



# USER MANUAL

Z10 Z20 Z30

- The battery cable should be as short as possible to minimize loss  
大屏幕LCD显示，充放电参数可调，带断电记忆功能。
- Screen with backlight, (Note: backlight, backlight in no operation after 5S or so automatically shut down)  
屏幕带背光（注意：背光在无操作后5秒左右自动关闭）
- Dual USB output, the maximum current of 2.5A, support mobile phone charging.  
双USB输出，最大电流达2.5A，支持手机充电。
- Fully 3-stage PWM charge management  
完整的3阶段PWM充电管理。
- Build-in short-circuit protection, open-circuit protection, reverse protection, over-load protection.  
内置过流、短路保护、开路保护、反接保护、均为自恢复型，不损伤控制器。
- Reverse current protection, low heat production.  
防倒灌电路，超低发热量。

## System Connection

### 系统连接

- The battery positive and negative pole according to the icon access controller, the controller will automatically detect the battery voltage, the load positive and negative pole according to the icon access controller, pay attention not to answer, the solar panel according to the icon access controller.  
将蓄电池正负极按图，控制器将会自动检测蓄电池电压，将负载正负极按图示接入控制器，注意不要接反，将太阳能板按图示接入控制器。上电后系统自动识别12V或者24V电瓶。
- please strictly follow the above order to access, otherwise it may damage the controller or other components; the disassembly sequence is contrary to the wiring order.  
请严格按照以上顺序进行接入，否则可能会损坏控制器或其他组件；拆卸顺序与接线顺序相反。
- 12V system with 17.5V solar panels, 24V system with 36V solar panels.  
12V系统配17.5V太阳能板，24V系统配36V太阳能板。

# User manual

## 产品说明书

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### Safety advice

#### 安全使用建议

- Make sure your battery has enough voltage for the controller to recognize the battery type before first installation.

本控制器为12V/24V自动识别，首次安装时，请确保电池有足够的电压，以便控制器能够识别为正确的电池类型。

- The battery cable should be as short as possible to minimize loss

将控制器尽量靠近电池安装，以避免电线过长造成降压，影响正常电压判断。

- The controller is only suitable for lead acid batteries:open,agm,gel.it is not suited for nickel metal hydride,lithium ions or other batteries

本控制器只适用于各种铅酸电池（包括开口，密封，胶体等），请勿使用其他电池（包括锂电池，镍电池等）。

- The charge controller is only suitable for regulating solar modules.Never connect another charging source to the charge controller

本控制器只能使用光伏板作为充电源，请勿使用直流或其他电源作为充电源。

- The controller will be heating during operation. Please be careful to install the controller in a smooth, well-ventilated surface

本控制器运行时会发热，请注意将控制器安装在平整，通风良好的表面。

### Product features

#### 产品特点

- build-in industrial micro controller

采用工业级主控芯片

## ● Characteristics



ITEM	NAME	ITEM	NAME
①	Plus	⑤	Solar Panel Terminal
②	Set Up	⑥	Battery Terminal
③	Minus	⑦	Load Terminal
④	Usb 5v	⑧	Usb 5v

## Lcd display/key

### 图标定义/按键

#### ● The chart shows



① The battery voltage or a light delay closing time display  
 电池电压或光控延时关闭时间等显示

**Plus:** press to increase value.  
 在参数设置界面，轻按一次使参数往上加一档。

**Set up:** switch between different display, or to enter/exit setting by long press.  
 用以切换参数显示界面，或长按5秒可进入或退出参数设置。

**Minus:** press to decrease value.  
 在参数设置界面，轻按一次使参数往下减一档。

- ② Solar input indication  
 太阳能输入指示
- ③ Charging instructions: flashing when charging often bright full or constant voltage charging  
 充电指示：闪烁时充电，常亮时充满或恒压充电
- ④ Battery power indicator  
 电瓶电量指示
- ⑤ Load indication  
 负载开启指示

Batt voltage 系统电压	12V/24V auto 12V/24V自动适应
Voltage of close light 光控关灯阈值	Solar panel 8V(Light off delay) 光伏板8V (光控关灯有延时)
USB output USB输出	Dual USB output, 5V/2.5A(MAX) 2路USB输出, 5V/2.5A(最大)
Self-consume 待机电流	<10mA
Operating temperature 工作温度	-35~+60℃
Size/Weight 尺寸/重量	149 * 73 * 33mm / 200g

- All green color voltage x2 while using 24V system  
绿色字体标记电压仅对应12V系统，如使用24V系统，请X2

This instruction is a general manual, such as a slight difference in the physical.  
此说明书为通用型说明书，如和实物有细微差别，请以实际为准

Product specifications are subject to change without prior notice  
产品规格如有更改，恕不另行通知

## Troubleshooting

Situation 异常现象	Probable Reasons 可能原因	Solution 解决方法
Charge icon not on when sunny 阳光充足但不充电	Solar panel opened or reversed 光伏板开路或接反	Reconnect 重新连接好光伏板
Load icon off 负载标识不亮	Mode setting wrong 模式设置错误	Set again 重新设置
	Battery low 电池电压太低	Recharge 对电瓶充电
Load icon slow flashing 负载标识闪烁	Over load 负载过流	Reduce load power 减小负载功率
	Short circuit protection 负载短路	Remove short circuit, 1 minutes or so automatic recovery 解除短路, 1分钟左右自动恢复
Power off 控制器不亮	Battery too low/reverse 电池电压太低/电瓶+、-接反	Check battery/connection 更换电池/对接对电池极性

## Specifications

### 产品特点

Product Model	Z10	Z20	Z30
Batt voltage 系统电压	12V/24V auto 12V/24V自动适应		
Charge current 额定充电电流	10A	20A	30A
Discharge current 额定放电电流	10A	20A	30A
Max solar input 最高光伏电压	12V battery, the highest 23V; 24V battery when the highest 46V 12V电瓶时, 最高23V; 24V电瓶时最高46V		
Equalization 提升充电电压	14.4V		
Float charge 浮充电压	13.7V ( default, adjustable ) 13.7V ( 默认值, 可调 )		
Discharge stop 放电截止电压	10.7V ( default, adjustable ) 10.7V ( 默认值, 可调 )		
Discharge reconnect 放电恢复电压	12.6V ( default, adjustable ) 12.6V ( 默认值, 可调 )		
Charge reconnect 充电恢复电压	13V		
Voltage of open light 光控开灯阈值	Solar panel 8V ( Light lights delay ) 光伏板8V ( 光控开灯有延时 )		

- 3 the discharge cut-off voltage: refers to the battery discharge to the voltage when the load off, to protect the battery, to prevent the battery over discharge damage.

放电截止电压：指电瓶放电到该电压时关闭负载，保护电瓶，防止电瓶过放电损坏

#### 4 Load operation mode

( 24H ) Load output 24Hours (except for battery under voltage)

( 1-23H ) Load on after sunset and closed after setting hours

( 0H ) Dusk to dawn

负载工作模式

( 24H ) 负载常开模式 ( 电瓶欠压除外 )


( 1-23H ) 光控+1-23小时定时关闭负载 ( 晚上自动开灯1-23小时后关闭 )

( 0H ) 纯光控模式 ( 白天关灯，晚上开灯 )

#### ● Note

- 1 the light control function is controlled by the solar panel, the use of light control function must access the solar panel, otherwise the light had no effect.

光控功能由太阳能板控制，使用光控功能必须接入太阳能板，否则光控无作用。

- 2 Load symbol  Light, only that the load output has been turned on, and there is no connection to the load.

负载符号点亮，仅说明负载输出已经开启，和有没有接负载无关。

- 3 12V load output of the largest 24V, 120W maximum output 240W, the load can not exceed the output power, if there is an inverter, the inverter can be directly connected to the battery, because the inverter itself comes with under voltage protection.

12V时负载输出最大120W，24V时最大输出240W，负载不能超过输出功率，如果有逆变器，逆变器请直接接电瓶上，因为逆变器本身自带欠压保护。

- 4 As long as it is not set to 【 1-23H 】 Or 【 0H 】 model, (The optical delay model) Battery not under pressure condition (Battery symbol does not blink ), Single short press the turn key can open /Close load output .

只要不设置在【 1-23H 】和【 0H 】模式 ( 这些为光控+延时模式 )，电瓶不欠压状态 ( 电池符号不 )，单独短按下翻键可以打开/关闭负载输出。

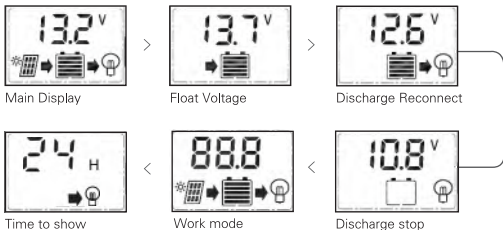
## Trouble Shooting

故障指南

## Display/setting

显示界面/参数设置

### ● Process



### ● Operation instructions

1 short press menu key to cycle through the interface and parameters  
短按菜单键可循环浏览各界面与参数

2 long press the menu button for 5S to enter the settings manually, this number will be flashing, into the corresponding set project on turn, turn key adjustment parameters you want value, after the completion of the system of automatic memory setting value and exit setup menu

长按菜单键5秒，进入手动设置，此时数字会闪烁，进入相应的设置项目后按上翻、下翻键调整您想要的参数值，完成后系统自动记忆设置值并且退出设置菜单；长按菜单键，设置项只循环一次。

3 in interface 2-5, long press [ UP ] to enter setting

在界面2-5下，长按上翻键5秒可以恢复到出厂默认值。

### ● Function declaration

1 the floating voltage: float start voltage

浮充电压：指浮充开始电压

2 discharge recovery voltage: refers to the battery discharge. protection the battery voltage to restore voltage, open the output

放电恢复电压：指电瓶放电保护后，电瓶电压升高到恢复电压时，开启输出。