

MPPT-Solar Charge Controller SMR500Li

Description:

This charger in processor technique contains all functions for smooth charging of **Lithium Batteries** by solar modules of 70Wp at 48V-, 560Wp at 24V- and 280Wp at 12V-Battery Systems. High precision voltage control allows save management of Lithium batteries.

Because of the powertracking it is possible to increase the electrical power of a solar system up to 40%, than standart charger can do.

The maximum solar voltage can be for a 12V-system as well as for a 24V-system and 48V-System 150V. (Open circuit voltage)

This buck converter feeds the maximum possible current from the power maximum into the Battery. As soon as the Battery is full and reaches its maximum voltage (14.4V/28.8V/57.6V) the charger drives the solar voltage towards open circuit voltage, preventing overcharging of the Battery. A yellow LED indicates this state of charge. Deep discharge protection is activated with 60 Seconds delay. Switching is done by a Power Mosfet on the ground level. Indication of consumer switch off by a red LED. The green LED indicates solar current.

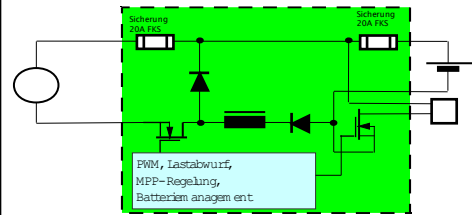
The powertracking system is utilized every 8 seconds to optimize the solar power point.

Optionally a LCD, can be added, displaying Solar voltage, Battery voltage, Battery current and Energy.

This charge controller should only be used for Lithium Batteries together with a Charge Balancing System.



Principal circuit diagram

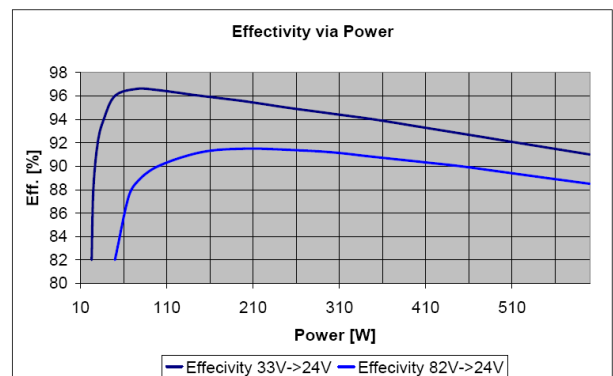
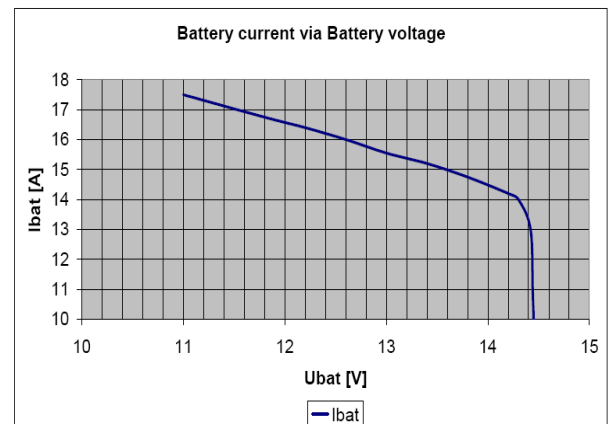


Highlights:

- * DC-Converter to optimize solar power income
- * MPP-Tracking of solar voltage
- * Selection of 3 Battery voltages 12V/24V/48V
- * Indication of state of charge per LED
- * Deep discharge protection
- * overvoltage protection for Lithium batteries
- * precision end of charge voltage regulation
- * Option: LCD for Battery voltage, -current, power, energy

Technical data for Highpower, LiFePo4 charge control:

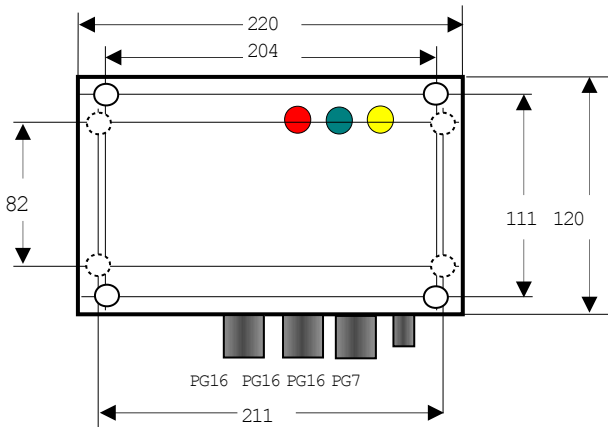
	12V-Battery	24V-Battery	48V-Battery
Max. solar open circuit voltage, Usoc	150V	150V	150V
Max. solar current	20A	20A	12.5A
Max. charge current	20A	20A	12.5A
Max. solar power, Pnom	280Wp	560Wp	705Wp
Efficiency	Ca. 93% @ 0.5Pnom	Ca. 96% @ 0.5Pnom	Ca. 96% @ 0.5Pnom
End of charge voltage (±2% at -25°C to 60°C)	14.4V	28.8V	57.6V
Overvoltage protection	15.1V	30.2V	60.4V
Deep discharg protection Load disconnect (±2%) Load reconnect	10.3V 12.5V with 1s delay	20.6V 25.0V with 1s delay	41.2V 50.0V with 1s delay
Current consumption	3mA	3mA	3mA
Terminals:	16sqmm/10sqmm 16sqmm/10sqmm 16sqmm/10sqmm 1.5sqmm		
Temperatur sensor	KTY10-5 or 1.91kOhm		
Cable glands	3xPG16, 1xPG7		
LED's	right: yellow (Indication of max Battery voltage) left: green (Battery current>0.5A) middle: red (consumer off)		
housing	Diecast aluminium wxhxd 220x80x120mm		
protection	IP65		
weight	2200g		
Moisture	90%		
Operating Temperature	-25°C to +60°C		



33V & 82V Solar voltage to 24V Battery

Technical data are subject to change

Housing dimensions:



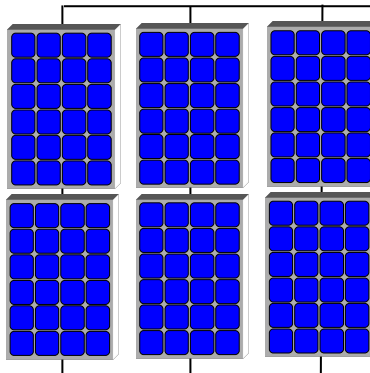
Height=80mm

Mounting hole for cover, M6

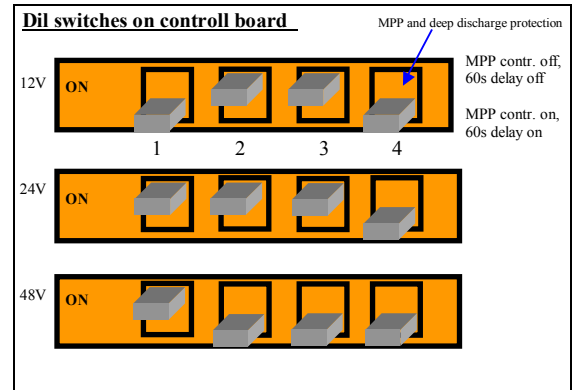
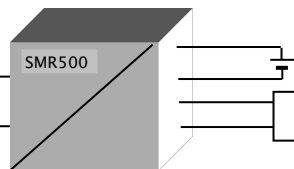
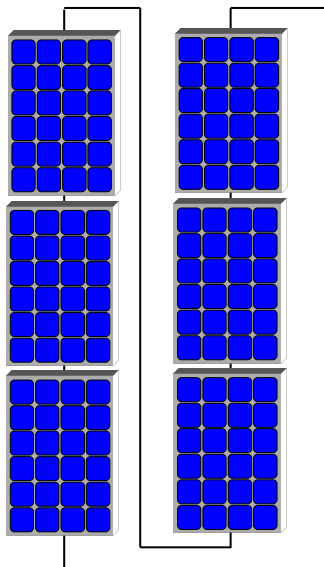
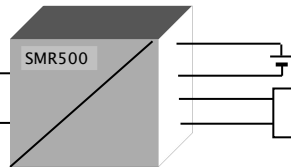
Mounting hole in bottom of housing

D=7mm

Applications:



Configuration with optimal effectivity
 2 modules – string, 72 cells.
 $U_{mpp}=34V$, $U_{soc}=41.5V$
 $P_{nom}=600Wp$,
 Effectivity=96% @ 0.1Pnenn
 95% @ 0.5Pnenn, 92% @ 1Pnenn
 24V-Battery system, I_{Battery}=20A



Configuration with maximum Solar voltage
 6 modules – string, 216 cells.
 $U_{mpp}=102V$, $U_{soc}=124V$
 $P_{nom}=600Wp$,
 Effectivity=81% @ 0.1Pnom
 91% @ 0.5Pnom, 89% @ 1Pnom
 24V-Batterysystem, I_{Battery}=20A

Connection diagram

