

fOthermo



# 1,000 watt SOLAR HEATING ROD

## LOWER HOT WATER COSTS AND USE SURPLUS ELECTRICITY

The fothermo solar heating element is a 1,000-watt direct current heating element for hot water preparation. An integrated surplus function allows excess power to be fed into a second solar heating element or into the home's electrical grid using a micro-PV inverter. This reduces hot water and electricity costs. The solar heating element uses continuously variable power control from 0 W to 1,000 W.



0 W - 1.000 W heating power

DC

Direct DC use



Innovative surplus feed-in



Easy plug & play installation



Made in Germany



## Advantages:

- For hot **water tanks up to 500 liters** volume.
- **Support for gas or oil heating** as well as heat pump and pellet heating.
- Up to **3,000 watts of photovoltaic** connected load
- Integrated **1,000 watt surplus** utilization
- **Easy retrofitting** of existing heating systems thanks to standardized G 1 ½ inch (6/4 inch) thread.
- **No registration required** - no registration of the photovoltaic system necessary.

## The function of the fothermo solar heating rod

The fothermo solar heating rod is a 0 to 1,000 watt continuously adjustable DC heating rod for solar-electric heat generation. Due to its self-sufficient operation, it requires no connection to the power grid, as the device is self-powered by the connected photovoltaic modules. The fothermo solar heating rod uses photovoltaic power directly to generate heat – completely free of bureaucracy and without interfering with the home's existing electrical system.

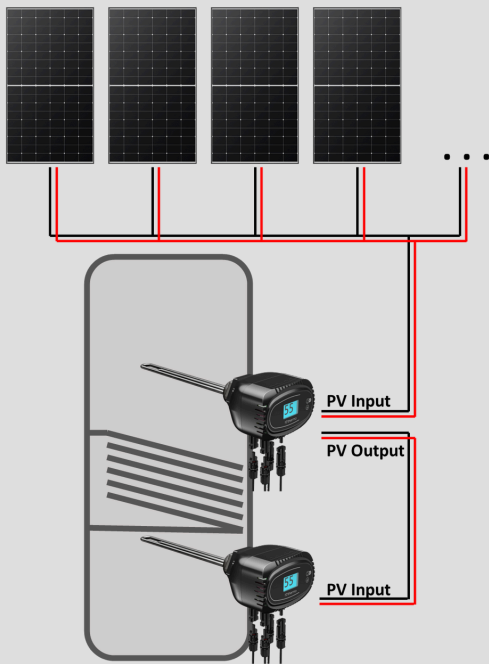
### Use of excess energy

An innovative switchover function enables the optional use of excess photovoltaic power. The switchover occurs as soon as the freely selectable maximum temperature of the hot water in the storage tank is reached. The excess power can be used to cascade several solar heating elements. It is also possible to feed the excess power into a micro-PV inverter in the home's electrical grid.



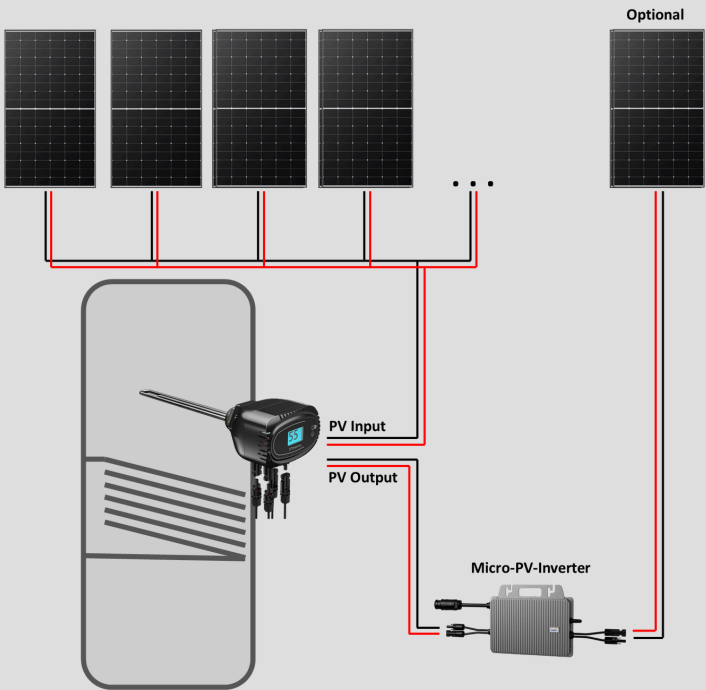
### Cascade circuit

Two solar heating elements can be connected in series. This allows for energy-efficient stratification of the hot water in the storage tank. Once the upper heating element reaches its maximum temperature, the system switches to the second heating element, which is screwed further down into the storage tank.



### Grid feed-in

Once the water in the hot water tank reaches its maximum temperature, the system can also be switched to a micro-PV inverter. This enables efficient and bureaucratic use of the surplus solar power generated. This can reduce not only hot water costs but also electricity costs.



## Performance and energy savings

Up to 3,000 watts of photovoltaic power (approximately 5 to 7 photovoltaic modules) can be connected to the fothermo solar heating rod. The heating rod uses up to 1,000 watts of photovoltaic power for hot water production. Excess power is regulated. Oversizing the photovoltaic module power enables high heating output even on cloudy days.

The following table provides an overview of the expected energy savings per year and household, depending on the number of connected photovoltaic modules. All data are rough guidelines.

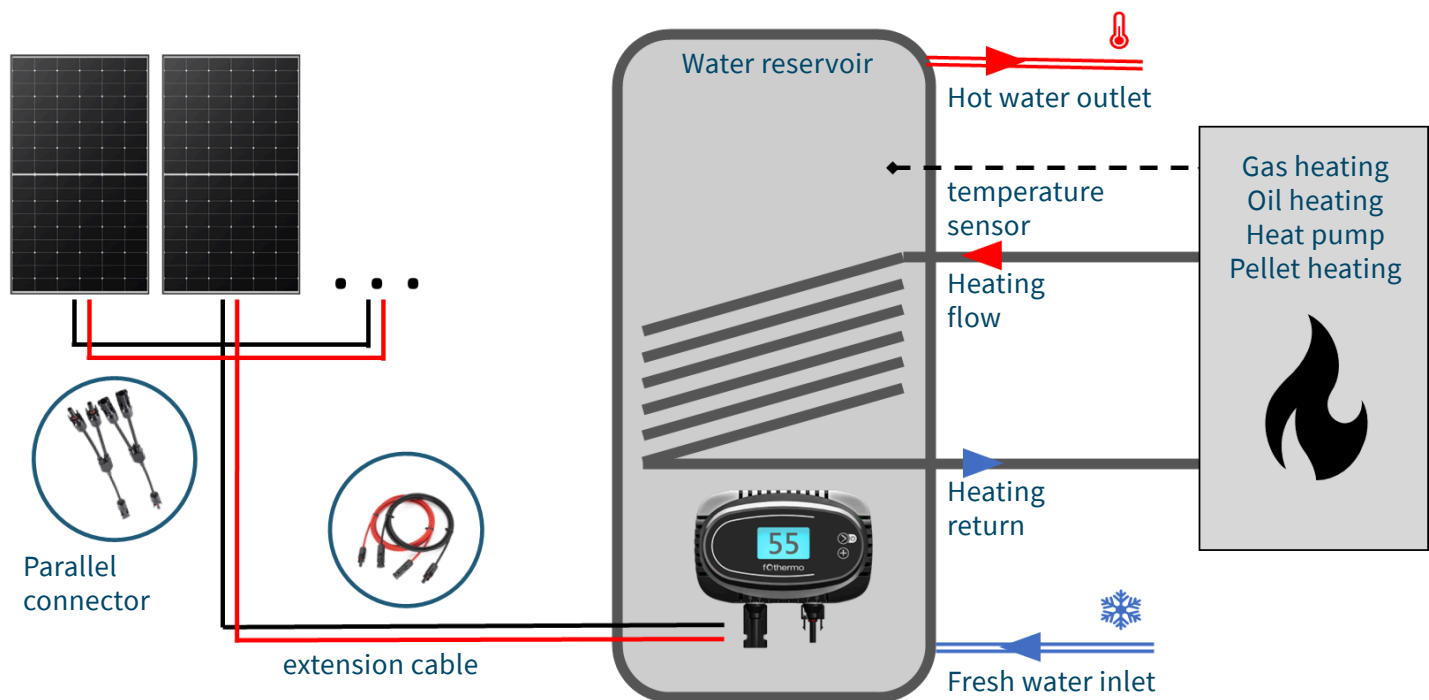
| Number of photovoltaic modules | Hot water produced in liters per year | Amount of heat generated in kWh per year |
|--------------------------------|---------------------------------------|--|
| 2                              | approx. 14,000 liters                 | ca. 900 kWh                              |
| 3 - 4                          | approx. 20,000 - 26,000 liters        | ca. 1,300 - 1,600 kWh                    |
| 5 - 7                          | approx. 30,000 - 34,000 liters        | ca. 1,900 - 2,200 kWh                    |

## Area of application - hot water preparation

The solar heating rod is designed as a simple and cost-effective heating backup. It is screwed directly into an existing hot water tank. This significantly reduces energy costs. At the same time, wear and tear on the heater/heat pump is reduced.

The heating element is particularly suitable for use with hot water tanks with a capacity of up to 500 liters. It features its own independent temperature sensor and a freely adjustable maximum temperature of 65°C or 85°C in lime-free water.

If there isn't enough solar energy available, the heating system's temperature sensor detects when the water needs to be reheated. If the temperature drops below a minimum value set in the heating system (e.g., 40°C), the heating system automatically reheats the water. This ensures hot water is always available - even in winter.



## Who is the solar heating rod suitable for?

The solar heating element was specifically developed for smaller households with one to four people to reduce hot water costs. It supports the existing heating system (gas, oil, pellet heating, or heat pump) in hot water preparation.

Example: With just three photovoltaic modules, a solar heating element in a two-person household can almost completely cover hot water needs during the summer months. Throughout the year, approximately 75% of the energy required for hot water is provided by the photovoltaic modules.

## Set - Configuration and Installation

What is needed to use the fothermo solar heating rod?:

1. Check whether your hot water tank has a G 1 ½ inch thread or a 180 mm inspection opening.
2. Components required for installation:
  - a. **fothermo solar heating rod**
  - b. **Photovoltaic modules** depending on needs and available space
  - c. **Solar extension cable** - from the modules to the solar heating rod
  - d. **Parallel connector** - for parallel connection of photovoltaic modules
3. Easy installation and plug & play installation



TECHNICAL DATA

|  |   |
|--|---|
| Product name                             | 1.000 W fothermo solar heating rod                    |
| Product model                            | ROD-1000  |
| stepless heating output                  | 0 W - 1,000 W   |
| Max. voltage                             | 50 V (max. open circuit voltage)                      |
| Recommended photovoltaic module voltage  | 38 V - 43 V (MPP voltage of the photovoltaic modules) |
| Max. input current                       | 23 A, automatic current limitation (DC)               |
| Max. connected photovoltaic power        | 3.000 Watt  |
| Recommended connected photovoltaic power | 1.500 W bis 2.500 W                                   |
| DC inputs                                | 1, MC4 compatible connector pair                      |
| Number of MPP trackers                   | 1   |
| Water temperature range                  | 5 °C to 65 °C (max. 85 °C in lime-free water)         |

SURPLUS OUTPUT

|                      |  |
|----------------------|--|
| Max. output power    | 1,000 W  |
| Max. output current  | 23 A, automatic shutdown of the output when exceeded |
| Output voltage range | 0 - 50 V Photovoltaikmodulspannung                   |
| DC outputs           | 1, MC4 compatible connector pair                     |

GENERAL DATA

|  |                          |
|--|--------------------------|
| Dimensions (L x H x W)                   | 468 mm x 140 mm x 154 mm |
| Heating element length / immersion depth | 315 mm / 295 mm          |
| Unheated heating element length          | 50 mm                    |
| Operating temperature range              | -10 °C to 35 °C          |
| Storage temperature                      | -10 °C to 35 °C          |
| Installation position                    | Horizontal               |
| Guarantee                                | 2 years                  |
| Protection class                         | IP 20                    |
| Weight                                   | 0,8 kg                   |
| Screw-in diameter                        | G 1 ½ inch               |

Dimensions and detailed drawing

