

Firmenanschrift aufbewahren - Nicht geeignet für Kinder unter 3 Jahren! - Verschluckbare Kleinteile! Keep the address of the company - Not suitable for children under 3 years! - Contains small parts! Veuillez conserver l'adresse - Ne convient pas pour les enfants de moins de trois ans! - Contient de petites pièces pouvant être absorbées! Adres bewaren - Niet geschikt voor kinderen beneden 3 jaar! - Kleine onderdelen Kunnen worden ingeslikt!

SOL-EXPERT group, C.Repy - Mehlisstrasse 19 - D-88255 Baidnt  
Tel.: +49 (0)7502 - 94115-0 - Fax: +49 (0)7502 - 94115-99  
info@sol-expert-group.de - [www.sol-expert-group.de](http://www.sol-expert-group.de)



Return the device to a certified provider at the end of its useful life!



No. 76631



Parts List		
Qty.	Component	Value / Description
1	Board	Fitted with SI2301
1	Resistor	8.2 Ohm
1	Resistor	20 kOhm
3	Resistor	100 kOhm
1	Water Tube	10 cm
1	Transistor	BC337
1	Diode	1N4148
2	Battery Mount	Size AA
1	LiFePO4 Storage Battery	400 mAh, 3.2 V
1	Solar Module	50 mA / 4 Volt
1	Wooden Parts Kit	Beech 4 mm
2	Cable	1x red and 1x black
1	LED with cable	White
1	Switch with Cable	Commutator
2	Nut	M2
2	Screw	M2 x 10
1	Wood Glue	in Tube
1	Sandpaper	Fine
1	Paper Clip	

You will need:
Soldering iron
Solder
Tweezers
Small screwdriver
Side cutters

**We recommend:**  
Adult supervision during assembly and soldering!



Conrad No.  
1530399

### Water Tube Torch Solar-powered, kit



#### HINWEIS - NOTE - REMARQUE - LET OP!

(DT) Eine ausführliche Anleitung in deutscher Sprache liegt der Verpackung bei. Die Anleitungen in den Sprachen Englisch, Französisch und Niederländisch können kostenlos in unserem Shop heruntergeladen werden. (EN) Instructions in German are enclosed in the packaging. The instructions in English, French or Dutch can be downloaded in our shop for free. (FR) Des instructions en allemand sont fournies avec l'emballage. Les instructions en anglais, français, et néerlandais sont à télécharger gratuitement dans notre boutique. (NL) De Duitse handleiding is bij de verpakking inbegrepen. De handleidingen voor de talen Engels, Frans en Nederlands kunnen gratis in onze shop worden gedownload. [www.sol-expert-group.de](http://www.sol-expert-group.de)

### The water tube torch kit

**General:** This soldering kit is intended as a simple introduction to the basics of soldering. It is ideal for guided soldering courses in school and workshops. The water tube torch can further be used in holiday programmes, school camps and other events related to soldering.

### How the solar-powered water tube torch works

After soldering and installing the board inside the water tube it can be used as a **solar-powered** torch for near range applications. The solar panel collects the required energy, which is then stored in the storage battery. So simply place in the sun to charge the storage battery.

### Safety Notes

- Keep these instructions in a safe place for future reference! They contain important information.
- If the storage battery is defective, only replace it with a new storage battery with the same specifications. (400 mAh / 3.2 V)
- This kit is only intended for battery operation. **Never connect the kit to 230 V mains voltage! Acute danger to life!**
- The soldering iron, the solder and the components being soldered become very hot during soldering. Be very careful!
- Always use a soldering base when soldering! This will prevent the components and the board from slipping.
- We recommend a soldering iron stand to hold the soldering iron safely during assembly.

# Environmental Warnings

**General:** Please return the board to a certified disposal company at the end of its useful life. They will ensure the board is disposed of in accordance with the law. This is environmentally friendly and actively contributes to the protection of the environment.

**Battery ordinance:** Dear customer, you have purchased a battery-operated product from us. Although the storage battery has a very long life, it will eventually need to be disposed of. Used batteries must not be discarded in the household waste. Consumers are legally obligated to return batteries to a suitable collection site. Used batteries contain valuable raw materials which are recyclable. You may also send your batteries to: SOL-EXPERT group, Mehlistrasse 19, 88225 Baidt.



**ATTENTION:**

The end user of this product is required by law to recycle the storage battery in this product!

## Assembly Instructions:

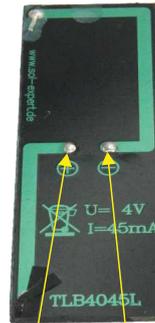


### 1 Soldering the solar cell

1

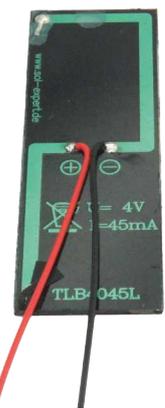


2



Tin-plate contacts (apply solder)

3



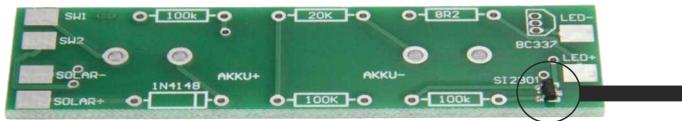
Solder cable (red and black 15 cm)  
Red cable to "+", black cable to "-"

A

### 2 Soldering the board

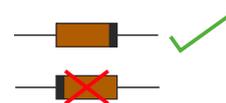
B

The small SMD component (SI2301) is already soldered on!

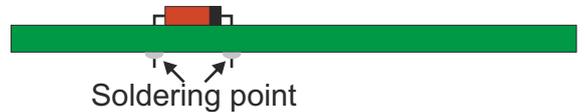
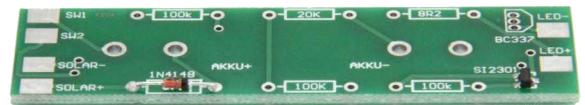


Fit and solder diode 1N4148 (note polarity!), trim leads with side cutters

C



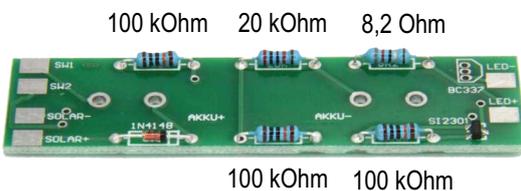
Diode  
1N4148



Soldering point

Fit and solder 5 resistors, trim leads with side cutter

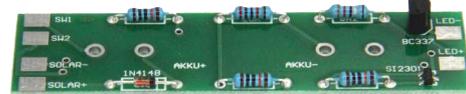
D



Resistor	
3x	100 kOhm brown orange black black brown
1x	20 kOhm brown red black black red
1x	8,2 Ohm brown silver black red grey

Fit and solder transistor BC337 (note correct installation position), trim leads with side cutters

E

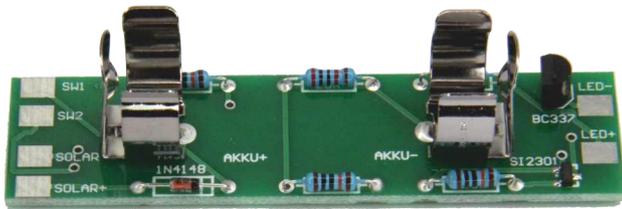


Transistor  
BC337



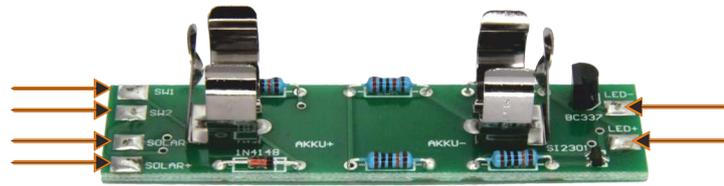
Solder on battery mount!  
If necessary, use a larger soldering tip!

F



Tin-plate solder contacts (apply solder): 6x

G



**Gluing TIP:**

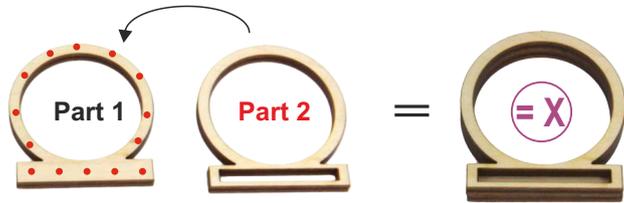
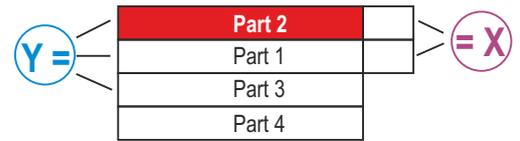
Less is more! – this frequently also applies to gluing. The kit includes a paper clip to ensure you do not apply too much glue. Simply bend it open. It helps with dispensing the glue. Squeeze a few drops of glue from the tube onto a suitable surface (e.g. paper, scrap piece of wood from the kit) and dip in the tip of the paper clip. You can now use the glue on the paper clip to apply the dots of glue. If glue dries on the paper clip, simply remove the glue with a tissue and add more to the tip.

**ATTENTION:**

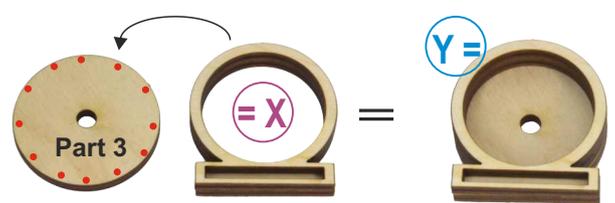
**All parts must be glued in place flush or the cover will not fit onto the water tube!**

**3 Assembling the LED cover**

Parts assembly order for the LED cover and switch cover



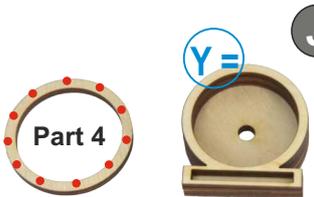
H



I

- • • Apply small glue dots to part 1 Glue part 2 onto part 1 – the parts must be glued together flush! Use very little glue

- • • Apply small glue dots to part 3 Glue part X onto part 3 – the parts must be glued together flush! Use very little glue



J

Insert LED (from the correct side) and glue in place

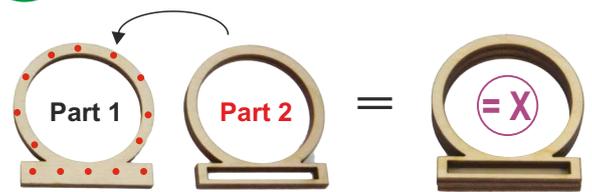
K



- • • Apply small glue dots to part 4. Glue part Y onto part 4 – the parts must be glued together flush! Use very little glue

**4 Assembling the switch over**

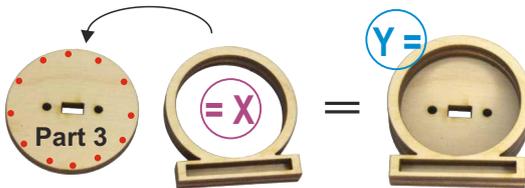
L



- • • Apply small glue dots to part 1. Glue part 2 onto part 1 – the parts must be glued together flush! Use very little glue

- • • Apply small glue dots to part 3 Glue part X to part 3

M

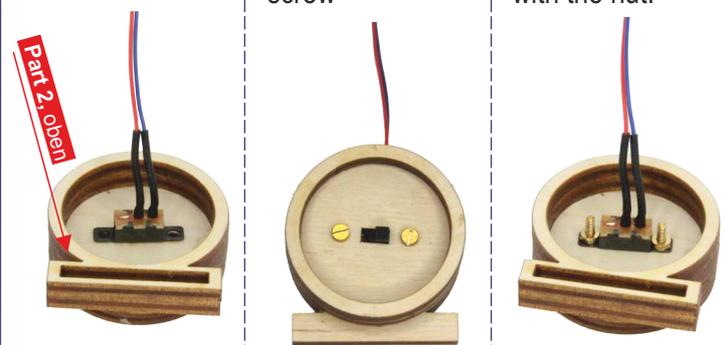


Plug in switch

Push through M2 x 10 screw

and secure with the nut.

O



- • • Apply small glue dots to part 4. Glue part Y onto part 4 – the parts must be glued together flush! Use very little glue

N

# 5 Soldering and final assembly

P

Use the sandpaper to remove any fibre from the edges of the tube



Q

Twist and slide on the switch cover



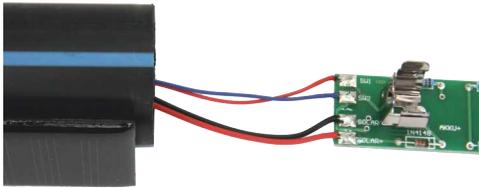
R

Feed the solar cell leads through the hole and insert the solar cell into the recess



S

Solder the switch leads and solar cell. Note the lead colour!

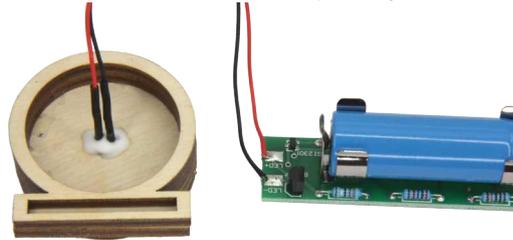


Red switch lead SW1  
Blue switch lead SW2

Black solar cell lead SOLAR-  
Red solar cell lead SOLAR+

T

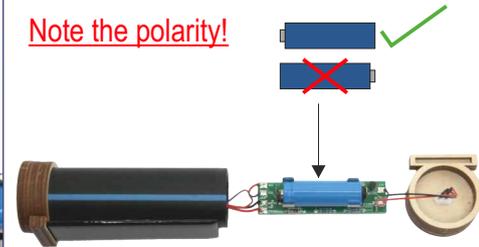
Solder the LED leads. Insert battery. Note the lead colours and polarity!



Red LED lead LED+  
Black LED lead LED-

U

Note the polarity!



V

Slide the board into the tube



W

Twist and slide on the LED cover



X

Finished!



## TEST:

When you slide the switch, the LED should light up.

If the LED does not light up:

- Check the components on the board
- Check the soldering
- Check the battery polarity
- Charge the storage battery in the sun for a few hours

