | Default setting: 14,4V / 28,8V (adjustable)                        |                   |
| Charge voltage 'float'                                                                                                                                                                                                                                                        | Default setting: 13,8V / 27,6V (adjustable)                        |                   |
| Charge algorithm                                                                                                                                                                                                                                                              | multi-stage adaptive                                               |                   |
| Temperature compensation                                                                                                                                                                                                                                                      | -16 mV / °C resp. -32 mV / °C                                      |                   |
| Operating temperature                                                                                                                                                                                                                                                         | -30 to +60°C (full rated output up to 40°C)                        |                   |
| Humidity                                                                                                                                                                                                                                                                      | 95%, non-condensing                                                |                   |
| Data communication port                                                                                                                                                                                                                                                       | VE.Direct<br>See the data communication white paper on our website |                   |
| ENCLOSURE                                                                                                                                                                                                                                                                     |                                                                    |                   |
| Colour                                                                                                                                                                                                                                                                        | Blue (RAL 5012)                                                    |                   |
| Power terminals                                                                                                                                                                                                                                                               | 16 mm <sup>2</sup> / AWG6                                          |                   |
| Protection category                                                                                                                                                                                                                                                           | IP43 (electronic components), IP22 (connection area)               |                   |
| Weight                                                                                                                                                                                                                                                                        | 1,3 kg                                                             | 1,3 kg            |
| Dimensions (h x w x d)                                                                                                                                                                                                                                                        | 130 x 186 x 70 mm                                                  | 130 x 186 x 70 mm |
| STANDARDS                                                                                                                                                                                                                                                                     |                                                                    |                   |
| Safety                                                                                                                                                                                                                                                                        | EN/IEC 62109-1, UL 1741, CSA C22.2                                 |                   |
| 1a) If more PV power is connected, the controller will limit input power.<br>1b) PV voltage must exceed Vbat + 5V for the controller to start.<br>Thereafter minimum PV voltage is Vbat + 1V.<br>2) A PV array with a higher short circuit current may damage the controller. |                                                                    |                   |