文件:AT15说明书中性 (AT15,AT20L,LT20,FT20通用,小辉芒)
尺寸:印刷尺寸210*210mm,折叠单页105*70mm
要求:正反黑白印制.

PWM Solar Charge Controller

User's Manual

--FX15.22.V01

Please read this manual carefully before you use this product.

1. Product Introduction

Thank you for selecting this series solar charge controller. The controller adopts advanced digital control technology, LCD display and automatically operation. With the features of Pulse Width Modulation (PWM) battery charging and unique control technology, the controller will improve the long battery life efficiently. Our controller has many unique features and easy to use.

Features as below:

- Image of LCD graphic symbol
- Automatic Identification of System Voltage level
- Automatic Temperature Compensation (custom)
- Adjustable charge-discharge control parameters
- Battery Low Voltage Disconnection (LVD)
- Overcurrent protection.
- Simple button operation
- Intelligent PWM charging mode
- Battery reverse-discharge protection
- Settable Operating mode of Load
- Battery reverse connection protection
- Overcurrent protection.

2. Installation

Install：

2.1 Ready tools and cables. Right cables are recommended. Ensuring that the current density < 4mm², which is conductive to reducing the drop of line voltage. Recommended: 20A with 6mm²cable. Check weather the installation sites compliance with the relevant safety requirements. Please avoid using or installing the controller in damp, dusty places or places with flammable, explosive and corrosive gases.

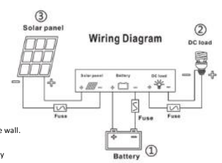
2.2 Install the controller into a fixed vertical plane. In order to ensure good ventilation and heat dissipation, please keep the instance over 10cm around the inverter and also between the backboard of the inverter and the wall.

2.3 To connect the controller and the battery by cables with right polarity. The battery indicator light on the controller will be on if successfully connected, otherwise, to check and reconnect

2.4 To connect the solar panel and the controller by cables with right polarity. If there is sunshine, the battery indicator light will be on in a circular manner to indicate right connection, otherwise, to check and reconnect.

2.5 To connect your load and the cables with right polarity and then connect with the load output port of the controller. Pay special attention to + - polarity to avoid reversed connection, otherwise, your load may be damaged.

Demolition: In case of any accident, please disconnect the solar panel, battery and load with controller in order.



Note：Reversed battery polarity will not damage the controller, but you may bear security risks on your load equipment.

3. Operation

1 Description of LCD graphic symbol

P1： Digital parameters.

P2： Charging indication. This symbol indicates that the solar panel is charging the battery; without this symbol means solar panel can't charge the battery because of low voltage. If the symbol is flickering, means the battery is fully charged and has entered float charging state.

P3： Indication for solar panel. This symbol indicates that the connection of solar panel is detected by controller; without this symbol means the connection of solar panel can't be detected, or there is no sunshine on the solar panel.

P4： 5 bars battery power indication.

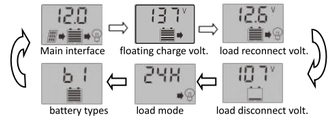
P5： Discharging indication. This symbol indicates that controller is in output state, otherwise not in the output state. The flickering of this symbol indicates the damages of internal control devices.

P6： load indication. This symbol indicates that controller is in output state, otherwise not in the output state. The flickering of this symbol indicates overload or the damage of the load.

2 Description of Button Function:

MENU (The left button): use the button to cycle between pages in each switch cycle sequence shown in (figure 1). Moreover, this button can perform the function of "add" in the parameter setting state.

SET (The right button): This button can open or shut off load in the main interface. It can perform the function of "minus" in the parameter setting state.



3 Viewing and setting the parameters:

The controller will default entry main interface "battery voltage interface" after correct power on. Use the button **MENU** could in turn visit the following parameters interface. If the parameters in that interface could be set, long press the button **MENU**(> 5seconds,numbers start flashing) to enter the parameter setting interface; calling off the parameter interface after long press the button **MENU** again. (The numbers stop flashing)

3.1 Main interface

This interface shows the overall unit state (pictured at right)

It is the default interface after correct power-on, showing charging and discharging state, 5 bars battery power indication and the voltage of the battery.

3.2 Opening and shutting off the load

You can use the **SET** button turn on or off the load only at the main interface.

Note：There is no such function for this button in other interface.

3.3 Viewing and setting the float charging voltage.

As shown on the right is the float charging voltage 13.8V (Adjustable value: 13V~15V). When the

battery voltage reaches 13.7V the controller will maintain the voltage values by PWM charging mode to avoid overcharge.

long press the button **MENU** > 5seconds(digital flicker) then go to set the floating voltage values and use the **SET** or **MENU** button to adjust the parameters; finally save the parameters you set after long press the button **MENU** again. (The numbers stop flashing) The float voltage value will be saved by controller.

3.4 Viewing and setting of the battery recovery charging voltage

As shown on the right is the load recovery charging voltage 12.6V (adjust tab le :11V~13.5V). The controller performs the function of battery low voltage protection, but the load output will be recovered as soon as the battery voltage ups to higher than the 12.6V.

In this interface long press the button **MENU** > 5seconds(digital flicker)then you can set the battery restore charging voltage; finally, long press the button **MENU** again (The digital stop flashing) to back to the parameter interface after finish setting. Setting value will be conserved by controller.

3.5 Viewing and setting of battery low voltage protection

As shown on the right is battery low voltage protection value10.7V (Adjustable value: 9V~12V). The controller will cut off load circuit when batter voltage is lower than this value,

in order to avoid over discharge of the battery.

long press the button **MENU** > 5seconds(digital flicker) to enter the setting interface of the battery low voltage protection and use the **SET**、**MENU** button to adjust the parameters; long press the button **MENU** again (digital flicker) to exit the setting the parameter interface after finish setting. The set parameters will be saved.

3.6 Viewing and setting of the load working mode

As shown on the right is the interface of load mode and different numbers represent different load mode.

24H represents Normal Mode; the load is always working in the absence of a breakdown.

1H ~ 23h represents Light Control with Time Control Mode; at this mode, the controller will start the load after darkness and will close the load after setting hours.

0 H represents Light Control Mode; The load works automatically at dusk and shuts off automatically at dawn.

long press the button **MENU** > 5seconds(digital flicker)at this interface can set load working modes and use the **SET**、**MENU** button to adjust the parameter; long press the button **MENU** again (digital flicker) to exit the setting interface after finish setting. Setting value will be saved by controller.

3.7 Viewing and setting of battery types

As shown on the right, different numbers represent different types of Battery.

b1：lead acid battery(12/24V Auto.)　b2：3 series 3.7V battery(12/24V Auto.)
b3：4 series 3.2V battery(12/24V Auto.)
1b1：12V lead acid battery　1b2：12V(3*3.7V)　1b3：12V(4*3.2V)
2b1：24V lead acid battery　2b2：24V(6*3.7V)　2b3：24V(8*3.2V)

long press the button **MENU** > 5seconds（digital flicker）at this interface to enter the battery type set and use the **SET**、**MENU** button to adjust the parameters; long press the button **MENU** again (digital flicker) to exit parameter setting interface. Setting value will be saved by controller.

4. Common Fault and Handling

4.1 Battery low voltage protection and solution:

This symbol shows up and flash on the screen means the battery voltage is lower than battery low voltage protection value. The controller enters the protected state and the Load output off.

Solution: Using solar panel or battery charger to charge battery, when the battery voltage reaches recovery charging value, the load will start working automatically.

4.2Overload protection and solution:

This symbol shows up and flash on the screen means the load is overcurrent or short circuit. The controller will stop output and enter overload protection state.

Solution: After solving the problem of output short circuit and reducing the load, press the button **SET** to restore power to the load.

4.3Input overvoltage and solution:

This symbol shows up and flash on the screen means the present value of the battery voltage is higher than rated Max. voltage, controller will stop output and enter overvoltage protection state.

Solution: 1. please choose battery with appropriate voltage grade to connect to controller;
2. Remove other charger for the battery.

5. Quality Assurance

1. Quality assurance should be carried out according to the following rules:
- the product is guaranteed of replacement, returning and repairing within 7 days after Sale.
- the product is guaranteed of replacement and repairing within 1 month after sale.
- the product is guaranteed of repairing within 12 months after sale.

2. If it is not possible to identify the using date of the controller, we would refer to the ex-work date, and prescribe 18 months as the warranty period. We need to charge beyond the warranty period. The controller can be repaired for life no matter when and where you use it.

3. If the controller is damaged by the following causes, we need to charge even if it is in the guarantee period.
- Not operate according to the user's manual and Repair by yourself or reform by yourself.
- use the controller under the condition which is beyond the using standard and technical requirements.
- Any inappropriate environmental condition which can cause the breakdown and aging of the apparatus.
- Improper carrying or storage.
- Regarding to the service of replacement, returning and repairing, you need to retreat the product to our company, and we decide whether to replace or repair after we make clear who should be responsible.

6. Technical data

Max. charge Current	10A	20A	30A
System voltage	12/24V		
Max. input voltage	50V		
Suitable Battery type	Sealed、GEL 、Flood 、Iron 、ion 、lithium		
LVD	10.7V (adjustable:9V~12V)		
LVR	12.6V (adjustable:11V~13.5V)		
Float Voltage	13.7V (adjustable:13V~15V)		
Boost Charging voltage	14.4V		
Battery Over Voltage Protection value	16.5V		
Temperature Compensation	-24mV/℃ for 12V system		
Points for Attention	Technical data for 12V battery system at 25 ℃		
Reverse Connection Protection	yes		
Load Over Current Protection	Yes, each two minutes restart once		
Charge Type	PWM		
Working Temperature	-20℃---+55℃		
Terminal Scale	28---10 AWG		
Waterproof Grade	IP32		

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