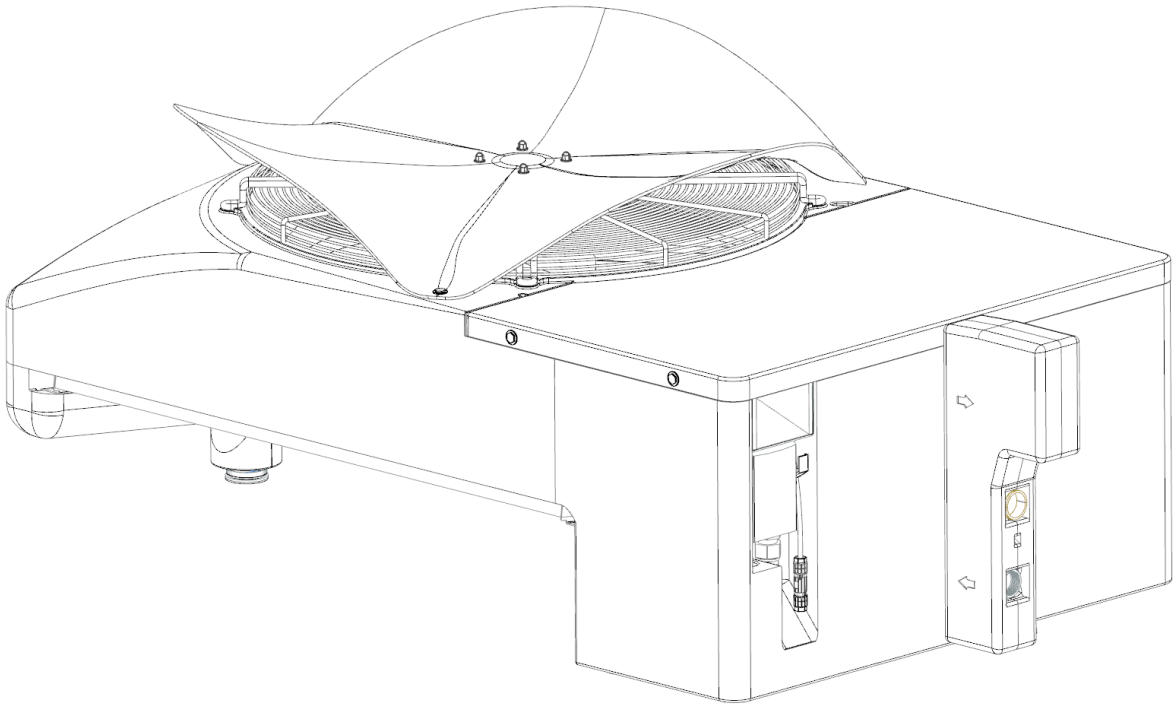
Blackbird Monoblock Heatpump

User Manual ENG



Weheat
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Netherlands

User Manual - October 2023

English – Original Instructions

Foreword

About this Document

This manual contains instructions and important information about the use of the Weheat heat pump.

This manual is intended for the end user of the Weheat heat pump.

Make sure you have fully read and understood the instructions in this manual before using the heat pump. Keep this manual for future reference.

Used Symbols

Symbol	Meaning
⚠ DANGER	This symbol indicates a hazardous situation that **could result** into severe injury or death if the associated instructions are not followed.
⚠ CAREFUL	This symbol indicates a hazardous situation which **could result** into significant injury or death if the corresponding instructions are not followed.
⚠ WARNING	This symbol indicates a hazardous situation that **could result** in injury or damage to the heat pump if the associated instructions are not followed.
WATCH OUT	This symbol provides useful information that is not related to a hazardous situation.
	This symbol indicates a reference to an external source.

Contact Information

For questions about the heat pump or this manual, you can contact:

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2. Safety

2.1. Safety Symbols on the Heat Pump

Symbol	Meaning
	Read the instructions in the manual.
	Warning; fire hazard due to flammable material.

2.2. Safety Warnings

⚠ CAREFUL

Always leave the installation, operation, or maintenance to a professional!
Risk of fire, explosion, and electrocution. Ensure that you have fully read and understood the instructions in this manual before installing, operating, or maintaining the heat pump.

Fire and explosion hazard:
• Never place the Blackbird near an open flame, as the refrigerant in the heat pump is slightly flammable.

Electrocution hazard:
• The heat pump and indoor unit should only be installed and maintained by a qualified installer.

⚠ WARNING

Cutting hazard. The evaporator fins are sharp and vulnerable. Do not touch the evaporator fins.

Fragmentation hazard. Do not insert objects into the air inlet and outlet.

Risk of burns. Do not touch the heat pump and the pipes during operation. The heat pump can produce water up to a temperature of 70°C.

Risk of product damage:

- Never climb, sit, or stand on the outdoor or indoor unit of the heat pump.
- Never turn off the main power when the outdoor temperature is below 5°C. The water in the heat pump can freeze. (Never turn off the supplied circulation pump, even during a prolonged period of absence.)
- Do not use the heat pump directly to heat swimming pool water; a high chlorine or salt content can damage the heat exchanger. (Pool heating is possible by creating a closed system with an extra heat exchanger)

Risk of reduced performance:

- Always ensure that the top and bottom of the evaporator are clean.

Risk of collateral damage:

- Do not slide the heat pump over the installation surface.
- Always ensure that the installation surface of the heat pump is free of dirt and debris.
- Do not connect other equipment to the same group as the heat pump.

3. Heat Pump Operations

A heat pump is different from a traditional gas boiler. It cannot generate a lot of power at once, so do not expect the temperature in your house to change quickly. This limited power is also relevant if you use a hot water tank.

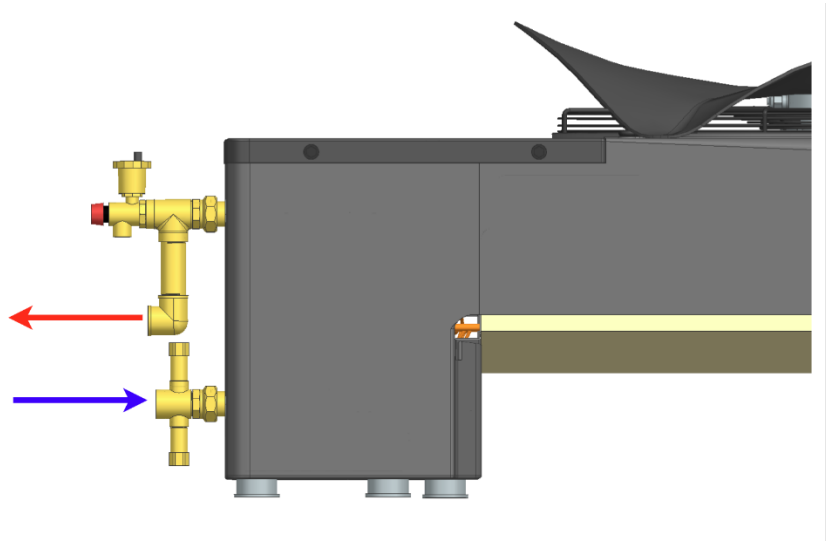
The efficiency of a heat pump depends on several factors: the outdoor temperature, the water temperature being produced, and the required power. It is often more efficient to keep your house constantly at temperature than to let it cool down and warm up again.

Operation

The Blackbird air-to-water heat pump is specially designed to heat your home sustainably and efficiently. The outdoor unit draws in outside air, which encounters a heat exchanger/evaporator filled with refrigerant; propane. This refrigerant absorbs heat from the air and evaporates.

The refrigerant is then led to a compressor in the outdoor unit. Here it is compressed, raising the temperature and pressure. The hot refrigerant goes to the condenser, where it gives its heat to the water. The refrigerant cools and condenses back to its liquid form. The water is transported to the indoor unit.

In the indoor unit, the heat is transferred to the water in your heating system, such as radiators or underfloor heating. The cooled water is then led back to the outdoor unit to start the process again. The heated water is distributed through your heating system to heat your home.



4. Product Information

4.1. Blackbird Outdoor Unit: Your Stylish and Efficient Heat Pump

The Blackbird outdoor unit is a monoblock heat pump with a capacity of 8 kW at a temperature of -10 °C. Its horizontal design ensures that the unit subtly integrates into your outdoor space, maintaining an aesthetically pleasing environment without compromising functionality.

Noise and Vibrations

The outdoor unit is equipped with vibration-damping feet in the form of springs and recyclable Expanded Polypropylene (EPP) housing, which results in less vibration and noise.

Monoblock Design

In a monoblock heat pump, all essential components—such as the compressor, evaporator, and condenser—are integrated into the outdoor unit. This simplifies and speeds up the installation process. Unique to the Blackbird is that most of these crucial components are strategically placed in the rear section of the outdoor unit, contributing to its compact and stylish design.

Dimensions and Weight

The outdoor unit has the following dimensions: 137x85x62 cm (LxWxH) and a weight of 78 kg.

Figure 1: Outdoor Unit of Blackbird Heat Pump

4.1.1. Butterfly Hood

The Butterfly hood is a specially designed protective cover installed as an addition to your Blackbird outdoor unit. Its primary function is to protect the outdoor unit from weather conditions such as rain, snow, and hail, ensuring a longer lifespan and optimal performance of the outdoor unit.

4.2. Operation of the Outdoor Unit

The outdoor unit extracts heat from the outside air, even at low temperatures, and converts it into usable energy to heat your home. The compressor in the unit compresses the refrigerant, increasing its temperature. This heated refrigerant is then passed through a heat exchanger, where it transfers heat to the circulating water of the heating system.

Integrated Components
In the monoblock design, all essential components such as the compressor, evaporator, and condenser are integrated. This ensures efficient heat transfer and minimizes heat loss.

Temperature Sensors
The outdoor unit is equipped with advanced temperature sensors that continuously measure the outdoor temperature. This information is forwarded to the indoor unit, which serves as a communication interface between the outdoor unit and the thermostat.

Summary
The Blackbird outdoor unit is an advanced and efficient part of your heating system. The device is designed to extract maximum heat from the outside air and efficiently convert it into usable energy, creating a comfortable living environment.

4.3. Blackbird Indoor Unit: The Smart Choice for Your Indoor Climate

The Blackbird indoor unit is designed to seamlessly work with the Blackbird outdoor unit, creating an efficient and reliable heating system.

Control

The indoor unit does not have a control panel. The heat pump can only be operated via a smartphone app. This offers you full control over your heating system, wherever you are. There is a light that indicates the status of the heat pump. See Alarm Management on page 16.

Pre-Assembled Indoor Unit

The pre-assembled indoor unit has external dimensions of approximately 46x33x13cm and is shown in Figure 2. This indoor unit contains a circulation pump with an automatic air vent and the "Control Bridge" for all electrical connections.

Compact Indoor Unit

The compact indoor unit has external dimensions of approximately 20x20x5cm and is shown in Figure 3. This indoor unit contains the control bridge for all electrical connections. The circulation pump that is not in the unit will have been added elsewhere in the installation.

Figure 2: Pre-Assembled Indoor Unit

Figure 3: Compact Indoor Unit

4.1. Circulation Pump

Every quarter of an hour, the circulation pump runs to check the water temperature in the house. The temperature sensor that measures this is in the outdoor heat pump. When it's cold outside, the water cools down over time. To properly monitor the current water temperature of the water in the pipes, the pump turns on regularly to measure this.

4.2. Operation of the Blackbird Indoor Unit

The Blackbird indoor unit acts as the central control point of your heating system. This unit regulates communication with the outdoor unit, thermostat, and, in a hybrid setup, also with the central heating boiler. In most cases, the indoor unit is installed near the central heating boiler or hot water tank.

Temperature Control

The indoor unit is equipped with a temperature sensor that measures the temperature of the water being sent to the heating system. Based on these measurements, the indoor unit regulates the water temperature to ensure optimal and efficient heating.

Hybrid vs. All-Electric Indoor Unit

- Hybrid: In a hybrid setup, a pre-assembled indoor unit is installed that communicates with the central heating boiler, thermostat, and outdoor unit. This ensures accurate water temperature and thus indoor temperature.
- All-Electric: In an all-electric setup, a pre-assembled indoor unit is also installed. This unit communicates with the thermostat and outdoor

Summary

The Blackbird indoor unit coordinates all elements of the heating system for reliable and efficient operation. The device is user-friendly and designed for maximum energy efficiency.

5. Using the Blackbird Heat Pump

With gas-fired heating systems, it is common to set the thermostat to a low temperature at night. With heat pumps, it is wiser to not let the day and night temperatures in the house differ too much.

For a heat pump, we advise not to lower the set room temperature at night. This is because it can take hours (especially in winter) to warm your house by 1-2 degrees again. If you still want to apply a nighttime reduction, we advise setting it to a maximum of 1-2 degrees lower than your desired daytime temperature.

6. System Requirements

6.1. Connection Power

The Blackbird has a connection power of 3600 Watts, and it is not permitted to connect other electrical devices to the same group as the heat pump.

The connection value of the Hybrid Indoor Unit is 300 Watts, which usually allows it to be connected to an existing socket.

The connection value of the All-electric indoor unit is 3600 Watts, and it is not permitted to connect other electrical devices to the same group as the all-electric indoor unit.

6.2. Accessibility of Outdoor Unit

The Blackbird must be placed in the open air and there must be sufficient space around the Blackbird to ensure good air circulation. Furthermore, access to the Blackbird should not be freely accessible to the public and/or playing children. Only certified installers can open and maintain the outdoor unit.

6.3. Thermostat

The Blackbird can be used with standard on/off thermostats. However, the Weheat algorithms are optimized to work with an Opentherm thermostat. Since Opentherm has several variants, it is advisable to use only Opentherm thermostats approved by Weheat.

7. Use and Maintenance

7.1. Regular Checks

Your heat pump is exposed to all weather conditions, and it is therefore necessary to regularly check the following points:

- Ensure that the fan grille is not blocked by leaves or other objects.
  ⚠ WARNING Never insert fingers or objects into the fan grille, as this can cause serious injuries.
- Ensure that the evaporator (bottom of the heat pump) is not covered with leaves or other objects.
  ⚠ WARNING The edges of the evaporator are very sharp, do not touch them, as this can cause injuries.

7.2. Snow

During periods of heavy snowfall, check that your heat pump is not buried under snow. Ensure that there is always good air circulation below and above the heat pump.

⚠ WARNING Be careful not to damage the heat pump while removing snow. Never insert body parts or other objects into the heat pump.

7.3. Frost Protection

Never turn off the heat pump or indoor unit when the outdoor temperature is below 5°C. At temperatures lower than 5°C, the circulation pump will continuously run to prevent the pipes from freezing. If the power unexpectedly goes out for an extended period during a frost period, the outdoor unit is protected with two frost protection valves. These ensure that all water drains from the heat pump before it has the chance to freeze. If this happens, contact your installer as soon as possible to get your system working again.

WATCH OUT It is normal for ice to form on the evaporator, the yellow-colored metal grid under the fan, on chilly days. This ice is automatically removed during a 'defrost cycle' that lasts a few minutes. During this cycle, steam may briefly come out of the heat pump.

7.4. Pump Protection

The circulation pump of the heat pump is regularly switched on to prevent prolonged stagnation of the system. Prolonged stagnation can lead to damage to certain components in your heating system. Therefore, never turn off the power to your indoor unit or circulation pump, even during a prolonged period of absence, as this can lead to damage or reduced lifespan.

7.5. Warm Tap Water

Warm tap water, which means domestic hot water, has a target temperature in an all-electric setup. This temperature is standardly set at 55 degrees. This temperature is more than sufficient for all your daily needs such as showering and dishwashing, and at the same time, it saves energy.

7.5.1. Legionella Prevention

Standardly, we activate a preventive cycle once a week that brings the tank above 60 degrees for 20 minutes to prevent legionella. This method is both energy and cost-efficient and complies with all applicable regulations regarding Legionella Prevention.

Important:

If the system fails to reach the required temperature for legionella prevention, a new attempt is made every three hours, starting on day 6 after the last legionella moment after 1:00 PM. If it still has not succeeded by day 7, we switch to maximum capacity, if necessary, with an additional electric heater. If it still does not work, a fault code is generated on day 8. The heating of the domestic hot water circuit is then stopped until a certified installer or we ourselves have solved the problem.

8. Malfunction

WATCH OUT

If your heat pump is not functioning properly, please contact your installer.

8.1. Alarm Management

- Green (heartbeat): The outdoor unit (external part of the heat pump) is in standby mode.
- Blue (heartbeat): The outdoor unit has started heating the household.
- Orange: Connection problem. This does not affect the operation of the heat pump, but it may affect information visible in the app.
- Red (flashing): A fault code has been detected. This does not mean that the pump is no longer working. Many error messages can be resolved by the system itself.
- No light: The indoor unit has no power. Check that the plug is in the socket and that the fuse is set correctly.

8.2. Self-Service Solutions

If you encounter problems with your Blackbird heat pump, there are several steps you can take before contacting your installer:

Check Water Pressure
Check the water pressure of the heat pump. This varies per installation. If you do not know this, you can contact your installer.

Check Outdoor Conditions
Check if there is a lot of snow or leaves around the outdoor unit. These can affect the efficiency of the heat pump. Remove snow or leaves if necessary to ensure a good airflow.

Check Fuse Box
Go to the fuse box and check if the fuse of the heat pump is still okay.
If the fuse has tripped, reset, or replace the fuse.

If the problem is still not resolved after these steps, then contact your installer.

9. Portal and App

Through the Weheat app and portal, you can get insights into your Blackbird heat pump.

9.1. Portal

To log in to the portal, go to: www.portal.weheat.nl

After the installation is completed, you will receive an email in which you can create an account for the portal.

9.2. App

You can download the Weheat app on your phone or tablet via Google Play or the Apple App Store.

Weheat is a convenient app that allows you to view the performance of your heat pump at any time. With this app, you can, for example, check the temperature of your house and view the status of the heat pump in real-time. The app also offers handy features such as receiving alerts and notifications about any malfunctions or problems with the heat pump. In short, the Weheat app is a useful tool for anyone who wants to monitor and optimally use their heat pump.

Download on the App Store

GET IT ON Google Play

10. Technical Specifications

Model	Blackbird
Power At A-10W35	8 kW
Energy Efficiency Class EN14825 - Average climate, low and medium temperature application:	A+++
Sound Pressure at 1m Measured according to EN12102-1 @ 8kW	49 dB(A)
Maximum Outlet Temperature	70 °C
Refrigerant	R290 (Propane)
Refrigerant Quantity	(1250 ± 25) grams
Construction Type:	Monoblock
	Air - Water
Power Control	Inverter
Power Control Range At A-10W35	1.8 - 8kW
All-electric Ready	Yes
Noise and Vibration Damping	EPP- housing
	Horizontal Orientation of Fan
	Integrated Vibration Dampers
Connectivity	4G
	Smartphone App
	Over-The-Air Updates
	Remote Diagnostics
Thermostat Interface	OpenTherm or on/off
Power Supply	1x 230 V, 16 A
Standby Power Consumption	0,028 kW
Outdoor Unit Weight	78 kg
Outdoor Unit Dimensions LxWxH	137 x 85 x 62 cm
Indoor Unit 'Hybrid Pre-assembled' Dimensions HxWxD	46 x 33 x 13 cm
Indoor Unit 'Compact' Dimensions HxWxD	20 x 20 x 5 cm

ENERGY EFFICIENCY MEASUREMENTS EN14825 - average climate conditions - low-temperature application 35°C			
Energy Efficiency Class		A+++	
Seasonal Energy Efficiency for Space Heating 'SCOP'		4,7	
Seasonal Energy Efficiency for Space Heating 'ηs'		184%	
Rated Power 'Prated'		8 kW	
COP and Part Load at Indoor Temperature 20°C and Outdoor Temperature Tj	Outdoor Temperature Tj	Part Load Power[1]	COP
	Tj= -10 C°	7,5 kW	2,7
	Tj= -7 C°	6,7 kW	3,1
	Tj= +2 C°	4,4 kW	4,6
	Tj= +7 C°	2,9 kW	5,9
	Tj= +12 C°	3,4 kW	8,5

[1] The mentioned powers are not full load but part load powers according to EN14825, simulating decreasing heat demand with increasing outdoor temperature.

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