

# Operating manual

## battery station 12 V/ 7 Ah, 12 V/ 12 Ah



### Customer support:

If you have problems or questions regarding this product, simply contact us!  
**Monday to Friday 8 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.: 101812, 101816

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 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 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 is universally usable for the energy supply of pumps and other products.
- The accumulator station has 2 switchable outputs with different voltages.
- Output 1 has an output voltage of 18 VDC. A timer function may be activated.
- Output 2 has an output voltage of 6 VDC.
- The accumulator station is switched off and on via a switch. The accumulator is further charged in a switched off state.
- The installed accumulator is protected against total discharge, overcharging and short circuit.
- LEDs provide information about the state of charge and the charge of the accumulator as well as about the status of the outputs.
- The system is ready-to-plug-in and set up in a matter of minutes.

**Note:** The accumulator station must not be set up in the blazing sun or in the water. It is designed in IP 44 (splashproof).

### Mode of operation of the accumulator station:

The accumulator station is interconnected between (a) solar module(s) and the corresponding devices.

**>> For initial start, please first connect the battery.  
See separate instructions! <<**

In the sun, the solar module generates electrical energy and charges the installed accumulator. The connected consumers are switched on as soon as the accumulator voltage is in an operational range. The LED „SYSTEM“ provides information about the state of charge of the accumulator.

**green light means: accumulator is ready for operation!**

**red light means: accumulator is exhausted and switched off**

The electronics protects the accumulator against total discharge, overcharging or short circuit.

**The charging of the accumulator always has priority over the operation of the consumers.**

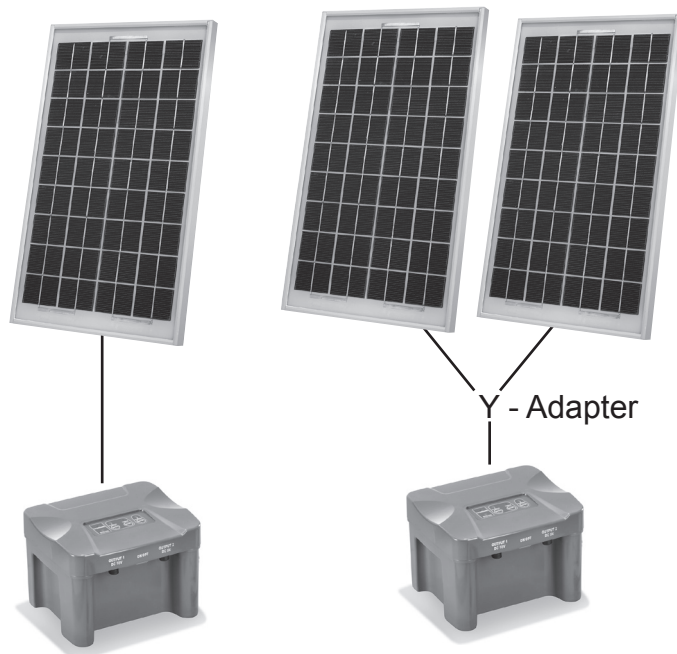
### 4. Assembly and Start-up

#### 4.1 Connection of the solar module

A maximum of 50 Wp of solar module capacity may be connected to the accumulator box. The solar module is connected at the cable on the back side of the accumulator box. A 5m extension cable for this cable is included in the set.



Depending on the version, you may connect one or several solar modules to the accumulator station. A single solar module may directly be connected to the accumulator box with the plug. A Y-distributor is required if you intend to connect 2 solar modules (e.g. 2 pieces 25 Wp). Via the Y-distributor, both solar modules are joined and then connected to the accumulator station.



If required, the cable may be extended by another 5 m extension cable.

As soon as the solar module is connected and sunlight falls onto the solar module, the LED „Charging“ will light up. The accumulator is fully charged if the LED is flashing.

Please note that the solar modules are positioned shadow-free directed towards the south and that they are mounted in a stable way.

**Attention:** The electronics in the accumulator box will be destroyed if more than 50 W of solar module capacity is connected!

#### 4.2 Main switch „SYSTEM“

The toggle switch „SYSTEM ON/OFF“ is applied at the front side of the accumulator box. The outputs are switched off if this switch is switched off („OFF“), however, the accumulator is still charged. In position „ON“, the LED „SYSTEM“ shines red or green. When the LED shines green, then the accumulator is charged sufficiently and the outputs may be operated as required via the buttons on the lid of the box. When the LED shines red, then the outputs are switched off and the accumulator has to be charged until the LED shines green (see item 6)



#### 4.3 Connecting the consumers

The accumulator box has 2 outputs. Those may be switched on or off via the „ON/OFF“ button. The green LED above the button shines green when the output is active. All outputs are protected against short circuit. In case of a short circuit in output 1, the green LED of the output will additionally flash until the fault is eliminated. Below, every output is described individually. Output 2 is equipped with a protective cap. This cap has to be removed before connecting consumers.



#### - Output 1 (output 1):

**Output voltage: 18 VDC, max. current load: 1.3 A**

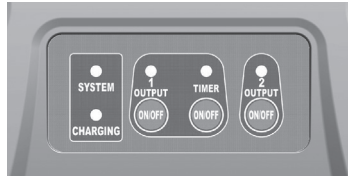
The output is switched via the button „ON/OFF“. The timer operation is activated by pressing the button „Timer“. That means that the output 1 „OUTPUT 1“ is activated for approx. 10 minutes every hour. This mode of operation is reasonable in particular in case of inadequate insolation. The output voltage is firmly set to 18 V.

#### - Output 2 (output 2):

**Output voltage: 6 VDC, max. current load: 0.7 A**

The output is switched via the button „ON/OFF“. The output voltage is firmly set to 6 V.

**Note:** The outputs are connected by means of system plugs. Corresponding distributors and/or extensions are available as accessories. The protective caps at the plug-in connections have to be tightened. Not used outputs have to be closed by means of the corresponding protective caps. Please do not apply force when plugging in!



### 5. Indicator LEDs

#### LED „SYSTEM“:

**green:**

Accumulator charged and outputs may be switched on.

**red/ green 2x flashing:**

Accumulator in full charge. See item: 6.

**red:**

The accumulator is discharged and the outputs are (OUTPUT) switched off.

#### LED „CHARGING“:

**yellow:**

Accumulator is charged

**yellow flashing:**

Accumulator is fully charged and on trickle charging.

#### LED „OUTPUT 1“:

**green:**

Output 1 is switched on.

**green flashing:**

Short circuit on output 1.

#### LED „TIMER“:

**green:**

Timer mode is activated.

#### LED „OUTPUT 2“:

**green:**

Output 2 is switched on.

### 6. Charging process

The LED „System“ will shine red if the accumulator was discharged the previous evening.

In the morning and when the sun is shining, the charging of the accumulator will have priority. As soon as the accumulator is charged, the „Charging“ LED will light up yellow. The charging timer is started when the accumulator reaches the voltage of 12.7 V and the accumulator will be fully charged for another (30 min. 7 Ah box) 50 minutes (12 Ah box) . The LED „System“ flashes every 10 seconds 2 x from red to green. The outputs (Output) are switched on after those 50 minutes.

### 7. Exchanging the accumulator

We recommend exchanging 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. Put the main switch (SYSTEM ON/OFF) at the front side of the accumulator box in the position „OFF“ and unplug all plugs.
2. Turn the accumulator station upside down and loosen the bottom four screws.
3. Then turn the accumulator box back again and carefully remove the lid.
4. Loosen the + Pole and - Pole connection on the accumulator.
5. Remove the accumulator from the case and insert a new identical in construction accumulator.
6. Put the cable lugs back onto the poles of the accumulator. In doing so, please pay attention to the color of the cables: **positive pole (red) and negative pole (black)**.
7. Close the case in reverse order.

**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. What to do during the winter

Fully charge the accumulator in the accumulator box. Use a sunny day for this purpose and put the switch „SYSTEM ON/OFF“ in the position „OFF“.

Only store the accumulator box (during the winter) in a fully charged state in a frost-free room. At sunny days, the accumulator box may occasionally be connected to the solar module for charging purposes. This enables an as long as possible lifetime of the accumulator.

If you want to operate the accumulator box during the winter, e.g. in connection with a pond aerator or a string of LED lights (available as accessories), then it is possible to store the box outdoors. Please pay attention to the fact that the site is free of snow and that the accumulator box is not under water when thawing begins. A frost protection for the accumulator box would be advantageous.

### 9. Troubleshooting

#### - LED does not shine green despite insolation but the yellow LED shines.

1. The accumulator is not charged sufficiently and has not achieved the restart threshold. The charging process may take several hours when the insolation is insufficient. (see item 6).
2. Accumulator is exhausted! The accumulator should be exchanged approx. every 2 years. Please see item 7 of this instruction.

#### - LED does not shine green despite insolation; when the switch „SYSTEM ON/OFF“ is switched off and on again, the pump starts to run and the green LED shines.

1. The accumulator had not achieved its restart threshold. After the switching off and on of the system, the electronics is reset and the connected consumers are supplied with energy without waiting for the restart threshold. This is an absolutely normal process and does not constitute a defect (please see item 6). However, this method should not be applied because it has negative effects on the lifetime of the accumulator.

#### - LED does not shine green despite insolation. The LED System flashes green two times at an interval of 10 seconds.

1. The accumulator is in the full charge phase. Please pay attention to item 6.

#### - The green LED above output 1 flashes.

1. There is a short circuit or overcharge on output 1. Please check the connected device and all plug-in connections (in particular the pumps and the LED lighting) for tightness.
2. Check the cables for damages or bites by animals.

#### - The yellow LED „CHARGING“ shines but nothing else works.

1. Is the switch „SYSTEM ON/OFF“ switched on (position ON)?
2. If yes, then switch off the switch „SYSTEM ON/OFF“ for approx. 1 minute and then on again. This will reset the control electronics.

### 10. Technical data:

Type	Accu box 12 V / 7 Ah	Accu box 12 V / 12 Ah
Art.-No:	101816	101812
Max. module capacity:	50 Wp	50 Wp
Charging timer:	30 min.	50 min.
Protection class:	IP 44	IP 44
Temperature range:	-15 to +30°C	-15 to +30°C
Accumulator:	PB 12 V/7 Ah	PB 12 V/ 12 Ah
Replacement accumulator:	901034	901032
(www.esotec.de)		
<b>Outputs:</b>		
Output 1:	DC 18V/ max. 1.3A	DC 18V/ max. 1.3A
Output 2:	DC 6V/ max. 0.7A	DC 6V/ max. 0.7A
5 m extension cable solar module:	101738	101736
5 m extension cable "Output 1":	101738	101736
5 m extension cable "Output 2":	101740	101740

**WARNING of trip hazard!** Please 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 of it 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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