

# Operating manual

## solar waterpump system "Palermo LED"

GB

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 light. With this solar light you purchased a product manufactured according to the current state of technology.

**CE** This product fulfils 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 light.

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

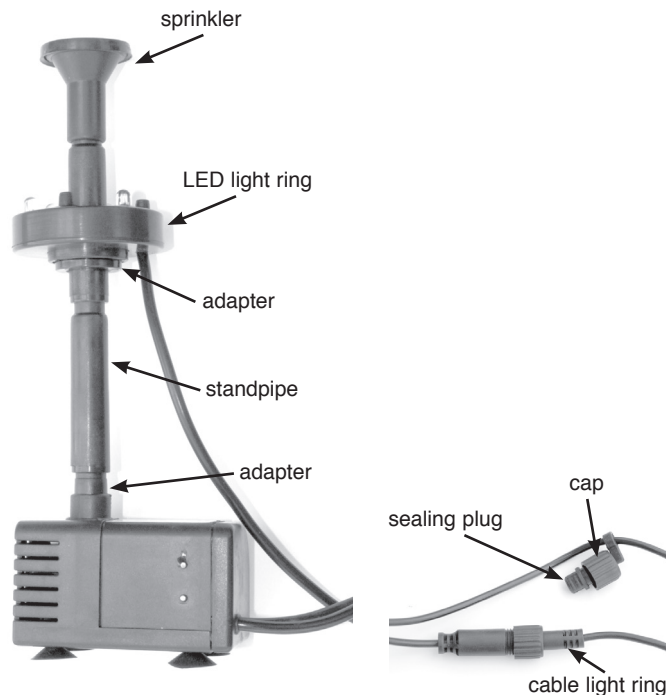
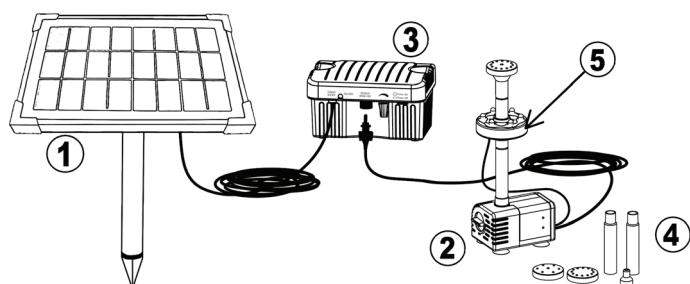
- The pump system is designed for the outdoor use in garden ponds. The integrated accumulator is charged depending on the solar radiation to the solar module and the pump will produce water correspondingly.
- A direct and shadow-free solar radiation is required for the function of the pump.
- When starting the pump, the integrated accumulator may be partially discharged and the pump will not produce/lift any water. Please charge the accumulator in the accumulator station for one day with solar radiation and leave the pump switched-off while charging (switch in position "OFF"). For more details, please see the manual of the accumulator box.
- On days with little sunshine, we recommend to operate of the pump in interval mode (pump runs for approx. 15 minutes every hour) and to control the operating voltage to 6 V (see manual of the accumulator box).
- The pump system is particularly characterized by its ease of installation and assembly. No tools are required for the assembly.
- The pump must not be used for the production/lifting of drinking water.
- The power (operating voltage) of the pump may be adjusted by means of a controller on the accumulator station.
- In order to avoid any disturbing gurgling, simply shorten the standpipe.
- In order to safely interrupt the production (of water) and protect the system against unauthorized activation, you will have to switch-off the pump system and disconnect the cable between accumulator box and pump.

### 4. Assembly and commissioning

The pump system consists of the following components:

1. Solar module with a three-piece ground spike.
2. Submerged pump in a plastic housing with a 5 m connection cable.
3. Accumulator box with a 6 V / 3,2 Ah accumulator.
4. Standpipes and 4 water nozzles.
5. LED Light ring with twilight sensor mounted on an adapter.

**Note:** Before assembly, please carefully read the manual of the accumulator box. It contains important information and notes!



1. Completely unroll the connection cable at the pump.
2. Attach the adapter to the pump and then the standpipes onto the adapter. Then, insert the LED light ring onto the standpipe by means of the included adapter. Now, attach the desired sprinkler onto the standpipe (illustration above on the left).
3. Now, release the cap at the cable of the pump, pull out the sealing plug and insert the plug of the LED light ring into the socket. Screw the cap nut tight (illustration above on the right).
4. Put the pump onto a stone in the pond. Please avoid placing the pump directly at the ground of the pond because here, a particularly high amount of dirt is sucked in by the pump and the nozzles will be clogged quickly.

**Note:** This pump is equipped with a dry run protection function. At the side of the pump, there are two sensor points. Those sensor points shall be completely under water. If one of the sensor points rises from the water, the pump is automatically switched-off in order to protect the pump. Please also see the pump manual.

5. Please make sure that the accumulator box is switched-off and now connect the plug of the pump with the socket at the accumulator box.
6. Completely unroll the cable at the accumulator box and insert the plug into the back side of the solar module.
7. Now, screw the ground spike tight at the back side of the solar module by means of the cap nut and insert the solar module at a sunny and shadow-free place.

**Note:** Before switching on the system, please carefully read the manual of the accumulator box. It contains important information and notes!

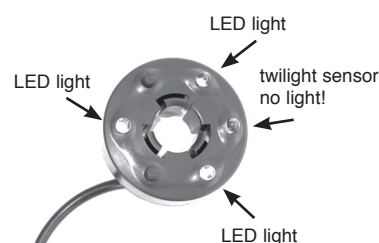
**Note:** Do not apply force when inserting the solar module. The front side of the solar module is fragile.

**Attention:** Risk of injury! A broken may not be repaired anymore and has to be disposed of it in an environmentally sound manner.

5 m extension cables for the pump or the accumulator box are available through the manufacturer or your dealer.

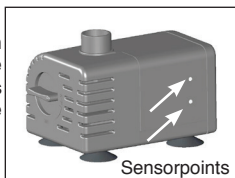
### 5. LED Illumination

The LED illumination of the light ring is automatically activated at dusk. Apart from the 3 LEDs, a twilight sensor is installed as light sensor. This sensor looks like an LED but is not illuminated.



## 6. Dry run protection

The pump is equipped as standard with a dry run protection. Two sensor points are provided on the side of the housing for this. The pump works if these points are under water. If a point projects out of the water, the pump does not work.



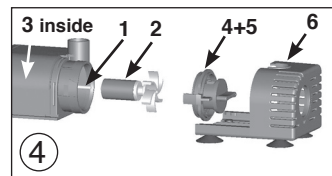
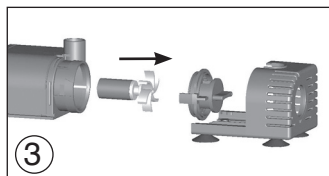
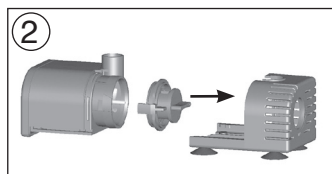
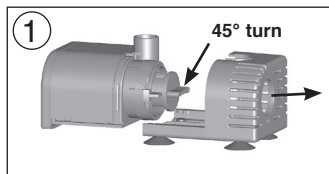
## 7. Care and maintenance

For optimum performance of the pump, it must be washed occasionally with warm water depending on the water contamination. To wash the pump, open the housing as follows:

**Note:** Please do not use force while dismantling or assembling the pump. The parts are very fragile and can break easily.

1. Disconnect the pump's plug.
2. Pull the front cover of the pump forward like a slide gently (Figure 1).
3. Turn the front cover of the pump by about 45° clockwise (Figure 1) and carefully pull the cover forward (Figure 2). Watch out for the plastic shaft and the seal while doing this.
4. Carefully drag the impeller out of the pump (if necessary, use pliers). (Figure 3).
5. Now clean all the parts carefully with warm water.
6. Then plug the shaft with the impeller carefully into the hole of the pump. Ensure that the shaft is fitted firmly.
7. Now place the cover carefully over the pump. Ensure that the seal is fitted properly.
8. Turn the front cover again by 45 degrees counter-clockwise into the starting position.
9. Slide the lower part of the pump completely into the pump housing.

The pump is ready to use again.



## 8. Spare parts (Figure 4)

1. White ceramic shaft:
2. Pump impeller:
3. Internal rubber bush:
4. Front cover:
5. Seal for cover:
6. Sliding carriages with suction bases:
7. Suction bases (4 pieces)
8. Complete nozzle set:

Item No.: 911002  
 Item No.: 911003  
 Item No.: 911004  
 Item No.: 911005  
 Item No.: 911006  
 Item No.: 911007  
 Item No.: 911008  
 Item No.: 911009

## 9. Malfunctions

### Solar pump does not work:

- Accumulator box switched-on?
- Pump not under water (dry run protection, see manual of the pump)
- After a long standstill in winter, it is required to charge the accumulator via the solar module. The accumulator should be exchanged every 2 - 3 years.
- Accumulator is discharged. Wait for sunshine and, if required, switch-off the accumulator box for one day and have it recharged.
- Pump clogged. Cleaning according to the manual of the pump!
- Check plug connection at the cable.

## 10. Storage during the winter

In case of sub-zero temperatures, i.e. during the winter, the pump and the accumulator box have to be stored at a warm place. Before storing it, clean the pump with lukewarm water as described in the manual of the pump. Switch-off the accumulator box (position "OFF", for further notes, see manual of the accumulator box).

## 11. Technical Data

<b>Solar pump system:</b>	<b>Palermo LED</b>
- System voltage:	6 - 9 VDC
<b>Solar module</b>	polycrystalline
- Cell type:	16 pieces
- Number of cells:	5 Wp
- Nominal power:	7,68 V
- Nominal voltage:	9,28 V
- Off-load voltage:	651 mA
- Nominal current:	770 mA
- Short circuit current:	IP 65
- Protection class:	-30°C to +75°C
- Temperature range:	

<b>Water pump:</b>	
- Operating voltage:	6 to 9 V DC
- Power consumption (6V/ 9V):	approx. 1,3/ 3,3 W
- Max. pump height (6V/ 9V):	approx. 0,7/ 0,9 m
- Flow rate (6V/ 9V):	approx. 240/ 330 l/h
- Protection class:	IP 68
- Operating temperature range:	+4 to +40°C
- Dry running:	dry run protection

<b>Accumulator box:</b>	
- Max. pump runtime with fully charged accumulator:	4 h
- Accumulator voltage:	6 V
- Accumulator capacity:	3,2 Ah
- Overcharge protection:	approx. 6,7 V
- Depth discharge protection:	approx. 5,6 V
- Voltage threshold for restart:	approx. 6,2 V
- Output voltage: :	6 - 9 V DC (adjustable)
- Max. load current (output):	3 W
- Max. connectable module capacity (input):	5 Wp
- Protection class:	IP 44

## 12. Safety Notes:

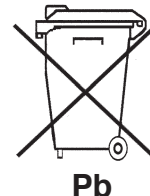
**DANGER for children!** Keep your children away from small parts which may present a choking hazard (standpipe and sprinkler) and the packing material fern. There is danger of suffocation!

**WARNING of trip hazards!** Please lay the connection cable so that it won't constitute a tripping hazard!

**CAUTION material damages!** If you set up the solar module without any module mounting you will have to pay attention to an adequate stability. The solar module may be damaged due to toggling or impact by foreign bodies.

## 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!



## Customer support:

If you have problems or questions regarding this product, simply contact us!  
**Internet: [www.esotec.de](http://www.esotec.de)**  
 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.: 101775**