

# **BAINTECH 120W** **SOLAR BLANKET**

Go off-grid with the Baintech 120w Solar Blanket. Designed to charge your 4WD, RV and Marine batteries, this lightweight and compact blanket will produce up to 6.6A in optimal conditions.

Designed with ease of use in mind, the simple plug and play Anderson plug connection is secure, safe and easy to connect.

The Baintech blanket comes with a smart 20amp 12/24v PWM with chemistry profiles for 3 types of batteries – sealed, GEL, and Flooded (see separate PWM manual included)

- **High efficiency**
- **Compact**
- **Light weight**
- **Easy to use – plug and play**
- **All accessories and PWM included**

<b>Efficiency</b>	Up to 24%
<b>Model</b>	120W (Blue)
<b>Output</b>	5.5V/2A & 18V/6.6A
<b>Solar Cell</b>	Monocrystalline Sunpower solar cell
<b>Rated Power</b>	18V 120W
<b>Unfolded Size</b>	1560mm H x 770mm W
<b>Weight</b>	3.6kg
<b>Charge controller</b>	12V/24V 20A solar charge controller
<b>Operating Temp</b>	-35° to +55°

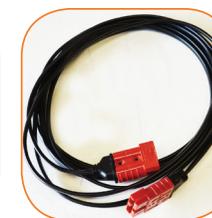


### **Included accessories:**

**PWM Regulator**



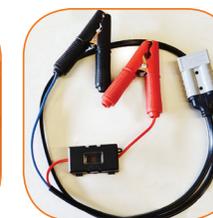
**6m Power Lead**



**Red Anderson Connection**



**Alligator Clamp Connector**



## How to connect the blanket to your devices

The 120W Baintech solar blanket offers a simple plug and play solution. The blanket comes with a PWM Solar Controller. The Solar Controller is normally used when there is no internal controller in your equipment. ( ie: when you want to charge your car battery, or a secondary battery in a trailer.)

### OUTPUT

Connect the Anderson connector with solar charger controller and then connect the Alligator clamps to your batteries. Always connect the battery you are wanting to charge FIRST to the Solar Controller before connecting the Solar Blanket. The reason is the Controller's AUTO SENSING needs to know what voltage it has to be set at, before the Controller can operate. The Controller can operate either at 12 or 24 volts Dc.

### USING WITH THE BAINTECH POWERTOP

The grey Anderson connector on the Solar Controller is plugged into the Powertop's grey Anderson socket or the battery you are intending to charge. The red Anderson socket is plugged into the cable from the blanket with the same. Plugging the grey connector in first, allows the auto-select function to kick in and determined if the battery is 12 or 24 volts before the blanket is connected.

## 12 month warranty

## Warning and Safety Instructions

Do not drive over the blanket, leave in wet environments - such as rain or sea water, or unattended where wind and theft may occur. If wind is likely to be an issue, use the supplied holes around the edge to tie down or peg the blanket to a secure spot.

1. Risk of explosive gases: Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal operation. For this reason, it is of utmost importance that you follow the instructions each time you use the solar panel charger.
2. Solar panel charger should not be used by persons with reduced physical, sensory or mental capabilities unless they are supervised by a person responsible for their safety.
3. Do not charge non-rechargeable batteries by the solar panel charger. It can damage the regulator or solar panel charger or create harm for the operator. Only use the solar panel charger for charging standard lead-acid, lithium-polymer, Li-Fe, Gel and AGM type 12V batteries .
4. Never smoke or allow a spark or flame in vicinity of battery or engine. This may cause the battery to explode.
5. Please keep the junction box out of water, if there is some water in the junction box, please make sure it's dry before using. Always clean the blanket after use to keep cells efficient and at their maximum.

### ADD ON SOLAR ACCESSORIES

#### ADD ON:

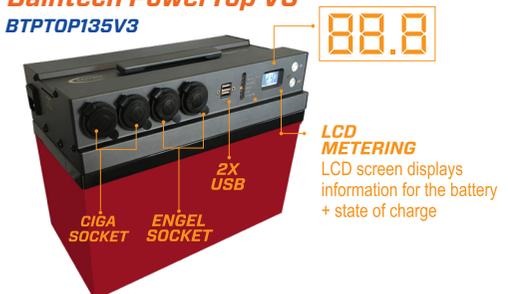
**Baintech Watt Meter**  
BTWATT01



Take the guesswork out of how much power your solar panels are generating. The Baintech Watt meter once connected will give you real time information on:

- Current (Amps/A)
- Voltage (Volts/V)
- Power (Watts/W)

**Baintech PowerTop V3**  
BTPTOP135V3



Ready to go right off the shelf, this fully portable plug-and-play system features a 12V 135Ah AGM battery with charging inputs for AC, DC and solar.

# 180W + 120W SOLAR BLANKET SOLAR 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 °C
- 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

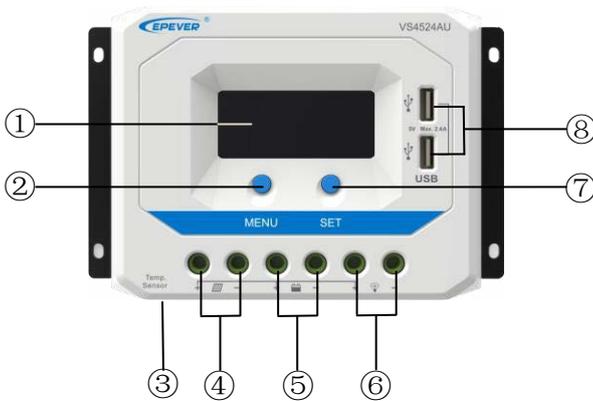


Figure 1 Characteristic

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 25°C.

## 3. Wiring

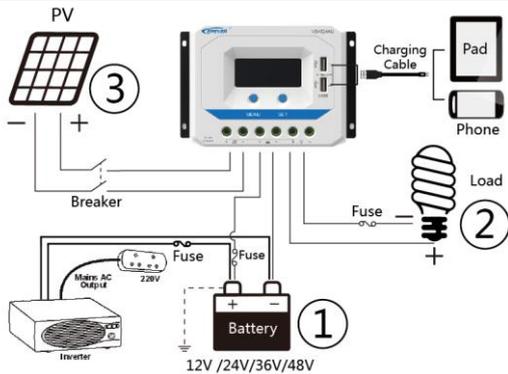


Figure 2 Connection diagram

(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.



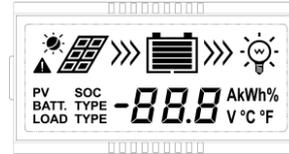
**NOTE:** Please connect the inverter or other load that it has the large start current to the battery rather than to the controller, if the inverter or other load is necessary.

## 4. Operation

### 4.1 Button Function

Button	Function
MENU button	<ul style="list-style-type: none"> <li>• Browse interface</li> <li>• Setting parameter</li> </ul>
SET button	<ul style="list-style-type: none"> <li>• Load ON/OFF</li> <li>• Clear error</li> <li>• Enter into Set Mode</li> <li>• Save data</li> </ul>

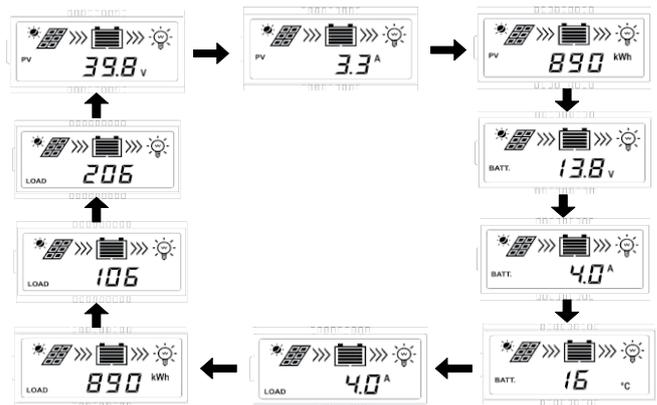
### 4.2 LCD Display



#### ► Status Description

Item	Icon	Status
PV array		Day
		Night
		No charging
		Charging
Battery	<b>PV</b>	PV Voltage, Current, Power
		Battery capacity, In Charging
	<b>BATT.</b>	Battery voltage, current, temperature
Load	<b>BATT. TYPE</b>	Battery type
		Load ON
		Load OFF
	<b>LOAD</b>	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 <sup>①</sup> , Load short circuit

① When load current reaches 1.02-1.05 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.

***	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



① Sealed (Default)

② Gel

③ Flooded

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°C	Output is OFF
	Temperature sensor is less than 55°C	Output is ON

#### 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°C	20A@55°C	30A@55°C		45A@55°C		60A@55°C		
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/°C/2V (25°C)								
Charge circuit voltage drop	≤0.29V								
Discharge circuit voltage drop	≤0.16V								
LCD temperature range	-20°C~+70°C								
Working environment temperature	-25°C~+55°C(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	4mm <sup>2</sup> /12AWG	10mm <sup>2</sup> /8AWG	16mm <sup>2</sup> /6AWG		16mm <sup>2</sup> /6AWG		25mm <sup>2</sup> /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°C, twice in 24Vsystem, triple in 36V system and quadruple in 48V system.

Controller Overheating	Temperature sensor is higher than 85°C	Output is OFF
	Temperature sensor is less than 75°C	Output is ON
Load Short Circuit	Load current ≥2.5 times rated current	Output is OFF <b>Clear the fault:</b> Restart the controller or wait for one night-day cycle (night time>3 hours).
	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;		
Load Overload	Six short circuit, the output is OFF	Output is OFF <b>Clear the fault:</b> Restart the controller or wait for one night-day cycle (night time>3 hours).
	Load current ≥2.5 times rated current	
	1.02-1.05 times, 50s,	
	1.05-1.25 times, 30s	
Damaged RTS	1.25-1.35 times, 10s	Charging or discharging at 25°C
	1.35-1.5 times 2s	

#### 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°C, 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 lightning.
- 6) The controller is damaged during transportation and shipment.