

# Operating manual

## solar battery station 12 V/ 7 Ah



### Customer support:

If you have problems or questions regarding this product, simply contact us!  
**Monday to Friday 9 am to 12 noon and 1 pm to 4 pm.**  
By phone: +49 9605-92206-0  
By e-mail for ordering spare parts: [ersatzteil@esotec.de](mailto:ersatzteil@esotec.de)  
By e-mail for questions about the product: [technik@esotec.de](mailto:technik@esotec.de)  
Product: Manufacturer Item No.: 101815

These instructions relate **ONLY** to this product and contain important information for using the product for the first time. Please keep these instructions for later reference and should always accompany the product in the event of transference to a new user.

## 1. Introduction

Dear Customer, thank you for purchasing the solar pump kit. With this solar pump kit you purchased a product manufactured according to the current state of technology.

**CE** This product fulfills all requirements of the valid European and national regulations. The conformity was proved. The relevant declarations and documentation are deposited with the manufacturer. To maintain this state and guarantee a safe operation, you as the user will have to follow this operating manual!

## 2. Safety Instructions



- In case of damages caused by not following this operating manual, the warranty rights will expire! We exclude liability for any consequential damages!
- We exclude liability for property or personal damages caused by inappropriate handling or not following the safety instructions.
- In these cases any guarantee rights will expire.

Due to safety and admission reasons (CE) it is not allowed to arbitrarily reconstruct and/or change the solar pump kit.

Therefore, please keep to the operating manual.

The accident prevention rules of the association of the industrial trade cooperative association for electric plants and working material are to be considered in industrial environments

## 3. Intended Use

- The accumulator station may be used in the esotec pump systems Verona, Toscana, Napoli, Napoli LED, Siena and Siena LED.
- The accumulator station is installed between pump and solar module.
- The pump may be switched-on or -off via a switch.
- Via a controller, the operating voltage of the pump may be adjusted to 12 and 24 V.
- Operation of the pump optionally via timer or permanent operation
- The integrated accumulator is protected against deep discharge, overcharge and short circuit.
- Two LEDs provide information about the state of charge and charging of the accumulator.
- The system is plug-in ready and set up within minutes.

**Note:** The accumulator station must not be positioned and set up in the blazing sun or in the water.

### 3.1 Mode of operation:

The accumulator station is interconnected between the solar module and the pond pump.

With optimal solar radiation, the solar module generates more electric energy than required by the pond pump. The excess energy is then stored in the accumulator and will be available to the pond pump when it is shady or dark outside.

The pump is switched-on and the green LED „System“ is illuminated if the accumulator voltage is within its operative range. The pump is switched-off and the red LED „System“ is illuminated if the accumulator is discharged.

The electronics protects the accumulator against deep discharge or overload.

The charge of the accumulator has always priority.

### 3.2 Operational Behavior:

In the morning, the discharged battery is charged via the solar module. A charging timer is started as soon as the battery reaches the voltage of 12,7 V and the battery is charged fully for another 120 minutes. The LED „System“ flashes every 10 seconds for 2 times red/green. The output is switched on after this time.

In the evening and with decreasing solar radiation, the pump is increasingly supplied with energy by the accumulator. The system will run until the accumulator has reached its deep discharge threshold (approx. 11,7 V). The pump and the LED illumination are switched-off automatically and the red LED „System“ is illuminated.

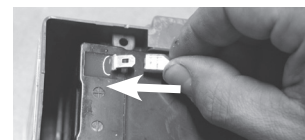
Then, the accumulator is again charged via the solar module the following morning. **This process may take several hours depending in the solar radiation.**

The output voltage of the accumulator station may be adjusted via the controller on the front side. In times with little sunshine, the controller should be adjusted to the lowest setting.

## 4. Assembly/installation and start of operation

1. Loosen the screws on the underside of the housing and remove the cover from the battery box.

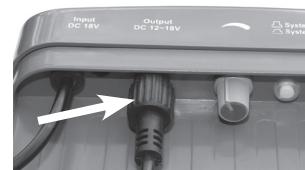
2. Place the electrical connector on the red (brown) cable onto the positive terminal of the rechargeable battery.



3. Completely unroll the cable at the pump.

4. Insert the plug on the pump cable in the built-in socket "OUTPUT DC 12-24 V" at the accumulator station. Screw the cap nut tight.

Please make sure that the switch is in **OFF** position.



5. Completely unroll the cable at the accumulator station.

6. Insert the cable with the socket into the plug of the solar module. Screw the cap nut tight.



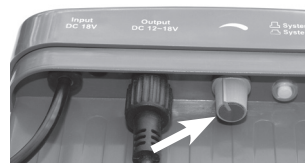
7. Put the pump into the pond. Please pay attention to the operating manual of the pump. It contains important notes regarding the start of operation and maintenance.

8. Put the switch „System“ into the position „ON“. The battery is discharged if the LED „System“ is illuminated red. Here, please pay attention to item (3.2). The output is switched on and the pump is working if the LED „System“ is illuminated green.



9. The operating voltage of the pump may be adjusted to 12V and 24 V. This is done by means of a controller. Thus, the power of the pump is adjustable.

**Note:** Full power should only be chosen in high summer. The increased power consumption leads to a reduction of the maximum operating time of the accumulator.



**Note:** The plugs and sockets are protected against inverse polarity. Do not apply force when inserting the plugs. The glass of the solar module is fragile.

**Note:** The accumulator station must not be set up in the blazing sun.

## 5. Operating mode of the accumulator station

### 5.1 Settings via „System“ pressure switch:

**1. Position ON :** If the built-in accumulator has the correspondingly high voltage, the pump starts to run (LED „System“ is illuminated green) and the accumulator is charged if excess energy is available. In case the capacity of the solar module should now be reduced due to clouds, the pump will be supplied with energy via the accumulator. In the evening, the pump will still run for some time until the control deactivates the accumulator (LED „System“ is red illuminated).



**2. Position OFF :** The pump is switched-off. The accumulator is charged via the solar module and the electric energy is stored. The LED „System“ is not illuminated.

**Note:** In case you would like to achieve a particularly long operating time in the evening, then set the switch to its „OFF“ position during the day and to its „ON“ position in the evening.

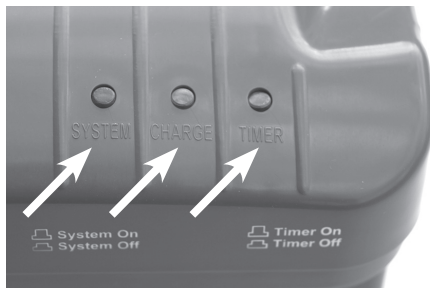
**Note:** In high summer and in case of a high solar radiation, we recommend leaving the switch in its „ON“ position. Thus, you will achieve the maximum possible runtime of the pump.

### 5.2 Timer operation:

Via the pressure switch „Timer On“, „Timer Off“ it is possible to operate the battery station by means of the timer function. The function is active when the switch is pressed. The green LED „Timer“ is illuminated while the output is switched on and it is flashing during the waiting period. The pump is working for approx. 10 minutes every hour.

**Note:** This function shall particularly be used in case of weak solar radiation or for a longer overshoot time at darkness.





## 6. LED Indicators

### LED „SYSTEM“:

**green:**

Battery charged and outputs may be switched on.

**red/ green flashing:**

Battery in end charging process. See item: 3.2

**red:** The battery is discharged and the outputs are switched off.

### LED „CHARGING“: **yellow:**

Battery charging

### LED „TIMER“:

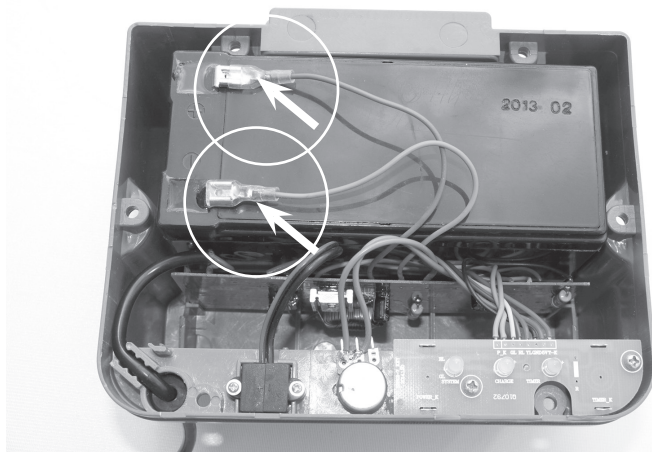
**green:**

Output is activated

**green flashing:**

Output is switched off, Timer is running.

## 7. Exchange of the accumulator



We recommend to exchange the accumulator approx. every 2 years. A new identical in construction accumulator is available from the manufacturer or dealer.

Proceed as follows if you want to exchange the accumulator:

1. Set the switch „System“ into the position „OFF“ and unplug the module and the water pump from the accumulator station.
2. Turn the accumulator station upside down and loosen the screws on the bottom frame of the accumulator box and carefully remove the cover.
3. Unplug both cables from the accumulator (see picture above). Please memorize the color of the cables for the **positive pole = brown** and **negative pole = blue**.
4. Remove the accumulator from the housing and insert the new identical in construction accumulator.
5. Reattach the cable lugs on the poles of the accumulator with correct polarity. Cable color for the **positive pole = brown** and **negative pole = blue**.
6. Close the housing in reverse order.
7. Connect the pump again and set the switch „System“ into the position „ON“

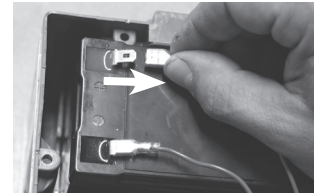
**Note:** Please only use an identical in construction accumulator with identical voltage and capacity.

**Note:** The old accumulator has to be disposed of in an environmentally sound way. For this purpose, please contact your local authorities, public collection points or your dealer.

## 8. Storing throughout the winter

Completely charge the rechargeable battery in the battery box. Use a sunny day to do this and disconnect the battery box.

After charging disconnect the cable from one terminal of the rechargeable battery.



To do this open the housing as described in Section 7. The battery box should only be stored throughout the winter in a fully charged condition and in a frost free room.

## 9. Troubleshooting

**LED does not light green in spite of solar radiation but the yellow LED is lit up.**

1. The accumulator has not yet been charged sufficiently and the restart threshold is not reached. The charging process may take several hours in case of insufficient solar radiation. See item 3.1 and 3.2.
2. Accumulator is exhausted! The accumulator should be exchanged approx. every 2 years. Please see item 7 of this instruction.

**The LED is not illuminated green. In spite of solar radiation when switching-off and on again of the switch „System“, the pump starts to work and the green LED is illuminated.**

1. The accumulator has not yet reached its restart threshold. The electronics is reset after the deactivation and activation of the system and the system starts to work without waiting for the restart threshold. This is a normal process and does not indicate any defect.

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

1. Check if the “Timer On/Off” switch is on. Please note, in this mode, the pump runs intermittently.
2. The pump is blocked, clean the pump by referring to pump manuals.

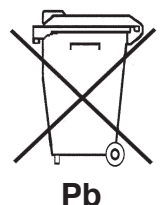
## 10. Technical data:

- Accumulator voltage: 12 V
- Accumulator capacity: 7 Ah
- Deep discharge protection: approx. 11,7 V
- Voltage threshold for restart: approx. 12,7 V
- Output voltage: 12 - 24 V DC (adjustable)
- Max. load (output): 20 W
- Max. connectable module capacity (input): 20 Wp
- Protection: IP 44
- Protection class: III
- Temperature range: -15°C to +30°C

**WARNING of trip hazard!** Lay the connection cable so that it does not constitute a trip hazard.

### **Battery take-back**

- Batteries must not be discarded into domestic waste.
- The consumer is legally required to return batteries after use, e.g. to public collecting centers or to battery distributors.
- Contaminant-containing batteries are labeled with the sign “crossed-out trashcan” and one of the chemical symbols. Used batteries should be disposed environmentally friendly and should not be discarded into domestic waste. Your dealer is legally required to take back old batteries.



### **Disposal:**

Dear customer, please cooperate in avoiding waste. When you intend to dispose of the product in future, please consider that it contains valuable raw materials suited for recycling.

Therefore, do not dispose it of with domestic waste but bring it to a collection point for the recycling of waste electrical and electronic equipment. Thank you very much for your cooperation!



### **Manufacturer:**

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