

SmartSolar Charge Controllers with VE.Can interface

MPPT 250/70 VE.Can up to MPPT 250/100 VE.Can



**SmartSolar Charge Controller
MPPT 250/100-Tr VE.Can
with optional pluggable display**



**SmartSolar Charge Controller
MPPT 250/100-Tr VE.Can
without display**



**Bluetooth sensing:
Smart Battery Sense**



**Bluetooth sensing:
BMV-712 Smart Battery Monitor**



Bluetooth sensing: SmartShunt

Ultra-fast Maximum Power Point Tracking (MPPT)

Especially in case of a cloudy 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 (MPP) 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 99 %.

Flexible charge algorithm

Fully programmable charge algorithm, 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.

Bluetooth Smart built-in

The wireless solution to set-up, monitor, update and synchronise SmartSolar Charge Controllers.

Internal temperature sensor and optional external battery voltage, temperature and current sensing via Bluetooth

A Smart Battery Sense, a BMV-712 Smart Battery Monitor or a SmartShunt can be used to communicate battery voltage and temperature (and current, in case of a BMV 712 or a SmartShunt) to one or more SmartSolar Charge Controllers.

VE.Direct or VE.Can

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

Synchronized parallel charging with VE.Can or Bluetooth

Up to 25 units can be synchronized with VE.Can, and up to 10 units with Bluetooth.

Fully discharged battery recovery function

Will initiate charging even if the battery has been discharged to zero volts.

Will reconnect to a fully discharged Li-ion battery with integrated disconnect function.

VE.Can: the multiple controller solution

Up to 25 units can be synchronised with VE.Can.

Remote on-off

To connect for example to a VE.BUS BMS.

Programmable relay

Can be programmed to trip on an alarm, or other events.

Optional: SmartSolar pluggable LCD display

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



SmartSolar pluggable display



| SmartSolar Charge Controller with VE.Can interface | 250/70 | 250/85 | 250/100 |
|--|---|-------------------------------|---------|
| Battery voltage | 12/24/48 V Auto Select (36 V: manual) | | |
| Rated charge current | 70 A | 85 A | 100 A |
| Nominal PV power, 12 V 1a,b) | 1000 W | 1200 W | 1450 W |
| Nominal PV power, 24 V 1a,b) | 2000 W | 2400 W | 2900 W |
| Nominal PV power, 36 V 1a,b) | 3000 W | 3600 W | 4350 W |
| Nominal PV power, 48 V 1a,b) | 4000 W | 4900 W | 5800 W |
| Max. PV short circuit current 2) | 35 A (max 30 A per MC4 conn.) | 70 A (max 30 A per MC4 conn.) | |
| Maximum PV open circuit voltage | 250 V absolute maximum coldest conditions 245 V start-up and operating maximum | | |
| Maximum efficiency | 99 % | | |
| Self-consumption | Less than 35 mA @ 12 V / 20 mA @ 48 V | | |
| Charge voltage 'absorption' | Default setting: 14,4 / 28,8 / 43,2 / 57,6 V (adjustable with: rotary switch, display, VE.Direct or Bluetooth) | | |
| Charge voltage 'float' | Default setting: 13,8 / 27,6 / 41,4 / 55,2 V (adjustable: rotary switch, display, VE.Direct or Bluetooth) | | |
| Charge voltage 'equalization' | Default setting: 16,2 V / 32,4 V / 48,6 V / 64,8 V (adjustable) | | |
| Charge algorithm | multi-stage adaptive (eight pre-programmed algorithms) or user defined algorithm | | |
| Temperature compensation | -16 mV / -32 mV / -64 mV / °C | | |
| Protection | PV reverse polarity / Output short circuit / Over temperature | | |
| Operating temperature | -30 to +60 °C (full rated output up to 40 °C) | | |
| Humidity | 95 %, non-condensing | | |
| Maximum altitude | 5000 m (full rated output up to 2000 m) | | |
| Environmental condition | Indoor, unconditioned | | |
| Pollution degree | PD3 | | |
| Data communication | VE.Can, VE.Direct and Bluetooth | | |
| Remote on/off | Yes (2 pole connector) | | |
| Programmable relay | DPST AC rating: 240 VAC / 4 A DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC | | |
| Parallel operation | Yes, parallel synchronised operation with VE.Can (max. 25 units) or Bluetooth (max. 10 units) | | |

ENCLOSURE

| | | | |
|------------------------------|---|---|--|
| Colour | Blue (RAL 5012) | | |
| PV terminals 3) | 35 mm ² / AWG2 (Tr models) Two pairs of MC4 connectors (MC4 models) | 35 mm ² / AWG2 (Tr models) Three pairs of MC4 connectors (MC4 models) | |
| Battery terminals | 35mm ² / AWG2 | | |
| Protection category | IP43 (electronic components), IP22 (connection area) | | |
| Weight | 3 kg | 4,5 kg | |
| Dimensions (h x w x d) in mm | Tr models: 185 x 250 x 95 mm MC4 models: 215 x 250 x 95 mm | Tr models: 216 x 295 x 103 MC4 models: 246 x 295 x 103 | |

STANDARDS

| | | | |
|--------|------------------------------------|--|--|
| Safety | EN/IEC 62109-1, UL 1741, CSA C22.2 | | |
|--------|------------------------------------|--|--|

STORED TRENDS

| | | | |
|--------------------------------------|--|--|--|
| Data stored | Battery voltage, current and temperature, as well as load output current, PV voltage and PV current. | | |
| Number of days trends data is stored | 46 | | |

- 1a) If more PV power is connected, the controller will limit input power.
- 1b) The PV voltage must exceed Vbat + 5 V for the controller to start. Thereafter the minimum PV voltage is Vbat + 1 V.
- 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
Maximum current per MC4 connector: 30 A (the MC4 connectors are parallel connected to one MPPT tracker)



With VE.Can up to 25 Charge Controllers can be daisy-chained and connected to a Color Control GX or other GX device
Each Controller can be monitored individually, for example on a Color Control GX and on the VRM website