



MPPT Solar Charge Controller Specification

Charge controllers are the core of every PV system, precisely controlling the flow of energy while protecting the battery, and increasing system efficiency. The instability of the energy supply in the solar energy utilization is one of the main obstacles to the popularization of solar products.

In order to increase system operation time, reduce costs and assure reliable battery protection, Sturdy developed 3 product lines of solar controller with MPPT charging mode: SCM24 series, SCM48 series and SCM96 series.

Product Picture



Features:

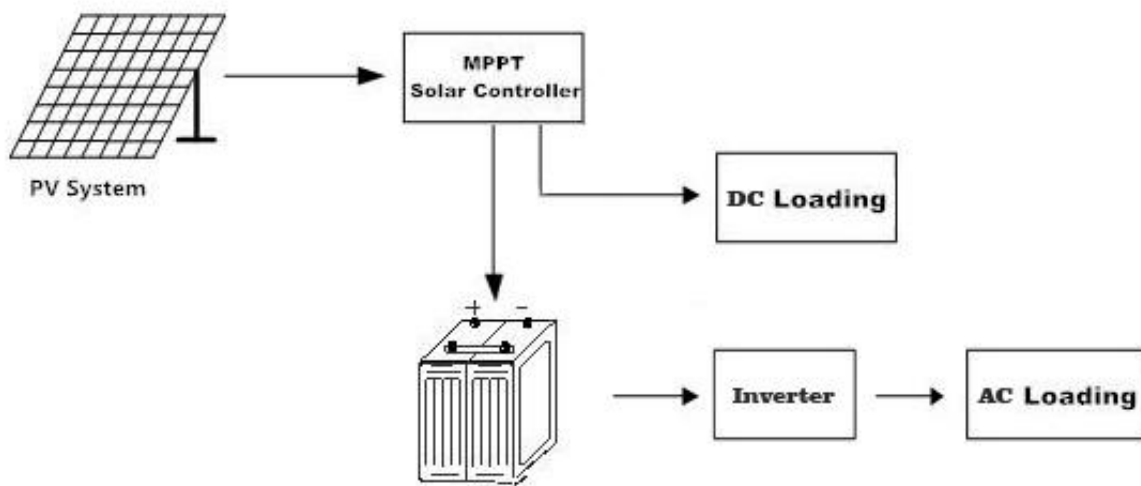
- Subdivision control of charging and discharging and intelligent battery management;
- MPPT efficiency 99.5%;
- Wall mounting type, front display and input & output wires at the bottom;
- Negative common mode and multi channel solar matrix input;
- Intelligent MCU control, professional computing to achieve the intelligent control;
- RS485 remote communication and data transmission;
- Accurate measurement display of the photovoltaic generation and save accurately charging & discharging record;
- LED displays show you the operating conditions of the system at any time;
- Comprehensive LCD display interface with Chinese & English;
- The user can set up the output voltage parameter and save the setting after power off;

- Save the historic alarm records function.

Electronic Protections:

- PV short circuit protection
- PV over voltage alarm protection
- PV over current alarm protection
- PV reverse polarity protection
- Battery overcharge protection
- Battery over discharge protection
- Battery reverse polarity protection
- Overheating protection

Solar System Connection:



Operating Principles

This controller is design for off-grid solar system. It aims to achieve the function of input control system which is composed of PV input and battery pack, then manage the battery charging voltage and supply power for DC load through the controller. It also can supply power for AC load by inverter. In this way, solar energy can be fully stored and used for communication or monitoring equipment in the remote areas.

This system is mainly composed by PV, energy storing device (backup battery pack), solar charge controller, power inverter and AC/DC load.

Solar charging means transforming the solar energy to DC electric power that can be stored by battery. Solar energy can be converted into power then supply to load and charge the backup packs through MPPT solar controller. So that, the backup packs can charge the load without sunshine.

LCD Display and The Button around



LCD screen display the work parameters, state of output real-time parameters , PV power supply statistics, various protection function, the LED indicator light alarm and etc.

- a. **UP** — Page Up Key: turn up the menu and the value increases when the parameter is set up; Enter the rapid adjustment state by pressing the UP key for 3S.
- b. **OK** — OK Key: enter the menu and return to the last menu; Click OK (save the data);
- c. **Down** — Page Down Key: turn down the menu and the value decreases when the parameter is set up.

Instruction Logo	Indicator Light Color	Normal State	Abnormal State	Cause of Abnormity
PV indicator	Green	Light on	Flash or off	Light on when the operation goes well; Light off when PV under voltage and it will flash when PV over voltage.
LOAD indicator	Green	Light on	Flash	Light on when the load is normal, while it will flash when over current, the battery has low voltage and the load has short circuit.
Fault indicator	Red	OFF	Flash or light on	Light off when the operation goes well; It will light up when the module has fault, the battery has short circuit, the load has short circuit and there is over temperature protection; It will flash when there is PV over voltage.

12V/24V Series :

Model	SCM2410	SCM2420	SCM2430	SCM2440	SCM2450	SCM2460
PV INPUT						
PV System Power (W)	144/288W	288/576W	432/804W	576/1152W	702/1440W	864/1728W
MPPT Working Voltage Range (VDC)	18V-90V for 12V standard battery group; 30V-90V for 24V standard battery group					
Recommend PV System Output Voltage (VDC)	20V for 12V battery group 40V for 24V battery group					
PV Input Reverse Protection	Yes					
Output Charging Data						
Output Voltage Type	12V/24V Automatic Recognize					
Output Voltage Range (VDC)	for 12V battery(10.8V-14.1V) / for 24V battery(21.6V-28.2V)					
Output Over Voltage (VDC)	For 12V battery(14.6VDC) / for 24V battery(29.2VDC)					
Output Current (A)	10A	20A	30A	40A	50A	60A
Output Reverse Protection	Yes					
Output Short Circuit	Yes					
Other Parameter						
PV Convert Efficient	≥96.5%					
MPPT Tracking Efficient	≥99.5%					
Standby Power (W)	≤10W					
Noise dB(A)	≤55					
Cooling Method	Fan Cooling					
Ingress Protection	IP20					
Communication	RS485(optional)					
Display	LCD+LED					
Data Record	200 records					
Running Temperature (°C)	-20 ~ 55°C					
Storage Temperature (°C)	-40 ~ 70°C					
Relative Humidity	0~95%, no condensation					
Working Altitude (m)	<3000m (over 3000m, every increase 500, the output will decrease 10%)					
Size (L*W*H) (mm)	200*170*74 (mm)			230*180*70mm		
Weight (kg)	1.6KG			2KG		

48V Series :

Model	SCM4810	SCM4820	SCM4830	SCM4840	SCM4850	SCM4860	SCM4880
PV INPUT							
PV System Power (W)	432/576	864/1152	1296/1728	1728/2304	2160/2880	2592/3456	4608
MPPT Working Voltage Range (VDC)	70V-150V						
Recommend PV System Output Voltage (VDC)	102V						
PV Input Reverse Protection	Yes						
Output Charging Data							
Output Voltage Range (VDC)	For 36V battery(32.4V~43.2V) / for 48V battery(43.2V~57.6V)						
Output Over Voltage (VDC)	For 36V battery(45V) / for 48V battery(60V)						
Output Current (A)	20A		30A	40A	50A	60A	80A
Output Reverse Protection	Yes						
Output Short Circuit	Yes						
Other Parameter							
PV Convert Efficient	≥96.5%						
MPPT Tracking Efficient	≥99.5%						
Standby Power (W)	≤10W						
Noise dB(A)	≤55						
Cooling Method	cooling fan						
Ingress Protection	IP20						
Communication	RS485(Optional)						
Display	LCD+LED						
Data Record	200 records						
Running Temperature (°C)	-20 ~ 55°C						
Storage Temperature (°C)	-40 ~ 70°C						
Relative Humidity	0~95%, no condensation						
Working Altitude (m)	<3000m (over 3000m, every increase 500, the output will decrease 10%)						
Size (L*W*H) (mm)	235*180*74mm			255*200*74mm			280*190*85
Weight (kg)	2KG			2.5KG			3KG

96V Series :

Model	SCM96-20S	SCM96-30S	SCM96-40S	SCM96-50S	SCM96-60S
PV INPUT					
PV System Power (W)	2304W	3456W	4608W	5760W	6912W
MPPT Working Voltage Range (VDC)	140V-300V				
Recommend PV System Output Voltage (VDC)	170V				
PV Input Reverse Protection	Yes				
Output Charging Data					
Output Voltage Range (VDC)	86.4V~115.2V				
Output Over Voltage (VDC)	120V				
Output Current (A)	20A	30A	40A	50A	60A
Over Output Current Protection (A)	21-23A	31-33A	41-43A	51-53A	61-63A
Output Reverse Protection	Yes				
Output Short Circuit	Yes				
Other Parameter					
PV Convert Efficient	≥96.0%				
MPPT Tracking Efficient	≥99.5%				
Standby Power (W)	≤10W				
Noise dB(A)	≤55				
Cooling Method	cooling fan				
Ingress Protection	IP20				
Communication	RS485(Optional)				
Display	LCD+LED				
Data Record	200 Records				
Running Temperature (°C)	-20 ~ 55°C				
Storage Temperature (°C)	-40 ~ 70°C				
Relative Humidity	0~95%, no condensation				
Working Altitude (m)	<3000m (over 3000m, every increase 500, the output will decrease 10%)				
Size (L*W*H) (mm)	255*180*75mm				
Weight (kg)	3.6KG				