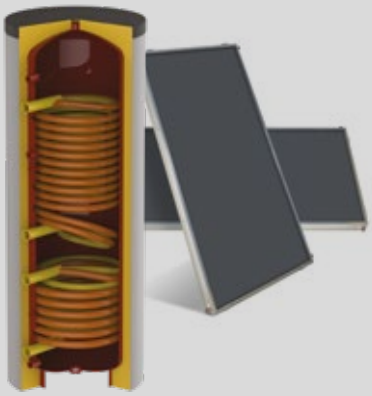
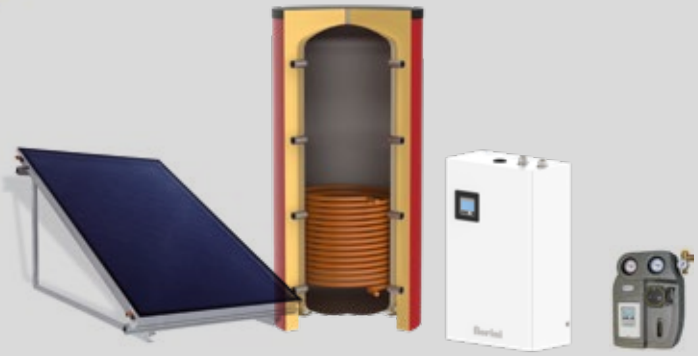
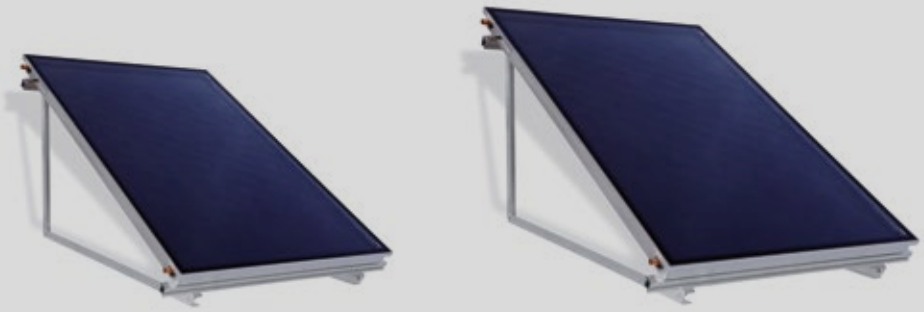
# Thermal Solar Systems















# Thermal Solar Kit for DHW production

## HOT WATER AND SOLAR HEATING SYSTEM

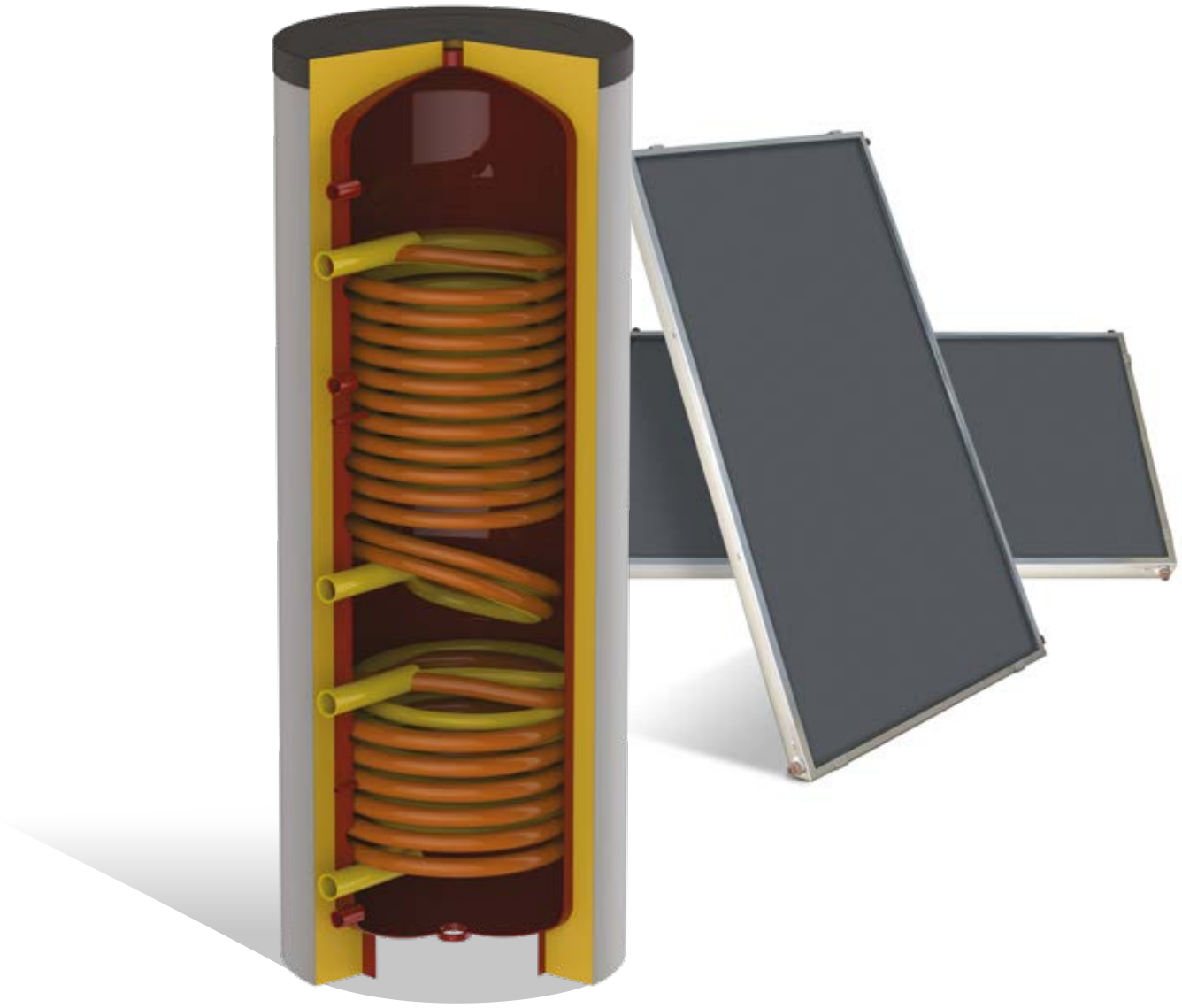
Solar energy is an inexhaustible source of energy that can be easily used both in hot water preparation and in the heating process. Solar energy helps protect the environment and ensures significant energy savings.

## OUR SOLUTIONS

Fiorini has designed two product lines: the Aqua Sun line for domestic hot water production and the Combi Sun line for domestic hot water production and heating. Both solutions are available in different versions which are realized based on the user's consumption and the heating system typology, in order to meet a wide range of needs.

## WHY THE SOLAR THERMAL KIT

In order to facilitate the choice of the most efficient solution and to make the installation of a solar thermal system easier, faster and therefore cheaper we conceived a series of devices which have many benefits and satisfy users' needs (single housing, multi-family houses, artisanal or commercial activities, accommodation facilities).



# Thermal Solar Kit for DHW production

**ADVANTAGES**

✪ Saving money. The technology we use ensures high efficiency. Acqua Sun and Combi Sun solutions make your working environment or your household more energy-efficient which saves you money every day. The solar Thermal Kit is not expensive and can be written off.

✪ Value of the property. The installation of a system based on renewable energy can improve the energetic classification of the household and working environments which makes the property value and commercial value increase.

✪ Respect for the environment. Solar energy is clean and eco-friendly. It helps reducing polluting emissions.

✪ Energy autonomy. Solar energy is an energy source which is always available and it is not subject to restrictions or conditioning. For this reason, it helps reaching energy autonomy. Consequently, thermal energy production is low-cost and not subject to price increases.

✪ Fast and easy installation. The production of devices in a Kit facilitates the assembly which also reduces installation time.

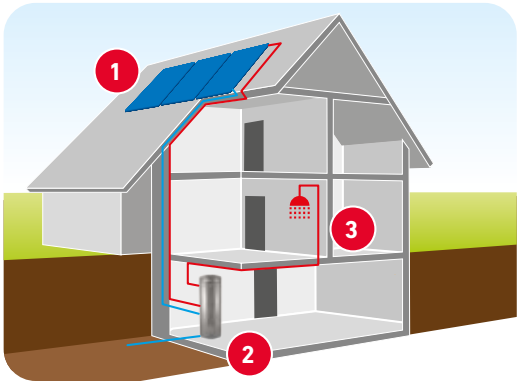
✪ Minimal maintenance. The equipment (collectors, regulators, pumps) and accessories require minimal maintenance.





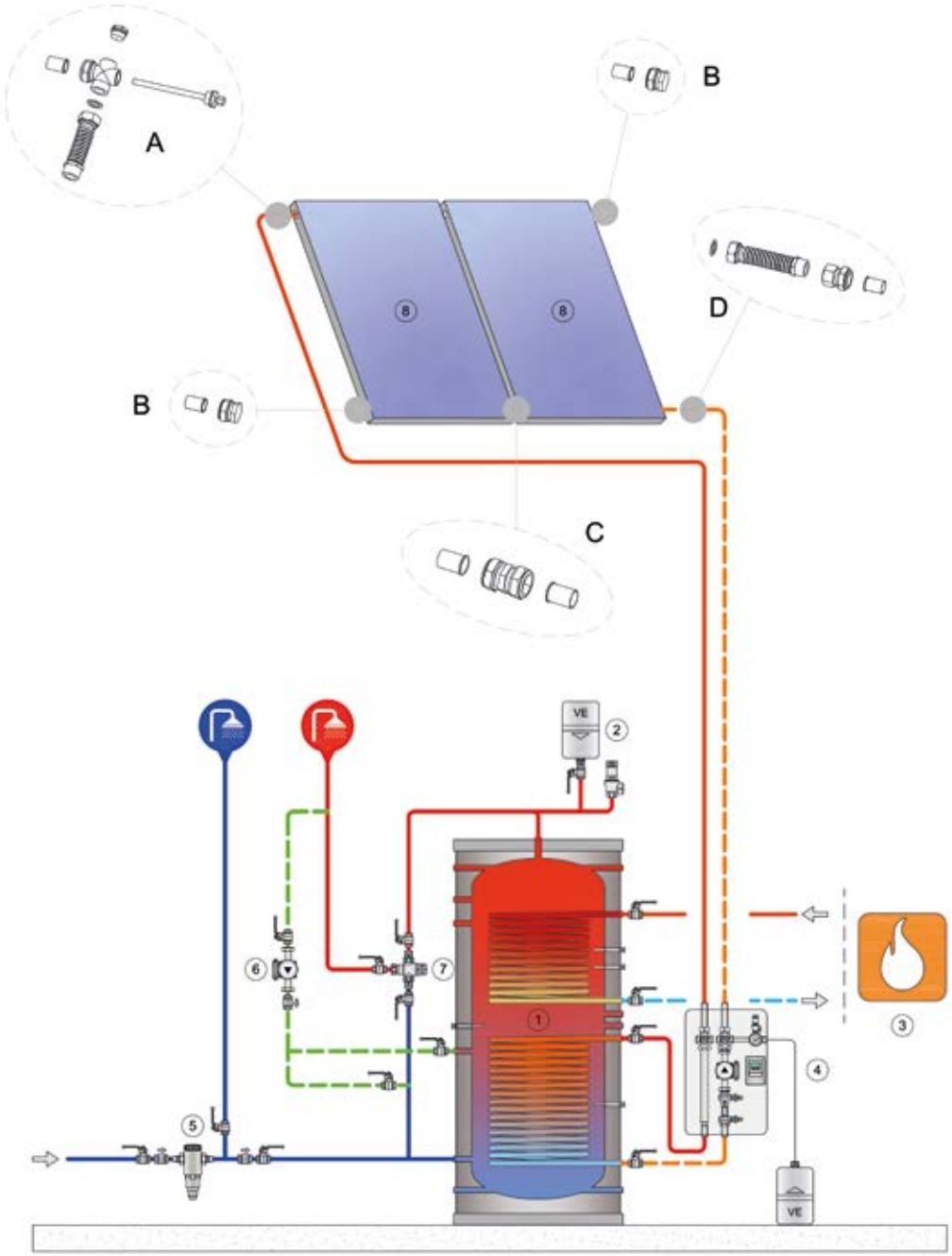
# AQUA SUN Thermal Solar kit for DHW production

The Aqua Sun Kit is the easiest and most efficient way to produce hot water using solar power. There are two versions of the Aqua Sun systems which correspond to different daily needs (see 'daily needs' chart).




**Principles**

1. The sun heats the solar liquid in the solar collectors
2. The solar liquid reaches the storage tank and heats the water with help of the exchanger.
3. The hot water is available for domestic use.




| List of components |
|---|
| A) kit outlet for the assembly of the collectors |
| B) kit plug for the assembly of the collectors |
| C) connection between collectors |
| D) kit inlet for the assembly of the collectors |

| List of components |
|---|
| 1. Fiorini domestic water storage tank |
| 2. safety unit |
| 3. heating from alternative source |
| 4. return unit solar thermal system |
| 5. bacteriostatic cold water filter |
| 6. sanitary recirculation pump |
| 7. DHW thermostatic mixer |
| 8. Fiorini solar collectors |

# AQUA SUN Thermal Solar kit for DHW production

| Rif. | Series<br>Energy label<br>Composition<br>Number of persons* | Aqua Sun 1<br>C<br>1 H2000+SMART2 200<br>x 2 | | Aqua Sun 1.1<br>C<br>1 H2500+SMART2 200<br>x 3 | |
|---|---|---|---|---|---|
| 8 | Solar collector | 1xH2000 | pag. 282 | 1xH2500 | pag. 284 |
| A+B+D | Kit for basic connections | 1 piece | | 1 piece | |
| C | Joint | - | | - | |
| 4 | Solar station for pumping and regulation | S2 SOLAR 30 - 25/6.0 | pag. 290 | S2 SOLAR 30 - 25/6.0 | pag. 290 |
| - | Anti-freeze liquid | 20 litres | pag. 300 | 20 litres | pag. 300 |
| 9 | Expansion vessel | 18 litres | pag. 300 | 18 litres | pag. 300 |
| 10 | Set for fixing the vessel | SSTOAS | pag. 300 | SSTOAS | pag. 300 |
| 1 | Solar power water heater | SMART2 200 | pag. 168 | SMART2 200 | pag. 168 |

| Rif. | Series<br>Energy label<br>Composition<br>Number of persons* | Aqua Sun 2<br>C<br>2 H2000+SMART2 300<br>x 4 | | Aqua Sun 2.1<br>C<br>2 H2500+SMART2 300<br>x 5 | |
|---|---|---|---|---|---|
| 8 | Solar collector | 2xH2000 | pag. 282 | 2xH2500 | pag. 284 |
| A+B+D | Kit for basic connections | 1 piece | | 1 piece | |
| C | Joint | 1 piece | | 1 piece | |
| 4 | Solar station for pumping and regulation | S2 SOLAR 30 - 25/6.0 | pag. 290 | S2 SOLAR 30 - 25/6.0 | pag. 290 |
| - | Anti-freeze liquid | 20 litres | pag. 300 | 20 litres | pag. 300 |
| 9 | Expansion vessel | 18 litres | pag. 300 | 18 litres | pag. 300 |
| 10 | Set for fixing the vessel | SSTOAS | pag. 300 | SSTOAS | pag. 300 |
| 1 | Solar power water heater | SMART 2 300 | pag. 168 | SMART 2 300 | pag. 168 |

| Rif. | Series<br>Energy label<br>Composition<br>Number of persons* | Aqua Sun 3<br>C<br>3 H2000+SMART2 500<br>x 6 | | Aqua Sun 3.1<br>C<br>3 H2500+SMART2 500<br>x 7 | |
|---|---|---|---|---|---|
| 8 | Solar collector | 3xH2000 | pag. 282 | 3xH2500 | pag. 284 |
| A+B+D | Kit for basic connections | 1 piece | | 1 piece | |
| C | Joint | 2 pieces | | 2 pieces | |
| 4 | Solar station for pumping and regulation | S2 SOLAR 30 - 25/6.0 | pag. 290 | S2 SOLAR 30 - 25/6.0 | pag. 290 |
| - | Anti-freeze liquid | 20 litres | pag. 300 | 20 litres | pag. 300 |
| 9 | Expansion vessel | 18 litres | pag. 300 | 18 litres | pag. 300 |
| 10 | Set for fixing the vessel | SSTOAS | pag. 300 | SSTOAS | pag. 300 |
| 1 | Solar power water heater | SMART2 500 | pag. 168 | SMART2 500 | pag. 168 |

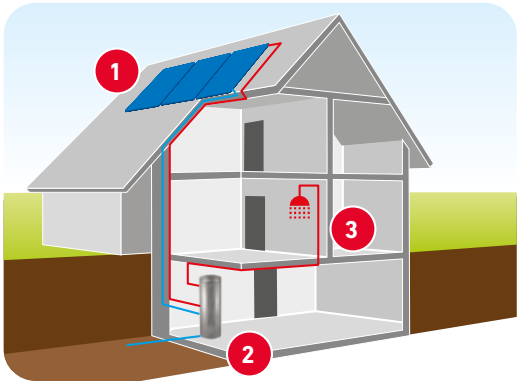
NOTE: Collector fixing kit not included (pag. 275)

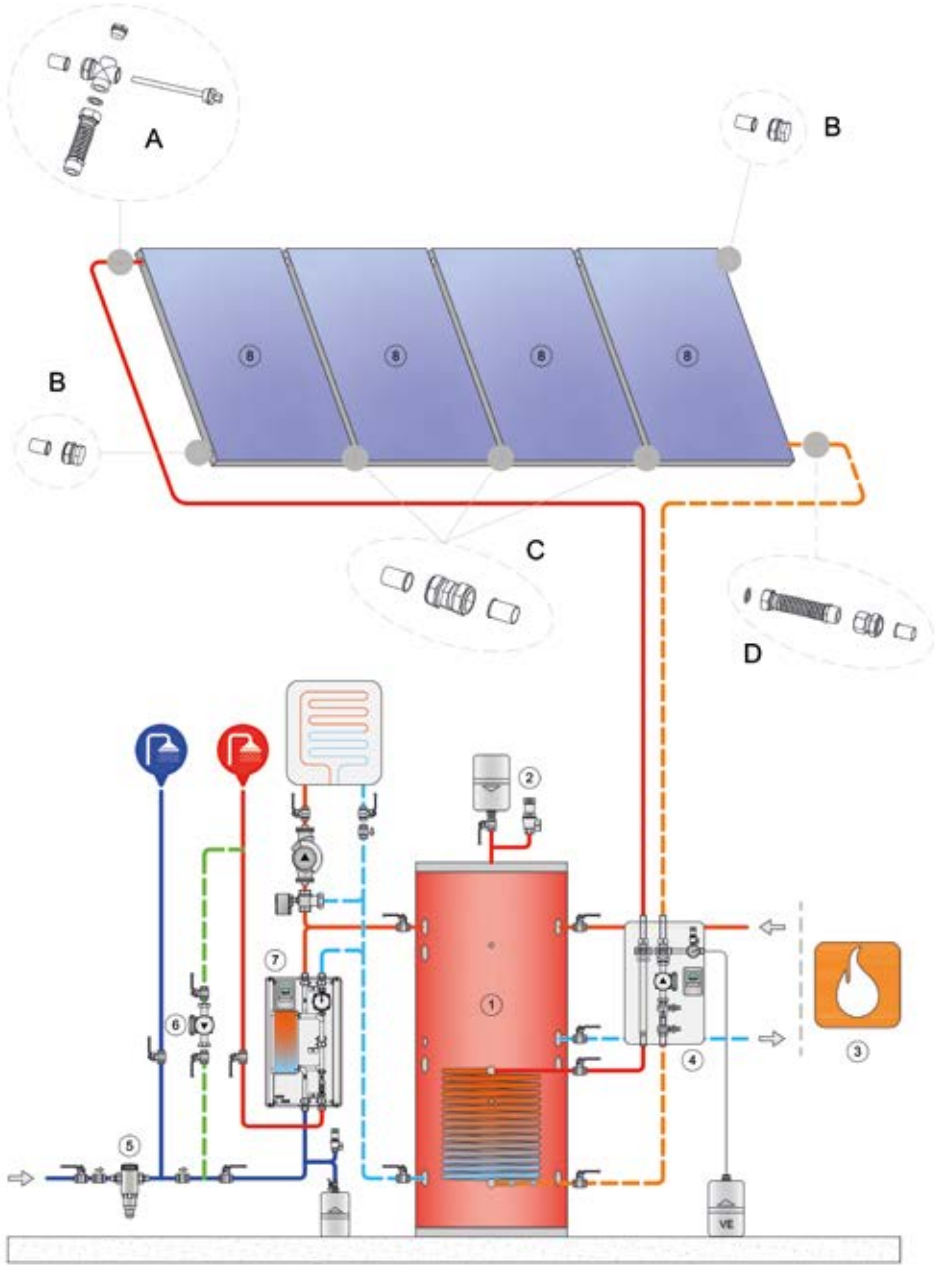
# Thermal Solar power kit for DHW production and heating – COMBI SUN

The Combi Sun kit is the solution which makes it possible to heat domestic water and water for the heating system. There are three versions of the Combi Sun system which correspond to different daily needs and different compositions/surfaces.

**Principles**

1. The sun heats the solar fluid in the solar collectors.
2. The solar fluid reaches the storage tank and heats the water with the exchanger.
3. The hot water in the storage tank can be used to heat domestic water and to heat the surroundings.




| List of components |
|---|
| A) kit outlet for the assembly of the collectors |
| B) kit plug for the assembly of the collectors |
| C) connection between collectors |
| D) kit inlet for the assembly of the collectors |

| List of components |
|---|
| 1. Fiorini domestic water storage tank |
| 2. safety unit |
| 3. heating from alternative source |
| 4. return unit solar thermal system |
| 5. bacteriostatic cold water filter |
| 6. sanitary recirculation pump |
| 7. DHW thermostatic mixer |
| 8. Fiorini solar collectors |

# Thermal Solar power kit for DHW production and heating – COMBI SUN

| | Series<br>Energy label<br>Composition | Combi Sun 4<br>C<br>4 H2500+PFB800+SET30 | | Combi Sun 6<br>C<br>6 H2500+PFB1000+SET30 | | Combi Sun 8<br>C<br>8 H2500+PFB1500+SET40 | |
|---|---|---|---|---|---|---|---|
| **Rif.** | **Residence*** | **small** | | **medium** | | **large** | |
| 8 | Solar collector | 4xH2500 | pag. 284 | 6xH2500 | pag. 284 | 8xH2500 | pag. 284 |
| A+B+D | Kit for basic connections | 1 piece | pag. 282 | 1 piece | pag. 282 | 2 piece | pag. 282 |
| C | Joint | 3 pieces | pag. 282 | 5 pieces | pag. 282 | 6 pieces | pag. 282 |
| 4 | Solar station for pumping and regulation | S2 SOLAR 30 - 25/6.0 | pag. 290 | S2 SOLAR 30 - 25/6.0 | pag. 290 | S2 SOLAR 30 - 25/7 | pag. 290 |
| | Anti-freeze liquid | 40 litres | pag. 300 | 60 litres | pag. 300 | 60 litres | pag. 300 |
| 9 | Expansion vessel | 25 litres | pag. 300 | 50 litres | pag. 300 | 50 litres | pag. 300 |
| 10 | Set for fixing the vessel | SSTOAS | pag. 300 | N.D. | - | N.D. | - |
| 1 | Puffer storage tank | PFB 800 | pag. 89 | PFB 1000 | pag. 89 | PFB 1500 | pag. 89 |
| 7 | SET fresh water station | SET 30 | pag. 249 | SET 30 | pag. 249 | SET 40 | pag. 249 |

N.A. Not Available














NOTE: Collector fixing kit not included (pag. 287)

# H2000 - High efficiency flat plate solar panels with aluminium tank

## H2000 high performance solar collector – 2 m² with an aluminium frame for vertical and horizontal installation

The new solar collector is made of profiles in high quality anticorrosive aluminium (Al Mg). It is endowed with a closing system with integrated perimeter gasket in vulcanized EPDM, and it is resistant to temperature swings and UV rays. It consists of a solar glass with antireflex safety, high transparency, a low iron content and insulation in qualitative mineral wool without formaldehyde and adhesives. The absorber is covered in highly selective vacuum aluminium and the product is endowed with connections. The collector is suitable for installation on the roof, for integration into the roof or for positioning on a structure. Performance and quality tested.




### Features

- ✔ Unique and intelligent design
- ✔ Unbeatable price/quality ratio
- ✔ Precise manufacturing: construction on a motorized product line
- ✔ Intelligent fixing system: reduced installation time
- ✔ Several installation possibilities: up to 6 connected collectors, on tile, flat roofs...

| | H2000 Vertical | |
|---|---|---|
| **Gross surface** | **code** | **price** |
| 2 m² | 821120058X | |

| Available models | |
|---|---|
| **Article** | **External dimensions** |
| H2000 | 1730 x 1170 x 83 mm |

| | Set for coupling collectors H2000/H2500 | |
|---|---|---|
| | **code** | **price** |
| base | 843070274X | |
| joint | 843070275X | |
| expansion | 843070277X | |
| horizontal joint | 843070276X | |

**Connection options**

Parallel connection



Max 6 collectors

Series connection



Based on pressure drop

Combined connection

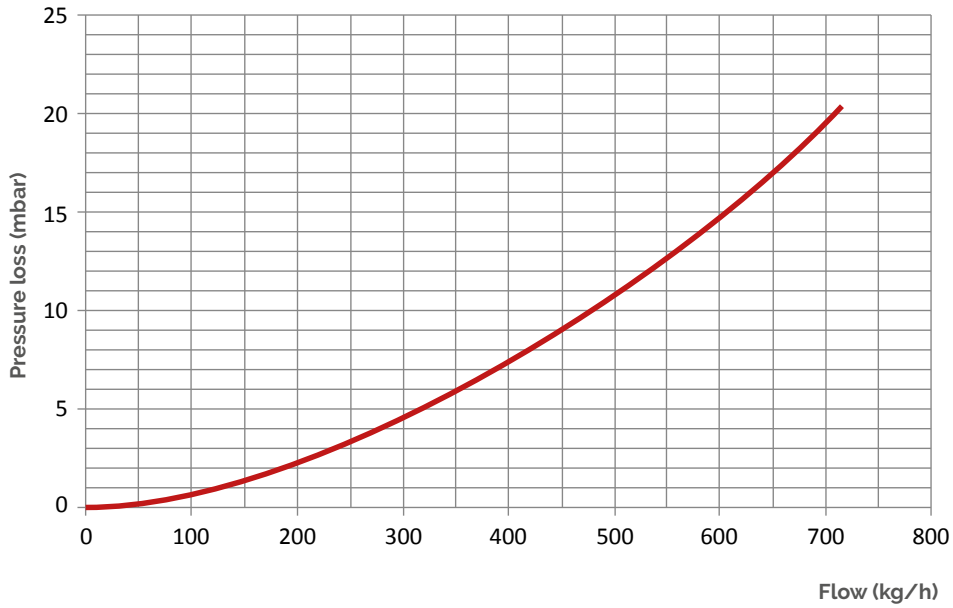


Based on pressure drop

# H2000 - High efficiency flat plate solar panels with aluminium tank

| Technical information | |
|---|---|
| Gross surface ($m^2$) | 2,02 |
| Exposed surface ($m^2$) | 1,84 |
| Net surface ($m^2$) | 1,84 |
| Capacity (l) | 1,56 |
| Flow | high flow/low flow |
| Glass thickness | 3,2 mm |
| Glass transmission coefficient | 91% |
| Thickness of insulation | 40 mm piano |
| Absorber | covered in highly selective vacuum aluminium |
| Absorption | 95% |
| Emission | 5% |
| Connections | 4 x 22 mm |
| Operating pressure | 10 bar |
| Testing pressure | 15 bar |
| Max temperature | 192°C |
| Weight | 35 kg |
| Certificates | EN 12975 + Keymark |
| Warranty | 10 years (glass not included) |

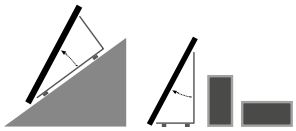
| Efficiency coefficient | Opening | Absorber |
|---|---|---|
| $\eta_0$ | 0,814 | 0,814 |
| $a_1$ | 4,061 | 4,061 |
| $a_2$ | 0,013 | 0,013 |




## Assembly



On the roof
Horizontal, vertical
Fixing kit, frames and accessories



Supported
Frame for horizontal or vertical structure

# H2500 - High efficiency flat plate solar panels with aluminium tank

## H2500 high performance solar collector – 2,5 $m^2$ with an aluminium frame for vertical and horizontal installation

The new solar collector is made of profiles in high quality anticorrosive aluminium (Al Mg). It is endowed with a closing system with integrated perimeter gasket in vulcanized EPDM, and it is resistant to temperature swings and UV rays. It consists of a solar glass with antireflex safety, high transparency, a low iron content and insulation in qualitative mineral wool without formaldehyde and adhesives. The absorber is covered in highly selective vacuum aluminium and the product is endowed with connections. The collector is suitable for installation on the roof, for integration into the roof or for positioning on a structure. Performance and quality tested.




### Features

- ✔ Unique and intelligent design
- ✔ Unbeatable price/quality ratio
- ✔ Precise manufacturing: construction on a motorized product line
- ✔ Intelligent fixing system: reduced installation time
- ✔ Several installation possibilities: up to 6 connected collectors, on tile, flat roofs...

| | H2500 Vertical | |
|---|---|---|
| **Gross surface** | **code** | **price** |
| 2.51 m2 | 821120067X | |

| Available models | |
|---|---|
| **Article** | **External dimensions** |
| H2500 | 2150 x 1170 x 83 mm |

| | Set for coupling collectors H2000/H2500 | |
|---|---|---|
| | **code** | **price** |
| base | 843070274X | |
| joint | 843070275X | |
| expansion | 843070277X | |
| horizontal joint | 843070276X | |

### Connection options

Parallel connection



Max 6 collectors

Series connection



Based on pressure drop

Combined connection

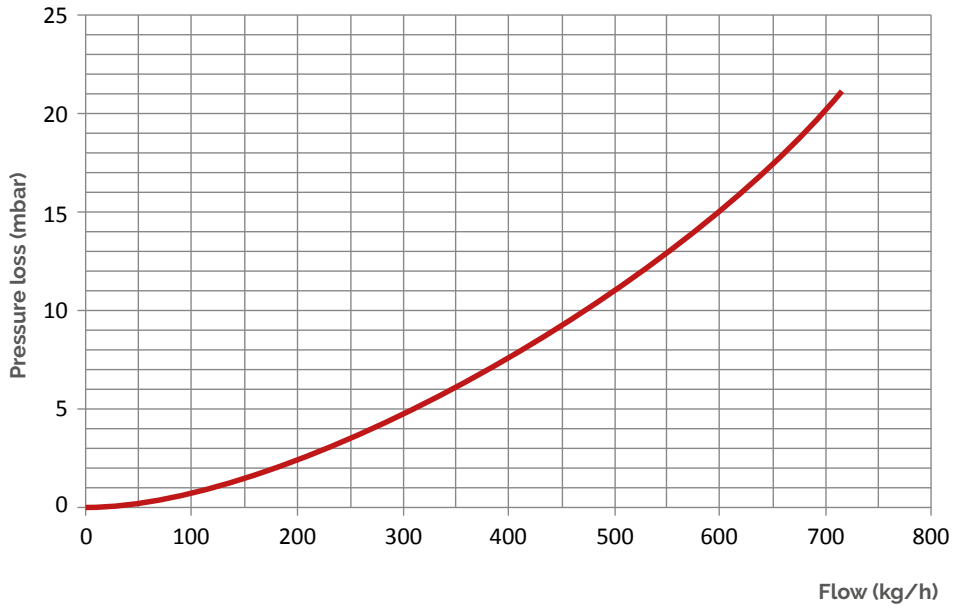


Based on pressure drop

# H2500 - High efficiency flat plate solar panels with aluminium tank

| Technical information | |
|---|---|
| Gross surface ($m^2$) | 2,51 |
| Exposed surface ($m^2$) | 2,31 |
| Net surface ($m^2$) | 2,31 |
| Capacity (l) | 1,95 |
| Flow | high flow/low flow |
| Glass thickness | 3,2 mm |
| Glass transmission coefficient | 91% |
| Thickness of insulation | 50 mm piano |
| Absorber | covered in highly selective vacuum aluminium |
| Absorption | 95% |
| Emission | 5% |
| Connections | 4 x 22 mm |
| Operating pressure | 10 bar |
| Testing pressure | 15 bar |
| Max temperature | 192°C |
| Weight | 35 kg |
| Certificates | EN 12975 + Keymark |
| Warranty | 10 years (glass not included) |

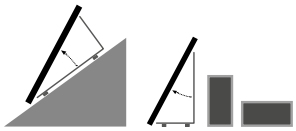
| Efficiency coefficient | Opening | Absorber |
|---|---|---|
| $\eta_0$ | 0,807 | 0,807 |
| $a_1$ | 4,04 | 4,04 |
| $a_2$ | 0,012 | 0,012 |




## Assembly



On the roof
Horizontal, vertical
Fixing kit, frames and accessories



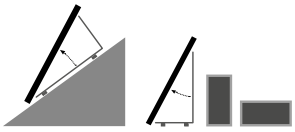
Supported
Frame for horizontal or vertical structure

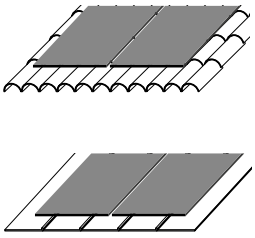
# Assembly and materials

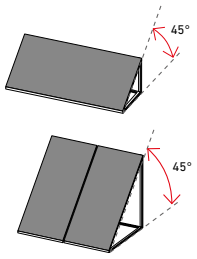
## Assembly and materials

A broad range of installation solutions All models of the collector are available in several versions in terms of installation, fixing and materials. Depending on the functional characteristics and the type of roof (flat roof, pitched roof with tile, on sheet, etc.) it is possible to choose from a broad range of solutions to ensure the maximum structural strength of the system and efficient heat exchanging of the collector. Custom solutions are meant to match the solar power system with the rest of the architecture to minimize the visual impact and structural obstructions.

| Installation | On the roof | | | Integrated | On a frame | | |
|---|---|---|---|---|---|---|---|
| Models | On tile | On frame (roof) | Stainless steel sheet | Galvanized steel sheet | Stainless steel structure | Galvanized steel structure | Aluminium structure |
| H2000 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| H2500 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

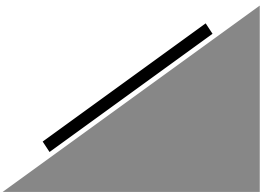
| Installation | |
|---|---|
| <br>On the roof<br>vertical/horizontal installation kit, frame and accessories | On tile<br>System for fixing the solar collector on a tiled pitched roof by means of sturdy hooks and frames.<br><br>On sheet<br>System for fixing the solar collector on a pitched sheet roof, with resistant aluminium structures and shaped welded stainless steel clamps. |
| <br>On a frame<br>vertical/horizontal frame | Supporting structure for mounting the solar collector in 45° from the flat surface. Suitable with flat and pitched roof. |

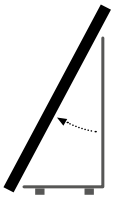




# Collector fixing systems

| Standard solar collector fixing systems H2000/H2500 | | | | |
|---|---|---|---|---|
| Arrangement | | | Vertical | |
| Installation | | Num. Panels | code | price |
| On the roof | On tile | ■ | 843070210X | |
| | | ■■ | 843070211X | |
| | | ■■■ | 843070212X | |
| | | ■■■■ | 843070213X | |
| | | ■■■■■ | 843070214X | |
| | | ■■■■■■ | 843070215X | |
| | On tile/sheet | ■ | 843070301X | |
| | | ■■ | 843070294X | |
| | | ■■■ | 843070293X | |
| | | ■■■■ | 843070302X | |
| | | ■■■■■ | 843070303X | |
| | | ■■■■■■ | 843070304X | |
| On support (structure to be put on flat surfaces) | 45° pitched aluminium | ■ | 843070242X | |
| | | ■■ | 843070243X | |
| | | ■■■ | 843070244X | |
| | | ■■■■ | 843070245X | |
| | | ■■■■■ | 843070246X | |
| | | ■■■■■■ | 843070247X | |





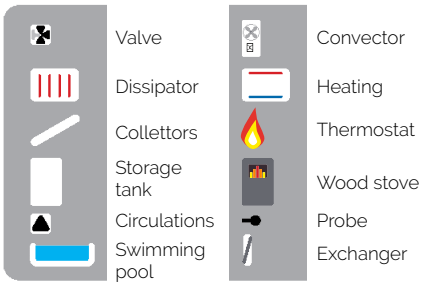
# MTDC Solar regulator

The MTDC differential controller is an electronic regulator for solar power systems. It is equipped with a large LED screen which enables an efficient control of the solar power system. A very useful wizard will guide you during the start-up of the system. Step by step the wizard program will configure your system using one of the various pre-set hydraulic diagrams indicated in the following list.

| Technical data | |
|---|---|
| Temperature sensor Pt1000 | 3 |
| Relay outputs 230VAC | 1 |
| 0-10V or PWM outputs | 1 |
| Power supply | 230 VAC |
| Protection Category | IP 40 |

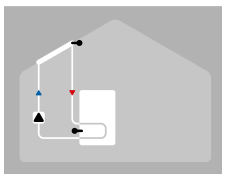
| Code | Price |
|---|---|
| C22130020 | |

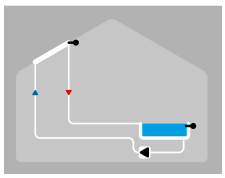


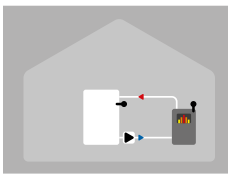



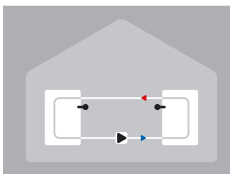

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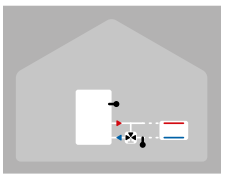
## Pre-set installations

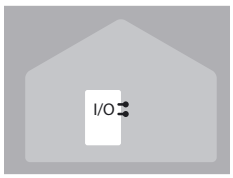

Solar + tank


Solar + pool


Wood-fired boiler with tank


Tank recharge

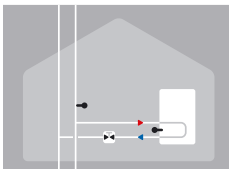

Solar with heating circuit

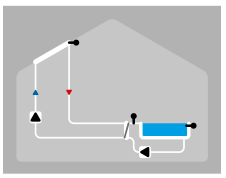


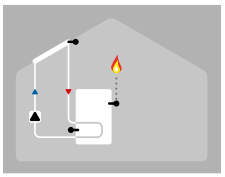
Thermostat

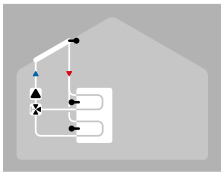


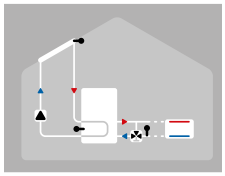
Universal temperature

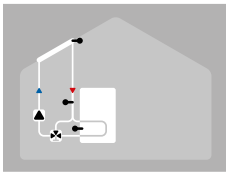

Cut-off valve

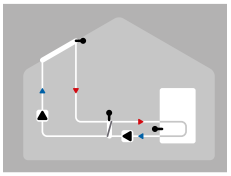

Solar with heat exchanger (sensor on secondary) and pool

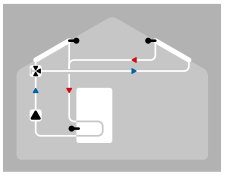

Solar with thermostat (auxiliary heating)

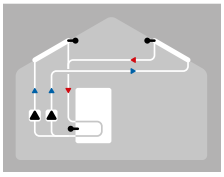

Solar with double zone tank

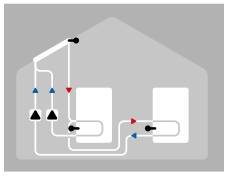

Solar with heating circuit

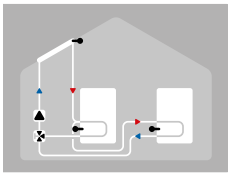

Solar with bypass

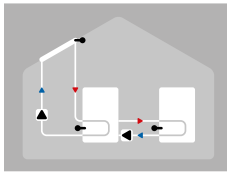

Solar with exchanger

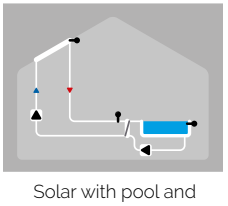

Solar with two collectors

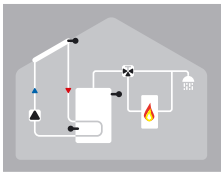

Solar with two collectors and two pumps

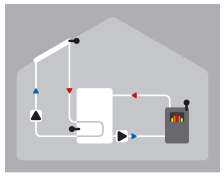

Solar with two tanks and two pumps

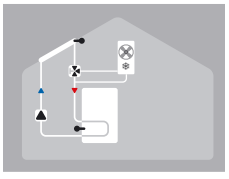

Solar with two tanks and valve

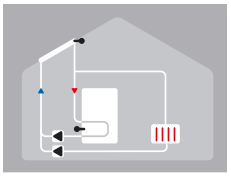

Solar with storage tank

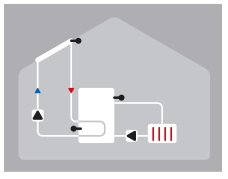

Solar with pool and exchanger


Solar with thermostat and valve


Solar with wood-fired boiler


Solar with cooling 1 (panel cooling)


Solar with cooling 2 (panel cooling)


Solar with cooling 3 (panel cooling)

# S1 SOLAR 1
# Solar module

The Solar module S1 SOLAR 1 is pre-assembled, tested and can be used for small solar installations.

The unit consists of a single return circuit.
The return circuit is equipped with:

- Flow meter and flow regulator, together with fill and drain couplings
- Solar circulation pump
- Ball valve with check valve. The check valve can be deactivated by turning the handle 45° (useful when filling the device)
- Thermometer 0-120 °C
- Safety valve (6 bar) with manometer Ø50 mm 0-10 bar and screwed drain 3/4" F
- Coupling for expansion vessel 3/4" M



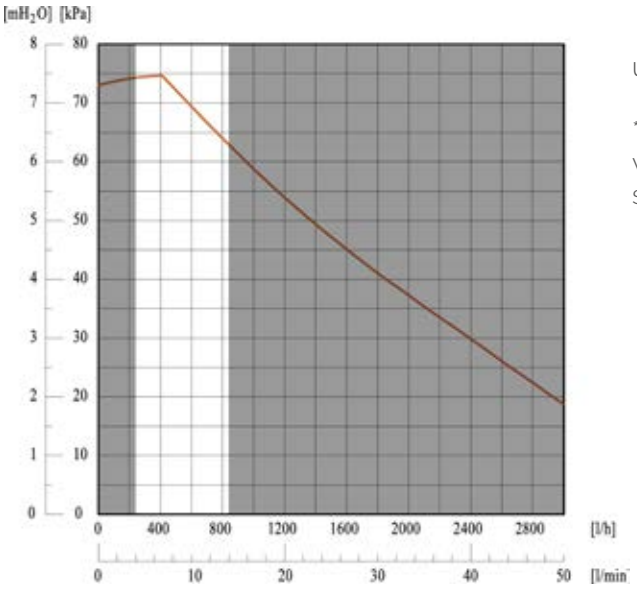

TESTED

**The solar module is available in one version**

| Code | Model | Flow (l/min) | | Power min/max W | Price | P. max | T. max |
|---|---|---|---|---|---|---|---|
| | | Min. | Max. | | | | |
| 838110001X | S1 SOLAR 1 | 2 | 12 | 3 / 45 | | 6 bar | 120°C(*) |

For a brief period (20s) the max T is 160°C

**Flow/performance curve**




up to 16 m²*

* approximate value, to be verified based on the installation conditions

# S2 SOLAR 30
# Solar module

The Solar module S2 SOLAR 30 is pre-assembled, tested and can be used in small and medium solar installations. It is equipped with a pre-wired regulator and temperature sensors.

The unit consists of a RETURN and DELIVERY circuit.
The delivery circuit comes with:

- Ball valve with check valve. The check valve can be de-activated by turning the handle 45° (useful when filling the device)
- Thermometer 0-120 °C
- Deaerator made of brass, with manual vent valve
- Piping and couplings

Return circuit comes with:
- Flow meter and flow regulator, equipped with fill and drain connections
- Solar circulation pump
- Ball valve with check valve. The check valve can be de-activated by turning the handle 45° (useful when filling the device)
- Safety valve (6 bar) with manometer
- Coupling for expansion vessel ¾" M
- Thermometer 0-120 °C

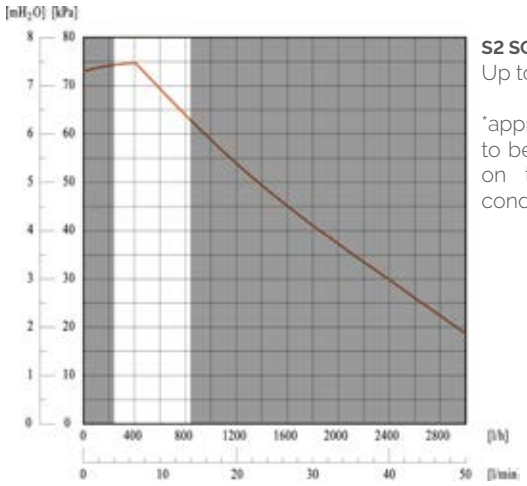



### The solar module is available in two versions depending on the flowmeter

| Code | Model | Flow (l/min) | | Potenza min / max W | Price | max. press. | max. temp. |
|---|---|---|---|---|---|---|---|
| | | Min. | Max. | | | | |
| 838110064X | S2 SOLAR 30 - 25/6 | 2 | 12 | 3 / 45 | | 6 bar | 120 °C (*) |
| 838110065X | S2 SOLAR 30 - 25/7 | 8 | 28 | 3 / 45 | | 6 bar | 120 °C (*) |

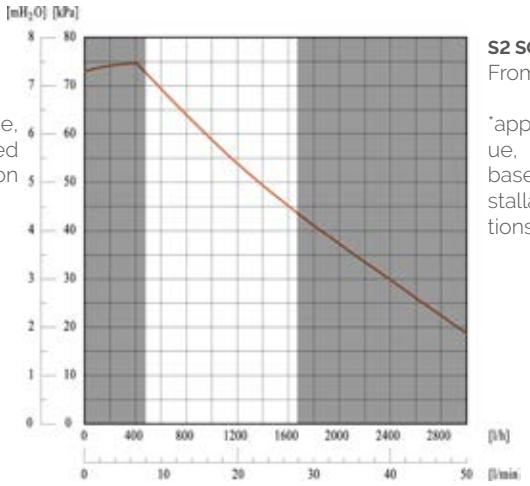
(*) For a brief period (20s) the max T is 160°C

### Flow/performance curve




**S2 SOLAR 30 - 25/6**
Up to 16m²

*approximate value, to be verified based on the installation conditions




**S2 SOLAR 30 - 25/7**
From 8 up to 35m²*

*approximate value, to be verified based on the installation conditions

# S2 SOLAR 2
# Solar module

The two-pipe solar station consists of the following components:

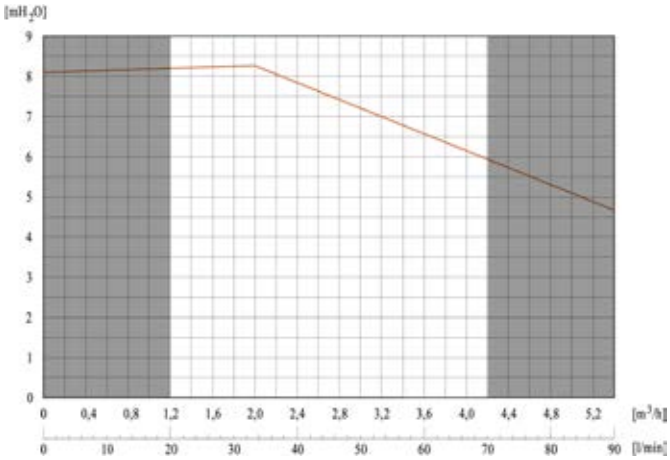
**Return:**
- Flow regulator gauge 20-70 l/min
- high efficiency synchronous solar circulator 0-10V command
- ball valve with non-return valve 18 bar (the non-return
- valve can be left out by turning the handle for 45 degrees) with a thermometer handle (thermometer with blue ring; 0°C-120°C).
- T coupling for the safety unit
- 6 bar safety unit with 0-10 bar manometer - ¾" male connection for expansion vessel. Drain outlet 1"F

**Delivery:**
- T coupling for well probe holder
- ball valve with non-return valve 18 mbar (the non-return valve can be left out by turning the handle for 45 degrees) with a thermometer handle (thermometer with red ring; 0°C-120°C).
- coupling tube and coupling

**Other features:**
- EPP insulation box (dimensions: 125x250x400 mm).
- Wall mount set.
- Nominal pressure: 10 bar.
- Continuous temperature: 120°C (brief period: 160°C for 20 sec.).
- External couplings: 22 mm compression coupling and 1"¼ female coupling.
- WILO TOP S 30/10 solar thermal pump (can be closed, does not have to be drained when serviced)
- Power: 195 / 270 / 380 W

**Dimensions:**
- Couplings: 11/4"
- Wheelbase: 125 mm
- Width with insulation: 285 mm
- Height with insulation: 500 mm




From 30 up to 90m2*
*approximate value, to be verified based on the installation conditions

| Code | Model | Flow (l/min) | | Potenza min / max W | Price | max. press. | max. temp. |
|---|---|---|---|---|---|---|---|
| | | Min. | Max. | | | | |
| 838110068X | S2 SOLAR2 | 20 | 70 | 8/130 | | 6 bar | 120°C(*) |



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