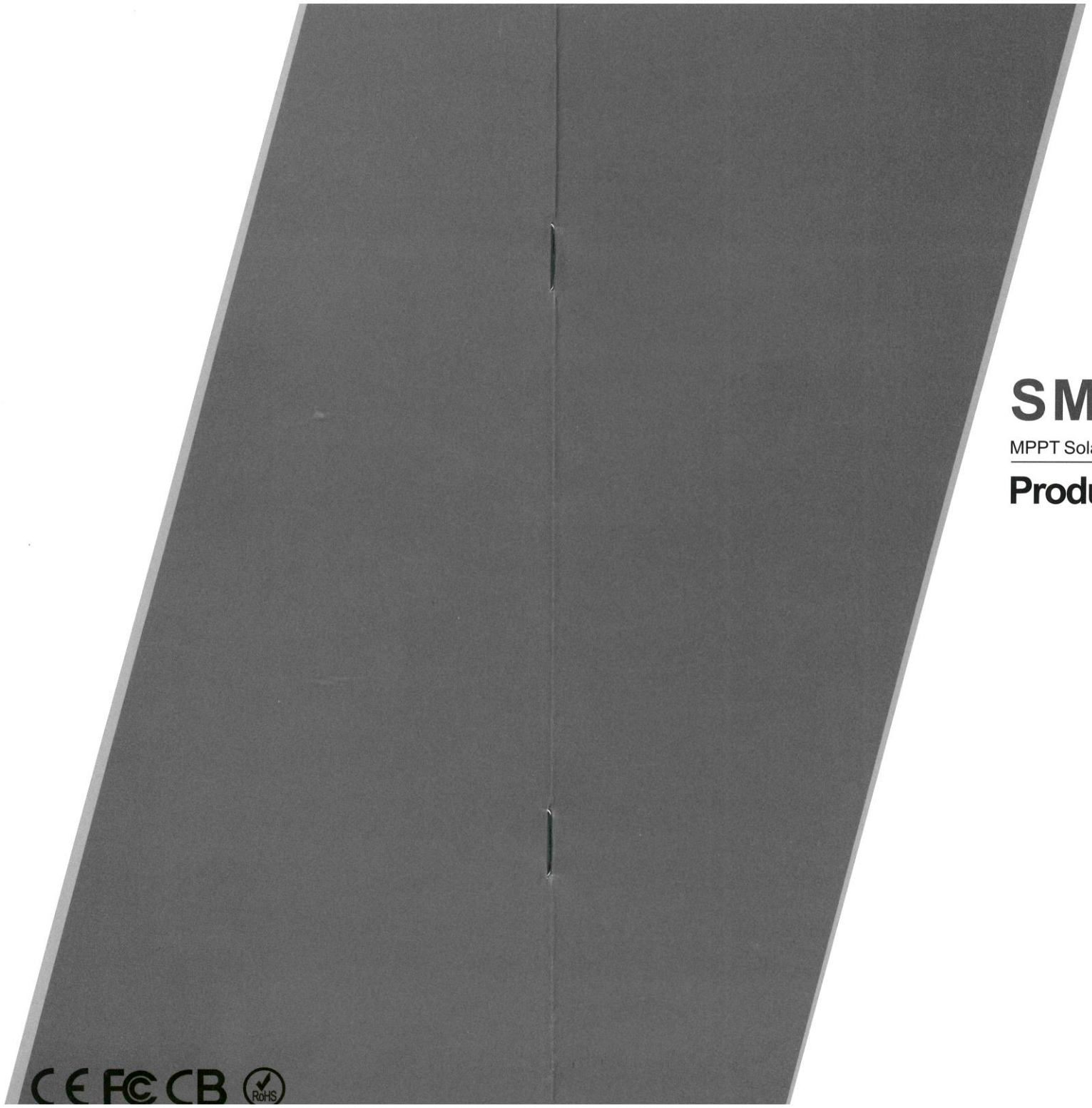


SMART2

MPPT Solar Charge Controller 30A

Product manual

Introduction

This manual contains the contents of the installation, operation and usage of the controller. Please read it carefully before installation. Professionals should be responsible for the equipment operating in order to make sure normal running of the controller. Please take good care of this manual for future reference whenever necessary. The followings are some symbols and marks used in this manual:

Symbol and Signs

Following symbol and signs will be used in the manual.

Warning

If you violate the operation rules, it would endanger personal safety, affect the reliability of the equipment or cause loss of data;

Danger

If you violate the operation rules, it would endanger personal safety, affect the reliability of the equipment or cause loss of data;

Attention

▶ Indicating additional data and information

Contents

1.Notes on This Manual

This manual describes how to install and service your Aims Power MPPT solar charge controller.

1.1 Validity

This manual applies to MPPT solar charge controller models produced by our company:

1.2 Target Group

This manual is intended for the installer and the operator.

1.3 All manuals for the device and installed components must be stored in the immediate vicinity of the charge controller and must be accessible at all times.

1.4 Symbols Used

The following types of safety messages and general information appear in this document:

Warning!

WARNING indicates a hazardous situation which, if not avoided, could result in machine stoppage or serious injury.

Warning!

WARNING indicates a hazardous situation which, if not avoided, could result in machine stoppage or serious injury.

Note!

In order to operate this device well, please read the operation instructions carefully.

2.Safety Instructions

2.1General Safety Instructions

Warning!

The input voltage of this device may be extremely high and life threatening.

• All work on the charge controller must only be carried out by an electrically skilled person.

•The controller is not to be used by children or persons with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

•Children should be supervised to ensure that they do not play with the controller.

Caution!

Surface may be extremely hot and may cause burns.

• Do not touch the enclosure of the charge controller during operation. If possible keep in a cool environment.

Caution!

Unit may emit some radiation which may be harmful.

•Do not stay within 1 foot of controller for any extended period of time.

2.2Explanation of Symbols

Below is the explanation for all the symbols shown on the device and label.

Symbol	Explanation
	Risk of electric shock Energy stored in capacitors will remain for 5 minutes; don't touch within this period after disconnecting. Both input and output lines have power, disconnect both and don't operate for at least 5 minutes after disconnection.
	No self-serviceable parts are inside the enclosure, don't attempt to remove the cover. Only qualified persons are permitted to operate and maintain the equipment. Only insulated tools are permitted for use to reduce risks of hazard to individuals.
	Beware of hot surface. The solar charge controller can become hot during operation. Avoid contact during operation. Never put any goods onto the controller.

• Symbols on the Type Label

Symbol	Explanation
CE FC CB	CE FCC CB ROHS mark ; The device complies with the requirements of the applicable CE FCC CB ROHS guidelines.

•Important Safety Instructions

When using the product, please do remember the below information to avoid fire, lightning or other personal injury:

	Warning! Ensure input DC voltage no more than Max. DC voltage .Over voltage may cause permanent damage to solar charge controller or other losses, which will not be covered by the warranty! This chapter contains important safety and operating instructions. Read and keep this operation guide for future reference.
	Warning! Authorized service personnel must disconnect both DC and battery bank power from the solar charge controller before attempting any maintenance or cleaning or working on any circuits connected to the solar charge controller.

• Before using the solar charge controller, please read all instructions and cautionary markings on the solar charge controller, and all corresponding sections of this guide.

• Contact I-Panda for any questions or concerns about your controller. Trying to modify or repair it may result in a fire, electric shock, or injury.

• To reduce a risk of fire and electric shock, make sure that existing wiring is in good condition and that all wire is properly sized. Do not operate the solar charge controller with damaged or substandard wiring.

• Do not disassemble the solar charge controller. It contains no user-serviceable parts. See Warranty for instructions on obtaining service. Attempting to repair the solar charge controller by yourself may result in a risk of electric shock or fire and will void your warranty.

• To reduce the risk of electric shock, authorized service personnel must use insulating tools when connecting or working on the controller.

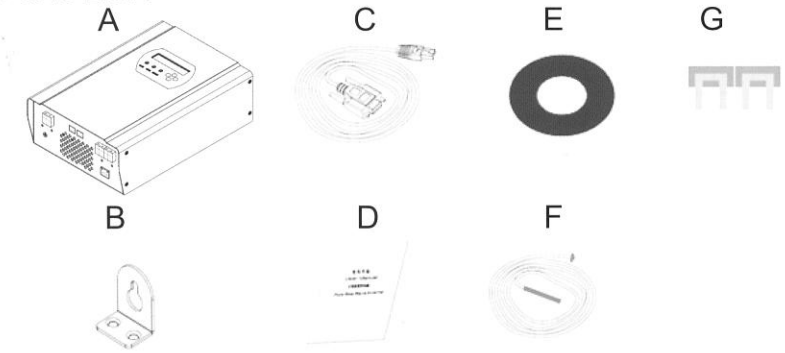
• Keep away from flammable, explosive materials to avoid fire.

• If at all possible keep away for excessively humidity to avoid corrosion.

• To reduce the chance of short-circuits, authorized service personnel must use insulated tools when installing or working with this equipment.

3.Unpacking

3.1 Parts List :



Object	Quantity	Description
A	1unit	Charge controller
B	2pcs & 4pcs	Hang bracket & screws
C	1pce	RS232 to RJ45 comm cable
D	1pce	Manual
E	1pce	CD
F	1pce	Bat Temp Sensor
G	2pcs	Spare Fuses

If there is any parts missing, please contact your dealer.

3.2 Check for Transport Damage

Check the charge controller for visible external damage, such as dents on the enclosure. Contact your dealer.

3.3 Identifying the Charge Controller

You can identify the charge controller by the type label. The type label is in the enclosure.

4.Assembly

4.1Operator：technical personnel;

4.2Selecting the Mounting Location

Danger:

Possible fire and explosion hazard.

The charge controller enclosure can become hot during operation.

•Do not mount the charge controller on flammable construction material.

•Do not mount the charge controller near highly flammable materials.

•Do not mount the charge controller in potentially explosive areas.

•Do not expose the charge controller to direct sunlight to avoid power loss due to overheating.

Caution:

Enclosure may become hot to the touch and may cause burns.

•Mount the charge controller in such a way that it cannot be touched inadvertently during operation.

4.2.1Dimensions

L * W * H: 8. 58*6. 5*2. 83 in/218mm*165mm*72mm

4.2.1Net Weight

Weight: 4.84Lbs or 2.1kg

4.2.3Ambient Conditions

•The mounting location and method must be suitable for the weight and dimensions.

•Mount on a solid surface.

•The mounting location must be accessible at all times.

•The charge controller must be easy to remove from the mounting location at any time.

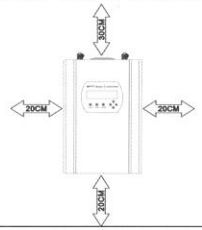
•The ambient temperature should be between -4 and 140F (-20 and 60 °C) to guarantee optimal operation.

•Do not expose the charge controller to direct sunlight to avoid power losses due to overheating.

4.2.4Safety Clearance

Observe the following safety clearance to wall, other devices or objects to ensure sufficient heat dissipation.

Direction	Safety clearance
Sides	8in or 20cm
Top	12in or 30cm
Bottom	8in or 20cm



5.MPPT controller Connection

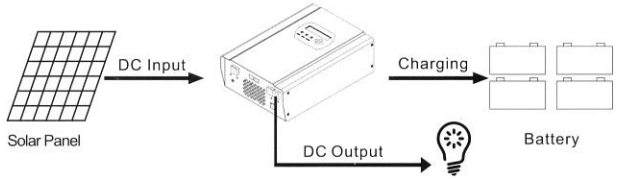
5.1Safety

Danger!
High voltages are present and dangerous
- Disconnect the PV array using a disconnection unit and secure it against accidental reactivation.
- Disconnect the circuit breaker and ensure that it cannot be reconnected.
- Ensure that no voltage is present in the system.

Warning:
Risk of injury due to electric shock。
If all cables with different voltages are routed in parallel, damaged cable insulations may lead to a short circuit.
- Route all cables separately if possible.

Warning:
Over voltage can destroy the system.
- Use an external over voltage protector in areas with an increased risk of lightning.

5.2Connections of the PV power system



5.2.1PV String

Solar panels may be connected in series or in parallel. Open-circuit voltage (Voc) of module arrays connected in series should be less than Max. DC input Voltage (150V) of the charge controller; operating voltage (Vmax) should conform to MPPT voltage range.

Please use PV cable to connect modules to the charge controller. It should be outdoor uv rated and we recommend 10Awg to prevent excessive losses due to distance. It is beneficial to increase the dc voltage to optimize performance and decrease inefficiencies.

Note:
Do not connect the PV panel positive or negative to ground.

Warning:
PV module voltage may be very high! Electrical shock and fire may result due to improper connections. Please comply with electric safety rules when connecting.

5.2.2The voltage and type of battery

1) This controller can charge DC: 12V, 24V and 48V battery systems. It will automatically recognize the system voltage

2) The controller has been pre-programmed to properly charge 4 battery types. See chart below. Any other types may be programmed using included software.

Pre-Programmed Charging Specs						
Battery Type	Bulk Voltage			Floating Voltage		
	12V	24V	48V	12V	24V	48V
Vented	14.2V	28. 4V	56. 8V	13.2V	26. 4V	52. 8V
Sealed	14.2V	28. 4V	56. 8V	13.4V	26. 8V	53. 6V
Gel	14.2V	28. 4V	56. 8V	13.7V	27. 4V	54. 8V
Ni-Cd	14.2V	28. 4V	56. 8V	14. 0V	28. 0V	56. 0V
Other	user-defined (using included software)					
Battery Type is defaulted to Gel. To change use the keypad on the display						

5.2.3DC direct load and max current:

The Load voltage is based on the battery system voltage. A 48Vdc battery bank will make the load output 48Vdc etc.

1) Output Load control:

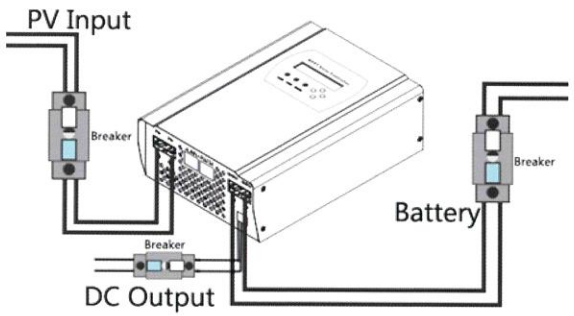
The Load output may be controlled in 5 different ways. It may be programmed through the charge controller or the included software. Modes: ON Mode / OFF Mode / Time Control Mode /PV Volt Ctrl / PV&Time Ctrl.

2) How to set the low voltage protection of DC Load output ?
The low voltage shut off for the Load output is set at 10.5Vdc per 12Vdc. So a 24Vdc system is set at 21.0Vdc. When the output Load voltage drops below this level, the output will shut off. It will turn back on once the output Load voltage reaches 0.5Vdc higher than this shutoff voltage.
3) Max DC Load output current
The maximum Load current is set at 30Amps. If exceeded an internal set of fuses will blow and will have to be replaced. A smaller external fuse is recommended.

5.2.4Specification for cable and micro-breaker

Model	SMART2 40A	SMART2 40A	SMART2 40A
Cable (Cu)	≥4mm/(0.16 in)	≥4mm/(0.16 in)	≥4mm/(0.16 in)
Micro-Breaker	63A	63A	63A

Micro-breaker should be installed between DC input and outputs. Kindly check the following picture (we do not provide external breakers):



5.2.5MPPT controller work step

Caution: Please follow the steps to ensure proper programming.
Please make sure the controller is properly wired.

Step 1: Close the battery breaker or make connection with the battery bank. Some led's and the lcd should illuminate.
Step 2: Now make the PV connection. If the PV module voltage is in the charging range, then the controller will start to work .
Step 3: If the DC Load will be used, set to proper settings and make the connection.

5.2.6 Steps for Proper Shutdown

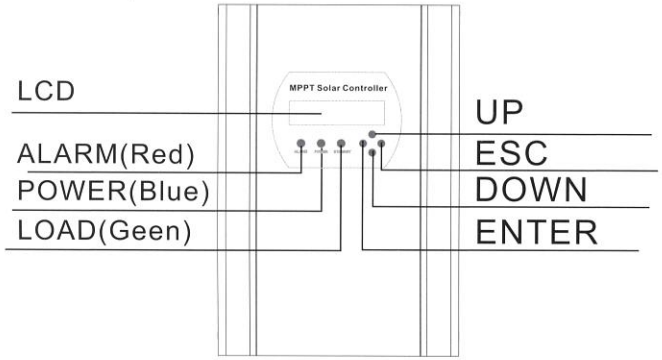
Caution: Follow the steps for shutdown to avoid damage

Step 1: Open the PV breaker to disconnect panels from controller.
Step 2: Open the battery breaker or disconnect controller from battery bank. This will completely shut the controller to off.

Warning :
NEVER disconnect the battery while charging. This will cause permanent damage to the controller and is not covered under the warranty. Always disconnect PV panels first.

6.Meaning of LED/LCD and function key

6.1Panel Description



Meaning of LED and function key

ALARM (Red) ------ Alarm indicating a fault
POWER(Blue) ----- Charging indicator
LOAD(Green)------- Load Light indicates load output present
UP ---------- UP Function Key for page up and to increase a number
DOWN ------- DOWN Function for page down and to decrease a number
ENTER ---------- ENTER key to accept an entry
ESC ---------- ESC Key to exit and save data

6.2 Smart Charge Modes

This controller has 3 mode :Constant charging stage (CC Mode) , Constant voltage charging stage (CV Mode) , Floating charge Stage (CF Mode) :
In CC Mode the blue led flashes every second.
In CV Mode the blue led flashes every 3 seconds.
In CF Mode the blue led stays on.

(Note: Charging Mode can also be checked via lcd or included s/w)

Menu No.	Menu Type	Menu Description
1	Work Status	Checks state of charge
2	Setting	Parameter set
3	Information	Parameter check

The information of LCD display in different menu .

SMART 2 MPPT LCD INFORMATION			Note
Work Status	Chg Cur （Charge current）		If is charging ,it will have information
	Chg Model （Charging Mode）		Charing Mode
	Time		Time
	Bat Temp(The real time temperature)		If connect temperature sensing wire ,then will show temperature
	Buck Temp (The main real time temperature)		
	PV Volt （Solar panel voltage）		PV input voltage
	Chg Power (Real time charge power)		Charging power
	Bat Volt （Battery real time voltage）		Show battery voltage , if is charging, it will show charging voltage .
			Will show fault mode under fault state
Setting	Bat Type Sel Setting	Vented	Battery type set
		Gel	
		Nicd	
		Sealed	
		User Def	
	User Bat Set	Bulk Volt Set	Users need to set bulk charging voltage and float charging voltage
		Float	
	Max Chg Cur Set		
	Date Set		Date Set
	Time		Time Set
	Gate Address Set		Gate Address Set
	Port Set		Port Set
	IP Address Set		IP Address Set

Setting	Load Control	Time Control	Set the time to control the DC load output on / off
		Load Off Bat Volt	Set the low voltage protection of battery . (Based on one battery)
		On/Off Mode	Keep on / off state
		PV Volt Ctr	Could set the PV voltage to control DC load output turn on/off
		PV & Time Ctrl	Could set the PV voltage and time to control DC load output turn on/off
Information	Bat Chg SYS		System Voltage
	Total power		Total energy from this machine
	Firmware Ver.		Firmware Ver.
	Machine ID		Machine ID
	Bat Type		Battery Type display
	IP Address		IP Address
	Port		Port Number
	Time Load Ctrl		Last time load control mode

7.Parameter Setting

When controller is connected to the battery bank and it is in the on state, the controller will show the Work Status information.

7.1 Could be set parameter of MPPT

Please check the details under Setting Interface

7.2The steps of setting

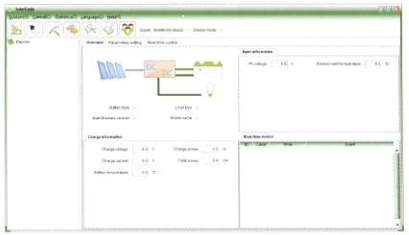
Press ESC into main menu ----> Press down to change the page to setting---->Press ENTER to get in ---->to press down to chose the information need be set .For example :

Press ESC into main menu ----> Press down to change the page to setting---->Press ENTER to get in ---->Press DOWN to change to load control---->Press ENTER to get in ---->Press DOWN to On/Off Mode---->Press ENTER to get in ----> Press UP or down to Load On mode---->Press ESC to save and exit .

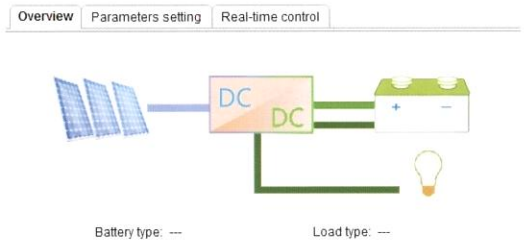
8.MPPT and PC Connection

8.1Solar Eagle introduction

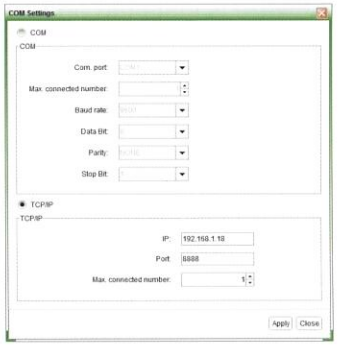
We have developed software that completely monitors and allows for many parameter changes via a computer. Below are some pics of what we've created:



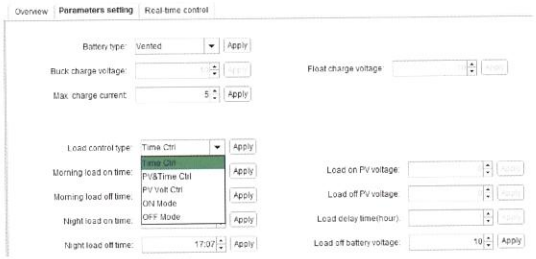
overview: Access main interface as follows:



Com Setting (Com) ：Get into set the connection of Solar Eagle and PC .



Setting: Get into battery type set and load control set interface.



Data: MPPT working status

Event Log ：MPPT working status per day

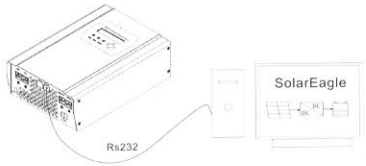
Login ：Some parameters set need administrator's pass word .

8.2 Then connection of MPPT and Solar Eagle .

Could connect trough RS 232 (COM) or (TCP/IP)

8.2.1 Connect through RS232 (COM)

1） If PC has RS232 connector, check the following picture



Step 1 : Please install Solar Eagle. For details please check install steps.

Step 2 : Once software is installed and controller is connected properly, allow controller to turn to on state (connected controller to battery will automatically start).

Step 3: Connected PC and controller with RS232 and PC will notice the communication, at this time the PC will chose COM1.

Step 4: Open the software as administrator (WIN 7 or 8), then press to choose COM communication and enter. It will automatically connect.

Step 5 : The software is now ready to be used.

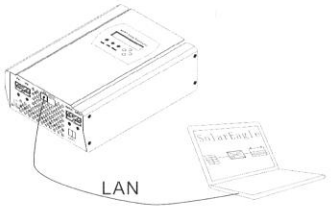
2) NO RS232 port?

If you do not have an RS232 port, then you need to prepare a USB to RS232 connector such as below:

Step 1: Please install USB to RS232 driver software and make sure it's communicating. The other steps are the same as above.

8.2.2 Connect through LAN (TCP/IP)

1)Connect through RJ45 ,like the following picture.



Step 1 : Install Solar Eagle software as described above.

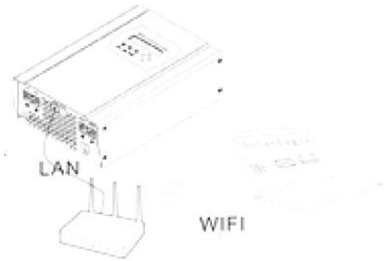
Step 2 : Install and ensure controller is properly wired. Allow it to turn on. This happens automatically when battery is properly connected.

Step 3: Connect PC and controller using RJ45.

Step 4: First method: Based on PC GATED ADDRESS and IP ADDRESS set the controller's PC GATED ADDRESS and IP ADDRESS. But please note the last number of IP address must be different. Ex: PC's PC GATED ADDRESS is 192.168.1.1, IP ADDRESS is 192.168.1.10, then the controller GATED ADDRESS is 192.168.1.1, IP ADDRESS is 192.168.1.8: Make sure controller and PC are in the same LAN.

Second method: Based on PC GATED ADDRESS and IP ADDRESS set the controller's PC GATED ADDRESS and IP ADDRESS. But please note the last number of IP address should be kept different. Ex: Controller's GATED ADDRESS is 192.168.1.1, IP ADDRESS is 192.168.1.10, then the PC's GATED ADDRESS is 192.168.1.1, IP ADDRESS is 192.168.1.8: Make sure controller and PC are in the same LAN.

Step 5: Open the software as the administrator (WIN 7 or 8). Then press to choose TCP/IP communication and fill IP address and port number, enter; It will automatic connect in 10s: If they do not connect, make sure controller and PC in the same LAN and restart controller .



Step 1 : Install Solar Eagle software as described above.

Step 2: Install and ensure proper controller connection. Once battery bank is connected the unit will automatically turn on.

Step 3: Connect controller and router through RJ45. Then add PC into LAN.

Step4: Set controller and PC's GATE ADDRESS based on router's GATE ADDRESS. Keep them in the same LAN. Ex: router's GATE ADDRESS is 192.168.1.1, then controller and PC's GATE ADDRESS should be 192.168.1.1.

Step 5 : Set the controller and PC's IP address based on GATE ADDRESS. To set IP ADDRESS, the last number should be different. Ex: IP's GATE ADRESS is 192.168.1.1, PC's IP ADDRESS should be 192.168.1.10, the controller's IP ADDRESS should be 192.168.1.5.

Step 6: Open software as the administrator (WIN 7 or 8), then press to choose TCP/IP communication and fill IP address and port number, enter; It will automatically connect in 10s. If they do not connect, make sure controller and PC are in the same LAN and restart controller.

8.2.3 Software usage

When the software has been successfully connected the following may be changed and/or monitored;

If you have special parameter changes required you may need to call AIMS Power to do so:

Step 1 : Contact us to receive password

Step 2 : Login

Step 3 : Change parameters

9.Maintenance and Cleaning

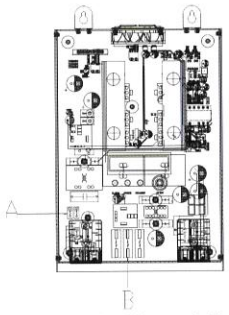
9.1 Replacing the Thermal Fuses

Using incorrect thermal fuses may irreparably damage the solar charge controller.

• Only use the thermal fuses included in the scope of delivery

1. Open the solar charge controller as described in section "Opening the solar charge controller"
2. Remove the broken thermal fuses from the sockets (A and B).
3. Insert new thermal fuses (included in the scope of delivery).
4. Close the solar charge controller as described in section "Closing the solar charge controller".
5. Remember always connect the batteries before the solar panels or you will permanently damage the controller.

Note: To clean simply wipe the outside with a lightly dampened cloth. If unit has been opened use an air spray such as a keyboard cleaner to blow out the internal dust that may accumulate inside the controller.



Replacing the Thermal Fuses

9.2 Cleaning the Cooling Fin

Clean the Fan air vents and internal cooling fan regularly by using a dry or slightly damp cloth to wipe.

Attention:

• Liquid detergent or corrosive solvent cleaning are forbidden.
• Liquid is not allowed in the device.
• clear the air vent passage.
•Carefully remove dirt with a suitable soft brush if deemed necessary.

10.Storage and Disposal.

10.1 Store the charge controller in a dry place with ambient temperatures between -40 °C and +75 °C.

10.2 Disposal

Dispose of the solar charge controller at the end of its service life in accordance with the disposal regulations for electronic waste which apply at the installation site at that time.

11. Recovery Processing and Warranty

11.1 Recovery Processing

When the controller abnormal, please check the following question and contact our customer service representative.

12.1.1 Controller failure mode:

Please check the fault tips in the failure mode, and then proceed to the appropriate troubleshooting.

12.1.2 When the controller does not start properly:

1. Check the controller external solar panels with the correct polarity.
2. Check Battery Connection.
3. Check Battery.
4. Check circuit breaker.
5. Check internal fuse.

If the problem persists , please contact customer service.

Please offer the following information: Equipment information: Model, Order No., serial-number(Stickers on the rear plate). Detailed description of the problem

(Type of system, occasionally/frequent problems, indicator light, data display, and so on).

11.2 Warranty

Within the warranty period, it is free to repair for the non-human fault. Otherwise, the cost of repairs would be charged.

12. Technical Parameters

MPPT solar controller modes : SMART2 -20A/25A/30A-series		20A	25A	30A
Charge Mode	MPPT (maximum power point tracking)			
Method	Three stages: constant current (MPPT), constant voltage, floating charge.			
System Type	DC 12V/24V/48V	Automatic recognition		
System voltage	12Vsystem	DC9V~DC15V		
	24Vsystem	DC18V~DC30V		
	48Vsystem	DC36V~DC60V		
Soft Start Time	12V/24V/48Vsystem	≤10S		
Dynamic Response Recovery Time	12V/24V/48Vsystem	500us		
Conversion Efficiency	12V/24V/48Vsystem	≥96.5%,≤99%		
PV Modules Utilization Rate	12V/24V/48Vsystem	≥99%		
Input Characteristics				
MPPT Working Voltage and Range	12Vsystem	DC18V~DC150V		
	24Vsystem	DC34V~DC150V		
	48Vsystem	DC65V~DC150V		
Low Voltage Input Protection Point	12Vsystem	DC16V		
	24Vsystem	DC30V		
	48Vsystem	DC60V		
Low Voltage Input Recovery Point	12Vsystem	DC22V		
	24Vsystem	DC34V		
	48Vsystem	DC65V		
Max DC Voltage	12V/24V/48Vsystem	DC160V		
Input Overvoltage Protection Point	12V/24V/48Vsystem	DC150V		
Input Overvoltage Recovery Point	12V/24V/48Vsystem	DC145V		
Maximum PV power	12Vsystem	286W	257W	429W
	24Vsystem	572W	715W	858W
	48Vsystem	1144W	1430W	1716W
Output Characteristics				
Selectable Battery Types (Default Gel battery)	12V/24V/48Vsystem	Sealed lead acid, vented, Gel, Ni-Cd battery(Other types of the batteries also can be defined)		
Constant Voltage	12V/24V/48Vsystem	Please check the charge voltage according to the battery type form.		
Floating Charge Voltage	12V/24V/48Vsystem			
Over Charge Protection Voltage	12Vsystem	14. 6V		
	24Vsystem	29.2V		
	48Vsystem	58.4V		
Rated Output Current	12V/24V/48Vsystem	20A	25A	30A
Current-limiting Protection	12V/24V/48Vsystem	25A	30A	35A
Rate charge current	12V/24V/48Vsystem	20A	25A	30A
Temperature Factor	12V/24V/48Vsystem	±0.02%/°C		
Temperature Compensation	12V/24V/48Vsystem	14.2V-(The highest temperature-25°C)* 0.3		
Output Ripples(peak)	12V/24V/48Vsystem	200mV		
Output Voltage Stability Precision	12V/24V/48Vsystem	≤±1.5%		
Charge voltage Peak-Peak Ripple	12V/24V/48Vsystem	200mV		
Charger voltage accuracy	12V/24V/48Vsystem	≤±1.5%		

Parameters

Discharge characteristic				
Setting Control	Controller or LAN			
Max discharge current	12V/24V/48V System	30A		
Max discharge power	12V/24V/48V System	420W	840W	1680W
Discharge protection	12V/24V/48V System	fuse 40A*2		
Double-time control	12V/24V/48V System	On in morning ,off in morning / On in night, off in night		
ON / OFF mode	12V/24V/48V System	ON / OFF		
PV voltage control	12V/24V/48V System	PV voltage on, PV voltage off		
PV voltage / time delay control	12V/24V/48V System	PV voltage on, time delay off		
Discharge voltage protection	12V/24V/48V System	Output off when it under setting voltage; Factory set is 10.5V.(Note : set based on 1 battery)		
Communication Features				
RS232 Communication	12V/24V/48V System	Chose COM communication		
LAN Communication	12V/24V/48V System	Set IP and Gate address for controller and solar eagle ;Then chose TCP communication		
Protection				
Input Low Voltage Protection	yes			
Input Overvoltage Protection	yes			
Input Polarity Reversal Protection	yes			
Output Overvoltage Protection	yes			
Output Polarity Reversal Protection	yes			
Short-circuit Protection	Recover after eliminating the Short-circuit fault, no problem for long term Short-circuit			
Temperature Protection	95°C			
Temperature Protection	Above 85°C,decrease the output power, decrease 3A per degree.			
Other Parameters				
Noise	≤40dB			
Thermal methods	Forced air cooling, fan speed rate regulated by temperature, when inner temperature is too low, fan ran slowly or stop; when controller stop working, fan also stop ran.			
Components	World brand raw materials. Compliance with EU standards. All rated temperature of electrolytic capacitors not less than 105°C			
Smell	No peculiar smell and toxic substances.			
Environment Protection	Meet the 2002/95/EC,no cadmium hydride and fluoride			
Physical				
Measurement DxWxH (mm)	218*156*72			
N.G(kg)	2.1			
G.N(kg)	2.4			
Color	Blue/Green (optional)			
Safety	CE, RoHS, PSE, FCC			
EMC	En61000			
Type of Mechanical Protection	IP21			
Environment				
Humidity	0~90%RH (no condense)			
Altitude	0~3000m			
Operating Temperature	-20°C ~ +40°C			
Storage Temperature	-40°C ~ +75°C			
Atmospheric Pressure	70~106kPa			