

EKOŠEN

IR HEATING SPECIALISTS

GENERAL CONDITIONS AND
INSTRUCTIONS FOR
INSTALLATION OF
IR HEATING PANELS

AND

GENERAL INSTRUCTIONS
ON THE USE OF EKOŠEN
IR HEATING SYSTEM

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Dear customer

We are delighted that you have decided to purchase **Sunlife** panels, which is based on modern technology by supplying the user with a **pleasant warmth**.

For most effective use, please **read the operating instructions** carefully before use. This will help you get to know the panels and learn how to use them efficiently and safely. Please note that the warranty is terminated **unless you follow the guidelines and instructions** from the manual. Also, all modifications on the panel and improper use are excluded from the warranty. **Follow the safety instructions!**

IMPORTANT!

At the beginning of the heating season, we recommend that you **start heating in time**. IR heating brings a number of advantages over other heating systems. People have different heating habits and needs. **IR heating SUNLIFE completely adapts to your needs**. However, the consumption of energy and thus the environmental burden is lower if we are **doing it rationally**.

Rational heating with SUNLIFE IR panels means that **during transition periods**, the system can be switched on, for example, only in the evening and where you need it. This way, you will benefit from the exceptional responsiveness of SUNLIFE heating. Due to short heating cycles during the transitional period, there is no complete uniform heating of the **Rationally heating in winter** means that you have the lowest temperature of the air, which still allows your living comfort, which is 21 degrees Celsius according to the expert guidelines. When you do not need heating in the winter (for shorter periods of up to two days), you are not in the room or at night you reduce the temperature by a few degrees, we recommend lowering the room temperature to 18 degrees Celsius.

If you are gone for longer time (more than seven days; for example, on holidays), you can even lower the temperature to 15 or even 12 degrees if the insulation is great. Better is the insulation more you can lower temperatures. When you have limited power, which is often by buildings with poor insulation, the house should not be subcooled. You can also leave a constant temperature, if you are so accustomed or as needed. Nevertheless, you will benefit from all the advantages of infrared heating. In this case, the room will also be heated even more steadily and the comfort will be higher due to higher temperature. It is important to compare the same heating habits and conditions when calculating the heating efficiency. If you are in doubt or notice that anything is different from predicted, contact the dealer. Our consultant will propose an optimal solution.

The rooms must be ventilated according to professional recommendations. This means that we must not allow the submerging of the peripheral surfaces in the space and objects in it. **We ventilate shortly and intensified**, several times a day. This means that the windows are opened for a few minutes. It is important that the air in the room is not excessively humidified, and this is mainly due to proper ventilation.

The IR radiator is designed for each room separately and it **is not correct to heat other rooms by opening the door**. In this case, there **can be a significant increase in energy consumption** from the one that would have been if the rooms were heated individually.

The term reclamation refers only to an event where it was necessary to replace or repair the product. Otherwise, the services of setting up and reviewing products under the current price list of EKOSEN are charged.

WARNING!

The panel layout must be adapted to your specific needs. These instructions are only general guidelines. If you carry out the installation on your own, we do not accept any liability for damage caused during installation or the use of heating panels and elements connected thereto.

Safety warnings

- It is recommended that the company EKOSEN, d.o.o., or an authorized person (electrician) performs connection, commission, maintaining and repairing.
- Handle the IR heating panel correctly. Use the safety gloves and glasses to prevent possible injuries.
- The Sunlife heating panel operates at high temperatures. **The full operating power is reached after 5-10 minutes.** Avoid the **risk of burns**, as the panel may heat up to 90°C. Sunlife Sun and the PRO line will heat up to 350°C. Do not place the system near children, people with special needs or in the vicinity of easily accessible terrain. There is a risk of burns.
- **Do not drill holes through the panel, as there may cause an electric shock. Deadly Dangerous!**
- Be careful not to trip around the cable. Do not pull the cable.
- When connecting the panel to a pre-installed installation, it should be provided in an electrical cabinet, where all panel conductors must be installed, including cathode arcs (overvoltage category III) that protect against overvoltage. Such connection should only be carried out by an authorized person or an electrician.
- Allow the panels to work for a longer period if you do not immediately reach the pleasant climate in the room. The reason might be that the objects in the room must be heated (furniture, walls, ceilings, floors, etc.). Once the objects are heated, the pleasant heat will spread throughout the room. So that the panels will turn on less time **and thus save on electricity.**
- The use of certain IR panels is not the most appropriate in tents, garden utensils, etc., that is, everywhere where the external factors (hail, wind, rain, sun, snow...) can affect the operation of the device. For details, contact an IR Heater Advisor.
- For ceiling mounting on the ceiling, ceilings are sufficient to withstand the weight of panels. This is assessed by the installer of the IR heating. Where IR panels can not be mounted on the ceiling, they are usually mounted on the wall. If a customer explicitly still asks for installation on inappropriate ceiling, he takes all the responsibility in the event of a panel collapse and resulting material or other damage. Ekosen does not take responsibility for this kind of decision.

Environmental responsibility

According to the principle of extended producer responsibility, EKOSSEN, d.o.o., has its obligations arising from the European Directives 2002/96/EC and 2006/66/EC, the "Regulation on waste electrical and electronic equipment" (Ur.l. RS, no. 55/2015) is implemented within the framework of the common plan for the management of waste electrical and electronic equipment in cooperation with TRIGANA d.o.o.

Handling of waste electrical and electronic equipment



The symbol of the crossed-out container on the product, its packaging or in the instructions for use means that the **device must not be disposed of between mixed municipal waste** and that it was placed on the market after August 13, 2005. It is your responsibility to submit it to the special collection points for separate waste collection in the local communal services. You can also send a device or appliance to a retailer or distributor directly at the time of purchase of the like product. By doing so, you fulfill legal obligations and contribute to the protection of the environment.

Separate collection and recycling of **WEEE prevents the negative consequences of environmental pollution and the aging of health** threats that can occur due to inadequate disposal of the product, and in addition, they allow processing of the material from which the material is made, saving energy and natural resources. If the product you want to discard is still working, submit it to one of the reuse centers. This will prolong its lifespan and prevent from ending up early with waste.

More detailed information

Take a step in green by visiting www.ozavescen.si and get more detailed information about recycling waste appliances, batteries, accumulators, and other waste. A list of collection centers of utility companies is available on the website, as well as information on reuse centers where you can submit still operating devices and appliances.

The right to withdraw from the purchase, the return of products

You can return the purchased goods within 8 days from the date of purchase. The option of withdrawal is for the item to be reviewed and, if it does not suit you, or your expectations are wrong, withdraw from the purchase. These recommendations do not apply if the item is defective or does not work at the time of purchase. In this case, you can reclaim your purchase.

The consumer has the right to notify the company in writing within 8 days of the receipt of the products via the e-mail address info@ekosen.si or to the seller's place of departure without having to state the reason for his decision. The only cost related to the withdrawal from the contract that the consumer is liable to pay the costs of returning the products. The products must be returned to the seller immediately after the cancellation notice of purchase contract.

The products received must be returned undamaged, unused and unmodified and originally packaged, unless the goods have been destroyed, defected, lost or reduced, without the consumers fault. The discounted codes as the discounts shall be taken into account and are not returned upon refund. The refunded amount is the paid amount.

For products, the consumer is guaranteed 3 years after the end of the warranty period with: maintenance, spare parts and accessories, but the services, parts and appliances are (payable).

General about infrared heating

Sunlife flat panels operate on the basis of **thermal waves (infrared radiation)**. They are characterized by low power consumption. **Sunlife panels convert electricity to heat with almost 100% efficiency in heat.** The heating surface is optimized that the heat output is the largest in the wavelength of IR radiation between 7-11 μm .

When connecting the panel to a pre-installed installation, it should be provided in an electrical cabinet, where all panel conductors must be installed, including cathode arcs (overvoltage category III) that protect against overvoltage. Such connection should only be carried out by an authorized person or an electrician.

The Sunlife IR panels heat up within a few minutes (5-10 min). To achieve ideal thermal comfort, if you do not immediately reach the pleasant climate in the room, you can leave the panels turned on for a longer time. Thus, all objects in the room are heated (furniture, walls, ceiling, floor, etc.). Once the objects in the room are heated, **the pleasant heat will spread throughout the room** and the panels will be switched on less time (saving on electricity).

The surface temperature of the panel depends on which type of panel you choose. It can heat up to about 90°C, and for industrial panels, Sunlife up to 350°C.

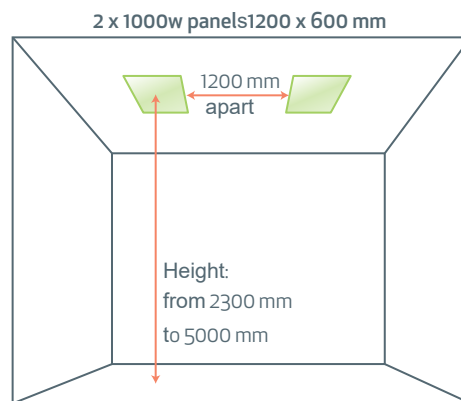
Preparation

- IR ceiling heating panels SUNLIFE are **low-energy heaters** designed for **main or secondary heating** for domestic or commercial heating.
- The heater is equipped with a cable to connect to the electricity network.
- **Only a person qualified to work with electrical installations** according to the relevant standards can install and connect the heater to a permanent place.
- **In the event of a malfunction**, it is necessary to immediately inform EKOSEN's head office to return the defective device to the manufacturer for repair or replacement.

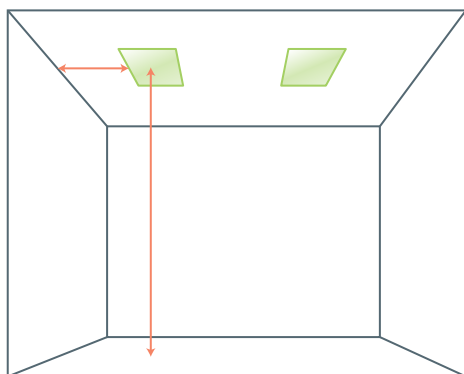
Installation - position of installation

For **proper installation and use**, read these instructions. If you have any additional questions regarding the installation and use of the product, please contact EKOSEN's head office at **tel. 02 620 81 99** or write to us by **e-mail: info@ekosen.si**.

- The heater must be spaced at least 300 mm from the surrounding walls.
- The heater must be spaced at least **150 mm from the installed lights** and other light sources.
- There is no need to leave space between the heater and the ceiling.
- Heaters are adapted to heat rooms with a ceiling height of **at least 2300 mm and a maximum of 5000 mm**.
- If a **large number of heaters** are placed in the same room, the minimum distance between the individual heaters should be **equal to or greater than the length of the heaters used**.
- If the heater is installed in **humidified areas (eg bathrooms)**, the switches and control panels should be installed in such a way that they can not be reached from a bathtub or shower.



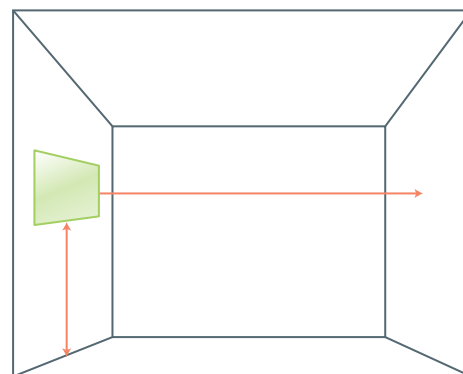
Ceiling installation



Recommended spaces for the ceiling mounting of the panel

The minimum distance to the ground should be 1.8 m when mounting the panel to the ceiling

Wall installation



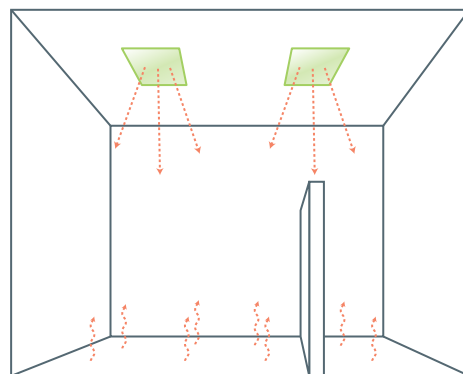
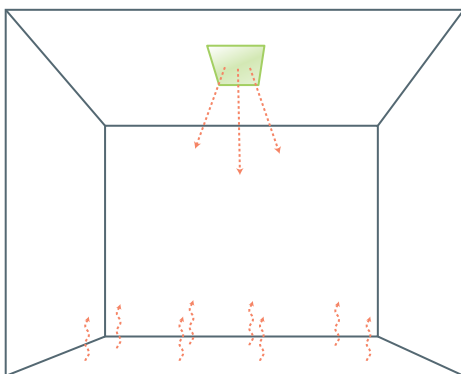
Recommended spaces for the wall mounting of the panel

When mounting, the installer may touch the frame, if the panel has a frame, the board itself must remain intact, so that the surface does not climb / twist when heated.

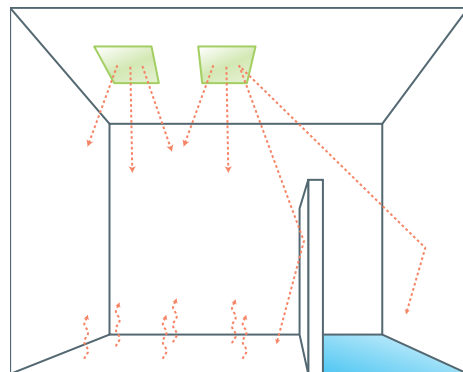
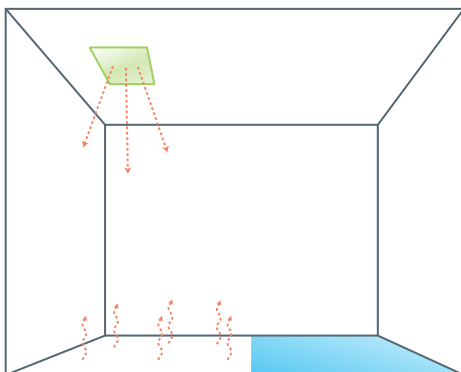
When installing panels on the ceiling, it should be taken into account that they are **evenly distributed and can emit heat to the entire space**, as this can ensure **proper and efficient heating of the room**. The following illustrations show the correct and incorrect images. It is clearly visible which parts are heated and which parts are not (blue floor).

It is recommended that **more smaller panels** are to be installed than one larger, as you will achieve a 10% higher effect (IR panels will be closer to the walls, which means warmer walls and a more even temperature of the floor). EXAMPLE: It is better to install two smaller IR panels 2 x 500w, than 1 x 1000w, as the heat is distributed faster.

Correct installation

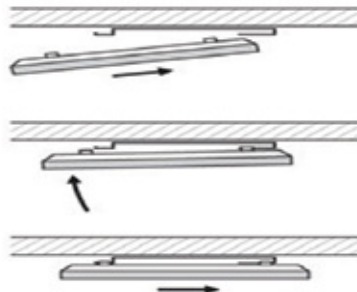


Incorrect installation

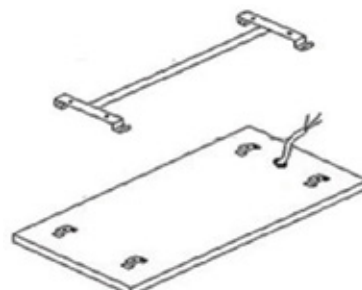




1 With the help of the bracket, mark 4 points on the ceiling, where you will drill the holes.



2 Insert the cartridges into the holes and tighten the support firmly onto the ceiling. Hang the heating panel on the bracket so that it gets stuck and can not slip away from it.



3 The heating panel can now be safely connected to the electricity network.

Connect the cables as instructed by the IRsun Regulator or thermostat. Once the installation is complete, set the temperature to at least 25 °C, wait for 90 seconds and check the correct operation of the panels by touching your hand.



IR panels SUNLIFE ONE



Thermostat Touch



Thermostat Touch (wireless)



IR Sun regulator

Use and handling

- **Do not cover the panels** with clothes or similar fabrics (**FIRE DANGER!**). The label is located on the heating side of the panel, which warns of this danger. Do not remove labels!
- As a result of heating and cooling **due to the expansion of the material**, occasional sounds may occur. This is normal and it is not a subject to reclamation!
- **A minor change in color is also a normal** and it is not a subject to reclamation!
- The heating element becomes very hot during operation. **BURN HAZARD.**

Cleaning and maintenance

Sunlife panels do not require maintenance. In the event of irregularities, turn off IR panels. **After use, the panel is still hot for a while.** Let it cool (pprox. 10-15 min). **Slightly wipe the Panel with a dry or just a bit moistened cloth;** otherwise, the surface may be clogged/twisted upon heating. Make sure that the heating surface is dry before turning it on again! Do not use detergents, gasoline or other cleaning agents.

How does the power consumption with IR panels fluctuate?

An example of an energy consumption of 150 m² in house heating and a medium-sized insulation.

Savings over the transitional period are higher than in the high season. For example, if the January consumption is €195, then we should not multiply by 6 months, but we need to consider the factors between 3, 6 and 4. If we took into account the wrong factor (6), the annual spending would be €1170 per year. In practice, the annual consumption is €807. Already years ago, tests showed that the savings in IR heating during the transition period are approx. 60%, and 70% in Slovenia. **In the main season, there are savings of 30%**, for Slovenia the figure is approx. 35%. On average, the savings in IR heating are between 50% and 65%. Researches were also carried out at the Technical University of Kaiserslautern (Germany).

In addition, we must take into account that **electricity consumption in the winter is higher between €10 and €20**, because the lights are burning for a longer period of time, we are more at the computer, we are more in front of the TV screen and we even cook more.

The calculation of the operation and consumption of the IR system is optimized to:

- the territory of Slovenia;
- the average outdoor temperature during the heating season between 0°C and +5°C;
- places up to an altitude of 700m;
- the duration of solar irradiation in the winter within the boundaries of the Slovenian average;
- places with an average wind speed up to 10 meters high;
- The customer is obliged to warn Ekosen in advance if the facility is located in an area where the situation varies from the stated ones, so that the calculation is suitably adjusted. If this is found later, this is not the subject of a complaint;
- Construction operations planned after the IR system is installed are not subject to the warranty application.
- The calculation is considered to be reference only if the IR system is the only source of heating.
- In the event that the IR panels do not heat all the premises in the facility, deviations from the calculation of consumption are possible by more than 20%.
- Ekosen is not taking the responsibility for the solidity of the building and the solidity of the materials used, where IR panels are installed and is not subject to the IR-panel warranty

In the event that a temperature anomaly occurs - the lack of temperature comfort and a greater deviation from the predicted heating costs are not the subject of reclamation.

General guidelines and cautions on the use of Ekosen IR heating system

Instructions and recommendations

At the start of the heating season, we recommend that you start heating in time. IR heating over other heating systems brings a number of advantages. People have different heating habits and needs. The IR heating system adapts perfectly to you and your needs. However, energy consumption and thus the environmental burden decreases if the heating system is handled rationally.

Winter and rational heating means that you have the air temperature at the lowest temperature that still allows your living comfort, which, according to professional guidelines, is 21 degrees Celsius. When you do not need heating in the winter (for shorter periods of your absence from 1 to 2 days), it is recommended that you lower the room temperature to no less than 18 degrees Celsius if the isolation of your premises is excellent.

If you are away for longer period (more than seven days), you can lower the temperature even up to 15 degrees. Advanced IR Sun Control allows you to select the 'Holiday' function to set the date of arrival, of departure and the temperature. Thus, on the day of your arrival, the room heating will automatically be activated at a preset temperature (eg 21 degrees). It is important to know that objects with poor insulation must not be undercooled.

Important

In the case of your daily presence in the facility, the minimum power consumption and optimal operation of the IR heating system will be ensured if you have set a constant temperature and you do not turn off the heating system! So, do not lower the temperature and do not change it several times a day! In case you are away for a longer time (service, school, etc.) or at night, the maximum tolerance of lowering the temperature is 1 to 2 degrees Celsius.

By following these instructions, you will receive all the advantages of IR heating. In this case, the room will heat up evenly and the comfort will be higher due to higher temperature.

Comparison

When comparing the efficiency of heating, it is important to compare the same heating habits and conditions. If you are in doubt or notice that something is different than anticipated, contact the seller. Our consultant will propose an optimal solution.

Ventilation

The rooms must be ventilated according to professional recommendations. This means that we must not allow the undercooling of the peripheral surfaces in the room and objects in it. The ventilation must be short and intense, several times a day. This means that the windows are opened for a few minutes. It is important that air in the room is not excessively humidified and proper ventilation helps to this.

Room heating

The IR panel is dimensioned for each room separately, so it is wrong to try to heat the adjacent rooms by opening the door. In this case, there may be a significant increase in energy consumption.

If you use classical thermostats and not advanced IR Sun regulators, it is necessary to set the hysteresis (deviation of temperature) to the smallest possible, which is in most cases 0.5 degrees Celsius. Thermostats with the smallest possible hysteresis setting of 1 degree Celsius are not suitable for IR heating, as the temperature deviation is too high and consequently the consumption can be significantly higher.

Reclamation/Formal Complaint

The term reclamation refers only to an event where it was necessary to replace or repair the product. Otherwise, you will be charged for setting up and reviewing products according to the valid price list of Ekosen. A complaint about the installation may be exercised within 1 year after the execution and does not include the intentional damage caused by a customer, a third party or a natural disaster.

The consumption costs using IR panels

IR-heating works on the basis of the heat radiation (infrared radiation), which is highly efficient and energy saving. Thus, all the objects in the room are heated to room temperature (floors, walls, furniture, ceiling, etc.). When objects in the room are heated, the pleasant heat will spread throughout the room and, consequently, the air will be heated to the set temperature on the regulation. As a result, the panels will be turned on for less time (saving electricity). For this reason, when using the IR heating system, the consumption can be higher for the first 7 to 10 days, especially when we start using the IR heating system in the main heating season (between December and February), since the IR panels must heat the surfaces in the room.

Consumption can be significantly higher if the system is often switched on and off manually. Minimum consumption is achieved with constant maintenance of the desired temperature or with the maximum permissible daily temperature adjustment for 1 to 2 degrees Celsius.

When calculating the consumption we can not multiply the monthly consumption by 6 months (the average heating season), since in the main heating season (December, January and February) consumption is between 1.5 and 3 times higher than in other transition months (October, November, March).

When the calculations of the required power of the IR panels are made in relation to the new insulation (for example new constructions or renovation of existing ones), but the building does not have additional isolation for the first heating season, it means that the consumption in a first season will be higher. In this case, you will not receive the full benefits of infrared heating, since due to insufficient installed power the surfaces in the room will be heated more difficult and will not return heat. Consequently the system will operate for a longer period of time per day.

***WARNING**

Each object has specific construction characteristics (materials used, construction quality, quality and type of insulation, possible thermal bridges, higher moisture ...), which can not be taken into account when calculating the required power of IR panels, despite very precise input data we receive them from the customer or at the facility's view. Despite the fact that the vast majority (99%) calculations of the required power is correct, it can be found that because of the special or inaccurate information, there may be insufficient installed power of the IR panels in a certain room. In this case, the customer will purchase an additional panel. When determining the appropriate power of the IR panel, the room in which the IR panel is installed is always taken into account. The adjacent rooms are excluded. If only 1 room with an IR panel is heated, the other adjacent rooms must not be heated, since the calculation was not based on taking into account additional rooms. This means that the power of the IR panels will be too low, the system will be overloaded and will work much longer than anticipated. Consequently the consumption will be higher and the surfaces of the room will remain cold (even under the table). To solve this problem, it is necessary to close the doors or to purchase panels for adjacent rooms. If all the rooms are equipped with IR panels, the consumption per m² may lower up to 35%, as if the adjacent rooms are heated in a different way.