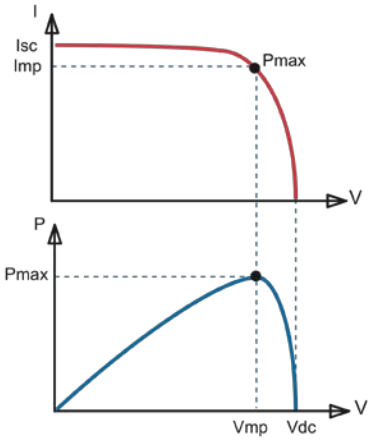
BlueSolar Charge Controllers MPPT – Overview

www.victronenergy.com



Maximum Power Point Tracking

Upper curve:

Output current (I) of a solar panel as function of output voltage (V).
The Maximum Power Point (MPP) is the point Pmax along the curve where the product I x V reaches its peak.

Lower curve:

Output power P = I x V as function of output voltage.
When using a PWM (not MPPT) controller the output voltage of the solar panel will be nearly equal to the voltage of the battery, and will be lower than Vmp.

Feature highlights

- Ultra-fast Maximum Power Point Tracking (MPPT)
- Advanced Maximum Power Point Detection in case of partial shading conditions
- Load output on the small models
- Battery Life: intelligent battery management by load shedding
- Automatic battery voltage recognition
- Flexible charge algorithm
- Over-temperature protection and power de-rating when temperature is high.

Color Control GX

All Victron Energy MPPT Charge Controllers are compatible with the Color Control GX: The Color Control GX provides intuitive control and monitoring for all products connected to it. The list of Victron products that can be connected is endless: Inverters, Multis, Quattros, MPPT 150/70, BMV-600 series, BMV-700 series, Skylla-i, Lynx Ion and even more.

VRM Online Portal

Besides monitoring and controlling products on the Color Control GX, the information is also forwarded to our free remote monitoring website: the VRM Online Portal. To get an impression of the VRM Online Portal, visit https://vrm.victronenergy.com, and use the 'Take a look inside' button. The portal is free of charge.

Related product: EasySolar

Minimal wiring and an all-in-one solution: the EasySolar takes power solutions one stage further, by combining an Ultra-fast BlueSolar charge controller (MPPT), an inverter/charger and AC distribution in one enclosure.

Model	Load output	Fan	Battery voltage	Optional display	Color Control GX	Com. port
75/10	Yes	No	12/24	MPPT control	Compatible	VE.Direct
75/15	Yes	No	12/24	MPPT control	Compatible	VE.Direct
100/15	Yes	No	12/24	MPPT control	Compatible	VE.Direct
100/30	No	No	12/24	MPPT control	Compatible	VE.Direct
100/50	No	No	12/24	MPPT control	Compatible	VE.Direct
150/35	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/45-Tr	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/45-MC4	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/60-Tr	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/60-MC4	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/70-Tr	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/70-MC4	No	No	12/24/36/48	MPPT control	Compatible	VE.Direct
150/70 CAN-bus	No	Yes	12/24/36/48	Integrated display	Compatible	VE.Can
150/85 CAN-bus	No	Yes	12/24/36/48	Integrated display	Compatible	VE.Can

MPPT150/60-MC4

MPPT Control

150/70 & 150/85 CAN-bus

Victron Energy B.V. | De Paal 35 | 1351 JG Almere | The Netherlands
General phone: +31 (0)36 535 97 00 | Fax: +31 (0)36 535 97 40
E-mail: sales@victronenergy.com | **www.victronenergy.com**

BlueSolar Charge Controllers MPPT 75/10, 75/15 & MPPT 100/15

www.victronenergy.com

Solar Charge Controller
MPPT 75/15

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.

Load output

Over-discharge of the battery can be prevented by connecting all loads to the load output. The load output will disconnect the load when the battery has been discharged to a pre-set voltage.
Alternatively, an intelligent battery management algorithm can be chosen: see Battery Life.
The load output is short circuit proof.
Some loads (especially inverters) can best be connected directly to the battery, and the inverter remote control connected to the load output. A special interface cable may be needed, please see the manual.

Battery Life: intelligent battery management

When a solar charge controller is not able to recharge the battery to its full capacity within one day, the result is often that the battery will continually be cycled between a 'partially charged' state and the 'end of discharge' state. This mode of operation (no regular full recharge) will destroy a lead-acid battery within weeks or months.
The Battery Life algorithm will monitor the state of charge of the battery and, if needed, day by day slightly increase the load disconnect level (i.e. disconnect the load earlier) until the harvested solar energy is sufficient to recharge the battery to nearly the full 100%. From that point onwards the load disconnect level will be modulated so that a nearly 100% recharge is achieved about once every week.

Programmable battery charge algorithm

See the software section on our website for details

Day/night timing and light dimming option

See the software section on our website for details

Programming, real-time data and history display options

- Modern Apple and Android smartphones, tablets, macbooks and other devices: see the VE.Direct Bluetooth Smart dongle and the MPPT app discovery sheet for screenshots.
- ColorControl panel

BlueSolar Charge Controller	MPPT 75/10	MPPT 75/15	MPPT 100/15
Battery voltage	12/24V Auto Select		
Rated charge current	10A	15A	15A
Nominal PV power, 12V 1a,b)	145W	220W	220W
Nominal PV power, 24V 1a,b)	290W	440W	440W
Max. PV short circuit current 2)	12A	20A	20A
Automatic load disconnect	Yes, maximum load 15A		
Maximum PV open circuit voltage	75V		100V
Peak efficiency	98%		
Self-consumption	10 mA		
Charge voltage 'absorption'	14,4V / 28,8V (adjustable)		
Charge voltage 'float'	13,8V / 27,6V (adjustable)		
Charge algorithm	multi-stage adaptive		
Temperature compensation	-16 mV / °C resp. -32 mV / °C		
Continuous/peak load current	15A / 50A		
Low voltage load disconnect	11,1V / 22,2V or 11,8V / 23,6V or Battery Life algorithm		
Low voltage load reconnect	13,1V / 26,2V or 14V / 28V or Battery Life algorithm		
Protection	Battery reverse polarity (fuse) Output short circuit / Over temperature		
Operating temperature	-30 to +60°C (full rated output up to 40°C)		
Humidity	95%, non-condensing		
Data communication port	VE.Direct See the data communication white paper on our website		
ENCLOSURE			
Colour	Blue (RAL 5012)		
Power terminals	6 mm² / AWG10		
Protection category	IP43 (electronic components), IP22 (connection area)		
Weight	0,5 kg		
Dimensions (h x w x d)	100 x 113 x 40 mm		
STANDARDS			
Safety	EN/IEC 62109		

1a) If more PV power is connected, the controller will limit input power.
1b) PV voltage must exceed Vbat + 5V for the controller to start.
Thereafter minimum PV voltage is Vbat + 1V
2) A PV array with a higher short circuit current may damage the controller.

Victron Energy B.V. | De Paal 35 | 1351 JG Almere | The Netherlands
General phone: +31 (0)36 535 97 00 | Fax: +31 (0)36 535 97 40
E-mail: sales@victronenergy.com | **www.victronenergy.com**