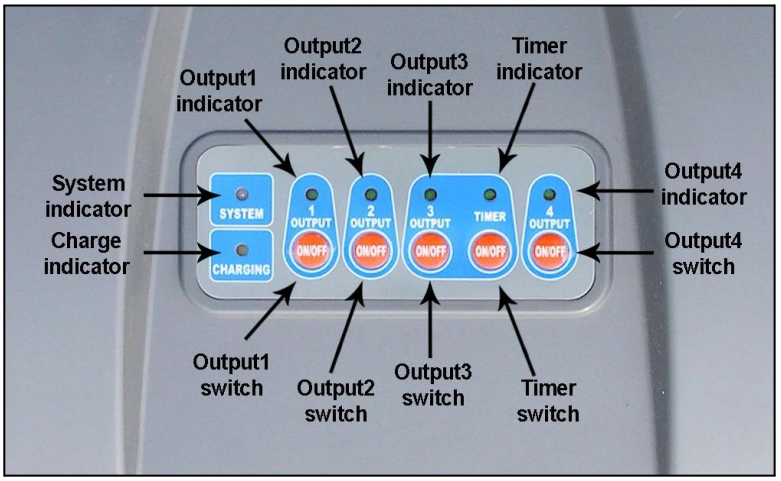
SOLAR BATTERY STATION USER'S MANUAL

Design for solar fountain pump and DC garden appliances
Item No.: SBB12-24

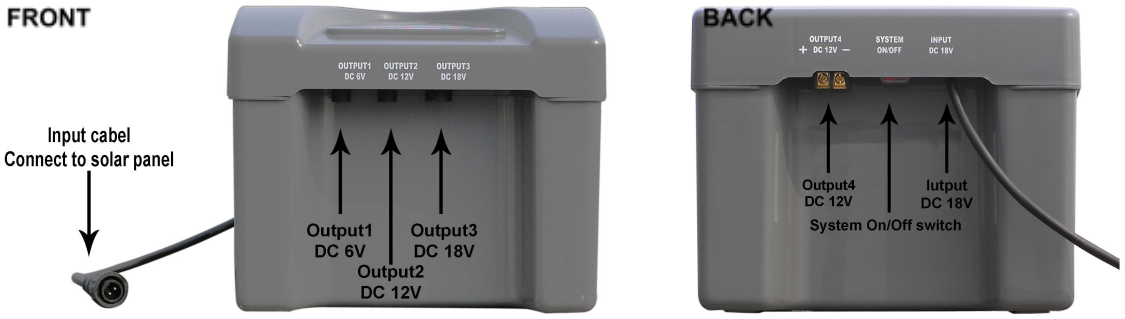
1. OVERVIEW

1) This special solar battery station is used to store solar energy for day and night use, and is originally designed for fountain pumps, but its application could be universally extended to air pumps and lights.
2) The input power should be from a solar module or DC power supply with an output voltage of 18V.
3) There are four output ports each of which has a different output voltage. The electric connector of the appliances to the **output 1 (6V), 2 (12V) and 3 (18V)** should be compatible with the output port. The interface of **output 4 (12V)** is of universal terminal which could be compatible with any applicable DC equipments.
4) The battery station has build-in functions of overcharging and over-discharging protection.
5) There are seven LED indicators show the status of SYSTEM, CHARGING, TIMER, OUTPUT 1, OUTPUT 2, OUTPUT 3 and OUTPUT 4. The SYSTEM indicator is bicolor. **GREEN** shows the battery is in normal operating status, **RED** shows the battery is in low voltage status, which requires the battery to be recharged, and **RED-GREEN flashing** shows the battery is preparing its readiness to output.

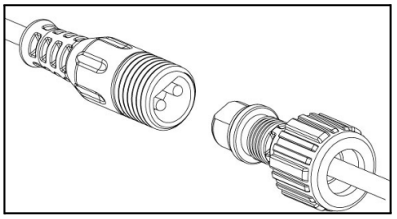


6) Timing function is provided **ONLY** for **output 3 (18V)** to reduce the energy consumption. The pump connected to **output 3** will work 10 minutes every hour periodically by the Timer, as energy saving mode, it is especially useful in winter or on cloudy days.

2. ASSEMBLING & OPERATION

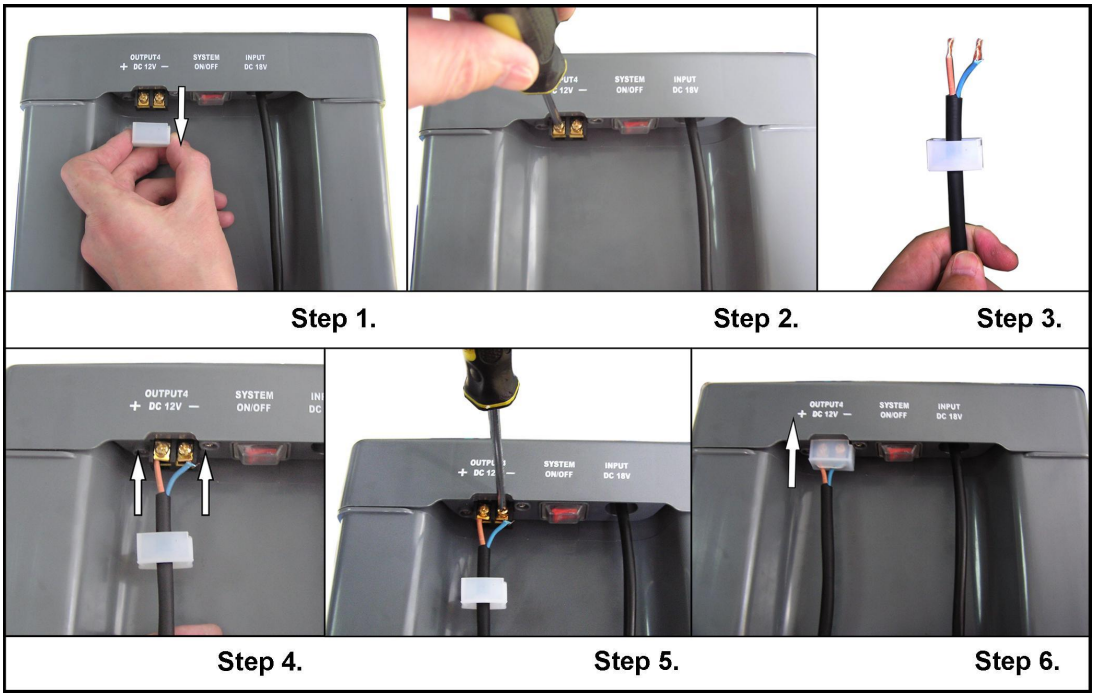


1) Connect the INPUT cable of the battery back-up to the solar module or a DC power supply, and tighten the protection screw. **The connectors are protected against reverse polarity as shown in the right figure. Don't insert the plug with reverse polarity by using**



unnecessary force.

2) The CHARGE yellow LED indicator lightens when the battery is being charged **no matter whether the system switch is ON or OFF;** otherwise the LED shuts off.
3) Electrically connect pumps and any other applicable DC equipment to the appropriate output ports of the battery station. The rubber covers for output 1 and output 2 are used to protect the ports when they are not in use. Remove the cover of the output and Keep it appropriately for possible needs in the future. The rubber cover for output 4 is used to protect the ports either in use or not in use. Please remove the cover and fit it back after output 4 is connected following below steps.



4) Turn the “SYSTEM ON/OFF” switch to the “ON” position, the “SYSTEM” indicator shows GREEN and the system is activated. **The “SYSTEM” indicator may show RED and all outputs are disabled when the battery operates for the first time, since the battery may lose its energy in the stock. It just needs to be charged for no more than one day in bright sunshine, then it shows GREEN and all the output ports are ready to output.**
5) Put on the switches of the outputs that are in use, the indicators will lighten GREEN, and meanwhile, the corresponding appliances will start to operate. To stop operation, just shut off the associated output switches. **If the appliance with diplex switches such as photosensitive garden lights, it may not work immediately while the switch is put on. Please refer to related manuals.**
6) All power outputs **except output 1 (6V)** will automatically stop running while the battery is discharged to its low voltage **limit A**, and the SYSTEM indicator shows ORANGE in the meantime. The **OUTPUT 1 (6V)** will continue to work and be cut off when the battery station is discharged to its low voltage **limit B**, and the SYSTEM indicator shows RED. Then ALL output ports stop outputting before the SYSTEM indicator changes to GREEN.
7) The SYSTEM indicator stays in RED before the battery is recharged to its normal voltage. While it rises to the normal voltage, the SYSTEM indicator will change to flashing RED-GREEN twice every 10 seconds. It will take another 2 hours before it changes to GREEN and all output ports start to output at the same time.
8) The “Timer On/Off” **ONLY** regulates the running mode of **OUTPUT 3 (18V)** pump between "intermittent mode" and "continuous mode". In the “intermittent mode” (i.e., “Timer On”), a build-in timer is enabled to run the pump 10 minutes per hour periodically to save the energy, and it is especially useful in winter or on cloudy days. In the "continuous mode", the build-in timer is disabled and the pump shall run continuously. **This function is available**

only when the SYSTEM indicator shows GREEN.

9) While the Timer function is activated, and the TIMER indicator shows GREEN, the pump works, if the indicator flashes **(once per second)** in GREEN, the pump rests.
10) Turn the system switch to “Off” position, ALL output ports will be disabled, the battery will still be charged in the daylight, and then the appliances will have longer operating time when put it to work in the evenings or special festive occasion. **The battery will always be charged in the sunlight no matter whether the system switch has been put to “On” or “Off”! And the system will automatically cut off the charging current while the battery is fully charged.**

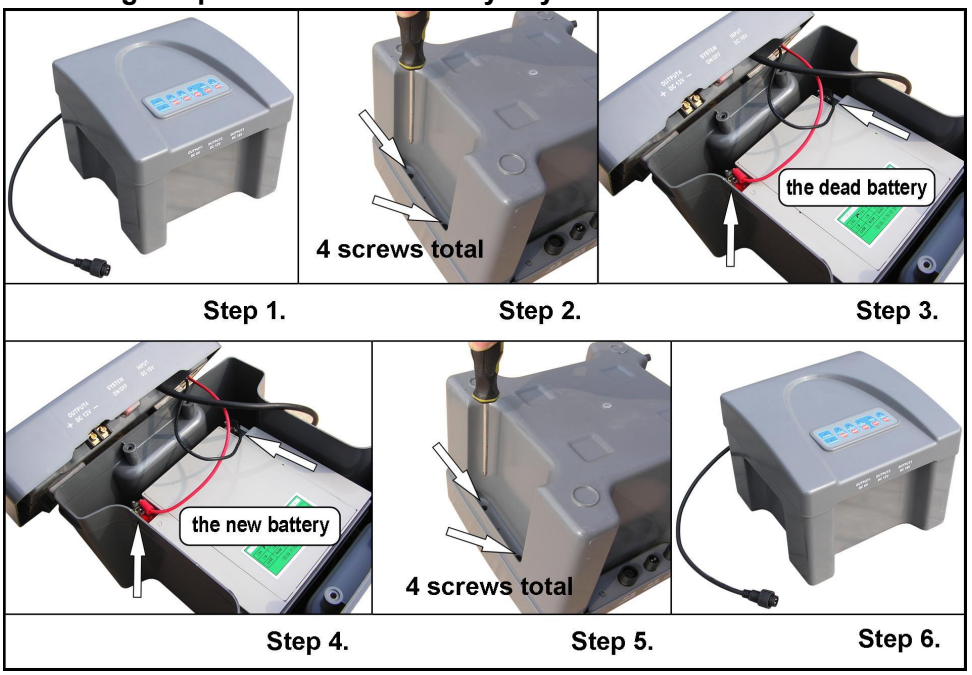
3. CAUTIONS

1) Do not charge the solar battery back-up by any AC power supply directly; it is designed ONLY for DC power.
2) **Never connect any appliances whose rated power is larger than the maximum power listed in the below technical data list. Otherwise it will be automatically cut off.**
3) Do not leave this battery back-up in bad ambient environment.
4) Do not leave the battery back-up in direct blazing sunlight or expose it to extremes of heat or cold, which can affect its service life. If possible place the battery in the shadow of the solar panel or your house or even a tree etc.
5) Do not dip this battery back-up into water, **its IP grade is 44.**

4. TROUBLE SHOOTING

If the SYSTEM indicator shows RED always and the pump does not work even though the solar module is in full sunlight **MORE THAN ONE SHINING DAY,** please check the possible failures below:

1) The CHARGE yellow indicator doesn’t lighten—check connection to the solar module.
2) The battery is out of its service life and needs to be replaced. Replace the battery by following the steps shown in the below photos. **Alternatively OUTPUT 1 (18V) pump may bypass the battery backup and connect the pump to solar panel directly and the pump will get almost the same good performance on sunny days.**



If the SYSTEM indicator shows GREEN, and the pump still does not work, please check the possible failures below:

1) Check if the TIMER indicator lightens. Please note, in this mode, the pump runs intermittently.
2) The pump is blocked, clean the pump by referring to pump manuals.

If the appliance is lights, please check the set manuals of lights.

5. **TECHNICAL DATA**

Lead acid battery	12 V, 24 Ah
Charging voltage and power	DC 18 V, Maximum input power: 75 W
Output 1 voltage and power	DC 6 V, Maximum output power: 4 W
Output 2 voltage and power	DC 12 V, Maximum output power: 12 W
Output 3 voltage and power	DC 18 V, Maximum output power: 30 W
Output 4 voltage and power	DC 12 V, Maximum output power: 12 W
Fuse current	10A
Size	255 x 255 x 205 mm
Net weight	8.8 KG

WARNING: Discharged batteries are still explosive and contain toxic chemicals. NEVER DISPOSE OF A BATTERY BY THROWING IT INTO THE TRASH, LANDFILL, INCINERATOR OR TRASH COMPACTOR. Take it to a service station or recycling center.