

MPP- Solar Charge Controller SMR500

Description:

This charger in processor technique contains all functions for smooth charging of lead Batterys by solar modules of 560Wp at 24V- and 280Wp at 12V-Systems.

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 (14.5V/29.0V/58.0V) the charger drives the solar voltage towards open circuit voltage, preventing overcharging of the Batterymulator. A yellow LED indicates this state of charge. Deep discharge protection is activatet 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.

A temperature sensor tracks the maximum Battery voltage at $-4mV/^{\circ}C/Battery\ cell$.

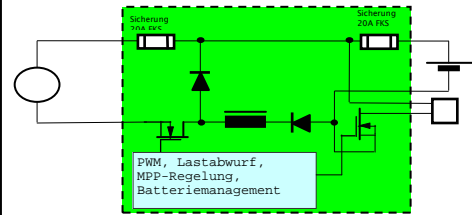
The powertracking system is utilized every 8 seconds to optimize the solar power point.

A battery management system allows adaptation to different battery types and optimal use of the battery capacity, including automatic and manual equalization controll.

Optionally a LCD, can be added, displaying Battery voltage, Battery current and ampere hours.



Principal circuit diagramm



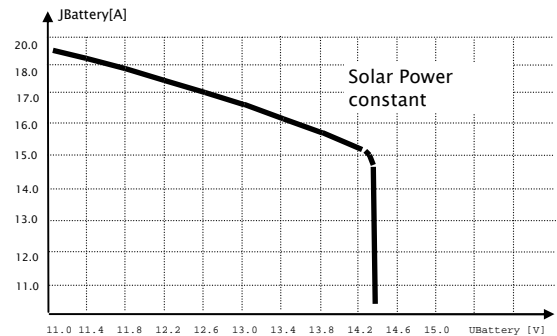
Highlights:

- * 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
- * Temperature tracking of Battery voltage
- * Option: LCD for Battery voltage, -current, power
- * Battery management System

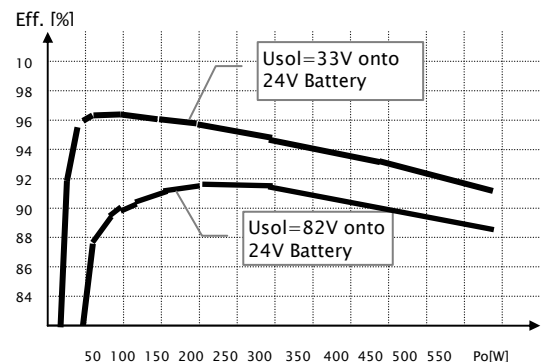
Technical data:

	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	14.5V	29.0V	58V
Deep discharge protection	10.8V	21.6V	43.2V
Load disconnect	12.5V with 60 seconds delay	25.0V with 60 seconds delay	50.0V with 60 seconds delay
Load reconnect			
Current consumption	3mA	3mA	3mA
Terminals:			
2x Solar generator	16sqmm/10sqmm		
2x Battery output	16sqmm/10sqmm		
2x consumer output	16sqmm/10sqmm		
2x temperature sensor	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	$-20^{\circ}C\ to\ +50^{\circ}C$		

Charge current vs Battery voltage

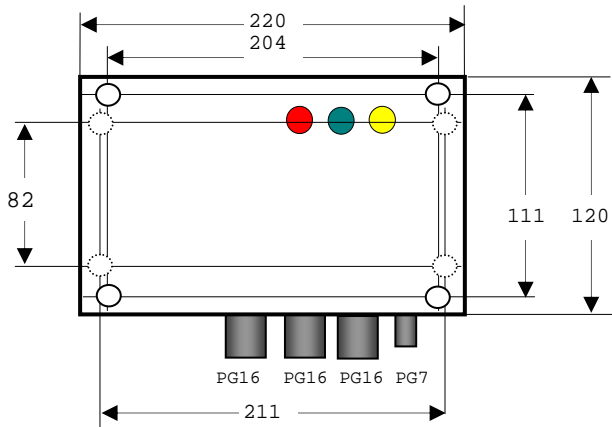


Effectivity vs solar power



Technical data are subject to change

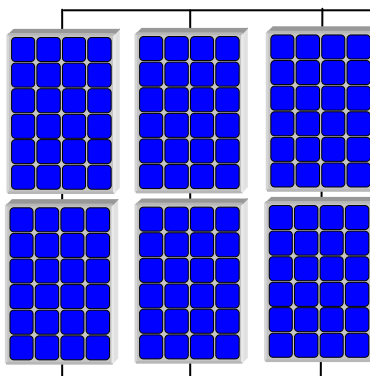
Housing dimensions:



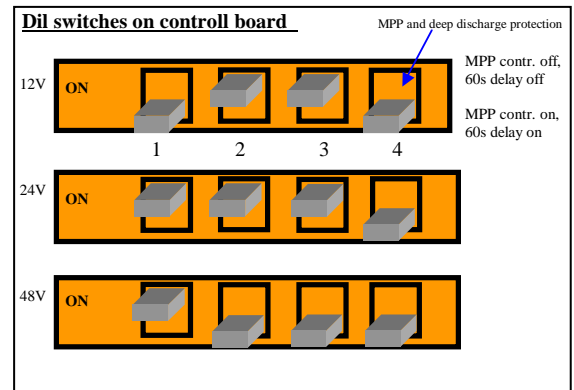
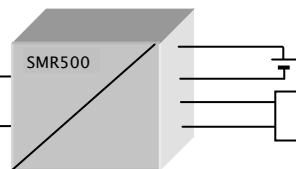
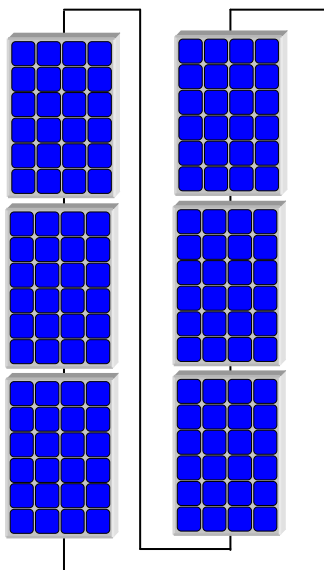
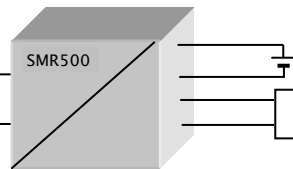
Height=80mm

Mounting hole for cover, M6
Mounting hole in bottom of housing
D=7mm

Applications:



Configuration with optimal effecivity
2 modules - string, 72 cells.
Umpp=34V, Usoc=41.5V
Pnom=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.
Umpp=102V, Usoc=124V
Pnom=600Wp,
Effectivity=81% @ 0.1Pnom
91% @ 0.5Pnom, 89% @ 1Pnom
24V-Batterysystem, Jakku=20A

Connection diagram

