# SmartSolar Charge Controllers with screw- or MC4 PV MPPT 150/45 up to MPPT 150/100

#### Ultra-fast 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 SmartSolar algorithm will always maximize energy harvest by locking to the optimum MPP.

#### **Outstanding conversion efficiency**

No cooling fan. Maximum efficiency exceeds 98%.

# Flexible charge algorithm

Fully programmable charge algorithm (see the software page on our website), and eight preprogrammed 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.

#### Bluetooth Smart built-in: dongle not needed

The wireless solution to set-up, monitor and update the controller using Apple and Android smartphones, tablets or other devices.

## VE.Direct

For a wired data connection to a Color Control GX, other GX products, PC or other devices

### Remote on-off

To connect for example to a VE.BUS BMS.

#### **Programmable relay**

Can be programmed (a.o. with a smartphone) to trip on an alarm, or other events.

#### Optional: pluggable LCD display

Simply remove the rubber seal that protects the plug on the front of the controller, and plug-in the display.







SmartSolar Charge Controller MPPT 150/100-Tr with optional pluggable display



SmartSolar Charge Controller MPPT 150/100-MC4 without display

| SmartSolar Charge Controller     | 150/45  | 150/60  | 150/70                  | 150/85  | 150/100                     |  |
|----------------------------------|---|---|-------------------------|---|-----------------------------|--|
| Battery voltage                  | 12 / 24 / 48V Auto Select (software tool needed to select 36V)  |   |                         |   |                             |  |
| Rated charge current             | 45A   | 60A   | 70A                     | 85A   | 100A                        |  |
| Nominal PV power, 12V 1a,b)      | 650W  | 860W  | 1000W                   | 1200W   | 1450W                       |  |
| Iominal PV power, 24V 1a,b)      | 1300W   | 1720W   | 2000W                   | 2400W   | 2900W                       |  |
| Iominal PV power, 36V 1a,b)      | 1950W   | 2580W   | 3000W                   | 3600W   | 4350W                       |  |
| lominal PV power, 48V 1a,b)      | 2600W   | 3440W   | 4000W                   | 4900W   | 5800W                       |  |
| Nax. PV short circuit current 2) | 50A (max 30A per MC4 conn.) 70A (max 30A per MC4 conn.)   |   |                         |   |                             |  |
| Maximum PV open circuit voltage  | 150V absolute maximum coldest conditions<br>145V start-up and operating maximum                                       |   |                         |   |                             |  |
| Maximum efficiency               | 98%   |   |                         |   |                             |  |
| Self-consumption                 | Less than 35mA @ 12V / 20mA @ 48V   |   |                         |   |                             |  |
| Charge voltage 'absorption'      | Default setting: 14,4 / 28,8 / 43,2 / 57,6V<br>(adjustable with: rotary switch, display, VE.Direct or Bluetooth)      |   |                         |   |                             |  |
| Charge voltage 'float'           | Default setting: 13,8 / 27,6 / 41,4 / 55,2V<br>(adjustable: rotary switch, display, VE.Direct or Bluetooth)           |   |                         |   |                             |  |
| Charge voltage 'equalization'    | Default setting: 16,2V / 32,4V / 48,6V / 64,8V (adjustable)   |   |                         |   |                             |  |
| Charge algorithm                 | multi-stage adaptive (eight preprogrammed algorithms) or user defined algorithm                                       |   |                         |   |                             |  |
| emperature compensation          | -16 mV / -32 mV / -64 mV / °C   |   |                         |   |                             |  |
| Protection                       | Battery reverse polarity (fuse, not user accessible)<br>PV reverse polarity / Output short circuit / Over temperature |   |                         |   |                             |  |
| Operating temperature            | -30 to +60°C (full rated output up to 40°C)   |   |                         |   |                             |  |
| lumidity                         | 95%, non-condensing   |   |                         |   |                             |  |
| Maximum altitude                 | 5000m (full rated output up to 2000m)   |   |                         |   |                             |  |
| Environmental condition          | Indoor, unconditioned   |   |                         |   |                             |  |
| Pollution degree                 | PD3   |   |                         |   |                             |  |
| Data communication port          | VE.Direct or Bluetooth  |   |                         |   |                             |  |
| Remote on/off                    | Yes (2 pole connector)  |   |                         |   |                             |  |
| Programmable relay               | DPST AC rating: 240VAC / 4A DC rating: 4A up to 35VDC, 1A up to 60VDC   |   |                         |   |                             |  |
| Parallel operation               | Yes (not synchronized)  |   |                         |   |                             |  |
|                                  |   | ENCLOSURE   |                         |   |                             |  |
| Colour                           | Blue (RAL 5012)   |   |                         |   |                             |  |
| PV terminals 3)                  | Two pa  | 35 mm <sup>2</sup> / AWG2 (Tr mode<br>irs of MC4 connectors (MC | - /                     | 35 mm <sup>2</sup> / AWG<br>Three pairs of MC4<br>mod | connectors (MC4             |  |
| Battery terminals                | 35mm <sup>2</sup> / AWG2  |   |                         |   |                             |  |
| Protection category              | IP43 (electronic components), IP22 (connection area)  |   |                         |   |                             |  |
| Veight                           |   | 3 kg 4,5kg  |                         | kg  |                             |  |
|                                  | Tr models: 185 x 250 x 95 mm  |   |                         | Tr models: 216 x 295 x 103                            |                             |  |
| Dimensions (h x w x d) in mm     | MC4 models: 215 x 250 x 95 mm   |   |                         | MC4 models: 24  | MC4 models: 246 x 295 x 103 |  |
|                                  |   | STANDARDS   |                         |   |                             |  |
| Safety                           |   | EN/IE   | C 62109-1, UL 1741, CSA | C22.2   |                             |  |

1a) If more PV power is connected, the controller will limit input power.
1b) The PV voltage must exceed Vbat + 5V for the controller to start. Thereafter the minimum PV voltage is Vbat + 1V.
2) A PV array with a higher short circuit current may damage the controller.
3) MC4 models: several splitter pairs may be needed to parallel the strings of solar panels

