※ Thank you for selecting ViewStar AU series solar charge controller. Please read this manual carefully before using the product.

ViewStar AU series solar charge controller

1. Overview

Thank you for selecting the ViewStar AU series common positive solar charge controller. The VS-AU controller is a PWM charge controller with built in LCD display that adopts the most advanced digital technique. The multiple load control modes enable it can be widely used on solar home system, traffic signal, solar street light, solar garden lamp, etc. The features are listed below:

- Adopt high quality components of ST,IR and Infineon, make sure product using lifespan
- Terminals have UL and VDE certification, the product is more safer and more reliable
- Controller can work continuously at full load within the environment temperature range from -25 to 55 ℃
- 3-Stage intelligent PWM charging：Bulk, Boost/Equalize, Float
- Support 3 charging options: Sealed, Gel, and Flooded
- LCD display design, dynamically displaying device's operating data and working condition
- Double USB design, the power supply charge for electronic equipment
- With humanized button settings, operation will be more comfortable and convenient
- Multiple load control modes
- Energy statistics function
- Battery temperature compensation function
- Extensive Electronic protection

2. Product Features

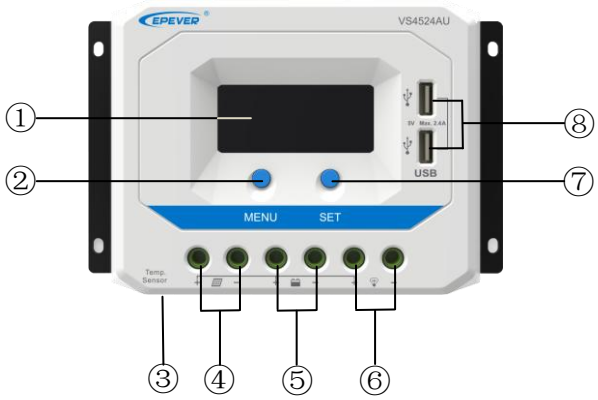


Figure 1 Characteristic

①	LCD	⑤	Battery Terminals
②	MENU Button	⑥	Load Terminals
③	RTS Port	⑦	SET Button
④	PV Terminals	⑧	USB Output Ports※

※ USB output ports provide the power supply of 5VDC/2.4A and have the short circuit protection.

Optional Accessory:

Name: Remote Temperature Sensor

Model: RTS300R47K3.81A

Acquisition of battery temperature for undertaking temperature compensation of control parameters, the standard length of the cable is 3m (length can be customized). The RTS300R47K3.81A connects to the port ③ on the controller.

NOTE: Unplug the RTS, the temperature of battery will be set to a fixed value 25ºC.

3. Wiring

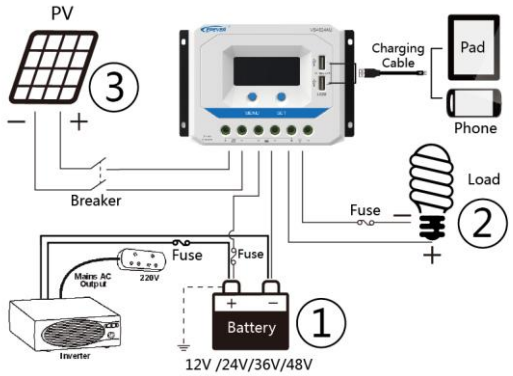


Figure 2 Connection diagram

(1) Connect components to the charge controller in the sequence as shown above and pay much attention to the "+" and "-". Please don't insert the fuse or turn on the breaker during the installation. When disconnecting the system, the order will be reserved.

(2)After power on the controller, check the LCD on. Otherwise please refer to chapter 6.Always connect the battery first, in order to allow the controller to recognize the system voltage.

(3)The battery fuse should be installed as close to battery as possible. The suggested distance is within 150mm.

(4) The VS AU series is a positive ground controller. Any positive connection of solar, load or battery can be earth grounded as required.

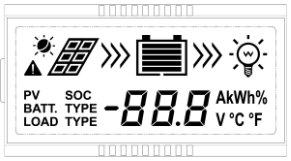
NOTE: Please connect the inverter or other load that it has the large start current to the battery rather than to the controller, if the inverter or other load is necessary.

4. Operation

4.1 Button Function

Button	Function
MENU button	• Browse interface • Setting parameter
SET button	• Load ON/OFF • Clear error • Enter into Set Mode • Save data

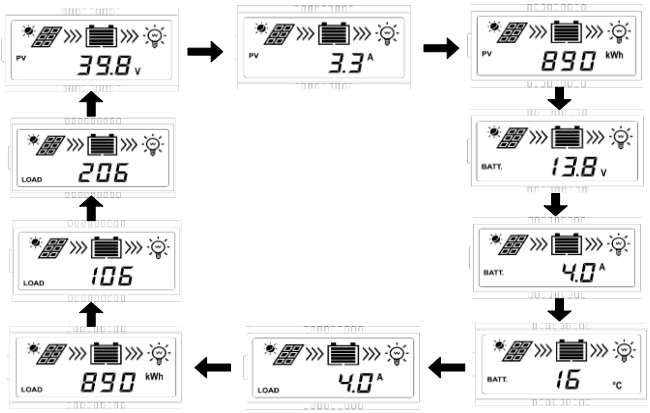
4.2 LCD Display



➢ Status Description

Item	Icon	Status
PV array		Day
		Night
		No charging
		Charging
	PV	PV Voltage, Current ,Power
Battery		Battery capacity, In Charging
	BATT.	Battery voltage. current, temperature
	BATT. TYPE	Battery type
Load		Load ON
		Load OFF
	LOAD	Load Voltage, Current, Load mode

➢ **Browse interface**



NOTE:

1） When no operation, the interface will be automatic cycle, but the follow two interfaces not be display.

2） Accumulative power zero clearing: Under PV power interface, press SET button and hold on 5s then the value blink, press SET button again to clear the value.

3） Setting temperature unit: Under battery temperature interface, press SET button and hold on 5s to switch.

➢ **Fault Indication**

Status	Icon	Description
Battery over discharged		Battery level shows empty, battery frame blink, fault icon blink
Battery over voltage		Battery level shows full, battery frame blink, fault icon blink

Battery Overheating	▲	Battery level shows current value, battery frame blink, fault icon blink
Load failure	▲	Load overload ① ,Load short circuit

①When load current reaches1.02-1.05 times 1.05-1.25 times, 1.25-1.35 times and 1.35-1.5 times more than nominal value, controller will automatically turn off loads in 50s, 30s,10s and 2s respectively

4.3 Load mode setting

Operating Steps:
Under load mode setting interface, press SET button and hold on 5s till the number begin flashing, then press MENU button to set the parameter, press SET button to confirm.

1**	Timer 1	2**	Timer 2
100	Light ON/OFF	2 n	Disabled
101	Load will be on for 1 hour since sunset	201	Load will be on for 1 hour before sunrise
102	Load will be on for 2 hours since sunset	202	Load will be on for 2 hours before sunrise
103~113	Load will be on for 3～13 hours since sunset	203~213	Load will be on for 3～13 hours before sunrise
114	Load will be on for 14 hours since sunset	214	Load will be on for 14 hours before sunrise
115	Load will be on for 15 hours since sunset	215	Load will be on for 15 hours before sunrise
116	Test mode	2 n	Disabled
117	Manual mode(Default load ON)	2 n	Disabled

NOTE: Please set Light ON/OFF, Test mode and Manual mode via Timer1. Timer2 will be disabled and display "2 n".

4.4 Battery Type

➢ **Operating Steps**

Under Battery Voltage interface, press SET button and hold on 5s then enter into the interface of Battery type setting. After choosing the battery type by pressing MENU button, waiting for 5s or pressing SET button again to modify successfully.

➢ **Battery Type**

①Sealed (Default) ②Gel ③Flooded

NOTE: Please refer to the battery voltage parameters table for the different battery type.

5. Protections

Protection	Conditions	Status
PV Reverse Polarity	When the battery is correct connecting, the PV can be reversed.	The controller is not damage
Battery Reverse Polarity	When the PV is not connecting, the battery can be reversed.	
Battery Over Voltage	The battery voltage reaches to the OVD	Stop charging
Battery Over Discharge	The battery voltage reaches to the LVD	Stop discharging
Battery Overheating	Temperature sensor is higher than 65℃	Output is OFF
	Temperature sensor is less than 55℃	Output is ON
Controller Overheating	Temperature sensor is higher than 85℃	Output is OFF
	Temperature sensor is less than 75℃	Output is ON
Load Short Circuit	Load current ≥2.5 times rated current One short circuit, the output is OFF 5s; Two short circuit, the output is OFF 10s; Three short circuit, the output is OFF 15s; Four short circuit, the output is OFF 20s; Five short circuit, the output is OFF 25s; Six short circuit, the output is OFF	Output is OFF **Clear the fault:** Restart the controller or wait for one night-day cycle (night time>3 hours).
Load Overload	Load current ≥2.5 times rated current 1.02-1.05 times, 50s, 1.05-1.25 times, 30s 1.25-1.35 times,10s 1.35-1.5 times 2s	Output is OFF **Clear the fault:** Restart the controller or wait for one night-day cycle (night time>3 hours).
Damaged RTS	The RTS is short-circuited or damaged	Charging or discharging at 25℃

6. Troubleshooting

Faults	Possible reasons	Troubleshooting
The LCD is off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV wire connections are correct and tight
Wire connection is correct, LCD not display	1) Battery voltage is lower than 9V 2) PV voltage is less than battery voltage	1) Please check the voltage of battery. At least 9V voltage to activate the controller 2) Check the PV input voltage which should be higher than battery's
▲ Interface blink	Battery over voltage	Check if the battery voltage is higher than OVD point (over voltage disconnect voltage), and disconnect the PV.
▲ Interface blink	Battery over discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
▲ Interface blink	Battery Overheating	The controller will automatically turn the system off. But while the temperature decline to be below 50 ºC, the controller will resume.
▲ Interface blink	Over load or Short circuit	Please reduce the number of electric equipments or check carefully loads connection.

8. Disclaimer

This warranty does not apply under the following conditions:

1) Damage from improper use or use in an unsuitable environment.

2) PV or load current, voltage or power exceeding the rated value of controller.

3) The controller is working temperature exceed the limit working environment temperature.

4) User disassembly or attempted repair the controller without permission.

5) The controller is damaged due to natural elements such as lighting.

6) The controller is damaged during transportation and shipment.

7.Technical Specifications

Item	VS1024AU	VS2024AU	VS3024AU	VS3048AU	VS4524AU	VS4548AU	VS6024AU	VS6048AU
Nominal system voltage	12/24VDC Auto			12/24/36/48VDC Auto	12/24VDC Auto	12/24/36/48VDC Auto	12/24VDC Auto	12/24/36/48VDC Auto
Battery input voltage range	9V～32V			9V～64V	9V～32V	9V～64V	9V～32V	9V～64V
Rated charge/discharge current	10A@55℃	20A@55℃	30A@55℃		45A@55℃		60A@55℃	
Max. PV open circuit voltage	50V			96V	50V	96V	50V	96V
Battery type	Sealed(Default) / Gel / Flooded							
Equalize Charging Voltage※	Sealed:14.6V/ Gel: No/ Flooded:14.8V							
Boost Charging Voltage※	Sealed:14.4V/ Gel:14.2V/ Flooded:14.6V							
Float Charging Voltage※	Sealed/Gel/Flooded:13.8V							
Low Voltage Reconnect Voltage※	Sealed/Gel/Flooded:12.6V							
Low Voltage Disconnect Voltage※	Sealed/Gel/Flooded:11.1V							
Self-consumption	≤9.2mA/12V;≤11.7mA/24V; ≤14.5mA/36V;≤17mA/48V							
Temperature compensation coefficient	-3mV/℃/2V（25℃）							
Charge circuit voltage drop	≤0.29V							
Discharge circuit voltage drop	≤0.16V							
LCD temperature range	-20℃～+70℃							
Working environment temperature	-25℃～+55℃(Product can work continuously at full load)							
Relative humidity	≤95%, N.C.							
Enclosure	IP30							
Grounding	Common Positive							
USB output	5VDC/2.4A(Total)							
Overall dimension	142x85x41.5mm	160x94.9x49.3mm	181x100.9x59.8mm		194x118.4x63.8mm		214x128.7x72.2mm	
Mounting dimension	130x60mm	148x70mm	172x80mm		185x90mm		205x100mm	
Mounting hole size	Φ4.5mm		Φ5mm		Φ5mm		Φ5mm	
Terminals	4mm²/12AWG	10mm²/8AWG	16mm²/6AWG		16mm²/6AWG		25mm²/4AWG	
Net weight	0.22kg	0.35kg	0.55kg	0.58kg	0.76kg	0.88kg	1.02kg	1.04kg

※Above the parameters are in 12V system at 25℃, twice in 24Vsystem, triple in 36V system and quadruple in 48V system.

Any changes without prior notice! Version number：V1.2