Nakoair OS20LCD

Nakoair OS20LCD Solar Air Heater, Ventilator, Dehumidifier User Manual

Model: OS20LCD

1. Introduction

The Nakoair OS20LCD Solar Air Heater is an advanced system designed to improve indoor air quality and climate. It functions as a heater, ventilator, dehumidifier, and humidifier, utilizing solar energy to provide fresh, warm, and dry air to your living spaces. This device helps prevent issues such as mold, fungi, and unpleasant odors, contributing to a healthier environment.

The system features an intelligent LCD thermostat that automatically manages indoor air conditions, seamlessly switching between solar and electrical power as required. Regular ventilation ensures continuous purification of the air.

2. Key Features

- **Solar-Powered Heating:** Utilizes solar energy to heat incoming air, reducing heating costs.
- **Ventilation:** Provides fresh air circulation, expelling stale indoor air.
- **Dehumidification & Humidification:** Automatically adjusts indoor humidity levels to maintain a healthy range (40-70% RH).
- **Automatic Operation:** LCD thermostat intelligently controls heating, ventilation, and humidity based on environmental conditions.
- **Dual Power Source:** Automatically switches between solar and electrical power for continuous operation.
- **Air Purification:** Helps eliminate mold, fungi, formaldehyde (HCHO), TVOC, benzene, and odors.
- **Durable Design:** Built for long-term use with high-quality components.
- **Certified Quality:** TÜV Rheinland tested and Solar Keymark certified.

3. Safety Information

Please read all safety instructions carefully before installation and operation. Failure to follow these instructions may result in property damage, injury, or death.

- **Installation:** Installation should be performed by qualified personnel in accordance with local building codes and electrical regulations.
- **Electrical Safety:** The device operates on low voltage. Ensure all electrical connections are secure and properly insulated. Do not expose electrical components to water.
- **Maintenance:** Disconnect power before performing any maintenance or cleaning.
- **Children and Pets:** Keep children and pets away from the unit during operation and installation.
- **Ventilation:** Ensure proper airflow around the unit. Do not block air inlets or outlets.
- **Structural Integrity:** Ensure the mounting surface can support the weight of the unit.

4. Package Contents

Verify that all components are present and undamaged before proceeding with installation.

- Nakoair OS20LCD Solar Air Heater Unit
- LCD Thermostat
- Air Outlet Vent
- Mounting Hardware (screws, brackets)
- User Manual (this document)
- Activated Carbon Fiber Filter (pre-installed or separate)





Figure 1: Main Nakoair OS20LCD Solar Air Heater unit. This image shows the front view of the black solar air collector panel.

5. Installation

5.1. Site Selection

Choose a location on an exterior wall that receives maximum direct sunlight throughout the day. Avoid areas shaded by trees, buildings, or other obstructions. For optimal performance, consider the following:

- **Orientation:** Ideally, the panel should face south (in the Northern Hemisphere) or north (in the Southern Hemisphere).
- **Angle:** An installation angle of 60 to 90 degrees relative to the ground is generally recommended for year-round performance. Adjustments can be made based on seasonal sun paths.
- **Room Size:** For frequently used rooms or highly humid areas, consider larger models (OS22/32/42) for better performance. The OS20LCD is suitable for rooms up to approximately 30m².





Model	OS20	OS22	OS30	OS32	OS42
Appro room area	35m²	40m²	60m²	65m²	100m²
Maximum air volume	88m³/h	98m³/h	105m³/h	113m³/h	135m³/h
Appro temperature rise	10⁰ C	11⁰ C	15⁰ C	16⁰ C	25⁰ C
In addition, the air temperature on the sunny side usually rises more than 10 °C under the big sun					
Max performance	520W/h	550W/h	800W/h	840W/h	1380W/h
Estimated energy sup plement kwh/year	525 kwh	550 kwh	780 kwh	820 kwh	1418 kwh
Dehumidification capacity (at high humidity)	0.3L/hour		0.5L/hour		0.8L/hour
Product size(cm)	101x72x6		118x89x6		197x100x6
Carton size(cm)	118x75x10		122x92x10		200x103x10
Net weight	13kg		16kg		26kg
Gross Weight	16kg		20kg		34kg

Houses with little sunlight or poor insulation; rooms with frequent occupancy or high humidity require much larger models. For frequently occupied rooms, it is better to purchase OS22/32/42 with LCD thermostat and automatic vents.
Reducing the air volume increases the temperature of the air entering the room and reduces noise. Increasing the air volume can increase dehumidification effect and increase the overall heat of the room.

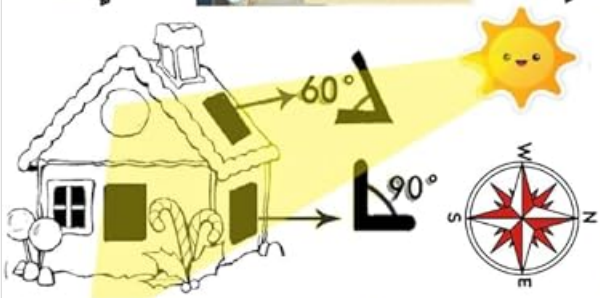
OSCAR Warranty conditions

SUNON fan life expectance: 70000 hours; 40000 hours warranty. Thermostat, air outlet can be replaced free of charge within 2 years. The lifespan for solar pv panel is 20 years, guaranteed for 10 years. While glass and aluminum materials are with long lifespan.











Free hole saw for wooden walls or lightweight bricks.



Note that by setting up two panels, e.g. one facing east-southeast and one south-southwest, you can take full advantage of the available sunshine throughout the day.

Figure 2: Installation guidance including recommended angles and tools. This image illustrates optimal panel angles (60 and 90 degrees) and compass directions for sun exposure, along with common tools required for installation such as a drill and hole saw.

5.2. Mounting the Unit

1. **Prepare the Wall:** Mark the mounting points for the brackets on the exterior wall. Ensure the wall material can safely support the unit's weight.
2. **Drill Holes:** Drill pilot holes for the mounting screws.
3. **Secure Brackets:** Attach the mounting brackets securely to the wall.
4. **Mount the Panel:** Carefully lift and attach the solar air heater panel to the secured brackets. Ensure it is level and firmly in place.



Figure 3: Various installation examples of the Nakoair solar air heater on different building types and wall surfaces. This collage shows the solar panel installed on residential homes, sheds, and other structures, demonstrating its versatility.

5.3. Air Duct and Thermostat Installation

1. **Drill Wall Opening:** Using a Ø135mm hole saw, create an opening through the exterior wall where the air duct will pass.
2. **Connect Ducting:** Connect the air duct from the solar panel to the interior air outlet vent. Ensure a sealed connection to prevent air leaks.
3. **Install Thermostat:** Mount the LCD thermostat on an interior wall at a convenient height. Connect the

thermostat to the solar panel unit and the electrical supply as per the wiring diagram (refer to specific wiring instructions included with the product).



Figure 4: Illustration of the Nakoair solar air heater panel connected to interior ducting and an air outlet vent, demonstrating the air circulation path.



Figure 5: Close-up view of the Nakoair air outlet vent, which is installed on the interior wall to distribute conditioned air.

6. Operating Instructions

6.1. LCD Thermostat Overview

The LCD thermostat provides real-time information and control over the unit's functions. It displays indoor/outdoor temperature, humidity, operating mode, and solar/electrical power status.



Figure 6: Detailed view of the Nakoair LCD thermostat, showing various indicators and control buttons. This image highlights the digital display with temperature, humidity, time, and operational mode icons.

6.2. Operating Modes

The Nakoair OS20LCD automatically adjusts its operation based on environmental conditions and user settings.

- **Heating Mode:** On sunny days, the system draws in fresh outdoor air, heats it using solar energy, and introduces it into the room. The injected air temperature can be 5 to 30°C higher than the outdoor

temperature. During midday, the air temperature can increase by approximately 10°C.

- **Ventilation Mode:** The system continuously ventilates the room with fresh air. This helps to expel stale air, reduce CO2 levels, and improve overall air quality. Even on cloudy or rainy days, the unit can switch to electrical power to provide fresh air.
- **Dehumidification Mode:** When indoor humidity is high, the system introduces drier outdoor air to reduce the indoor relative humidity to the optimal range of 40-70%. This is particularly effective in basements and damp areas.
- **Humidification Mode:** If indoor air is too dry, the system can introduce more humid outdoor air to increase the indoor relative humidity to the optimal range.



WHO (World Health Organization) lists indoor air pollution as one of the top 10 threats to human health.When indoor ventilation conditions are poor,gas pollutants will accumulate indoors,and the concentration will increase,causing serious indoor air pollution.

Dehumidification or humidification

Optimum level (for comfort as well as building quality) is a relative humidity (RF) of 40-70 %.



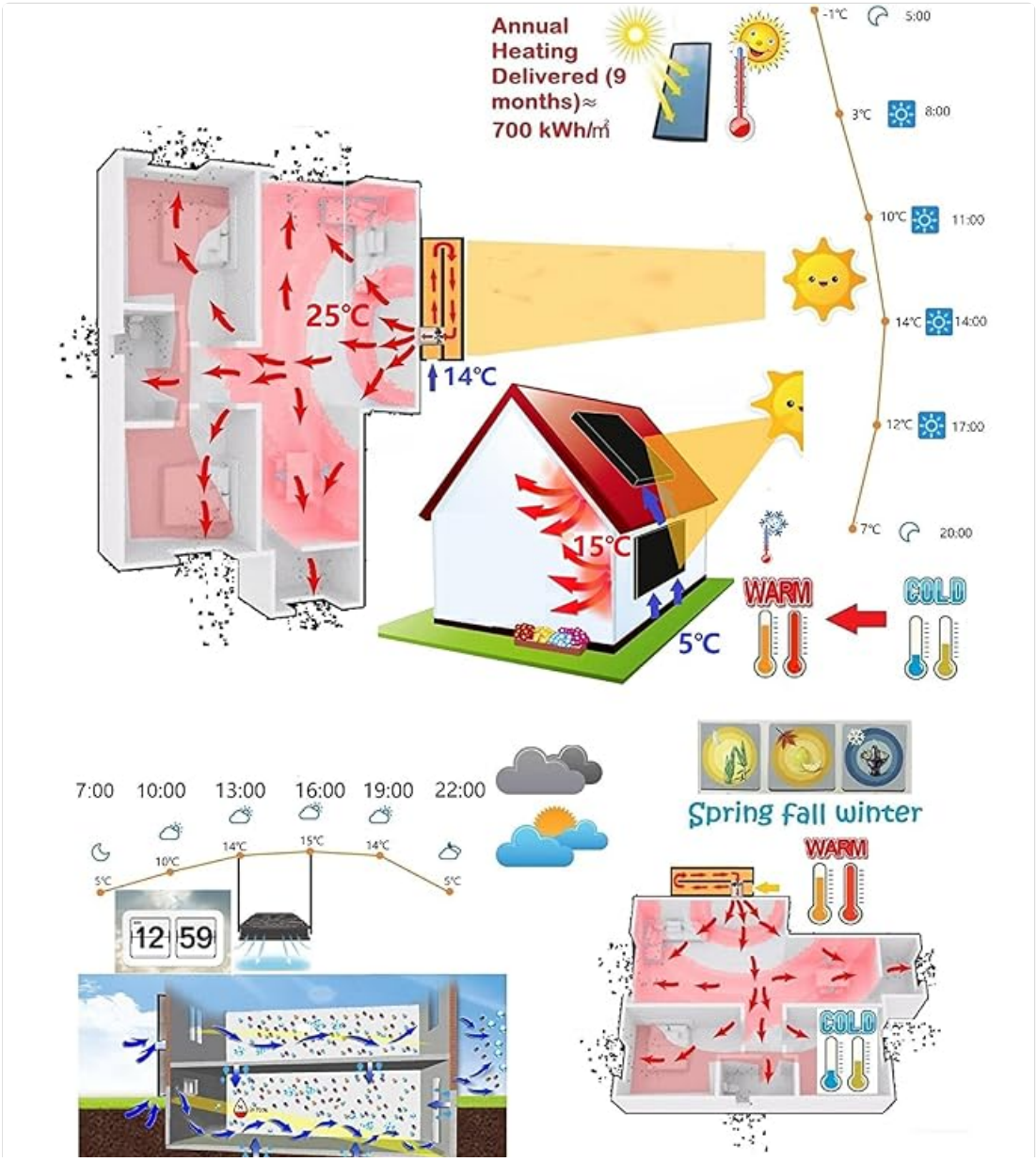
Make sure the value of your holiday home and wooden furniture. Especially suitable for wooden houses and basements.



The dry climate indoor can easily cause virus



Figure 7: Operational diagrams showing how the system heats, ventilates, and dehumidifies. This image includes illustrations of air flow, temperature changes, and the reduction of indoor pollutants like HCHO and TVOC.



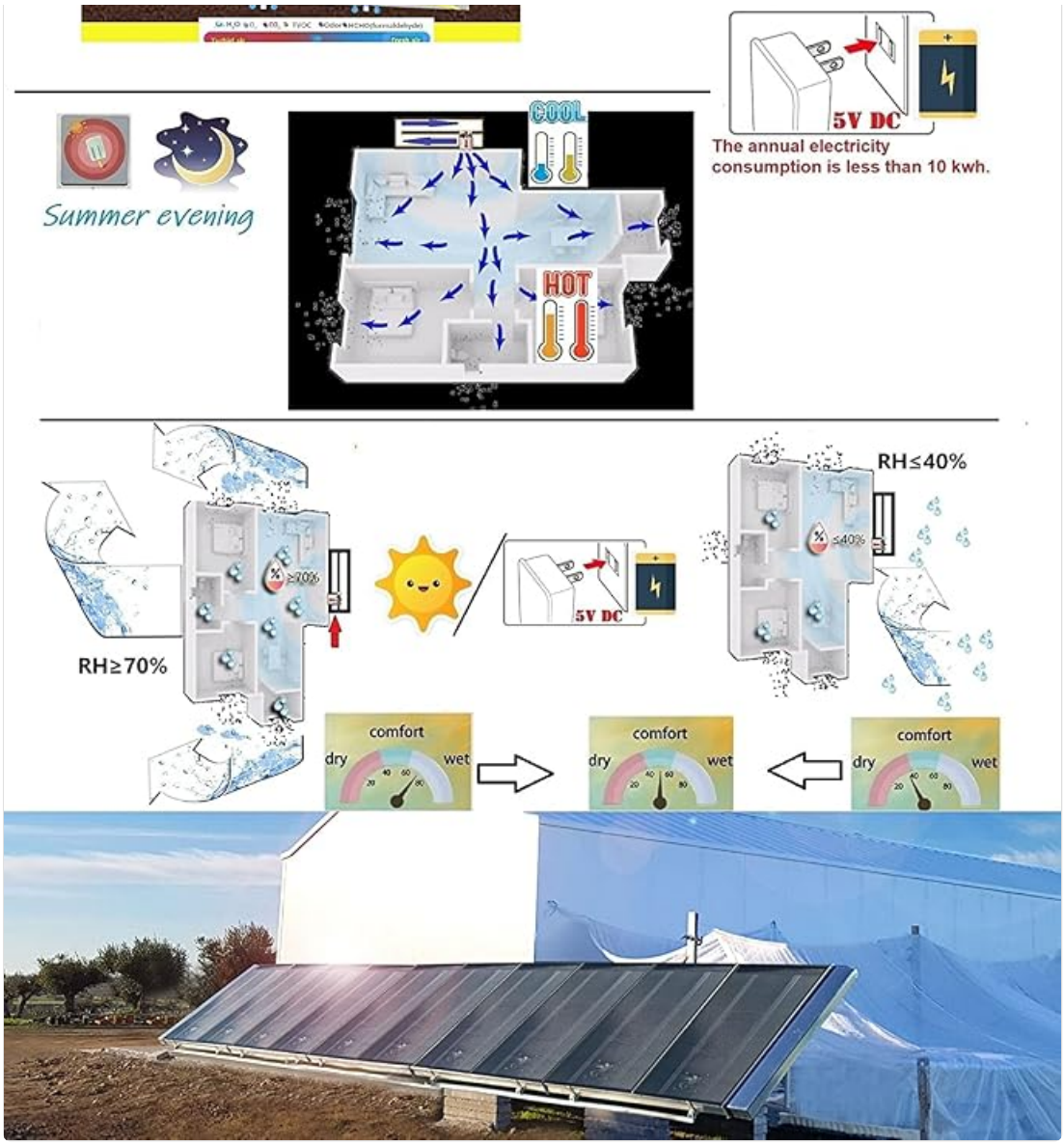


Figure 8: Diagrams explaining the system's operation across different seasons and its humidity control capabilities. This includes illustrations of heating in spring/fall/winter, cooling in summer evenings, and maintaining optimal humidity levels.

7. Maintenance

7.1. Filter Cleaning/Replacement

The unit is equipped with an activated carbon fiber filter designed to filter dust, odors, and prevent insects. Regular cleaning or replacement of this filter is crucial for maintaining optimal air quality and system performance.

- **Frequency:** Inspect the filter every 3-6 months, or more frequently in dusty environments.
- **Cleaning:** Gently remove dust and debris from the filter using a vacuum cleaner or by tapping it. Do not wash the activated carbon filter with water.
- **Replacement:** Replace the filter if it appears heavily soiled or damaged, or if you notice a decrease in air quality or airflow.



Figure 9: Close-up view of the activated carbon fiber filter, which is essential for filtering dust, odors, and preventing insects from entering the system.

7.2. Exterior Cleaning

Periodically clean the exterior of the solar panel with a soft, damp cloth to remove dirt and ensure maximum solar absorption. Do not use abrasive cleaners or solvents.

8. Troubleshooting

If you experience issues with your Nakoair OS20LCD, please refer to the following common troubleshooting steps:

- **No Power:** Check all electrical connections and ensure the unit is receiving power. Verify that the solar panel is exposed to sufficient sunlight.
- **Poor Airflow:** Inspect the air filter for blockages and clean or replace it if necessary. Ensure the air inlet and outlet vents are not obstructed.
- **Insufficient Heating/Cooling:** Verify that the unit is operating in the correct mode. Ensure the solar panel is clean and receiving direct sunlight. Check thermostat settings.
- **Unusual Noises:** Check for any loose components or obstructions in the fan.

If the problem persists after attempting these steps, please contact Nakoair customer support for assistance.

9. Specifications

Feature	Specification (OS20LCD)
Approximate Room Area	30 m²
Maximum Airflow	88 m³/h
Approximate Temperature Rise	10°C
Estimated Energy Supplement	520 kWh/year
Dehumidification Capacity (at high humidity)	0.3 L/hour
Product Dimensions (L x W x H)	101 x 72 x 6 cm
Net Weight	13 kg
Gross Weight	16 kg
Manufacturer	Nakoair

Feature	Specification (OS20LCD)
Model Number	OS20LCD

Product Information



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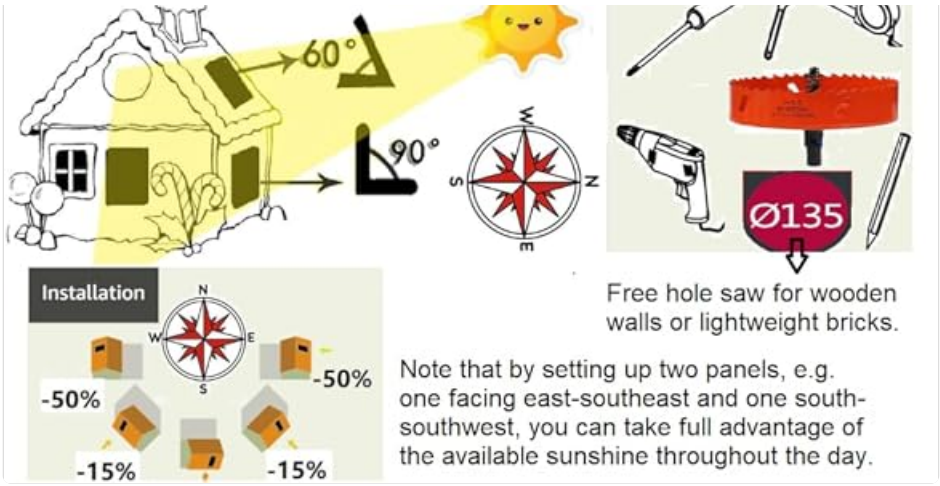


Figure 10: A table detailing specifications for various Nakoair solar air heater models, including OS20, OS22, OS30, OS32, and OS42. This provides a comparative overview of room size, airflow, temperature rise, energy supplement, dehumidification capacity, and physical dimensions.

10. Warranty and Support

Nakoair products are designed for durability and long-term performance.

- **Solar Air Collector:** Expected lifespan of over 6 years.
- **SUNON Fan:** Expected lifespan of 70,000 hours; 40,000 hours warranty.
- **Thermostat and Air Outlet:** Free replacement within 2 years.
- **Photovoltaic Solar Panels:** Lifespan of 20 years, 10 years warranty.
- **Materials:** White steel and aluminum materials are designed for long lifespan.

For technical support, warranty claims, or spare parts, please contact Nakoair customer service through your purchase channel or visit the official Nakoair website.

11. Applications

The Nakoair Solar Air Heater is suitable for a wide range of applications, including:

- Holiday homes and residential buildings
- Commercial buildings
- Basements, lofts, garages, workshops, barns
- Cabins, summer houses, storage rooms
- Sheds, caravans, tents, greenhouses
- Drying rooms, gyms, shops
- Homes without electricity (when solar power is sufficient)

It is particularly effective in areas prone to humidity or requiring consistent fresh air circulation.

12. Certifications

The Nakoair Solar Air Heater has received international certifications, ensuring product reliability and compliance with European standards.

- **TÜV Rheinland Test Report:** Performance testing for thermal performance, solar protection, rainwater penetration, frost resistance, mechanical load, and impact resistance.
- **Solar Keymark Certification:** The leading quality label for solar thermal energy in Europe, confirming compliance with relevant European standards.



Figure 11: Certificates from TÜV Rheinland and Solar Keymark, demonstrating the product's adherence to international quality and performance standards. This image also includes graphs showing power output and air volume performance.