### Introduction

This is a MPPT (maximum Power Point Tracking) smart solar controller, With charging and discharging function, increasing  $30\% \sim 60\%$  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.

#### **Features**

- 1. MPPT charging mode, peack efficincy up to 99%;
- 2. DC12V / 24V / 48V battery system automatic recognition;
- 3. Maximum PV input voltage up to DC100V;
- 4. Three stages charge: fast charge (MPPT), constant voltage charge, floating charge;
- 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);
- 7. Digital tube can display battery voltage and charging current;
- 8. RS232 communication, we can offer communication protocol also;
- 9. This controller can be paralleled infinitely.
- 10. CE, RoHS and FCC Certifications are approved.
- 11. 2 years warranty; 3 ~ 10 years extended technical service.

### **Parameter**

MPPT solar controller I-P-e-SMART-12V / 24		40A
Charge mode	MPPT (maximum po	wer 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	≤3\$
Dynamic response recovery and range	12V / 24V / 48V system	500us
MPPT efficiency	12V / 24V / 48V system	≥96.5%, ≤99%
INPUT CHARACTERIS	TICS	
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

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Low voltage input	12V system	DC18V
Recovery point	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
	12V system (W)	568
Maximum PV power	24V system (W)	1136
·	48V system (W)	2270
CHARGE CHRECTRES	TICS	
Calastable Dettem		
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	12V / 24V / 48V	Please check the charge voltage according to the battery
Voltage	system	type form.
Rated Input Current	12V / 24V / 48V system	40A
Current-limiting Protection	12V / 24V / 48V system	45A
Temperature Factor	12V / 24V / 48V system	± 0.02% / ℃
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	12V / 24V / 48V	≤ ± 1.5%
Precision	system	1.570
Precision		1.370
Precision  Output Discharge Ch		
Precision  Output Discharge Che Output voltage  Low voltage output		Base on battery voltage  Default 10.5V; recovery 11V; custom available;
Precision  Output Discharge Char  Output voltage  Low voltage output  Protection point	aracteristics	Base on battery voltage  Default 10.5V; recovery 11V; custom available;
Precision  Output Discharge Chi Output voltage  Low voltage output Protection point  Rated output Current	aracteristics	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A
Precision  Output Discharge Char  Output voltage  Low voltage output  Protection point  Rated output control	aracteristics	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch
Precision  Output Discharge Char  Output voltage  Low voltage output  Protection point  Rated output Current  The output control  Output control set me	aracteristics	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A
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Precision  Output Discharge Chi Output voltage  Low voltage output Protection point  Rated output Current The output control Output control set moderate output  LED digital tube display  LED light display  PC (communication pounts)  Protection Input Low Voltage Production Input Overvoltage Production  Output Overvoltage Production  Output Control  Output Current	ode ay ort) otection otection	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics
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Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set modisplay  LED digital tube display  PC (communication perotection Input Low Voltage Procenting over voltage  Low Voltage output Protection  Input Overvoltage  Low Voltage output Protection	aracteristics  code  ay  ort)  otection  otection  power Protection	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes
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Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set moderate output Current Display  LED digital tube display PC (communication pount to Voltage Proceeding Input Low Voltage Proceding Overvoltage Charge Overvoltage Proceding Overvoltage Overvoltage Cow Voltage Overvoltage Protection Rated Output Current Temperature Protection Other Parameters	aracteristics  code  ay  oort)  otection  otection  power Protection  con  protection	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control output control set modisplay  LED digital tube display PC (communication point low Voltage Protection liput Overvoltage Procharge over voltage Low Voltage output Protection  Rated output Current Temperature Protection  Rated output Current Temperature Protection  Cother Parameters  Noise  Thermal heat-dissipat Components	aracteristics  code  ay  oort)  otection  otection  power Protection  con  protection	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  yes  yes  yes  y
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control output control set modisplay  LED digital tube display PC (communication point light display PC (communication point light display PC (communication point Low Voltage Protection light Overvoltage Proceding over voltage Low Voltage output Protection  Rated output Current Temperature Protection  Rated output Current Temperature Protection light	aracteristics  code  ay  oort)  otection  otection  power Protection  con  protection	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  yes  yes
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set mo Display LED digital tube displ LED light display PC (communication p Protection Input Low Voltage Pro Input Overvoltage Pro Charge over voltage Low Voltage output Protection Rated output Current Temperature Protectio Other Parameters Noise Thermal heat-dissipa Components Certification Physical	aracteristics  ode  ay  oort)  otection otection power Protection  c protection ion  ting method	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  ≤40dB  Itself cooling  Imported material, with EU standards.  CE FCC ROHS
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control output control set moderate protection point  ED light display  LED digital tube display  LED light display  PC (communication perotection  Input Low Voltage Procedure over voltage  Low Voltage output Protection  Rated output Current Temperature Protection  Rated output Current Temperature Protection  Cother Parameters  Noise  Thermal heat-dissipat  Components  Certification  Physical  Measurement D x W	aracteristics  ode  ay  oort)  otection otection power Protection  c protection  on  ting method	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  ≤40dB  Itself cooling
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set mo Display LED digital tube displ LED light display PC (communication p Protection Input Low Voltage Pro Input Overvoltage Pro Charge over voltage Low Voltage output Protection Rated output Current Temperature Protection Rated output Current Temperature Protection Cher Parameters Noise Thermal heat-dissipa Components Certification Physical Measurement D x W package size D x W x	aracteristics  ode  ay  oort)  otection otection power Protection  c protection  on  ting method	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  yes  yes  Z40dB  Itself cooling fan cooling  Imported material, with EU standards.  CE FCC ROHS  205 * 168 * 60  265 * 196 * 110
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set mo Display  LED digital tube displ LED light display PC (communication p Protection Input Low Voltage Pro Input Overvoltage Pro Charge over voltage Low Voltage output Protection  Rated output Current Temperature Protection Rated output Current Temperature Protection Chher Parameters Noise Thermal heat-dissipa Components Certification Physical Measurement D x W p package size D x W x N.G (KG)	aracteristics  ode  ay  oort)  otection otection power Protection  c protection  on  ting method	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light RS232  Check the input characteristics  Check the input characteristics yes  yes  yes  yes  yes  ≤40dB  Itself cooling  Imported material, with EU standards.  CE FCC ROHS  205 * 168 * 60 265 * 196 * 110 1.8kg
Precision  Output Discharge Chroutput voltage  Low voltage output Protection point  Rated output Current The output control Output control set mo Display LED digital tube displ LED light display PC (communication p Protection Input Low Voltage Pro Input Overvoltage Pro Charge over voltage Low Voltage output Protection Rated output Current Temperature Protection Rated output Current Temperature Protection Cher Parameters Noise Thermal heat-dissipa Components Certification Physical Measurement D x W package size D x W x	aracteristics  code  ay  oort)  otection  otection  power Protection  con  ting method  x H (mm)  x H (mm)	Base on battery voltage  Default 10.5V; recovery 11V; custom available;  30A  Always on, always off, PV voltage control switch  Controller button or upper computer  Battery voltage, charge current  Charging indicator light, LOAD indicator light  RS232  Check the input characteristics  Check the input characteristics  yes  yes  yes  yes  yes  yes  Z40dB  Itself cooling fan cooling  Imported material, with EU standards.  CE FCC ROHS  205 * 168 * 60  265 * 196 * 110

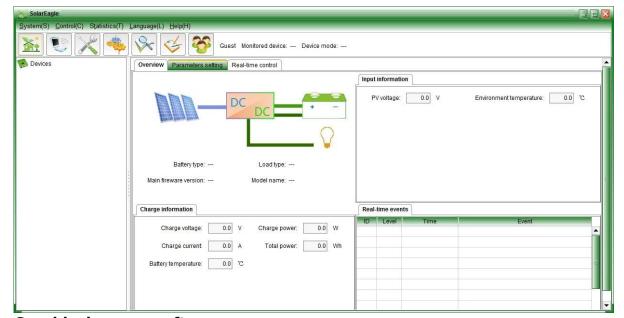
Environment	
Humidity	0 ~ 90% RH (no condense)
Altitude	0 ~ 3000m
Operating Temperature	-20 ℃ ~ + 50 ℃
Storage Temperature	-40 ℃ ~ + 75 ℃
Atmospheric Pressure	70 ~ 106kPa

# **Products photos**

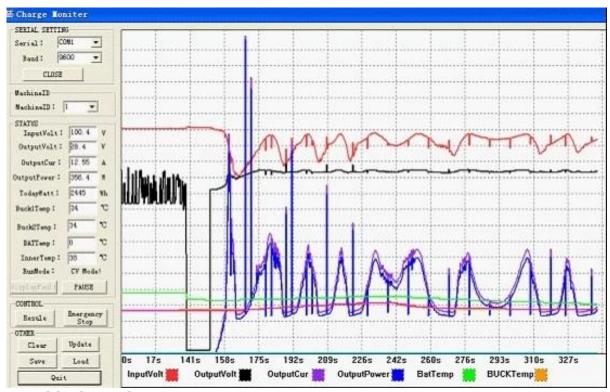




Upper software and test software display information and set parameters



**Graphical: upper software** 



**Graphical: testing ware** 

### Certificate



## **Company**







