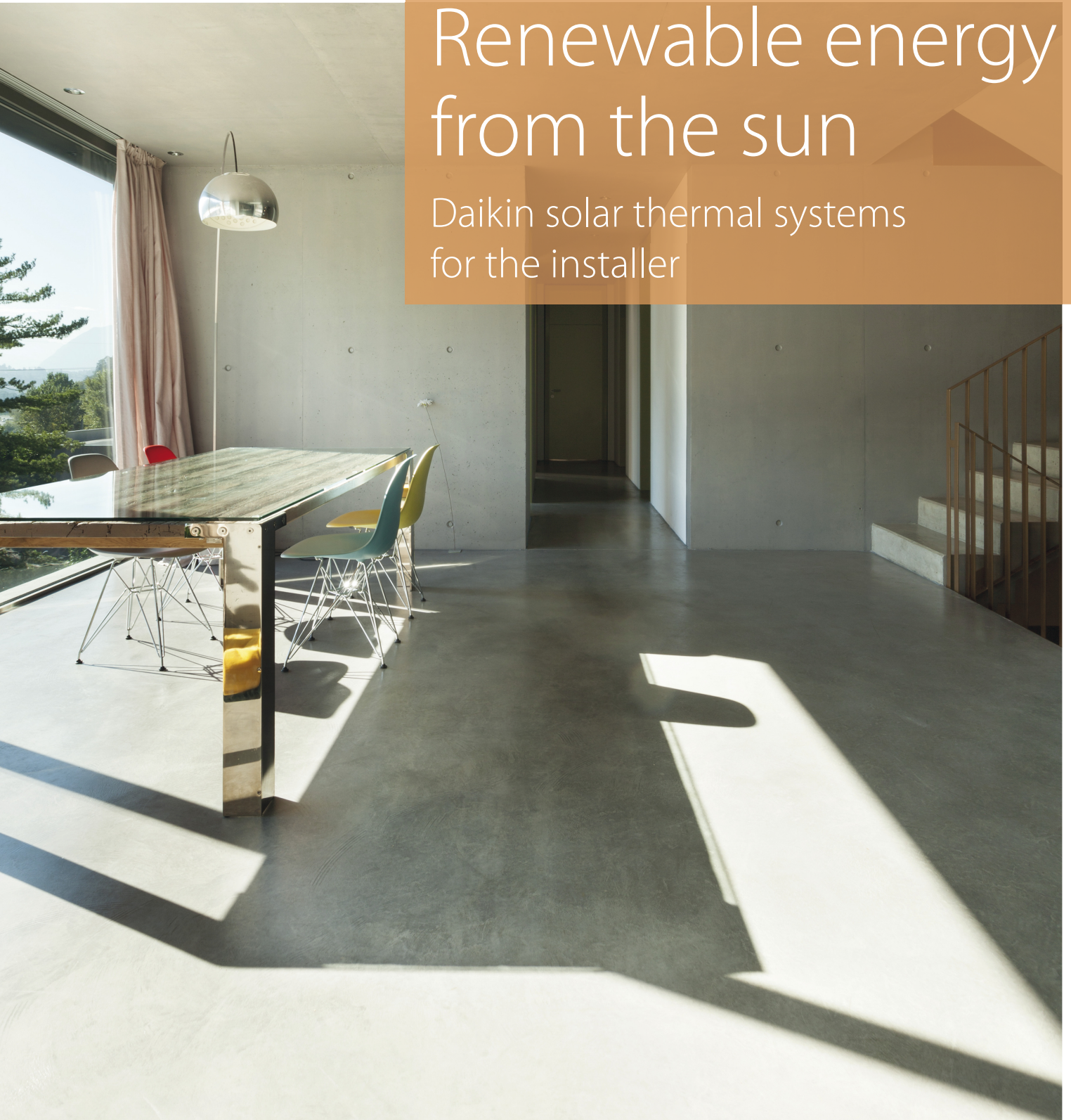


Renewable energy from the sun

Daikin solar thermal systems
for the installer



Renewable energy from the sun

Solar Thermal systems



Why choose Daikin Solar?

Your customer requires a solar thermal system:

- › Hot water throughout the year: the solar system works all year round supplemented by an auxiliary heat source, such as a heat pump, during low solar days
- › Must work in a new build or low-energy house
- › Can work in a retrofit application

Your solution - Daikin solar thermal:

- › Intelligent control to optimise solar energy usage
- › Simple and reliable technology
- › Unique DHW thermal store technology
- › Automatically controlled solar pump speed for maximum efficiency

Your customer gains:

- › Reduced carbon footprint: a renewable solar heating system doesn't release any harmful carbon dioxide or other pollutants while it is running.
- › Cut energy bills: sunlight is free, so hot water running costs are reduced

You gain:

- › Straight forward installation
- › Simple commissioning

Result: win-win for you AND the customer



MCS IK006

Daikin's efficient heating solutions maximise use of the renewable energy all around us, converting free heat from the air and the sun to deliver reliable, controllable heating and hot water for domestic and light commercial buildings – even on cloudy days.

As well as manufacturing a range of air-to-water heat pumps, Daikin also manufactures solar panels and provides all the key components of a complete hot water system, designed to work together for optimum energy efficiency and comfort levels.

Daikin solar systems are perfect partners for Daikin Altherma air-to-water heat pumps and ROTEX GCUs. When also combined with underfloor heating, fan convectors or other heat emitters, the full Daikin range creates a highly economical, versatile and energy-efficient heating system.

Daikin solar thermal systems

harness renewable energy from the sun using the latest solar thermal panel technology

Daikin solar is available in two different variants, which meets all structural conditions and individual requirements.

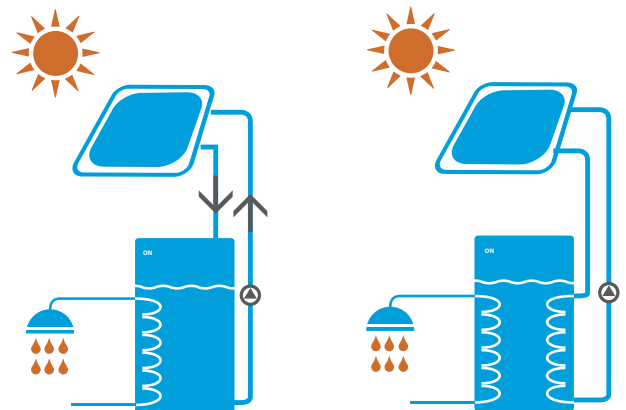
The direct drain-back system

If the construction conditions permit, we recommend the unpressurised and direct drain-back system. The water in the thermal store is supplied directly and without a additional heat exchanger to the solar panels, heated and then stratified into the thermal store. This increases the efficiency of the solar collectors considerably and the entire utilisation of the installation. Since the system is unpressurised, components which would otherwise be required are not necessary, such as the expansion tank, pressure relief valve, pressure gauge and heat exchanger.

The solar panels are only filled if there is enough heat from the sun and if the thermal store can absorb heat. The fully-automatic control system controls the system independently to provide optimum utilisation of the solar energy. If the sunshine is insufficient, or if the solar thermal store does not need any more heat, the pump switches off and the entire solar system drains into the thermal store. The addition of antifreeze agents is not required since the panel surface is not filled with water when the system is not operating. This is a further plus from the environmental perspective. The principle functions only if the connection pipes in the building and on the roof are installed with a constant gradient. If this is not possible, the pressurised solar system is the optimum alternative.

The pressurised solar system

The pressurised solar system impresses with its simple installation and is suitable for all applications and buildings. It operates efficiently and safely at any desired length of pipes and feed height. The well-engineered structure of the Daikin solar thermal store means that an additional plate heat exchanger is not required.



Drain-back solar system

Pressurised solar system

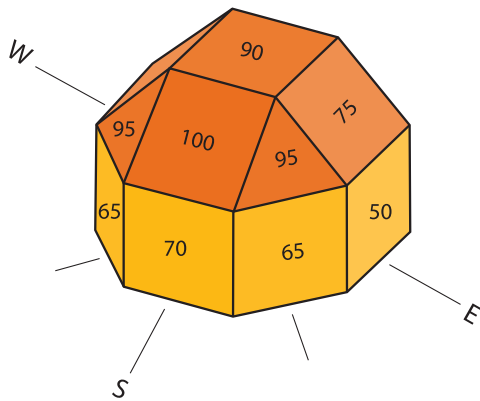


How to size the system?

When selecting a system, it is important to consider the available solar energy and local site conditions.

Designing an effective solar thermal system

To ensure maximum efficiency, it is important to consider the various factors that influence performance and output. The overall performance of a solar water system also depends on hot water usage patterns and how the hot water system is used, such as daily draw-off patterns and the use of any auxiliary devices.



Panel orientation

Position panels in a southerly direction for maximum potential – angled between 30° and 45°. The diagram illustrates the best siting for a solar panel – 100 being the optimum position.

Important factors for solar system design are explained in the Government's approved SAP 2009 design method. Key factors for consideration are:

- > **Orientation.** Solar panels should ideally face south for optimum solar gain. However, they can still be effective if the roof is facing anywhere between east and west through south.
- > **Inclination.** The angle of inclination is also important to the effectiveness of solar panels. The optimum fixed installation angle in the UK for year round performance is 30-45 degrees. In the majority of cases the angle of installation is determined by the existing roof pitch.
- > **Shading.** It is also important to ensure that the roof is clear from overshadowing trees or objects, e.g. chimneys.

Factors to consider:

- > Property location
- > Size of panels
- > Roof orientation and inclination
- > Available roof area
- > Annual solar radiation
- > Number of occupants
- > Hot water usage patterns
- > Overshading

Guide to sizing solar thermal systems

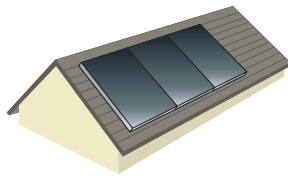
| Number of occupants | 1 | 2 | 3 | 4 | 5 |
|----------------------------|-----|-----|-----------|-----|-----|
| Small solar panel (V21) | 1 | 2 | 3 | 4-5 | 4-5 |
| Standard solar panel (V26) | 1 | 2 | 2-3 | 4-5 | 4-5 |
| Thermal store size | | | | | |
| EKHWP | 300 | 300 | 300 / 500 | 500 | 500 |

Assumptions:

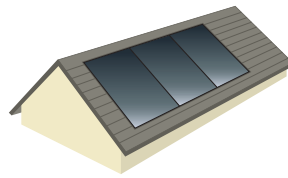
- > Daily hot water requirement = 50 litres per person
- > 1m² of panel per person
- > 50 litres of hot water storage per 1m² of panel
- > Typical south facing at 30-45° inclination

✓ Fixing systems for every roof type

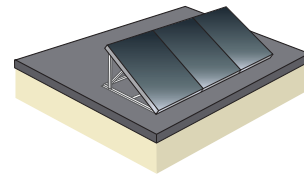
Daikin solar panels come with a range of options to meet any installation requirement. Highly efficient Daikin solar panels are available in vertical and horizontal orientation for on-roof, in-roof and flat roof applications.



On-roof installation



In-roof installation
(vertical only)



Flat-roof installation

| Roof fixing types | On roof | In-roof (2+ panels) | A-frame |
|----------------------------|---------|---------------------|---------|
| Small solar panel (V21) | ✓ | ✓ | N/A |
| Vertical solar panel (V26) | ✓ | ✓ | ✓ |
| Vertical solar panel (H26) | ✓ | N/A | ✓ |

✓ Accessories

Daikin DHW thermal store technology

An innovative and high specification heating solution, the thermal store acts as a natural reservoir for the drainback solar system, thereby optimising installation space. Mains pressurised hot water is delivered via an indirect stainless steel heat exchanger, which supplies hygienic hot water without the issues resulting from the build-up of deposits typically associated with indirect cylinders. The thermal store is not pressurised and there are few system components, so installation time and maintenance costs are reduced. The drain-back solar pump station and controller are fixed onto the front for a neat installation.



EKHWP Domestic hot water tank solar support

- › Available in 2 capacities - 300 and 500 litres:
 - Can be combined with drain-back or pressurised
 - Optimised connections
- › Easier installation of each system circuit:
 - Improved design: attractive colour and new form
 - Optimised for easy transport and installation
 - Better insulation means reduced energy costs
 - Higher flow-rate thanks to optimised connection technology
 - Clear connections mean easier installation

Solar Thermal Systems

Drain-back thermal store

EKHWP-B



EKHWP-B

| Accessory | | EKHWP | 300B | 500B | | |
|---------------------------------|---------------------------|---------------------------------|---|------------------------------|------------------------------|-------|
| Casing | Colour | | Traffic white (RAL9016) / Dark grey (RAL7011) | | | |
| | Material | | Impact resistant polypropylene | | | |
| Dimensions | Unit | Width | mm | 595 | 790 | |
| | | Depth | mm | 615 | 790 | |
| | Weight | Unit | Empty | kg | 58 | 82 |
| Tank | Water volume | | l | 300 | 500 | |
| | Material | | | Polypropylene | | |
| | Maximum water temperature | | °C | 85 | | |
| | Insulation | Heat loss | kWh/24h | 1.5 | 1.7 | |
| | Energy efficiency class | | | B | | |
| | Standing heat loss | | W | 64 | 72 | |
| | Storage volume | | l | 294 | 477 | |
| | Heat exchanger | Domestic hot water | Quantity | | 1 | |
| | | | Tube material | | Stainless steel (DIN 1.4404) | |
| | | | Face area | m ² | 5.600 | 5.800 |
| Internal coil volume | | | l | 27.1 | 29.0 | |
| Operating pressure | | | bar | 6 | | |
| Average specific thermal output | | | W/K | 2,790 | 2,825 | |
| Charging | | Quantity | | 1 | | |
| | | Tube material | | Stainless steel (DIN 1.4404) | | |
| | | Face area | m ² | 3 | 4 | |
| | | Internal coil volume | l | 13 | 19 | |
| | | Operating pressure | bar | 3 | | |
| | | Average specific thermal output | W/K | 1,300 | 1,800 | |
| Auxiliary solar heating | | Tube material | | - | Stainless steel (DIN 1.4404) | |
| | | Face area | m ² | - | 1 | |
| | | Internal coil volume | l | - | 2 | |
| | | Operating pressure | bar | - | 3 | |
| | | Average specific thermal output | W/K | - | 280 | |

Pressurised thermal store

EKHWP-PB



EKHWP-PB

| Accessory | | EKHWP | 300PB | 500PB | | |
|---------------------------------|---------------------------|---------------------------------|---|------------------------------|------------------------------|-------|
| Casing | Colour | | Traffic white (RAL9016) / Dark grey (RAL7011) | | | |
| | Material | | Impact resistant polypropylene | | | |
| Dimensions | Unit | Height | mm | 1646 | 1658 | |
| | | Width | mm | 595 | 790 | |
| | Weight | Unit | Empty | kg | 64 | 92 |
| Tank | Water volume | | l | 294 | 477 | |
| | Material | | | Polypropylene | | |
| | Maximum water temperature | | °C | 85 | | |
| | Insulation | Heat loss | kWh/24h | 1.5 | 1.7 | |
| | Energy efficiency class | | | B | | |
| | Standing heat loss | | W | 64 | 72 | |
| | Storage volume | | l | 294 | 477 | |
| | Heat exchanger | Domestic hot water | Quantity | | 1 | |
| | | | Tube material | | Stainless steel (DIN 1.4404) | |
| | | | Face area | m ² | 5.600 | 5.800 |
| Internal coil volume | | | l | 27.1 | 29.0 | |
| Operating pressure | | | bar | 6 | | |
| Average specific thermal output | | | W/K | 2,790 | 2,825 | |
| Charging | | Quantity | | 1 | | |
| | | Tube material | | Stainless steel (DIN 1.4404) | | |
| | | Face area | m ² | 3 | 4 | |
| | | Internal coil volume | l | 13 | 19 | |
| | | Operating pressure | bar | 3 | | |
| | | Average specific thermal output | W/K | 1,300 | 1,800 | |
| Auxiliary solar heating | | Tube material | | - | Stainless steel (DIN 1.4404) | |
| | | Face area | m ² | - | 1 | |
| | | Internal coil volume | l | - | 2 | |
| | | Operating pressure | bar | - | 3 | |
| | | Average specific thermal output | W/K | - | 280 | |

Solar Thermal Systems

Solar collector

EKSH-P/EKSV-P

| Accessory | | EKSV/EKSH | EKSH26P | EKSV21P | EKSV26P |
|-------------------------|---|----------------------------------|----------------|----------------|----------------|
| Mounting | | | Horizontal | Vertical | |
| Dimensions | Unit | mm | 2,000x85x1,300 | 1,006x85x2,000 | 1,300x85x2,000 |
| Weight | Unit | kg | 42 | 33 | 42 |
| Volume | | l | 21 | 1.3 | 1.7 |
| Surface | Outer | m ² | 2.6 | 2.01 | 2.60 |
| | Aperture | m ² | 2.360 | 1.800 | 2.360 |
| | Absorber | m ² | 2.35 | 1.79 | 2.35 |
| Coating | Micro-therm (absorption max. 96%, Emission ca. 5% +/-2%) | | | | |
| Absorber | Harp-shaped copper pipe register with laser-welded highly | | | | |
| Glazing | Single pane safety glass, transmission +/- 92% | | | | |
| Allowed roof angle | Min.~Max. | ° | 15~80 | | |
| Operating pressure | Max. | bar | 6 | | |
| Stand still temperature | Max. | °C | 192 | | |
| Thermal performance | Zero loss collector efficiency η_0 | | - | | |
| | Heat loss coefficient a1 | W/m ² .K | 4.250 | 4.240 | 4.250 |
| | Temperature dependence of the heat loss coefficient a2 | W/m ² .K ² | 0.007 | 0.006 | 0.007 |
| | Thermal capacity | kJ/K | 6.5 | 4.9 | 6.5 |



EKSH-P

| Accessory | | EKSRPS | 4 | |
|-------------------------|-------------------------|---|-----------------|------|
| Mounting | | | On side of tank | |
| Dimensions | Unit | HeightxWidthxDepth mm | 815x142x230 | |
| Weight | Unit | kg | 6 | |
| Operation range | Ambient | Min.~Max. | °C | 5~40 |
| Operating pressure | Max. | bar | 0 | |
| Stand still temperature | Max. | °C | 85 | |
| Control | Type | Digital temperature difference controller with plain text display | | |
| | Power consumption | W | 2 | |
| Power supply | Phase/Frequency/Voltage | 1~/50/230 | | |
| Power supply intake | | Indoor unit | | |



EKSRPS4

EKSRDS2

| Accessory | | EKSRDS2 | |
|--------------|-------------------|---|-------------|
| Mounting | | On wall | |
| Dimensions | Unit | HeightxWidthxDepth mm | 410x314x154 |
| Control | Type | Digital temperature difference controller with plain text display | |
| Power supply | Frequency/Voltage | V | 50/230 |



Trust Daikin

Daikin makes world-class heat pumps. In fact, more than 250,000 Daikin Altherma heat pumps have been fitted across Europe since its initial launch in 2006.

We focus on doing only what we're best at: creating the most efficient heating, ventilation and air conditioning solutions, renowned for design excellence, quality and reliability.

So you can depend on Daikin for the ultimate in comfort, for your customers, leaving you free to focus growing your business with a leading innovator in heating and renewable technologies.

More than 250,000 Daikin Altherma heat pumps have been fitted across Europe since its initial launch in 2006.

daikin.co.uk

Heating installer line: 0845 641 9070

Dedicated homeowner support line: 0845 641 9271

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