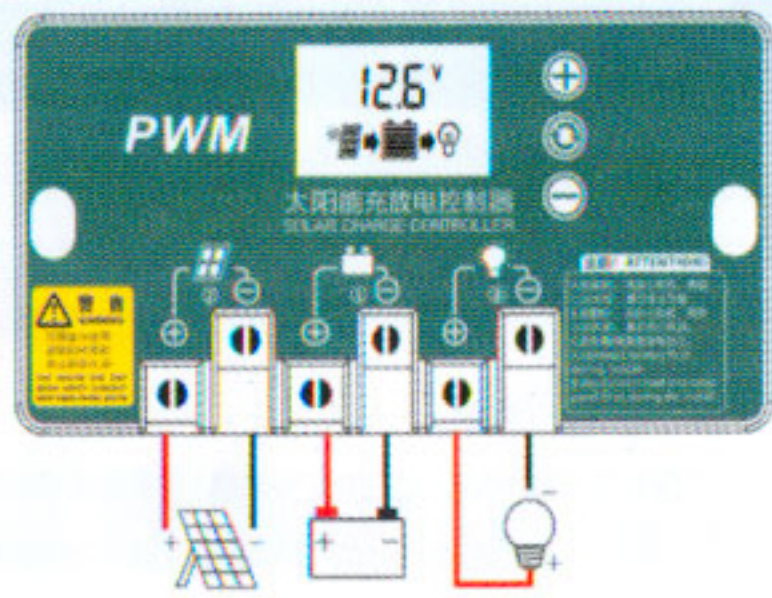


MANUAL v1.0 KTN-E

SAFETY INSTRUCTIONS

1. This controller is a 12V / 24V controller. When installing for the first time, make sure the battery has enough voltage so that the controller can identify the correct battery voltage type.
2. Install the controller as close to the battery as possible to avoid voltage drop caused by too long wire, which will affect the normal voltage judgment.
3. This controller is applicable to 12 / 24V lead-acid battery, lithium-ion battery and lithium iron phosphate battery. Please pay attention to select the corresponding battery type in the menu. The wrong battery type may cause overcharge of the battery, which may lead to fire or explosion and other safety accidents.
4. This controller can only use solar panel as the charging source, do not use DC power as the charging source.
5. The controller will generate heat when running. Please pay attention to install the controller on a flat and well ventilated surface.
6. This product can not be used in series or parallel!
7. This product is not waterproof! Humid environment will corrode the circuit board, damage the controller and lose the warranty!
8. Do not install the product in the car, the temperature in the closed car box in summer will be as high as 70 °C or above, which will cause the controller to burn!

SYSTEM CONNECTION



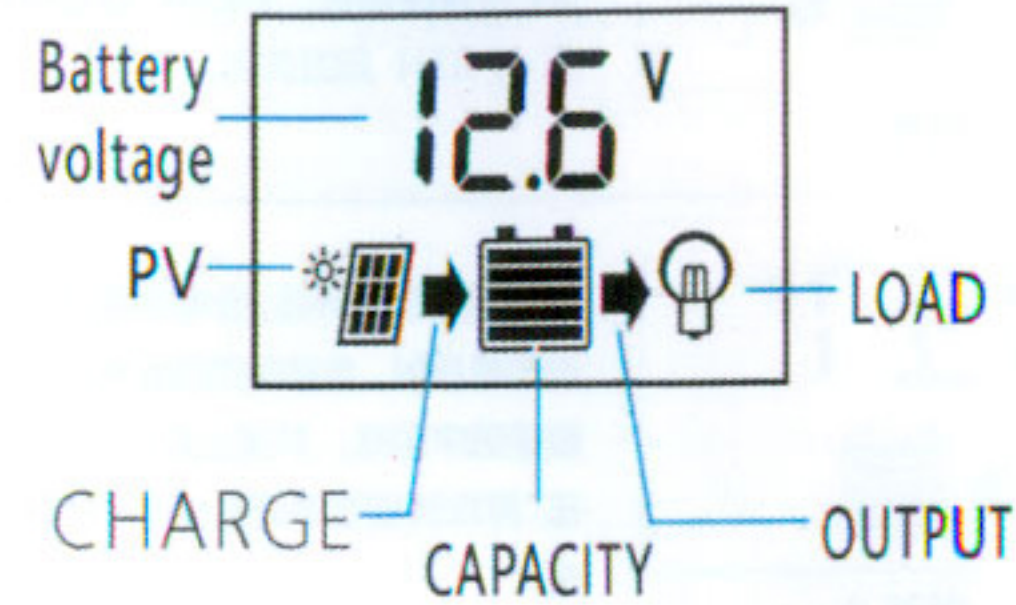
1. Connect the battery to the charge regulator - plus and minus.
2. Connect the solar module to the regulator - plus and minus.
3. Connect the consumer to the charge regulator - plus and minus.

be careful!! Please connect in strict accordance with the above order, otherwise the controller will be damaged.

be careful!! The removal sequence is the reverse of the wiring sequence, otherwise the controller will be damaged.

be careful!! Do not connect the inverter to the output port, please connect it directly to the battery.

LCD DISPLAY/KEY



- F1: click to enter setting NO.1~5.
F2: hold 5s to reset and restore factory setting.



- F1: click to check PV voltage.
F2: hold 5s to reset.



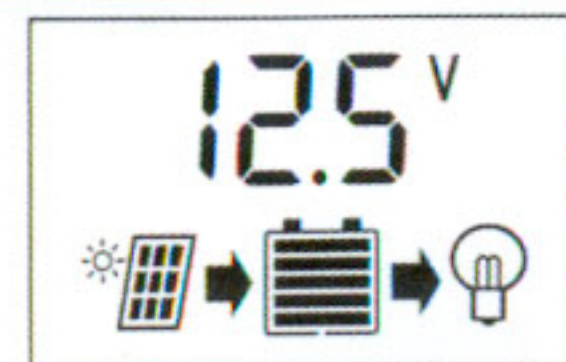
- F1: click to control output manually.
F2: click to exit if an error happened.

HOW THE CONTROLLER WORKS

The direct current from the solar panel charges the battery after passing through the controller, and the battery voltage rises gradually. When the battery voltage reaches the limit value, the controller adopts PWM technology to automatically control the voltage battery in the constant voltage charging state, so as to ensure that the battery will not be overcharged. At the same time, the load output is also monitored by the controller. When the battery voltage reaches the over discharge protection value, the controller automatically cuts off the output to protect the battery from injury. Only when the battery voltage is recharged to the over discharge recovery voltage, the controller can automatically turn on the load output again.

Some models have the function of light time control output. The controller judges night by detecting the voltage of solar panel, then turns on the load output and turns off after a certain time delay. At the same time, at night, the controller can prevent the battery from reverse discharging to the solar panel.

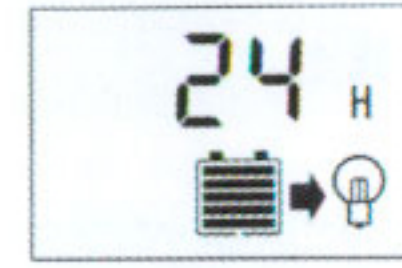
DISPLAY/SETTING



Main display, it shows battery voltage, battery capacity, charging and discharging status. press [MENU] to enter menu like below.



Battery type
B01=General lead-acid(default)
B02=3S X 3.7V 11.1V lithium ion Battery
B03=4S X 3.2V 12.8V LiFePO4 Battery
Setting:hold menu key until number flash,click [+/-] to adjust,and hold menu key again until number stop flashing ,the setting is saved.



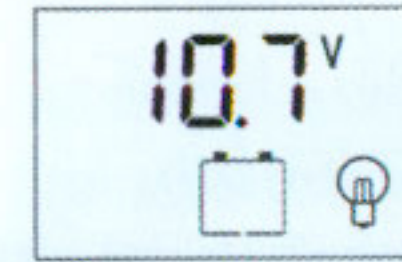
Load output timer control
[24H] -output turn on all the time.
[0H] -output turn on only during Dusk to Dawn(D2D).
[1~23H]-output turn on after sunset and turn off after 1~23H. Attn: no matter which is selected ,output will turn off when battery is in a LVD condition.
Setting method:same as above one.



Charge voltage setting (only for B01,B02,B03)
Different battery types have different maximum charging voltage. Consult your battery supplier for more information.Default setting is recommended.The setting is the same as above.

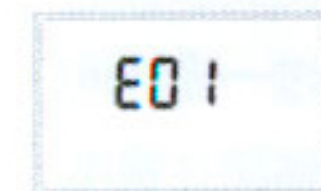


Low voltage re-connect (LVR) setting
When a low voltage disconnect happens,the controller will wait until the voltage raise more then this voltage,then it will re-connect the load again.
Default setting is recommended.The setting is the same as above.



Low voltage disconnect (LVD)setting.
When battery voltage is lower than this voltage,the controller will cut off the output automatically .Default setting is recommended.The setting is the same as above.

ERROR CODE



Battery low voltage warning .
To prevent damage of the battery, Output automatic disconnect when battery voltage drop below LVD voltage and automatic re-connect if raise above LVR voltage.
press to ignore for one time and force to work again.



Battery high voltage warning .
To prevent damage of the load equipment , Output automatic disconnect when battery voltage raise above HVD voltage and automatic re-connect if drop below HVR voltage.



PV over-voltage warning .
In order to protect the internal circuit,Charging automatic stop when PV voltage exceed 50V and automatic recover when voltage drop below 45V.(for 12V/24V system)

TROUBLESHOOTING TABLE

PROBLEM	POSSIBLE CAUSES	SOLUTION
no indicator is on after connecting to the battery	1.battery voltage is too low. 2.battery is reversed	1.fully charge the battery. 2.check battery connection.
Sun light is good but the charge indicator is off	PV wire is broken or reversed	re-connect the wire
No output voltage	over discharge protection	charge the battery to "LVR" and then output will recover automatically.

TECHNICAL PARAMETER

Rated system voltage	12V/24V auto		
Rated input current	10~30A		
Rated output current	10A		
Maximum Input PV voltage	<50V 1. For 12V battery, use 18V solar panel 1. For 24V battery, use 30-36V solar panel Do not use 30-36V solar panel to charge 12V battery!!		
BATTERY TYPE	Lead-acid	Li-Ion	LiFePO4
Charge voltage	13.7V	12.3V	14.0V
Low-voltage Disconnect (LVD)	10.7V	9.5V	11.2V
Low-voltage Re-connect (LVR)	12.0V	10.5V	12.0V
High-voltage Disconnect (HVD)	16.0V	16.0V	16.0V
High-voltage Re-connect (HVR)	15.0V	15.0V	15.0V
Maximum Wire size	15mm ² /6AWG		
USB output	5V/2A		
Standby lost	<10mA@ 12V		
Working temp.	-20~+60 °C		
Size/Weight	133*70*21.5mm /150g		
Mounting hole size	119.5mm		

*all red color voltage X2 while using 24V system.
*Product specifications are subject to change without prior notice.