## Introduction

This e-SMART MPPT (maximum Power Point Tracking) solar charge controller is a smart solar controller with automatic recognition function, smart charging and discharging function, three stages charging function to protect battery. It can increase 30%~60% efficiency than traditional PWM controller. It supports many kinds of batteries.It also have RS232 communication function.

**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 can use it in different system conveniently.
3. Maximum PV input voltage up to DC100V.
4. Three stages charge: fast charge(MPPT), constant voltage charge,floating charge, It can protect batteries well .
5. Three option of discharge: on mode and off mode and PV voltage(solar) control mode.
6. Users can choose 4 kinds of commonly standard batteries(Sealed lead acid, Vented, Gel, NiCd). Other kinds of batteries can be defined by users.
7. Digital tube can display battery voltage and charging current. The software can display various parameters such as model number, PV input voltage, battery type, battery voltage, charging current, charging power, working condition.
8. RS232 communication, we can offer communication protocol also, it's convenient for user's integration management.

9. This controller can be paralleled infinitely.

10. CE and RoHS Certifications are approved.We can help clients to approve 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 | | 15A | 20A | 25A | 30A | 40A |
|---|---|---|---|---|---|---|
| Charge mode | MPPT(maximum power point tracking) | | | | | |
| Charge method | Three stages: constant current(MPPT),constant voltage,floating 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 time | 12V/24V/48V system | 500us | | | | |
| MPPT efficiency | 12V/24V/48V system | ≥96.5%,≤99% | | | | |
| INPUT CHARACTERISTICS | | | | | | |
| MPPT working voltage range | 12V system | DC14V~DC100V | | | | |
| | 24V system | DC30~DC100V | | | | |
| | 48V system | DC60~DC100V | | | | |
| Low input voltage protection point | 12V system | DC14V | | | | |
| | 24V system | DC30V | | | | |
| | 48V system | DC60V | | | | |
| Low input voltage Recovery point | 12V system | DC18V | | | | |
| | 24V system | DC34V | | | | |
| | 48V system | DC65V | | | | |
| High input voltage protection point | 12V/24V/48V system | DC110 | | | | |
| High input voltage recovery point | 12V/24V/48V system | DC100V | | | | |
| Maximum PV power | 12V system (W) | 213 | 284 | 355 | 426 | 568 |
| | 24V system (W) | 426 | 568 | 710 | 852 | 1136 |
| | 48V system (W) | 852 | 1136 | 1420 | 1704 | 2272 |
| CHARGE CHRECTRESTICS | | | | | | |
| Selectable Battery Types (Default 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 | | | | | |
| Rated Input Current | 12V/24V/48V system | 15A | 20A | 25A | 30A | 40A |
| Current-limit Protection | 12V/24V/48V system | 20A | 25A | 30A | 35A | 45A |
| Temperature Factor | 12V/24V/48V system | ±0.02%/℃ | | | | |
| Temperature Compensation | 12V/24V/48V system | 14.2V-(The highest temperature-25℃)*0.3 | | | | |
| Output Ripples(peak) | 12V/24V/48V system | 200mV | | | | |

| Output Voltage Stability Precision | 12V/24V/48V system | ≤±1.5% | |
|---|---|---|---|
| Output Discharge Characteristics | | | |
| Output voltage | Base on battery voltage | | |
| Low voltage output Protection point | Default 10.5V; Recovery 11V; It can be adjustable. | | |
| Rated output Current | 30A | | |
| The output control | On mode, Off mode, PV voltage control mode | | |
| Output control set mode | Controller button or PC software | | |
| Display | | | |
| LED digital tube display | Battery voltage, Charge current | | |
| LED light display | Charging indicator light, LOAD indicator light | | |
| PC□communication port□ | RS232 | | |
| Protection | | | |
| Low input voltage protection | Check the input characteristics | | |
| High input voltage protection | Check the input characteristics | | |
| Charge overpower protection | yes | | |
| Discharge low voltage protection | yes | | |
| Discharge high 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 | | |
| 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 customized for you.

## Products Package

| Number | quantity | Items included |
|---|---|---|
| 1 | 1 pc | Controller color (blue or green is optional OEM ODM order is highly welcome ) |
| 2 | 2 pc | Hangers (used for controller hanging on the wall) |
| 3 | 4 set | Screw |
| 4 | 1 pc | RJ45 to RS232 cable |

| 5 | 1 pc | Battery temperature sensor wire |
|---|------|-------------------------------|
| 6 | 2 pc | Fuse（DC output） |
| 7 | 1 pc | User instruction（manual） |
| 8 | 1 pc | CD |

**1.Controller PC upper software and testing software can display information. Users can set parameters via PC upper software.**



Graphical: PC upper software
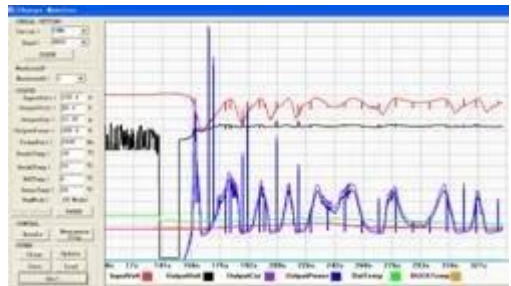


Graphical: testing software

1.1 The first picture show solar controller working status(charge and discharge), PV voltage, charge voltage, charge current etc. Users can choose the type of the batteries, DC-load output control method.
1.2 We provide PC upper software. Testing software is not including. (user's PC has software development platform, if needed, please apply for it)

**2. Information display and parameter setting.**



Figure 2.1



Figure 2.2

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 shows13,please see Figure 2.1;Press ENTER1  a little bit longer, users can set battery types.
2.2 ENTER2 button: press right ENTER2 show 2 digital battery current (if it is not charging, then it display 00, if the charge current is 22.5A, then it shows 22,please see Figure 2.2); press ENTER2 button a little bit

longer,  DC load control can be set (On mode, Off mode, PV voltage control mode)
Please see more details in the user manual.


Other detailed parameters
Please see the outline of the design, technical documents, user manuals etc.
Research and development department made 2th version on May 5, 2014.