

# SmartSolar Charge Controllers with VE.Can interface

## MPPT 150/70 VE.Can up to MPPT 150/100 VE.Can



**SmartSolar Charge Controller  
MPPT 150/100-Tr VE.Can  
with optional pluggable display**



**SmartSolar Charge Controller  
MPPT 150/100-Tr VE.Can  
without display**



**Bluetooth sensing:  
Smart Battery Sense**



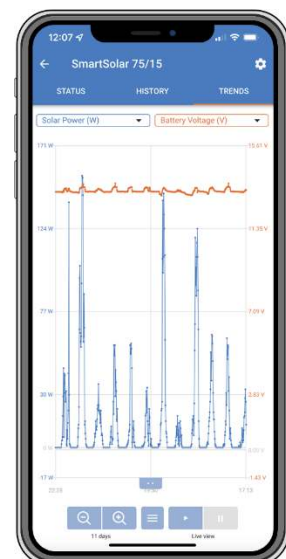
**Bluetooth sensing:  
BMV-712 Smart Battery Monitor**



**Bluetooth sensing: SmartShunt**



**SmartSolar pluggable display**



### 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, 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

### 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, and up to 10 units with Bluetooth

### 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 Charge Controller with VE.Can interface	150/70 VE.Can	150/85 VE.Can	150/100 VE.Can (also available without Bluetooth)
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)	50 A (max 30 A per MC4 conn.)		70 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 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 preprogrammed 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	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)		
<b>ENCLOSURE</b>			
Colour	Blue (RAL 5012)		
PV terminals 3)	35 mm <sup>2</sup> / AWG2 (Tr models) Two pairs of MC4 connectors (MC4 models)	35 mm <sup>2</sup> / AWG2 (Tr models) Three pairs of MC4 connectors (MC4 models)	
Battery terminals	35mm <sup>2</sup> / AWG2		
Protection category	IP43 (electronic components), IP22 (connection area)		
Weight	3 kg	4,5kg	
Dimensions (h x w x d) in mm	Tr models: 185 x 250 x 95 mm MC4 models: 215x 250 x 95 mm	Tr models: 216 x 295 x 103 MC4 models: 246 x 295 x 103	
<b>STANDARDS</b>			
Safety	EN/IEC 62109-1, UL 1741, CSA C22.2		
<b>STORED TRENDS</b>			
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		
<p>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)</p>			



**With VE.Can or Bluetooth up to 25 respectively up to 10 Charge Controllers can be daisy-chained for synchronous charging 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 (VE.Can) or on a smartphone or iPad (Bluetooth)**