

## User's Manual

### Safety Attentions

- Get the tools and cables ready. Select the appropriate cable to ensure that the current density is less than "4A/mm<sup>2</sup>", which is conducive to reduce the cable voltage damage.
- The controller will be heat when working. Please install the controller on the flat, well-ventilated environment.
- In the process of connecting wires, please connect the battery first (in order to ensure the correct identification of the battery voltage level), then connect the solar panel. After the controller completes the battery voltage level identification, manually close the load output of the controller and connect the controller finally.
- In order to use safely, please do not use solar panels that exceed the rated current of the solar controller, please do not connect the load over rated current, please do not use AC/DC switching power supply instead of solar panel to connect the controller.

### Product Features

- Single button operation
- Adjustable charging and discharging control parameters
- Load overcurrent/short-circuit protection
- Various load mode
- 5V/2A USB (WP30D/WP30D)
- Support Lead-acid battery and lithium battery charging and discharging
- Intelligent 3-stage PWM charging mode
- Battery over discharge/overvoltage/low voltage protection
- Battery reverse discharge protection
- Solar panel/Battery reverse connect protection

### LCD Display/Button

digital display: 88.8 V, 10A/20A, voltage, hour, 10A/20A, current, MENU, UP(+), DOWN(-)

solar panel: 88.8 V, 10A/20A, voltage, 10A/20A, current, MENU, UP(+), DOWN(-)

charge: 88.8 V, 10A/20A, voltage, 10A/20A, current, MENU, UP(+), DOWN(-)

battery: 88.8 V, 10A/20A, voltage, 10A/20A, current, MENU, UP(+), DOWN(-)

load: 88.8 V, 10A/20A, voltage, 10A/20A, current, MENU, UP(+), DOWN(-)

discharge: 88.8 V, 10A/20A, voltage, 10A/20A, current, MENU, UP(+), DOWN(-)

### WP20D System Connection

### WP20D Display/Setting

main display: 12.5 V, 13.8 V, 60.1, 14.4 V, 2.4 H, 12.6 V, 10.7 V

functions: battery type, float/recovery voltage, absorption charge/constant voltage, load mode, low-voltage protection, low-voltage recovery

### WP30D System Connection

### WP50D/WP60D System Connection

### Factory Default Settings

At main loop interface 2. long press Menu till the symbols in the dotted column starts flashing, the controlling parameters will recover to the default value. Controller will restart automatically to re-view the controller data.

### Various Working Modes For Load

Load mode	dark	setting time	dawn
24H manual control mode	-	-	-
1-23H light control on and sleep off mode	Load on	Load off	Load off
0H light control mode	Load on	-	Load off
CV reverse light control mode	Load off	-	Load on

Note: WP20D do not have reverse light control mode

### WP30D/WP50D/WP60D Display/Setting

main display: 12.2, 26, 2.18, 8.12, 85.54, 16.7, 13.8, 14.4, 10.7, 12.6, 2.4, 20, 12.6, 2.4, E01

functions: battery type, auto-identify of system voltage, Set Parameter, recovery voltage, cut-off current, error code interface

### WP30D/WP50D/WP60D Error Code and Solution

Error code	Cause	Solution
E01	Low voltage of battery load off	Charge the battery or change a new battery.
E02	Overload load off	Decrease the load, then use Menu button to turn on the load or the load will be automatically turn on after 2 minutes.
E03	Load short-circuit load off	Remove the short-circuit load, use Menu button to turn on the load.
E04	Over-voltage of battery load off	Check the connection of battery and whether the capacity of battery is too small, check if there is another charger connected with the battery.
E05	Solar panel over current, controller stop charging	Check whether the power of solar panel has been over power, decrease the panels and then the controller can be start to charging automatically after 2 minutes.

### Technology Parameters

Solar Input	Model	WP30D	WP30D	WP50D	WP60D
Rated Current	20A	30A	30A	60A	
Input Voltage	< 50V	< 100V	< 100V	< 100V	

### Charge management

Load-lead batteries	3-stage charging (bulk charge, absorption charge, float charge)
Float voltage	Staged, GEL, Flood, USE1
Absorption voltage	13.8V, 13.8V, 13.8V, 13.8V (0-15V adjustable)
Absorption time	14.4V, 14.0V, 14.4V, 14.4V (0-15V adjustable)
Absorption time	2h
Float voltage	12.6V
Low-voltage protection	12.6V
Low-voltage recovery	12.6V

### Lithium batteries

Load-lead batteries	3-stage charging (bulk charge, constant-voltage charge, step-charge)
Constant voltage	3.7-3, 3.7-4, 3.2-4, 3.2-5, USE2
Cut-off charge current	12.6V, 16.8V, 14.4V, 16.0V, 14.4V (0-15V adjustable)
Recovery charge voltage	2A (1A-30A adjustable)
Recovery charge voltage	12.6V, 16.0V, 13.6V, 17.0V, 13.6V (0-15V adjustable)

### Discharge Management

Battery Type	Lead-acid batteries	3.7-3	3.7-4	3.2-4	3.2-5	USE1
Low-voltage protection	16.7V (0-15V adjustable)	9.9V	12.2V	11.2V	14.0V	11.2V (0-15V adjustable)
Low-voltage recovery	12.6V (0-15V adjustable)	11.1V	14.8V	12.8V	16.0V	12.8V (0-15V adjustable)
Over-voltage protection	16.0V				18.5V	
Low-voltage recovery	15.5V				14.0V	

USB power: 5V USB, the maximum output current is 2A

### Voltage Identify Range Of Battery

System voltage	Lead-acid batteries	3.7-3	3.7-4	3.2-4	3.2-5	USE2
12V	\$ 11V	\$ 14.0V	\$ 18.8V	\$ 16.4V	\$ 20V	\$ 14.4V
24V	\$ 30V	\$ 28.2V	\$ 34.0V	\$ 29.8V	\$ 37V	\$ 29.8V
36V	\$ 40.5V	\$ 38.2V	\$ 46.0V	\$ 41.4V	\$ 50.4V	\$ 41.4V
48V	\$ 48.0V	\$ 38.2V	\$ 50.0V	\$ 45.4V	\$ 54.4V	\$ 45.4V

Others: Max wire size: 6mm (AWG #16) 16mm (AWG #13) 25mm (AWG #11)

Working temperature: -20°C ~ 50°C

Storage temperature: -20°C ~ 50°C

Working humidity: 10%~90%, no condensation

Dimension: WP30D: 166\*88\*38mm, WP50D/WP60D: 202\*124\*45mm

Weight: 270g/306g/370g

Waterproof: IP30

Note: Above parameters apply to system 12V in an example of 24V/36V/48V system, the voltage parameter should be multiplied by 2/3/4.

Note: WP20D controller without temperature compensation, backlight function, without cut-off current.

b01 - Solar battery  
b02 - Gel battery  
b03 - Flood battery  
b04 - Lithium battery custom type  
b05 - Lead-acid battery custom type