

# SmartSolar Charge Controllers with screw- or MC4 PV connection

## MPPT 250/60 and MPPT 250/70



**SmartSolar Charge Controller  
MPPT 250/70-Tr  
with optional pluggable display**



**SmartSolar Charge Controller  
MPPT 250/70-MC4  
without display**



**Bluetooth sensing:  
Smart Battery Sense**



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



**Bluetooth sensing: SmartShunt**

### Bluetooth Smart built-in

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

### 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 points (MPP) 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 (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 and optional external battery voltage and temperature 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

### Synchronized parallel charging with Bluetooth

Up to 10 units can be synchronized 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.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

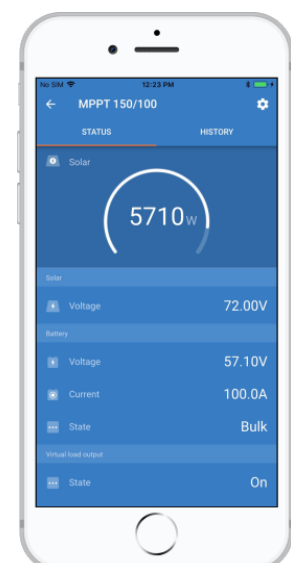
Can be programmed (a.o. with a smartphone) to trip on an alarm, or other events.

### Optional: 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	250/60	250/70
Battery voltage	12 / 24 / 48 V Auto Select (software tool needed to select 36 V)	
Rated charge current	60 A	70 A
Nominal PV power, 12 V 1a,b)	860 W	1000 W
Nominal PV power, 24 V 1a,b)	1720 W	2000 W
Nominal PV power, 36 V 1a,b)	2580 W	3000 W
Nominal PV power, 48 V 1a,b)	3440 W	4000 W
Max. PV short circuit current 2)	35 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	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: 240 VAC / 4 A DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC
Parallel operation	Yes: up to 10 units can be synchronized with Bluetooth	
ENCLOSURE		
Colour	Blue (RAL 5012)	
PV terminals 3)	35 mm <sup>2</sup> / AWG2 (Tr models) Two pairs of MC4 connectors (MC4 models)	
Battery terminals	35 mm <sup>2</sup> / AWG2	
Protection category	IP43 (electronic components), IP22 (connection area)	
Weight	3 kg	
Dimensions (h x w x d)	Tr models: 185 x 250 x 95 mm MC4 models: 215 x 250 x 95 mm	
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)

