

# SmartSolar Charge Controllers with screw- or MC4 PV connection

## MPPT 150/45 up to MPPT 150/70



**SmartSolar Charge Controller  
MPPT 150/70-Tr  
without optional display**



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**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 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 (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 98 %.

### 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.

### 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.

### 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

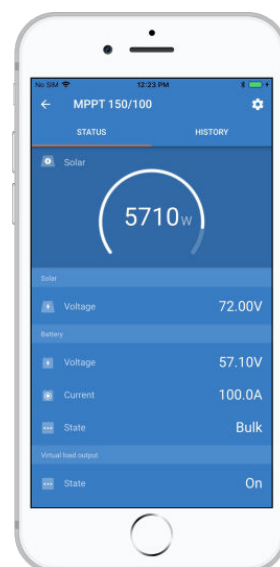
Can be programmed to trip on an alarm, or other events.

### 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	150/45	150/60	150/70
Battery voltage	12 / 24 / 48 V Auto Select (software tool needed to select 36 V)		
Rated charge current	45 A	60 A	70 A
Nominal PV power, 12 V 1a,b)	650 W	860 W	1000 W
Nominal PV power, 24 V 1a,b)	1300 W	1720 W	2000 W
Nominal PV power, 36 V 1a,b)	1950 W	2580 W	3000 W
Nominal PV power, 48 V 1a,b)	2600 W	3440 W	4000 W
Max. PV short circuit current 2)	50 A (max 30 A per MC4 conn.)		
Maximum PV open circuit voltage	150 V absolute maximum coldest conditions 145 V start-up and operating maximum		
Maximum efficiency	98 %		
Self-consumption	Less than 35mA @ 12 V / 20mA @ 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)			

