



Pumps for the Future

REEFE™ SOLAR PUMP USER'S MANUAL

Model No.: RSFB2500

1. OVERVIEW

- 1) This solar water pump is designed for water features and waterfalls, and is powered by a solar panel.
- 2) The solar panel needs to be placed in sunlight with its solar cells facing the sun as much as possible.
- 3) The power supply of the pump is provided via a battery station which is charged by the solar panel, so that the pump is capable of working at night and on overcast days.
- 4) The latest DC brushless motor technology is used in the pump design and manufacturing, so that the pump has high efficiency and long service life.
- 5) The pump has a built-in function of dry-run protection. The dry-run protection function is provided by two sensor points on one side of the pump body (not visible from outside – See Figure 1). The pump works if both of the points are submerged in water. If either or both points emerge out of water, the pump stops working.
- 6) 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.
- 7) The input power should be from a solar module or DC power supply with an output voltage of 18V.
- 8) 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 equipment.
- 9) The battery station has built-in functions of overcharging and over-discharging protection.

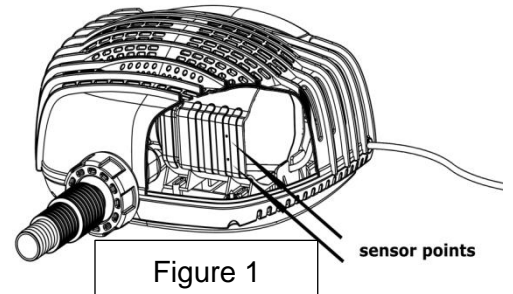
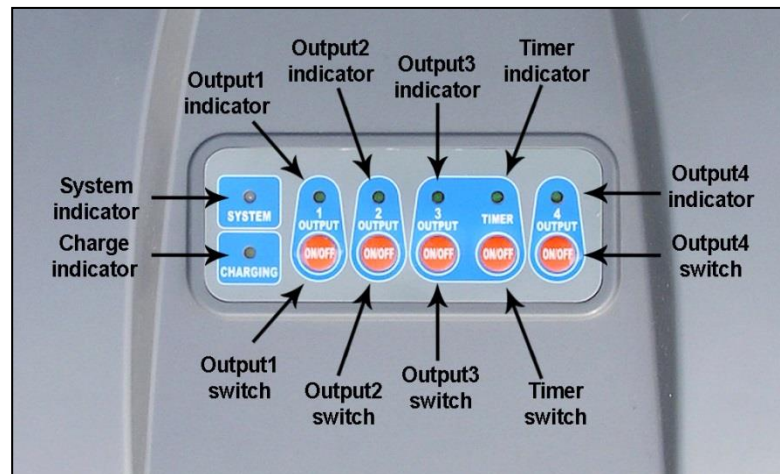


Figure 1

- 10) There are seven LED indicators 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.



show

- 11) Timing function is provided **ONLY 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.

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2. COMPONENTS

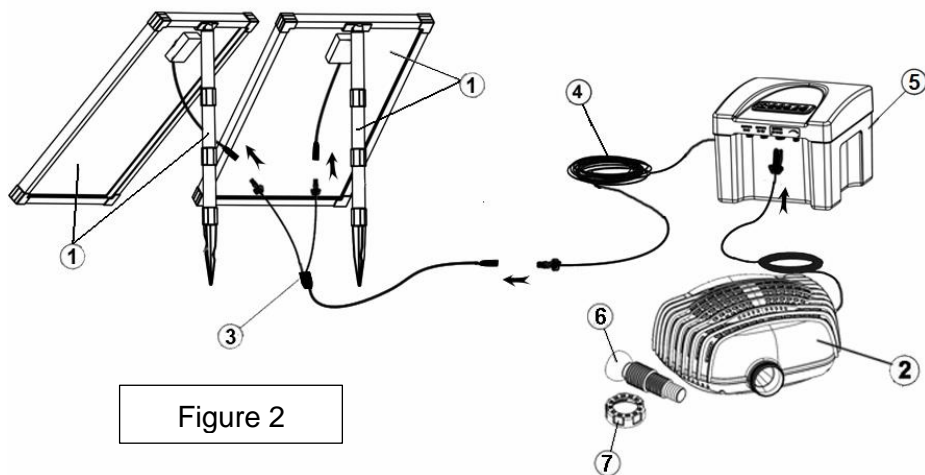


Figure 2

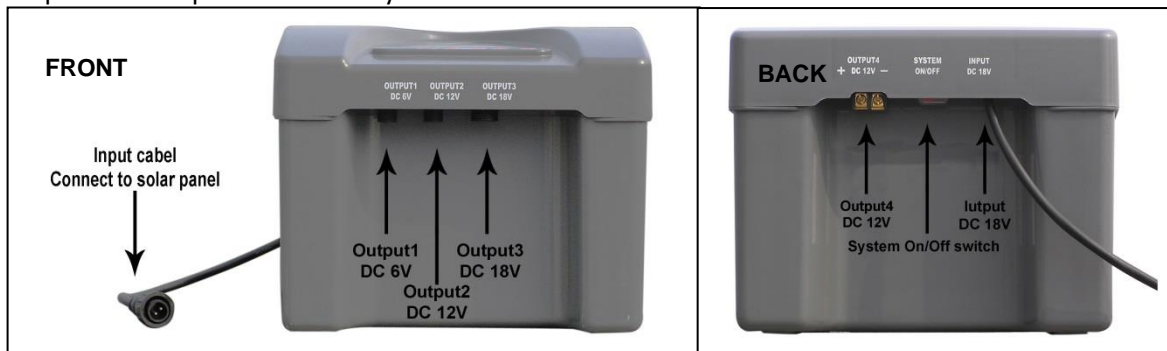
FOUNTAIN FUNCTION

If you wish to use a fountain nozzle (not supplied) you will need to connect it using hose from the hose connection (part 6 in Figure 2) as the thread outlet on the pump is a non-standard thread (M56 x 2.0mm)

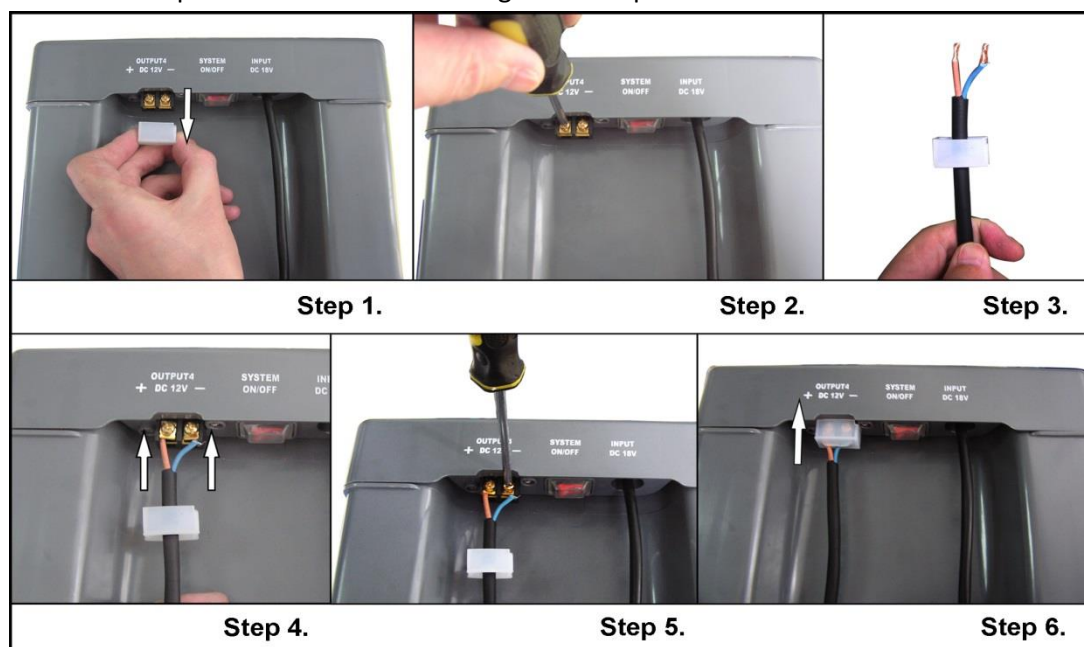
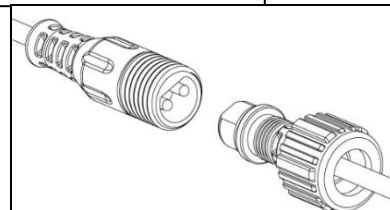
- 1) Solar panel and ground spike 2) Pump 3) "Y" connector 4) Panel to battery cable 5) Battery station
6) Hose connection 7) Gland nut (M56 x 2.0mm) 8) Spare Impeller (not pictured)

3. ASSEMBLING

- 1) Unpack all components carefully



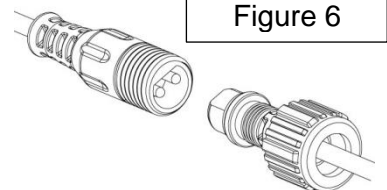
- 2) Connect the INPUT cable of the battery back-up to the solar module or a DC power supply, and tighten the protection screw. **The connectors are protected against reverse polarity as shown in the right figure. Don't insert the plug with reverse polarity by using unnecessary force.**
- 3) The CHARGE 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.
- 4) 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.



- 5) 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.**
- 6) 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 duplex switches such as photosensitive garden lights, it may not work immediately while the switch is put on. Please refer to related manuals.**
- 7) 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 until 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.
- 8) 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.
- 9) 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.**
- 10) 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.
- 11) 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.**

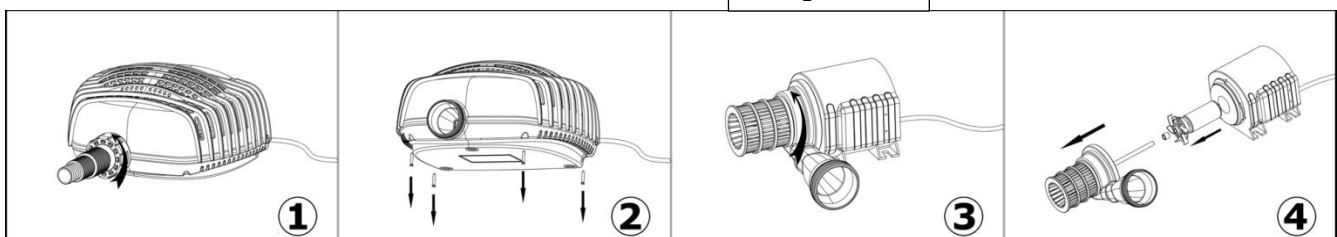
4. CAUTION

- 1) Any altering of the product itself or changing of components with non-genuine parts voids warranty.
- 2) Operate the pump in water only (never above 40°C), especially keep it away from flammable liquids, and do not use in hazardous areas.
- 3) All the connections are protected against reverse polarity as shown in Figure 6. Don't insert the plug with reverse polarity by using force.
- 4) The pump is dry run protected. The pump will automatically stop when there is insufficient water.
- 5) Do not charge the solar battery back-up by any AC power supply directly; it is designed **ONLY** for DC power.
- 6) **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.**
- 7) Do not leave this battery back-up in bad ambient environment.
- 8) 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.
- 9) Do not dip this battery back-up into water, **its IP grade is 44.**



5. CLEANING AND MAINTENANCE

Figure 7



If the pump starts losing power or stops working after operating for a certain time, please clean the inside of the pump and any debris on the outer filter cage.

The pump can be opened by unscrewing the four screws on the bottom of the filter housing.

To clean the pump, disassemble the pump according to Figure 7 and then clean all parts with water.

In the case of a build-up of lime-scale (calcium deposits) use a mild descaling solution, following the instructions provided for a “shower head”- we recommend RUBBEDIN DESCALE MAGIC – available from most Hardware’s and Supermarkets.

***Be careful not to drop the ceramic shaft while cleaning the impeller as it is fragile and breaks easily.**

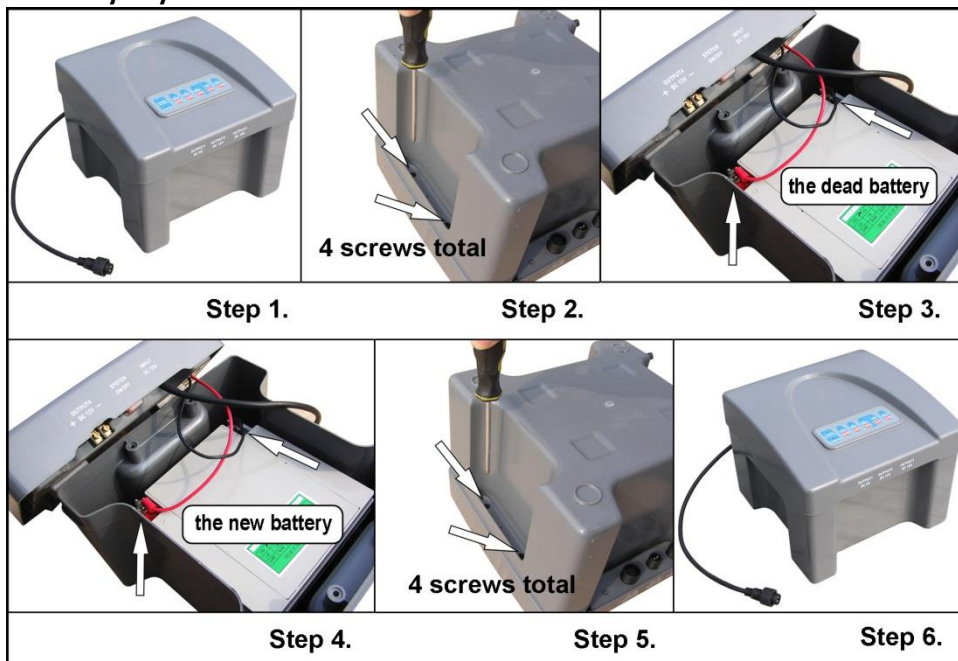
6. TROUBLE SHOOTING

*Pump does not operate; please check the possible reasons:

- 1) Clouds, dust or shade will cause the pump to stop.
- 2) No connection to the power supply – check all the cables and connections.
- 3) Impeller is blocked – clean the pump as described in **“CLEANING AND MAINTENANCE.”**
- 4) Check the water level, ensure the pump is fully submerged in water; low water level will cause it to stop.
- 5) If all above are ok, try the spare impeller supplied with the pump.
- 6) **If pump does operate but there is no water running through the pipework: clean the pipework and the filter to make sure there are no blockages.**

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:

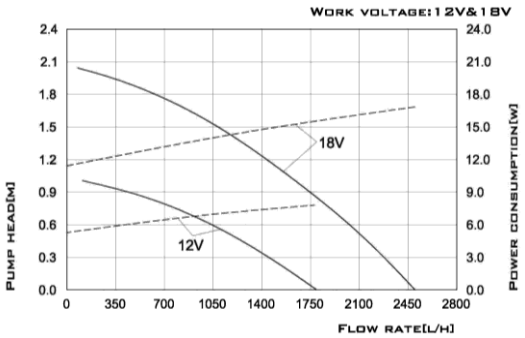
- 1) Check if the TIMER indicator lightens. Please note, in this mode, the pump runs intermittently.
- 2) The pump is blocked, clean the pump by referring to pump manuals.

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

7. TECHNICAL DATA AND PUMP CURVE

Peak Power of Solar Panel	50W
Operating voltage	12-18V
Maximum pump head	2.1m
Maximum flow rate	2480L/H
Cable length	5 M

- **ALL** Performance data is subject to change without notice, and is subject to the Solar Energy (Sunlight) available.



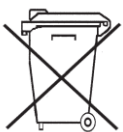
Lead acid battery	12 V, 24 Ah
Charging voltage and power	DC 18 V, Maximum input power: 75 W
Output 1 voltage and power	DC 6 V, Maximum output power: 4 W
Output 2 voltage and power	DC 12 V, Maximum output power: 12 W
Output 3 voltage and power	DC 18 V, Maximum output power: 30 W
Output 4 voltage and power	DC 12 V, Maximum output power: 12 W
Size	255 x 255 x 205 mm
Net weight	9.3 KG



WARNING: Condition of Warranty: This pump and battery pack **MUST NOT** be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It **MUST** be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.



WARNING: This battery is a **SEALED LEAD ACID BATTERY**. Do not attempt to open the sealed Battery unit. Serious bodily harm may occur including but not limited to blindness and poisoning and death. 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 an approved recycling center. Contact your local council for further information.



SOLAR PUMPS 24 MONTH LIMITED WARRANTY CONDITIONS

1. Warranty covers only motor failure and manufacturing defects within a 24 month period from the original date of purchase for REEFE™ SOLAR PUMPS purchased and used in mainland Australia.
2. Faults arising due to: - Accidents, misuse, not following these instructions or power surges/spikes/brownouts will not be covered by this warranty
3. Warranty will be void if any tampering or removal of identification labels or electrical cables has occurred, or if pump is moved from the original place of installation or if any non-genuine parts have been fitted.
4. The costs of loss of livestock, damage to property, consequential losses or injury caused by the misuse or abuse or your installation of this appliance is not covered by this warranty. Also, consequential losses caused by faults or failure of this product (which are not reasonably foreseeable by ASCENTO GROUP AUSTRALIA to occur) are not covered by this warranty.
5. Faults caused by installation or improper servicing will not be covered. In addition defects stemming from insufficient maintenance are not covered.
6. Warranty is void if this pump is used for pumping anything other than fresh, clean water, or clean saltwater.
7. In the case of pump failure, you must:
 - 1) Check the trouble shooting guide first.
 - 2) Then call ASCENTO on 1800 807 604 and speak to the Warranty Department who will authorize repair or replacement OR you may return to the original place of purchase for replacement or refund.
8. For any warranty claim to be valid, an original proof of purchase must be supplied, or an acceptable substitute.
9. If an exact replacement is not possible the closest equivalent product will be supplied at Ascento Group Australia discretion.
10. This product is guaranteed as fit for the purpose of use as stated on the outer packaging, and NO other use.
11. Condition of Warranty: This pump is not to be used as your sole water supply or for drinking water or for fire-fighting purposes.
12. Condition of Warranty: This pump MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.
13. This product is not intended for use by children or infirm persons. It is your responsibility to ensure, by way of supervision or isolation, that children or other infirm or irresponsible persons are not harmed by this product. The Sealed Battery unit is of LEAD ACID type and is EXPLOSIVE, and contains TOXIC CHEMICALS, no user repairable parts are included and the sealed unit MUST NOT be opened.
14. All installations must comply with the local Council, Shire, electrical and plumbing regulations in your area.
15. The sealed battery is a wearing part and is not covered under warranty except in the case of severe premature failure. The expected lifespan is 12 to 18 months.
16. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you (the purchaser) do not fall within the meaning of 'consumer' in the Australian Consumer Law some or all of the provisions of the Australian Consumer Law will not apply to you.

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IMPORTANT NOTE: DO NOT use for anything other than clean, fresh or saltwater.

NOTE:

1. Save Power and the Environment refers to the fact that this product does not require mains power to operate. Note that this product has not been independently tested to verify the savings.
2. Performance figures are for the maximum performance in full mid-day summer sunlight and will vary according to the Solar Energy available; the pump may not operate at all when the Sun is obscured by clouds or dust. This Solar Pump does not operate during the night, except for Battery Back-up versions.