

# **INSTALLATION AND OPERATING INSTRUCTIONS**

**HYDROBOX KENSOL KTH1**

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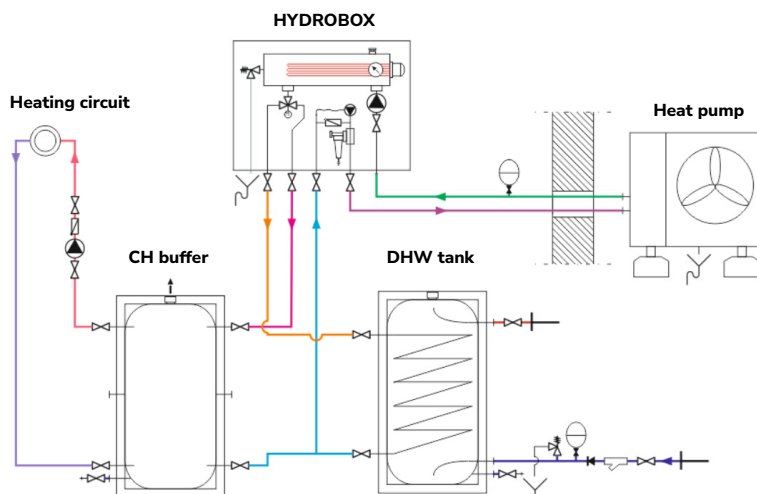
## 1. Introduction

Hydrobox is a module designed for indoor installation, speeding up the installation of a system with a monobloc air-to-water heat pump, a buffer tank and a hot water storage tank. The compact form and thoughtful design makes the entire installation take up less space, while providing easy access for maintenance activities.

Due to the company's philosophy of continuous product improvement, we reserve the right to change the manual and any specifications in this document without notice.

## 2. Installationsschema

FIG. 1. EXAMPLE INSTALLATION DIAGRAM USING HYDROBOX MODULE KTH1



## 3. Precautions and recommendations

### PRECAUTIONS:

- All installation work must be performed only by a qualified and trained installer. Improper installation carries the risk of fire, flooding, electrical shock or damage to the unit and heat pump.
- Please refer to the instructions of the individual main components, in particular the magnetic filter, the anti-freeze system and the controller.
- The device is not intended to be operated by children.
- For the sake of safety of use, it is necessary to regularly check the technical condition of the device.
- Lightning can damage the device, so it should be unplugged during a storm.
- The device must not be misused.
- Do not touch the device with wet hands - risk of shock!

## ELECTRICAL:

- Live electrical device. Before doing anything with the power supply (connecting cables, installing the device, etc.), make sure that the device is not connected to the grid.
- Connection of heating elements must be carried out taking into account the electrical parameters of the device and in accordance with applicable regulations. The electrical installation components used such as electrical wiring and apparatus must be selected properly.

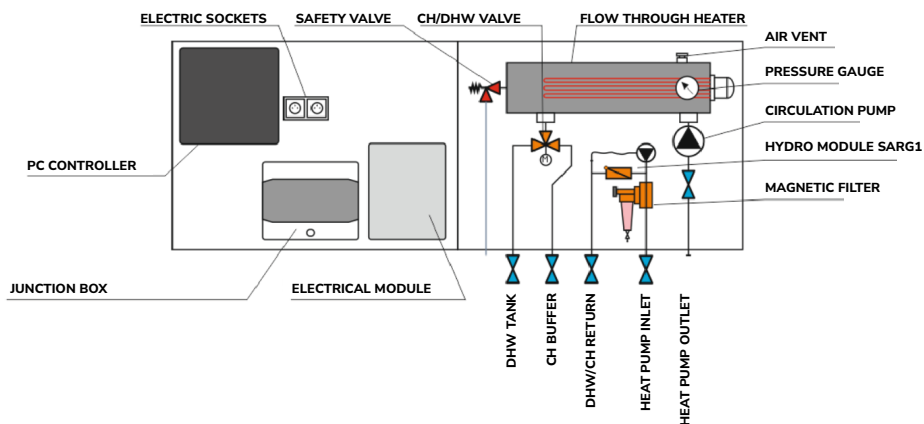
## HYDRAULIC:

- The device can be filled with low-oxygen water, preferably using dedicated corrosion inhibitors for heating systems.
- The device should be installed with a view to applying the necessary pressure and thermal protection in accordance with PN-EN 12828+A1:2014-05.
- Dry operation of the heater and circulation pump is not allowed.
- Do not block the trigger of the safety valve. ON THE SECTION FROM THE SAFETY VALVE TO THE HEAT PUMP, DO NOT INSTALL BALL VALVES, CHECK VALVES, FILTERS OR OTHER SHUT-OFF DEVICES!
- When using the device for installations operating in cooling mode, vapor-proof hydraulic components should be additionally insulated to reduce the effect of condensation.

## 4. Technical data and components

Diverter valve	DN25
Electric heater	3 x 2 kW (level adjustable)
Circulation pump	IBO AMG 25-60
Anti-freeze kit	SARG1
Magnetic filter	11000G magnet, 500µm mesh
Safety valve	3 bar
Size of hydraulic connections	GW 1"
Dimensions H x W x D.	530 mm x 650 mm x 295 mm
Mass	35 kg
Noise	< 35 dB
Recommended electrical supply	min. 3 x 10A, 230V AC, 50Hz
Recommended power cord	5 x 2,5 mm <sup>2</sup>
Recommended cable for sensor with SARG1	2 x 1 mm <sup>2</sup> shielded

**FIG. 2. COMPONENTS AND DESCRIPTION OF HYDRAULIC CONNECTIONS**



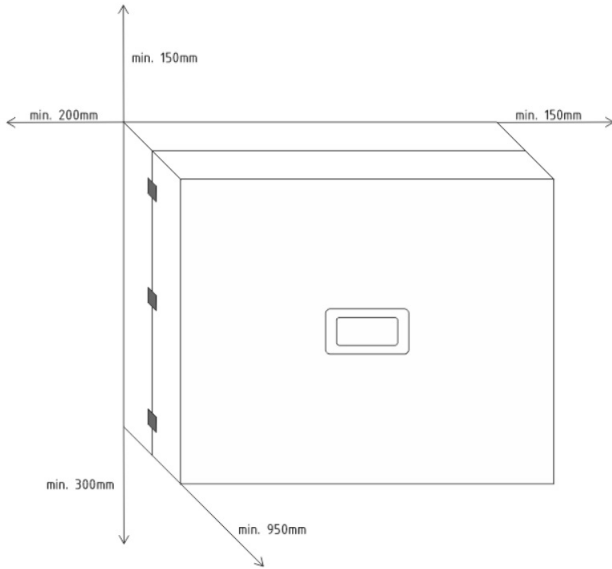
## 5. Transportation and storage

- Store the device in a dry and dust-free place.
- Do not store the device below 0°C and above 40°C.
- It is not recommended to transport the device unpacked from the supplied packaging. Moving the device requires at least two people or the use of a transport cart.
- When lifting the device, be careful against accidentally opening the door. Do not lift by grasping the connector pipes.

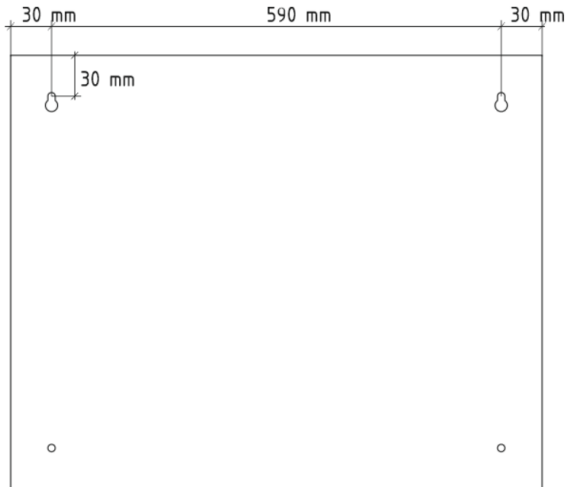
## 6. Wall installation and service distances

Installation of the device should be carried out on the wall or a structure that allows vertical hanging. Observe the minimum distances from obstacles according to Figure 3. Suspend the device by first fastening the two top M8 screws according to Figure 4. For installation, you can use the supplied set of screws and screw anchors or use others adapted to the condition of the wall/ or structure. The installer selects the appropriate anchoring elements. Then further fix the device using the lower installation holes.

**FIG. 3. MINIMUM DISTANCES FROM OBSTACLES**



**FIG. 4. INSTALLATION HOLES**



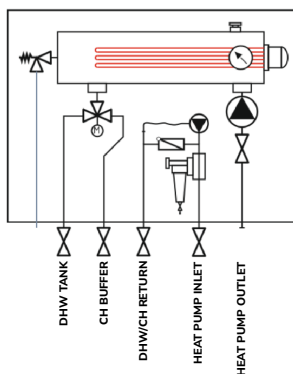
## 7. Hydraulic connections

All hydraulic connections should be made using piping and fittings of the correct diameters. Examples of recommended diameters for the most popular systems are shown in Table 2.

Pump model	Required flow [M3/H]	Pp-R-Gf	Press Steel	Copper	Multilayer Pipe
KTM 6	1,4	Ø40x6,4	Ø 28x1,5	Ø 28x1	Ø32x3
KTM 10	2,2	Ø50x8,3	Ø 35x1,5	Ø 35x1	Ø40x3,5
KTM 14	3,1	Ø50x8,3	Ø 35x1,5	Ø 35x1	Ø40x3,5

The device should be connected to the installation according to the purpose of the connector pipes as described in Figure 5.

**FIG. 5. HYDRAULIC CONNECTIONS**



**REMEMBER TO INSTALL A SAFETY VALVE, AN EXPANSION VESSEL AND A PROPER SELECTION IN ACCORDANCE WITH PN-EN 12828:2014 OR LATER.**

## 8. Electrical connections

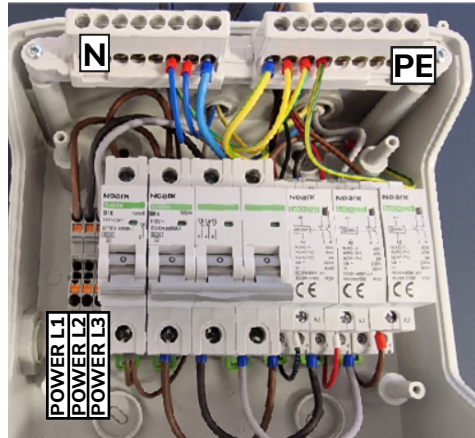
The basic electrical connections for the HYDROBOX installation include:

- Power supply to the heater (Figure 6) - plug the power wires into the ZUG rail bonds and into the N and PE rails.
- Installation of temperature sensors of the SARG1 system (Figure 7) - extend the wires of sensors T1 (outdoor temperature IN1) and T2 (water circulation temperature IN2),
- THE POWER SUPPLY OF THE OUTDOOR UNIT MUST BE DONE SEPARATELY ACCORDING TO THE INSTALLATION INSTRUCTIONS OF THE HEAT PUMP!
- REFER TO THE CONTROLLER/HEAT PUMP MANUAL FOR HOW TO CONNECT THE OTHER SENSORS AND OTHER DEVICES!

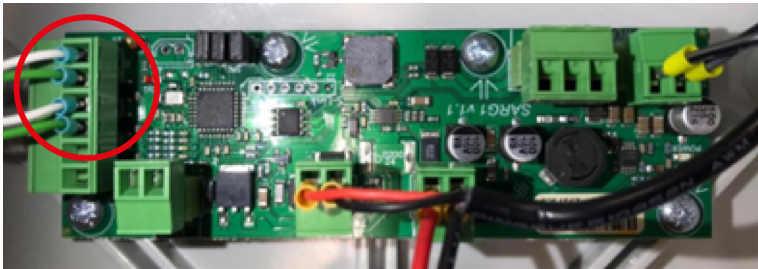
Cable list:

Recommended power cord	5 x 2,5 mm <sup>2</sup>
Recommended cable for sensor with SARG1	2 x 1 mm <sup>2</sup> vvvv

**FIG. 6. CONNECTIONS IN THE ELECTRICAL BOX**



**FIG. 7. SARG1 SYSTEM SENSOR SOCKET LOCATION**



## 9. Magnetic filter operation

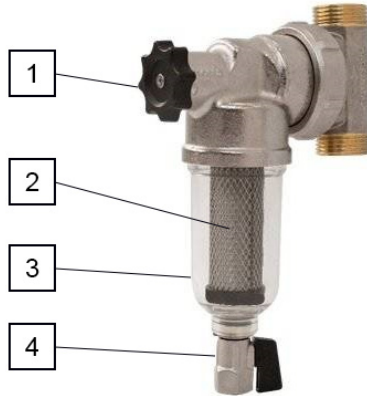
The circulation is protected by a magnetic filter. It is recommended to clean it for the first time after about a month of operation of the installation, and then a minimum of once a year.

### STEP-BY-STEP ACTIVITIES:

1. Close the shut-off valve (1),
2. Empty the filter chamber with the drain valve (4),
3. Unscrew the filter chamber (3),
4. Remove and clean cartridge and magnetic element under running water the mesh (2),
5. Remove and clean cartridge and magnetic element under running water the mesh (2),
6. Carefully screw the filter chamber, paying attention to the correct position of the gasket,
7. Unscrew the ball valve (1).



**FIG. 8. MAGNETIC FILTER**



## 10. Operation of the circulating pump

If a pump malfunction occurs, verify the malfunction and remove the cause according to Figure 9.

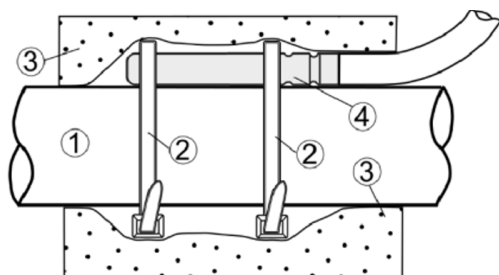
**FIG. 9. CIRCULATION PUMP ERROR CODES**

ERROR CODE	DISPLAY	CAUSE	LÖSUNG
Shaft blockage		The pump shaft is blocked	Dismantle the motor housing and then check whether the pump impeller rotates without resistance, if there is resistance, the pump shaft should be dismantled and then cleaned from the accumulated deposits.
Voltage too high or too low		Mains voltage is too low or too high	Check the line voltage, if there are deviations, contact an electrician.
No phase		No phase	Check the electrical network
Engine overload		Engine overload	Replace the pump

## 11. Launching and operating of the SARG1

Place the probe of the outdoor temperature sensor T1 outside, away from heat sources and in the shade. Place the probe of the heating water temperature sensor T2 as close as possible to the heat pump on the outlet pipeline, directly on the pipe, under the insulation layer or in a suitable capillary. In the case of pipes made of poorly conductive material, such as PP-R, it is advisable to find another location for the sensor, such as on a metal made fitting, and insulate effectively. If necessary, the probe cable can be extended.

**FIG. 10. INSTALLATION OF CIRCULATION SENSOR**



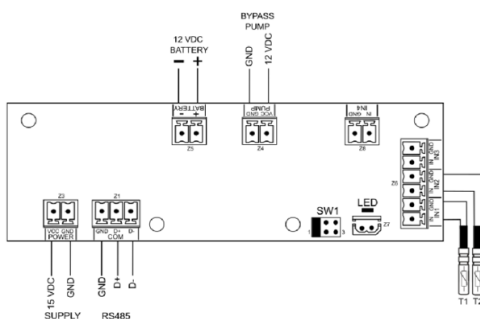
**Installation of a circulating water temperature sensor:**  
1 - pipe, 2 - clamp, 3 - thermal insulation (insulation lagging), 4 - temperature sensor

It is imperative to make sure that the T1 and T2 sensors are correctly identified. Incorrect connection of sensors may result in malfunction of the system and lack of antifreeze protection of the heat pump! If there are cyclic beeps, first verify the correct plugging in of the sensor wires and the circulating pump, as well as the connections when extending the wires if necessary. After repair, the error signaling subsides with a time delay (except for an error related to battery damage - in which case the error must be reset).

If you need to mute the acoustic signal (e.g., until the arrival of a technician), it is possible to disable the buzzer by removing jumper #3 on connector SW1.

Error reset is possible by removing jumper #2 on SW1 connector for 30 seconds.

**FIG. 11. INTERIOR OF SARG1 MODULE**



## 12. Cleaning and maintenance

Basic maintenance activities include:

- Washing the housing with a damp cloth with a possible mild detergent,
- Vacuuming the inside of the case,
- Cleaning the magnetic filter (see „Magnetic filter operation“), Checking the condition of the electrical cables,

- Checking the condition of hydraulic connections,
- Checking the operation of the anti-freeze system.

## 13. Disposal

Caring for the environment is of paramount importance to us. Awareness that we manufacture devices that contain electronics, batteries and many other complex components, obliges us to dispose of used components and devices in a nature-safe manner. The crossed-out garbage symbol on the product indicates that the product must not be disposed of in regular waste containers. By segregating waste for recycling, we help protect the environment. It is the user's responsibility to take used equipment to a designated collection point for recycling of waste generated from electrical and electronic equipment.





v 1.0