S3 SERIES MPPT SOLAR CHARGE CONTROLLER V117

For Models: S3-30A, S3-40A, S3-50A, S3-60A

Reminder: For advanced function and application, please go to www.makeskyblue.com

Main Features

30A/40A/50A/60A MPPT solar charge controller

MPPT technology

Built-in DSP controller with high performance

Automatic battery voltage detection for 12V/24V/36V/48V

3-stage charging optimizes battery performance

The MPPT track speed is 5 times faster than traditional controllers

The charging voltage accuracy is ±0.2V

Overcharge protection, Input PV polarity reverse protection, Output limited current protection, Over-temperature protection

Suitable for battery types such as sealed lead acid, vented gel and lithium battery, etc

Warning and Caution

Be aware that only qualified professionals could install these controllers. Please read full manual before installing them.

1) The controllers can be installed indoor only. Keep controller away from water. Don't use wet towel to wipe controller.

2) Keep controller in an environmental temperature from -22℃~+55℃. Avoid direct sunlight.

3) Keep good heat dissipation.

4) Use the pure copper wires and connect all polarity correctly.

5) The output is only for DC load less 5A current. If your battery is 48V, then load should be 48V and current less 5A

6) Please don't set any parameters if you are not professional since the controller can work well on default except lithium battery.

7) Please don't insert any meter or other devices between controller to battery and controller to PV.

8) Please use two-pole circuit breaker. And make sure input and output with separate circuit breakers.

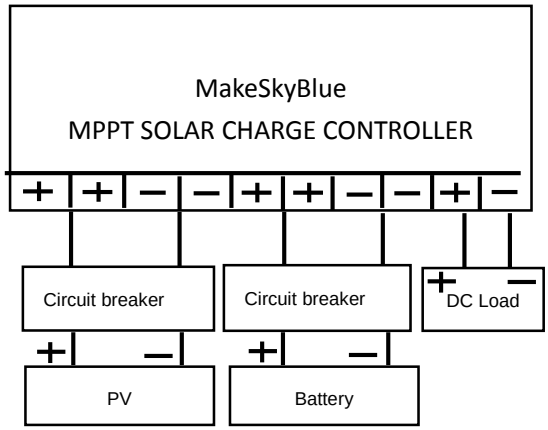
PV Module Requirement

Models: S3-30A, S3-40A, S3-50A, S3-60A V117		S3-30A	S3-40A	S3-50A	S3-60A
Maximum PV Module Power	For 12V Battery	≤400W	≤480W	≤600W	≤720W
	For 24V Battery	≤720W	≤960W	≤1200W	≤1440W
	For 36V Battery	≤1000W	≤1400W	≤1800W	≤2100W
	For 48V Battery	≤1200W	≤1700W	≤2200W	≤2800W
PV Module Open Circuit Voltage (Voc of panel should be in the correct range)	For 12V Battery	DC20V~DC80V			
	For 24V Battery	DC37V~DC105V			
	For 36V Battery	DC50V~DC160V			
	For 48V Battery	DC72V~DC160V			

Notes: Voc is 1.5 or 2 times than battery voltage, then it's best efficiency. Please choose the PV modules with right Voc.

Two-pole Circuit Breaker and Wires Requirement

Models	S3-30A	S3-40A	S3-50A	S3-60A
Pure copper wires	6mm² / 9AWG	6mm² / 9AWG	6mm² / 9AWG x2PCS	6mm² / 9AWG x2PCS
Circuit breaker	63Ax2PCS	63Ax2PCS	63Ax2PCS	100Ax2PCS



Installation steps

1. Take one two-pole circuit breaker and keep it turn off, then install this circuit breaker between controller and battery, then connect batteries to controller with correct polarity. Set the controller parameter that you want (See **Manual Setting steps**) and reboot controller. Double check the settings successful or not. If for acid battery, you don't need to set the parameter and controller works well. The battery voltage should be over 12V, then the controller can start up.

2. Take another two-pole circuit breaker and keep it turn off, then install this circuit breaker between controller and PV modules, and make sure the PV polarity correct, then connect wires between PV modules and controller. Make sure all wire connection stable, or it's easy to break CPU.

3. Turn on the circuit breaker between controller and batteries, and turn on the circuit breaker between controller and PV modules.

4. The controller LCD displays the parameters if all is correct. If the controller is no response, please send email to sales@makeskyblue.com for help.

Reminder

For S3-30A and S3-40A, you can connect one wire to one PV+ and another wire to one PV-.

For S3-50A and S3-60A, it's better to connect two wires to two PV+ and another two wires to two PV-.

For BAT+ and BAT-, it's same way to connect wires.

LCD display

Item	Description
1	PV voltage / Output power
2	Battery voltage / Charging current
3	Working mode/Error code / Temperature
4	ACC Power Generation

Working mode

3.0	Night mode, no charging
4.0	MPPT mode
7.0	Absorption mode
8.0	Floating mode

Troubleshooting

Code	Description	How to solve
18	Input PV voltage is low	Increase the PV voltage
60	Over-temperature protection	Fan will work and temperature reduction automatically
63	Battery voltage is high	Battery high voltage protection and wait for recovery
65	Battery voltage is low	Battery over-discharge and wait for recovery
71	Input PV voltage is high	Decrease the PV voltage, refer to correct Voc range
73	Over-charging current	Decrease the PV power, refer to correct Voc range
74	Output load is short	Disconnect the load and press ENT over 5 seconds

Basic Parameter

Models	S3-30A	S3-40A	S3-50A	S3-60A
Charging mode	3-stage: constant current(MPPT), constant voltage, floating			
Battery voltage automatic recognition: 12V Battery	DC9V~DC15V			
Battery voltage automatic recognition: 24V Battery	DC18V~DC29V			
Battery voltage automatic recognition: 36V Battery	DC30V~DC39V			
Battery voltage automatic recognition: 48V Battery	DC40V~DC60V			
Overcharging protection voltage	12V Batt: 15V; 24V Batt: 30V; 36V Batt: 45V; 48V Batt: 60V			
Limited current protection	31A	42A	51A	61A
Max efficiency	≥98.2%			
PV utilization	≥99%			
Protection function				
Temperature protection	75℃			
Fan-on temperature	>45℃			
Fan-off temperature	<40℃			
Properties				
Size (mm)	214x115x50			
Net weight(Kg)	1.1			
Gross weight(Kg)	1.2			
Electromagnetic compatibility	Accord to EN61000, EN55022, EN55024			
Enclosure	IP21			
Environmental temperature	-20℃ ~ +55℃			
Storage temperature	-40℃ ~ +75℃			

Manual Setting

Reminder: The controller will work well on default setting except lithium battery.

Caution! Disconnect the PV modules before setting the controller. When you set up all steps, please reboot the controller to see if all setting is successful or not.

Step 1: D00 Press the button PRG, then LCD displays D00. This is setting for load working time (Default is 24-hour). Press ENT until numbers flash, then long-press UP/DOWN to set up time that you want, press ENT to confirm it. This output voltage is same as battery. The load is only for small DC loads less 5A current. If no load, just leave it.

Step 2: D01 Press the button UP, LCD shows 13.8 (Voltage can be set from 12V-17V). This is default value of floating voltage. Press ENT until numbers flash, then long-press UP/DOWN to set up voltage that you want, press ENT to confirm it.

Caution! This value is for one 12V battery. If there are many batteries in series, the controller will multiply them in proportion automatically and the LCD only displays the voltage of one battery (For example, if your battery is 4x12V, and if you set the voltage at 14.1, the charge voltage will be 4x14.1 automatically, but the LCD only displays 14.1).

Step 3: D02 Continue to press the button UP, LCD shows 14.5 (Voltage can be set from 12V-17V). This is highest absorption voltage for battery. Press ENT until numbers flash, then long-press UP/DOWN to set up voltage that you want, press ENT to confirm it.

Caution! This value is for one 12V battery. If there are many batteries in series, the controller will multiply them in proportion automatically and the LCD only displays the voltage of one battery.

Step 4: D03 Continue to press the button UP, LCD shows 10.0. This is protection value of battery discharge. Press ENT until numbers flash, then long-press UP/DOWN to set up voltage that you want, press ENT to confirm it.

It means it's protected when 12V battery is less 10.0V and there is no output power from OU+ and OU-.

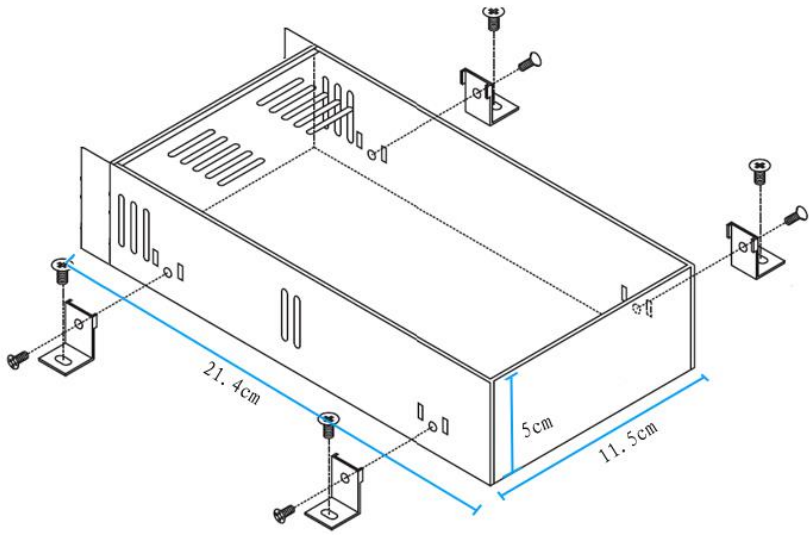
Step 5: D04 Continue to press the button UP, LCD shows 00. 00 is default for acid batteries.

If it's for lithium battery, please press ENT until numbers flash, then long-press UP/DOWN to choose 01, press ENT to confirm it. Step 2 (D01) is no useful when you choose 01 for lithium battery. And the voltage in step 3 (D02) will be highest charging voltage for lithium battery. Press ESC to exit the setting menu. Reboot the controller and check settings again.

Batteries charge voltage reference

Battery Type	**Absorption Voltage (Constant voltage)**			**Floating Voltage**		
	12V	24V	48V	12V	24V	48V
Vented	14.2V	28.6V	57.2V	13.2V	26.4V	52.80V
Sealed	14.4V	28.8V	57.6V	13.8V	27.6V	55.2V
Gel	14.4 V	28.8V	57.6V	13.8V	27.6V	55.2V
NiCd	14.2V	28.6V	57.2V	14.0V	28.0V	56.0V
Lithium	You can set the voltage from 12V to 17V.					

Dimension



Notes: Please use our screws only since it may damage the internal PCB if using other screws.
Please use proper torque to push the screws into casing since it may damage the internal PCB by strong torque.

Content Included

1 Controller 1 English manual 4 Corner connections 4 Screws for controller casing

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