

MPPT- Solar charge controller SMR2000

Description:

This charger in processor technique contains all functions for smooth charging of lead Batteries by solar modules of 2400Wp at 24V- and 1200Wp 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 activatet with 60 Seconds delay. Switch off is done by a Power Mosfet on the ground level. Indication of consumer switch off, by a red LED. Yellow LED on shows battery full. The green LED indicates solar current.

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

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

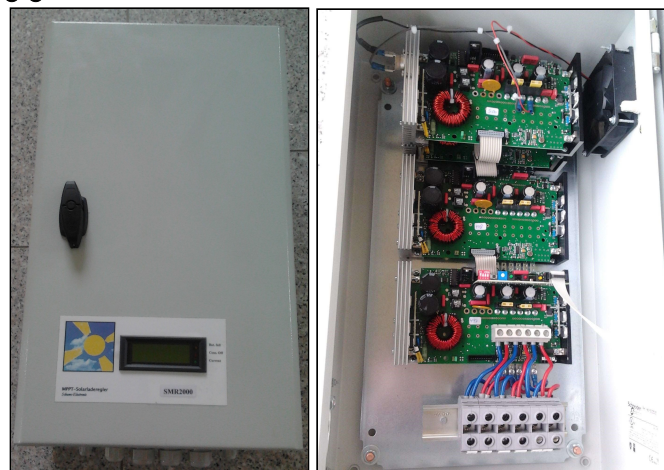
A battery management system allows adaptation to different battery types and optimal use of the battery capacity, including automatic and manual equalization controll.

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

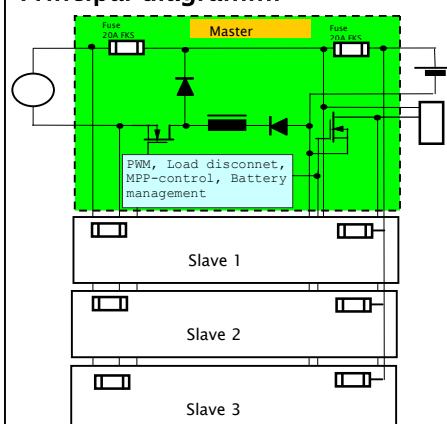
Optionally a RS232 can be added.

Highlights:

- * DC-Converter to adapt battery to solar voltage
- * MPPT-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).



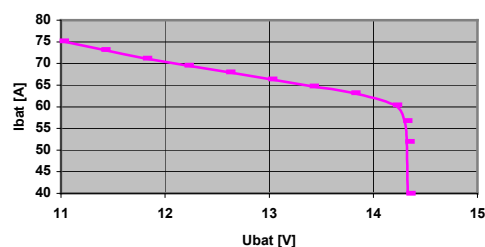
Principal diagramm:



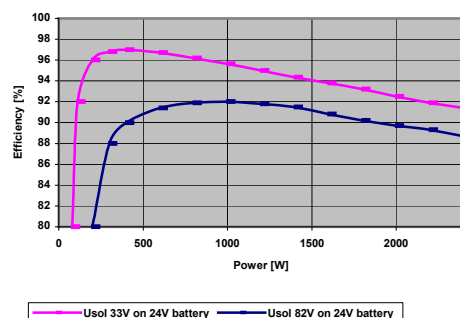
Technical data

	12V-Akku	24V-Akku	48V-Akku
Max. solar open circuit voltage, U_{oc}	200V	200V	200V
Max. solar current	86A	83A	52A
Max. charge current	80A	80A	50A
Max. solar power, P_{nom}	1120Wp	2240Wp	2820Wp
Efficiency	Ca. 93% bei Halblast	Ca. 96% bei Halblast	Ca. 96% bei Halblast
Deep discharge protection			
Load disconnect (short cut protected)	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 reconnect	12.5V	25.0V	50.0V
Max. consumer current	50A	50A	50A
End of charge voltage	14.5V	29.0V	58V
Current consumption	16mA	16mA	16mA
Terminals			
3x solargenerator		35qmm/25qmm,	
2x battery output		35qmm/25qmm,	
2x consumer outp.		35qmm/25qmm,	
2x temp. sensor		1qmm,	
2x pot.free contacts		1qmm,	
1x Earth		M6	
Temperatur sensor		KTY10-5 or 1.91kOhm	
Cable glands		3x PG16, 2x PG7	
LED's		right: yellow (Indication of max Battery voltage) left: green (Battery current > 0.5A) middle: red (consumer off)	
housing		Steel wall mounted wxhxd 300x500x210mm	
protection		IP54	
weight		15.5kg	
Moisture		90% (coating)	
Operating Temperature		-20°C bis $+50^{\circ}\text{C}$	

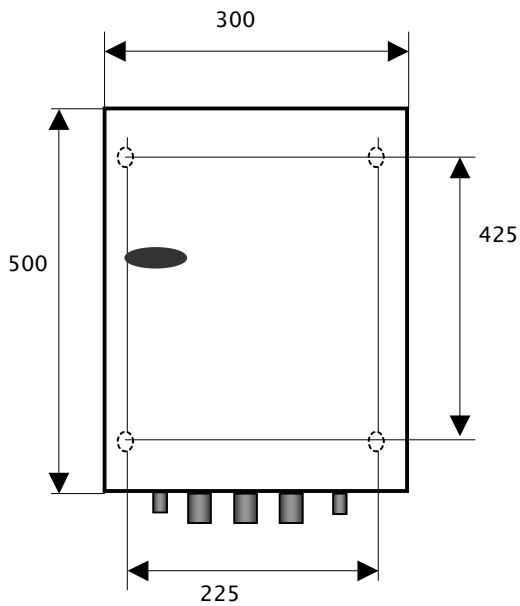
Battery current via battery voltage



Efficiency via power

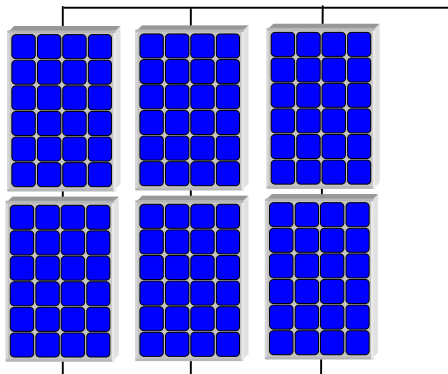


Housing dimensions (mm):



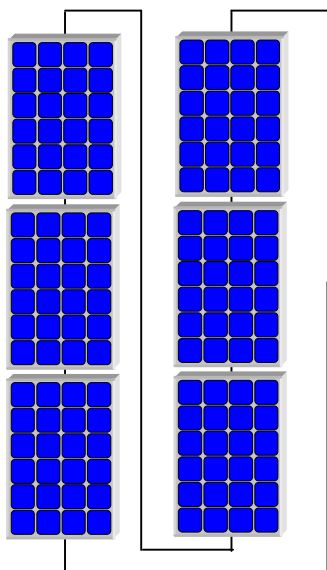
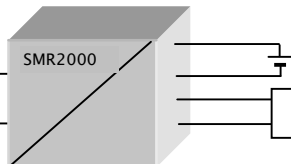
Height=210mm
Mounting holes in bottom of housing
D=10mm

Applications:



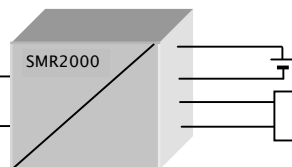
Configuration with optimum efficiency:

2 Modules string, 72 cells.
 $U_{mpp}=34V$, $U_{soc}=41.5V$
 $P_{nom}=2240Wp$,
Efficiency=96% at 0.1 P_{nom}
95% at 0.5 P_{nom} , 92% at 1 P_{nom}
24V-Battery system, $I_{Battery}=80A$

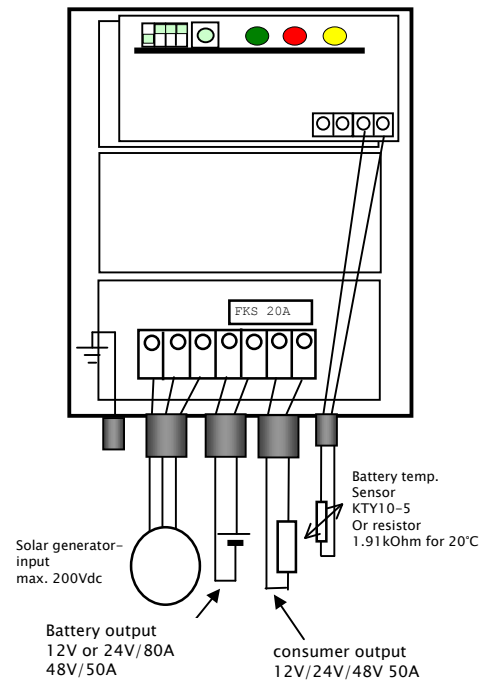


Configuration with maximum Solarvoltage:

6 Modules string, 216 Cells.
 $U_{mpp}=102V$, $U_{soc}=124V$
 $P_{nom}=2240Wp$,
Efficiency=81% at 0.1 P_{nom}
91% at 0.5 P_{nom} , 89% at 1 P_{nom}
24V-Battery system,
 $I_{Battery}=80A$



Connection diagram



Dil switches on controll board

