

## Introduction

This is a MPPT (maximum Power Point Tracking) smart solar controller, with charging and discharging function, increasing 30%~60% efficiency than traditional PWM controller. It has automatic recognition function, three Stages charging function, also supports many kinds of battery charging and discharging, RS232 communication etc, It's our company's MPPT solar controller e-SMART series.

Remarks:DC12V/24V/48V battery system automatic recognised.

## Features

1. MPPT charging mode, peak efficiency up to 99%, saving 30%~60% solar panel than traditional PWM controller.
2. DC12V/24V/48V battery system automatic recognition, users would like to use in different system conveniently.
3. DC12V/24V/48V system, maximum PV input voltage up to DC100V.
4. Charge type: three stages charge fast charge(MPPT), constant voltage, floating charge, protected our battery, lead to a long use age.
5. Discharge type owns always on pattern and always off pattern, it also has PV voltage solar controlling switch pattern.
6. Clients can auto choose any one in the 4 kinds of commonly used batteries, Sealed lead acid, vented, Gel, NiCd and custom other batteries.
7. Digital tube display controller battery voltage and charging current,upper computer display various parameters, such as model, PV input voltage, battery types, battery voltage, charging current, charging power, working condition etc.
8. RS232 communication, and that providing communication protocol, it's convenient for customer's integration management.
9. This controller could be paralleled infinitely.
10. CE, RoHS Certifications approved; cooperating with clients through the other certifications.
11. 2 years warranty; 3~10 years extended technical service.

Parameters:

MPPT solar controller modes I-P-e-SMART-12V/24V/48V-series		40A
Charge mode	MPPT(maximum power point tracking)	
Charge method	Three stages: constant current(MPPT),constant voltage,floatting charge	
System type	DC12V/24V/48V	Automatic recognition
System voltage	12V system	DC9V~DC15V
	24V system	DC18V~DC30V
	48V system	DC36V~DC60V
Soft start time	12V/24V/48V system	≤3S

Dynamic response recovery and range	12V/24V/48V system	500us
MPPT efficiency	12V/24V/48V system	$\geq 96.5\%$ , $\leq 99\%$
<b>INPUT CHARACTERISTICS</b>		
MPPT working voltage and Range	12V system	DC14V~DC100V
	24V system	DC30~DC100V
	48V system	DC60~DC100V
Low voltage input Protection point	12V system	DC14V
	24V system	DC30V
	48V system	DC60V
Low voltage input Recovery point	12V system	DC18V
	24V system	DC34V
	48V system	DC65V
Input over voltage protection point	12V/24V/48V system	DC110V
Input over voltage recovery point	12V/24V/48V system	DC100V
Maximum PV power	12V system (W)	568
	24V system (W)	1136
	48V system (W)	2272
<b>CHARGE CHRECTRESTICS</b>		
Selectable Battery Types (Default type is GEL battery)	12V/24V/48V system	Sealed lead acid, vented, Gel, NiCd battery (Other types of the batteries also can be defined)□
Constant Voltage	12V/24V/48V system	Please check the charge voltage according to the battery type form.
Floating Charge Voltage	12V/24V/48V system	Please check the charge voltage according to the battery type form.
Rated Input Current	12V/24V/48V system	40A
Current-limiting Protection	12V/24V/48V system	45A
Temperature Factor	12V/24V/48V system	$\pm 0.02\%/^{\circ}\text{C}$
Temperature Compensation	12V/24V/48V system	14.2V-(The highest temperature-25°C)*0.3
Output Ripples(peak)	12V/24V/48V system	200mV
Output Voltage Stability Precision	12V/24V/48V system	$\leq \pm 1.5\%$
<b>Output Discharge Characteristics</b>		
Output voltage	Base on battery voltage	
Low voltage output Protection point	Default 10.5V; recovery 11V; custom available ;	
Rated output Current	30A	
The output control	Always on, always off, PV voltage control switch	

Output control set mode	Controller button or upper computer	
Display		
LED digital tube display	Battery voltage, charge current	
LED light display	Charging indicator light, LOAD indicator light	
PCcommunication port	RS232	
Protection		
Input Low Voltage Protection	Check the input characteristics	
Input Overvoltage Protection	Check the input characteristics	
Charge over voltage power Protection	yes	
Low Voltage output Protection	yes	
Rated output Current protection	yes	
Temperature Protection	yes	
Other Parameters		
Noise	≤40dB	
Thermal heat-dissipating method	Itself cooling	fan cooling
Components	Imported material, with EU standards.	
Certification	CE\FCC\ROHS	
Physical		
Measurement D x W x H(mm)	205*168*60	
package size D x W x H(mm)	265*196*110	
N.G(KG)	1.8kg	
G.N(KG)	2kg	
Type of Mechanical Protection	IP25	
Environment		
Humidity	0~90%RH ( no condense)	
Altitude	0~3000m	
Operating Temperature	-20℃ ~ +50℃	
Storage Temperature	-40℃ ~ +75℃	
Atmospheric Pressure	70~106kPa	

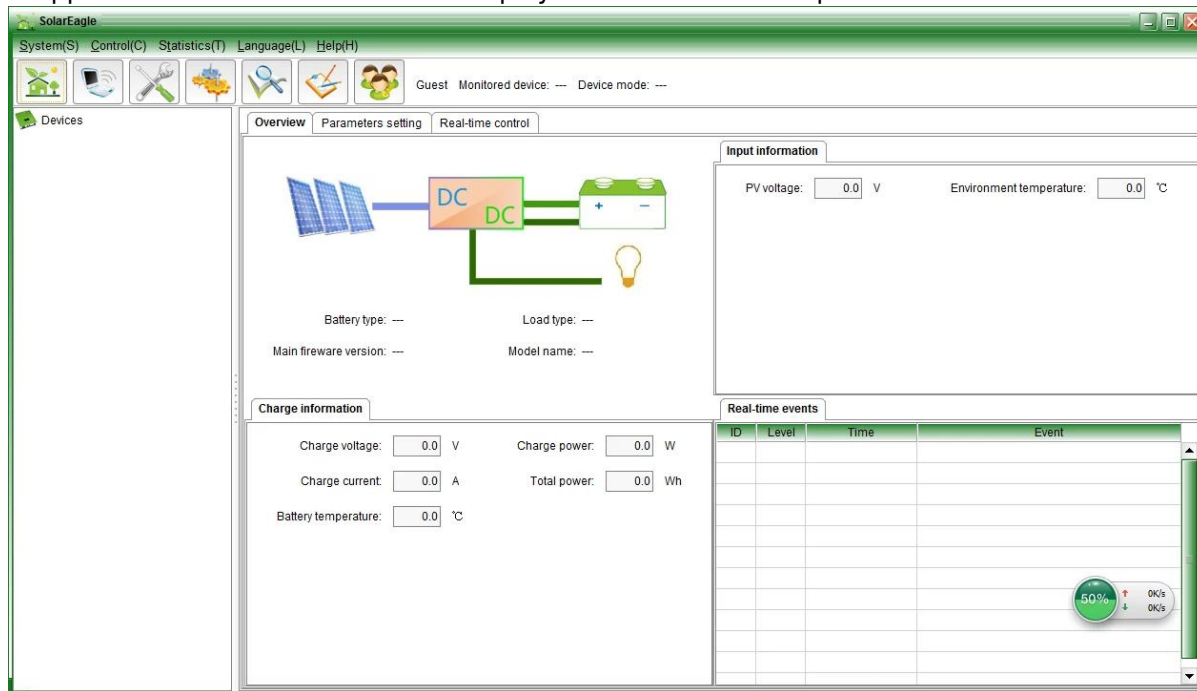
### Remarks

The specification is only for reference. Subject to change without prior notice  
We provide OEM and ODM service. The 36V/72V/96V model also can be custom made for you.

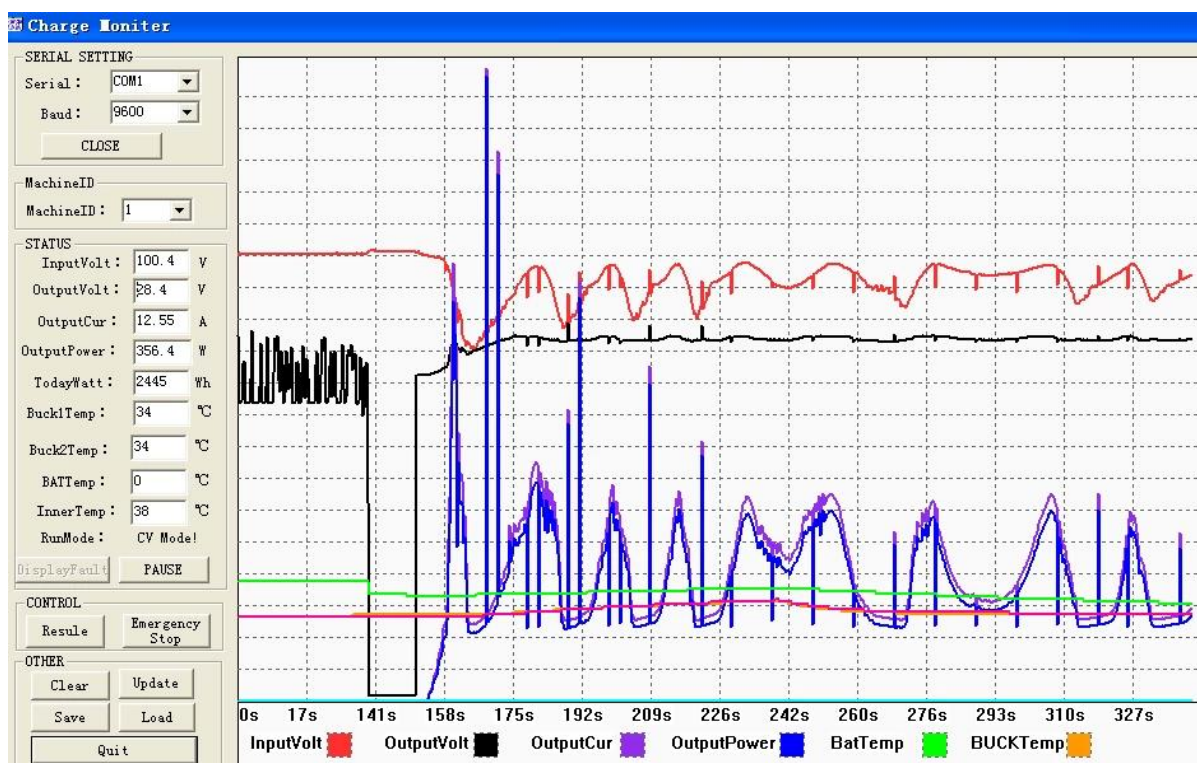
### Products Package

Number	quantity	parets name
1	1 pc	Controller appearance(blue or green is optional)OEM is available also)
2	2 pc	hangersUsed in the controller hanging
3	4 set	screwUsed for hanging ear lock in the controller
4	1 pc	RS232 port
5	1 pc	Battery temperature sensing lines
6	2 pc	fuseDC output
7	1 pc	specificationmanual
8	1 pc	CDBuilt-in upper software

Controller upper software testing software display information and set parameters.  
 1.Upper software and test software display information and set parameters.



Graphical: upper software



Graphical: testing ware

1.1 show solar charge and discharge status, PV voltage, charge voltage, charge Current etc, and setting the type of the batteries, LOAD output control method.

1.2 Product standard upper software; testing software is not provided(Due to testing software need clients' PC has software development platform, if clients have the requests, please apply to our company for taking)

Remarks: the PC software is offered freely by our company.

## 2. Information display and parameter setting



e-Smart series

2.1 ENTER1 button: press left ENTER1 show 2 digital battery voltage (if it is charging, then shows 2 digital charge voltage), for example, the battery voltage or charge voltage is 13.5V, it shows 13.

Press ENTER1 for a long time, you can set battery types; more informations please see the specification.

2.2 ENTER2 button: press right ENTER2 show 2 digital battery current (if it has n't been charging, then display 00, if the charge current is 20.5A, then it shows 25; press ENTER2, you can set always on and always off pattern, you can see more details in the specification.

### **Other detailed parameters**

Please see the outline of the design, technical documents, product manuals etc.

Engineering department custom 2th version on May 5, 2014.







**MAINTENANCE CARD**

Name \_\_\_\_\_ Tel \_\_\_\_\_

Address \_\_\_\_\_

Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial No. \_\_\_\_\_

Bought From \_\_\_\_\_ Date Purchased \_\_\_\_\_

Invoice Number \_\_\_\_\_ Invoice Price \_\_\_\_\_

Conditions of warranty:  
1. The above warranty is guaranteed under normal use for two years from date of purchase. During the period, we will repair or replace any defective parts, free of charge, any damaged parts, defects caused by accident, negligence, misuse, transportation, normal wear, accident, or any alteration that affects the usability or performance of the equipment will not be covered by the warranty.  
2. The warranty does not cover consumable parts and accessories in operation. We do not offer the warranty period as well as the cost of any service parts and service with the product owner is responsible.  
3. Any alteration of the equipment will be allowed.  
4. Please keep your invoice and product with this warranty card for maintenance service.

Issued By \_\_\_\_\_

**CERTIFICATE**

Model: \_\_\_\_\_

Specifications: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

Products have been tested, qualified by standard and permitted to deliver.





## MPPT Solar Charge Controller

Adopting Advanced MPPT Technology  
High Conversion Efficiency  
Rs232 Port



CEFC®

**HIGH-END QUALITY**  
SOLAR CHARGE CONTROLLER

CEFC®