

MPPT

SOLAR CHARGE CONTROLLER

75 ~ 450PV - 10 ~ 200A_{dc} - 12 ~ 48V_{dc}



HmT
electrical

 **victron energy**
BLUE POWER

Features



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SmartSolar MPPT

The Maximum Power Point Tracking (MPPT) solar charge controller is designed to efficiently convert solar energy into usable power for charging batteries. MPPT technology allows these controllers to optimize the solar panel output by finding the maximum power point at which the panels can generate the most electricity.

Fully discharged battery recovery function

Will initiate charging even if the battery has been discharged to zero volts. Will reconnect to a fully discharged Lithium-ion battery with integrated disconnect function.

Maximum Power Point Tracking (MPPT)

Especially in case of an overcast, when light intensity is changing continuously, an ultra-fast MPPT controller will improve energy harvest by up to 30% compared to PWM (Pulse Width Modulator) 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 MPPT's 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.

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

Maximum Power Point Tracking (MPPT) Solar Charge Controller

The MPPT RS SmartSolar is a 48V solar charge controller with up to 450 VDC PV input and either 100A (2 inputs), or 200A (4 inputs) output. It is used in on-grid and off-grid solar applications where maximum battery charging power is required.

Multiple Independent MPPT Tracking Inputs

With multiple MPPT trackers, you can optimize your solar design for maximum performance for your specific location.

Isolated PV Connection for Additional Safety

Full galvanic isolation between PV and battery connections provide additional overall system safety.

Wide MPPT Voltage Range

80-450 VDC PV operating range, with a 120 VDC PV startup voltage.

PV Isolation Resistance Monitoring for Peace of Mind at Higher Voltages

The MPPT RS continuously monitors the PV array and can detect if there are faults that reduce the isolation of the panels to unsafe levels.



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



Bluetooth Sensing:
Smart Battery Sense



Rotary Switch



VE.Direct to USB
Interface

Specifications



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Single tracker only

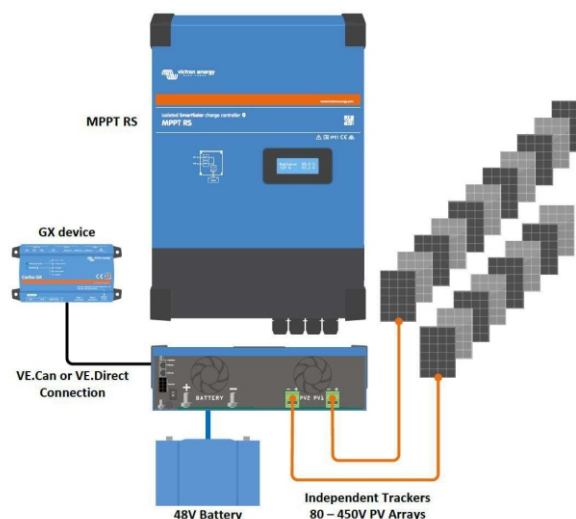
SmartSolar Charge Controller	Load output	Battery voltage	Optional display	Bluetooth	Com. port	Remote on-off	Programmable relay	Wire Box
75/10	15A	12/24V	MPPT control	Built-in	VE.Direct	No	No	S 75-10/15
75/15	15A	12/24V	MPPT control	Built-in	VE.Direct	No	No	S 75-10/15
100/15	15A	12/24V	MPPT control	Built-in	VE.Direct	No	No	S 100-15
100/20 (up to 48V)	20A/20A/1A	12/24/36/48V	MPPT control	Built-in	VE.Direct	No	No	S 100-20
100/30	No	12/24V	MPPT control	Built-in	VE.Direct	No	No	M
100/50	No	12/24V	MPPT control	Built-in	VE.Direct	No	No	M
150/35	No	12/24/36/48V	MPPT control	Built-in	VE.Direct	No	No	M
150/45	No	12/24/36/48V	MPPT control	Built-in	VE.Direct	No	No	M
150/45-Tr	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/45-MC4	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/60-Tr	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/60-MC4	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/70-Tr	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/70-MC4	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
150/70-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	L
150/70-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	L
150/85-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
150/85-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
150/100-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
150/100-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
250/60-Tr	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
250/60-MC4	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
250/70-Tr	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
250/70-MC4	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct	Yes	Yes	L
250/70-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	L
250/70-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	L
250/85-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
250/85-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
250/100-Tr VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL
250/100-MC4 VE.Can	No	12/24/36/48V	MPPT ctrl & SmartSolar ctrl	Built-in	VE.Direct & VE.Can	Yes	Yes	XL



Inside the SmartSolar MPPT RS 450/100



Solar Charge Controller MPPT 75/15



The 100A MPPT RS combined with a GX device, charging a 48V battery with 2 separate solar PV strings.

Isolated SmartSolar MPPT RS	450 100	450 200
CHARGER		
Battery voltage	48 V	
Rated charge current	100 A	200 A
Maximum charge power	5,8 kW at 57,6 V	11,5 kW at 57,6 V
Charge voltage 'absorption'	Default setting: 57,6 V (adjustable)	
Charge voltage 'float'	Default setting: 55,2 V (adjustable)	
Programmable voltage range	Minimum: 36 V Maximum: 60 V ⁽⁷⁾	
Charge algorithm	Multi-stage adaptive (adjustable)	
Battery temperature sensor	Included	
Maximum efficiency	96 %	
Self-consumption	15 mA	
SOLAR		
Maximum DC PV voltage	450 V	
Start-up voltage	120 V	
MPPT operating voltage range	80 – 450 V ⁽¹⁾	
Number of trackers	2	4
Max. PV operational input current	18 A per tracker	
Max. PV short circuit current ⁽²⁾	20 A per tracker	
Max. DC output charging power	4000 W per tracker 5760 W total	4000 W per tracker 11520 W total
Maximum PV array size per tracker ⁽³⁾	7200 Wp (450 V x 20 A) ⁽³⁾	
PV Isolation fail level ⁽⁴⁾	100 kΩ	
GENERAL		
Synchronised Parallel Operation	Yes, up to 25 units with VE.Can	
Programmable relay ⁽⁵⁾	Yes	
Protection	PV reverse polarity Output short circuit Over temperature	
Data communication	VE.Direct port, VE.Can port & Bluetooth ⁽⁶⁾	
Bluetooth frequency	2402 – 2480 MHz	
Bluetooth power	4dBm	
General purpose analogue/digital in port	Yes, 2x	
Remote on-off	Yes	
Operating temperature range	-40 to +60 °C (fan assisted cooling)	
Humidity (non-condensing)	max 95 %	
ENCLOSURE		
Material & Colour	steel, blue RAL 5012	
Protection category	IP21	
Battery-connection	M8 bolts	
Power terminals PV input	2	16 mm ²
Weight	7.9 kg	13.7 kg
Dimensions (h x w x d) in mm	440 x 313 x 126	487 x 434 x 146
STANDARDS		
Safety	EN-IEC 62109-1, EN-IEC 62109-2	
Country of Origin	Designed in The Netherlands, made in India	
<p>1) MPPT operating voltage range is constrained by battery voltage - PV VOC should not exceed 8 x battery float voltage. For example, a 52,8 V float voltage results in a maximum PV VOC of 422,4 V. See product manual for further information.</p> <p>2) A higher short circuit current may damage the controller if PV array is connected in reverse polarity.</p> <p>3) Max. 450 VOC result in appr. 360 Vmpp, therefor the maximum PV array is appr. 360 V x 20 A = 7200 Wp.</p> <p>4) The MPPT RS will test for sufficient resistive isolation between PV+ and GND, and PV- and GND. In the event of a resistance below the threshold, the unit will stop charging, display the error, and send the error signal to the GX device (if connected) for audible and email notification.</p> <p>5) Programmable relay which can be set for general alarm, DC under voltage or genset start/stop function. DC rating: 4 A up to 35 VDC and 1 A up to 70 VDC</p> <p>6) The MPPT RS is currently not compatible with VE.Smart Networks.</p> <p>7) The Charger set-point (float and absorption) can be set to max 60 V. The output voltage at the charger terminals can be higher, due to temperature compensation as well as compensation for voltage drop over the battery cables. The maximum output current is reduced on a linear basis from full current at 60 V to 5A at 62 V. The equalization voltage can be set to max 62V, the equalization current percentage can be set to max 6%.</p>		



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