

# MPPT- Solar Charge Controller SMR500

## Description:

This charger in processor technique contains all functions for smooth charging of lead Batteries by solar modules of 600Wp at 24V- and 300Wp 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 200V. (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 Battery. Deep discharge protection is activated with 60 Seconds delay. Switch off is done by a Power Mosfet on the ground level, indicated by a red LED. A yellow LED shows battery full.

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.

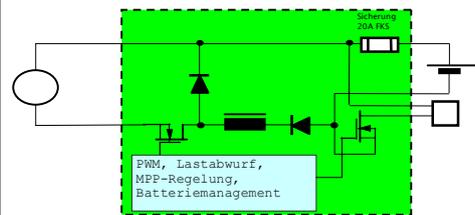
A battery management system allows adaptation to different battery types and optimal use of the battery capacity, including automatic and manual equalization controll.

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

**Optionally** a RS232 can be added.



## Principal circuit diagram



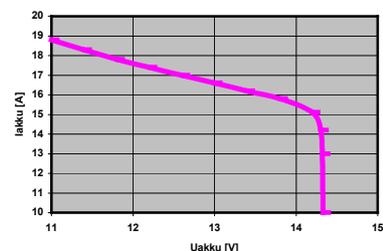
## Highlights:

- \* DC-Converter to adapt battery to solar voltage
- \* MPP-Tracking of solar power
- \* Selection of 3 Battery voltages 12V/24V/48V
- \* Deep discharge protection short cut protected
- \* Option: Temperature tracking of Battery voltage
- \* Option: LCD for Battery voltage, -current, power and energy (kilowatt hour meter).

## Technical data:

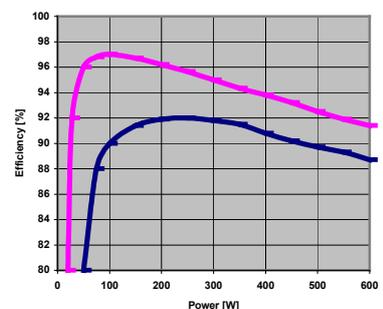
	12V-Battery	24V-Battery	48V-Battery
Max. solar open circuit voltage, U <sub>soc</sub>	200V	200V	200V
Max. solar current	20A	20A	12.5A
Max. charge current	20A	20A	12.5A
Max. solar power, P <sub>nom</sub>	312Wp	604Wp	755Wp
Efficiency	Ca. 93% @ 0.5P <sub>nom</sub>	Ca. 96% @ 0.5P <sub>nom</sub>	Ca. 96% @ 0.5P <sub>nom</sub>
End of charge voltage	14.5V	29.0V	58V
Deep discharge protection	10.8V Battery voltage with 60 Sec. Delay	21.6V Battery voltage with 60 Sec. delay	43.2V Battery voltage with 60 Sec. delay
Load disconnect (short cut protected)			
Load reconnect	12.5V	25.0V	50.0V
Max. consumer current	12.5A	12.5A	12.5A
Current consumption	7mA	7mA	7mA
Terminals		16qmm/10qmm, 16qmm/10qmm, 16qmm/10qmm, 1qmm, 1qmm, M6	
3x solargenerator			
2x battery output			
2x consumer outp.			
2x temp. sensor			
2x pot.free contacts			
1x Earth			
Temperatur sensor		KTY10-5 or 1.91kOhm	
Cable glands		3xPG16, 2xPG7	
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°C to +50°C	

Battery current via battery voltage



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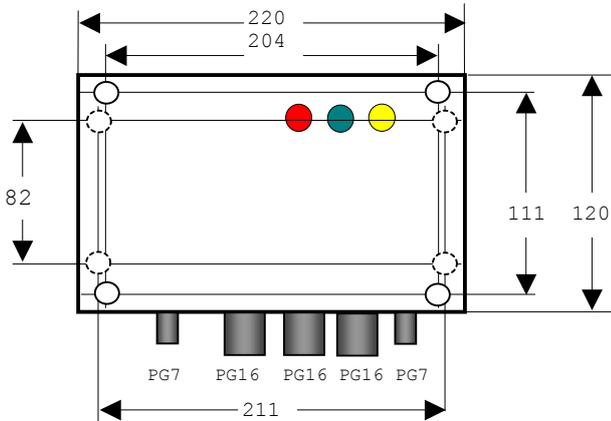
Efficiency via power



Usol 33V on 24V Battery Usol 82V on 24V Battery

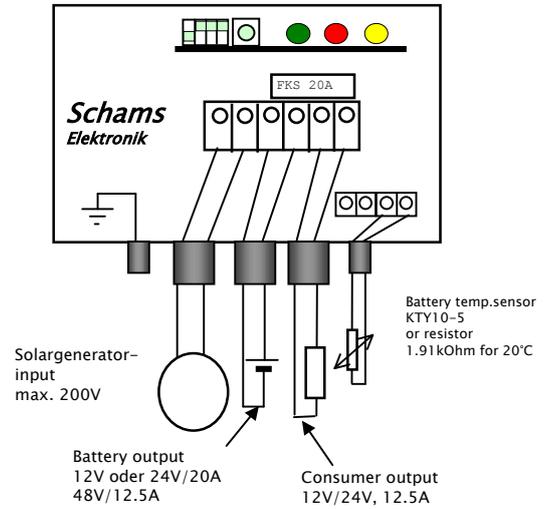
Technical data are subject to change

**Housing dimensions:**

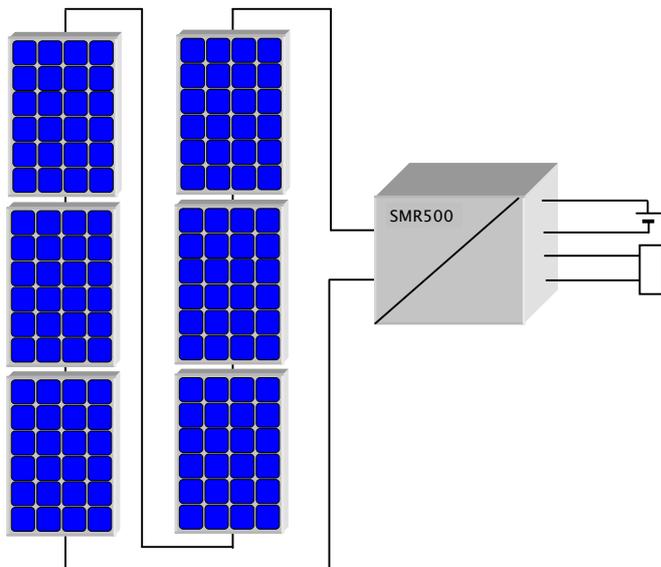
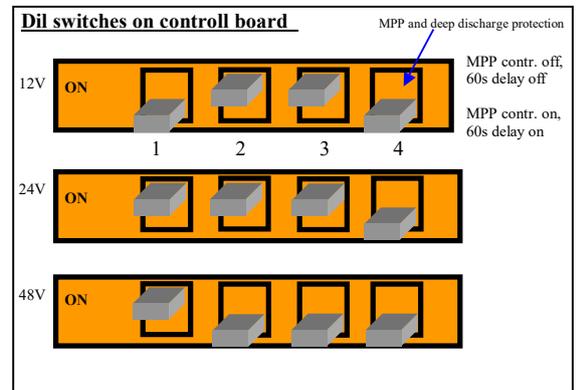
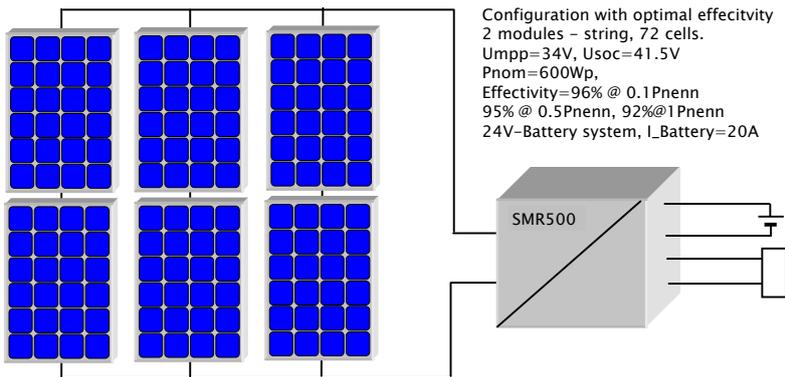


Height=80mm  
Mounting hole for cover, M6  
Mounting hole in bottom of housing  
D=7mm

**Connection diagram**



**Applications:**



Technical data are subject to change