

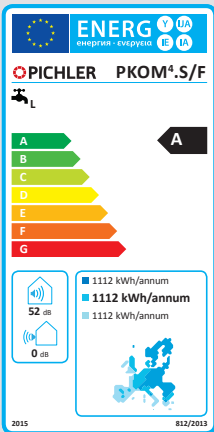
OPERATING AND INSTALLATION INSTRUCTIONS SYSTEM VENTECH PKOM⁴



250 m³/h 1.300 Watt



1.300 Watt 4 persons



 **PICHLER**

Systematic ventilation.

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1. Introduction

Dear Customer,

Thank you for purchasing a *System Ventech PKOM⁴* type heat pump combi unit.



Please carefully read and observe this Operating and Installation Instructions to ensure safe, reliable and economic operation of your unit.

Keep this document in a safe place and readily available at all times.

Troubleshooting and interventions in the heat pump unit may only be done by *specialised companies with trained and appropriately certified staff*.

The unit is subject to ongoing improvement and further development. Your unit may therefore vary slightly from the description in this Instruction.

Nameplate:

Please always keep the *model and serial number* (see nameplate on unit) at hand to use in case of queries or when ordering spare parts.



Illustration: Example Nameplate

Please contact us directly should you have further questions.

The Passive House Institute is an independent body that tests and certifies products in respect of suitability for application in passive houses. Products carrying the "Passive House approved component" certificate were tested in accordance with uniform criteria, are comparable in respect of their characteristics and are of excellent quality in terms of energy conservation.



1.1 CUSTOMER SERVICE



Please contact the installer of your ventilation and air conditioning system or contact us directly for any questions pertaining to the supplied heat pump combi unit *PKOM⁴ System VENTECH*.

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2. Symbols used in this document

Please familiarise yourself with the following Safety symbols. The symbols will highlight warnings of danger and potential hazards.



Note!



Attention! Ignoring this warning may lead to injury or threat to life and limb and/or damage the unit.



Attention – High voltage! Ignoring this warning may lead to injury or threat to life and limb.



3. Designated use

3.1 PURPOSE

The *System Ventech PKOM⁴* type heat pump combi unit is intended for installation in residential or industrial buildings. It is a compact ventilation unit with integrated heat pump module, used for mechanical aeration and ventilation of rooms and for air conditioning (heating or cooling). The version with storage tank will also heat and store the household hot water supply.

Designated use includes the supply or extraction of up to 250 m³/h of air.

The heat pump module comprising two separately operating refrigeration systems will allow heating of the (drinkable) hot water and simultaneously also heat or cool the supply air.

The areas supplied with air will be supplied with filtered and conditioned fresh air. The extract air from bathroom, toilet and kitchen will be discharged to dispose of moisture and odours.

The extracted air must be free of aggressive vapours and substances causing wear. Any other use shall be deemed contrary to designated use. The manufacturer accepts no responsibility for damages or consequential damages arising from improper use.

Designated use shall also include servicing as prescribed in the Operating and Installation Instructions.

This unit is not intended for use by persons, including children, with limited physical, sensory or mental capacity or who lack experience and/or the requisite knowledge, unless under the supervision of a person responsible for their safety or instructing them on the use of the unit. The unit is not suited for external installation and shall only be installed in suitable and temperature controlled interior areas. The heat pump combi unit is not suited for drying and baking out of new buildings.



The *System Ventech PKOM⁴* type heat pump combi unit is not a ready-to-use product and may only be switched on after proper installation and linking into the ventilation and air conditioning components. Only qualified and instructed persons shall work on and with the unit. Persons transporting, setting up or working on the unit must have read and understood the Operating Instructions, especially *Chapter 5 "Safety"*. The end user must furthermore also be made aware of potential hazards.



3.2 REQUIREMENTS FOR OPERATION WITH FIREPLACES



The safety regulations and standards must be heeded when operating the unit in the presence of room air dependent fireplaces. The supply of air for combustion in a fireplace must be provided separately where such fireplace draws on room air.

Proper operation of the PKOM⁴ heat pump unit requires that it must be possible to shut off existing piping for combustion air and flue gas systems of fireplaces drawing in room air.

The PKOM⁴ heat pump unit may only be installed in rooms, homes and user units

of similar size containing fireplaces drawing in room air provided safety systems ensure that such fireplaces using liquid or gaseous fuels cannot be used simultaneously with the ventilation system of the dwelling or provided the waste gas ducting for such fireplaces will be monitored by safety systems.

If the pressure in the room where the fireplace is installed is more than 4 Pa below external pressure, the extract air system must automatically and safely switch off.

3.3 REQUIREMENTS FOR OPERATION WITH KITCHEN HOODS



Due to high loading and irregular operation, the air extracted by a kitchen hood must not be integrated in a home ventilation system. Two options for operation of a kitchen hood are possible:

A) The air extracted by kitchen hoods may be separately discharged to the atmosphere through exhaust air ducting, taking into account corresponding inflow

of air (e.g. through window ventilation). The balance of air volumes in the home will be disturbed if a kitchen hood is operated without a separate air supply. Proper operation of home ventilation system will thus not be assured (low pressures, spreading odours, etc.).

B) The kitchen hood operates with circulating air.

3.4 LIABILITY

The PKOM⁴ heat pump combi unit has been developed and manufactured for controlled mechanical aeration and ventilation, with additional heating and cooling of homes and rooms for similar use, such as seminar rooms and small offices. The heating power for household hot water is designed for average hot water requirements (nominal usage profile L as per EN 16147).

Any other use shall be deemed improper and may cause personal injury or damage to the PKOM⁴ heat pump combi unit, for which the manufacturer shall accept no liability.

The manufacturer shall accept no liability for any damages due to:

- Non-observance of the Safety, Operating and Servicing instructions in these Operating and Installation Instructions
- Installation of spare parts not supplied by the manufacturer, whereby the responsibility for the use of such spare parts shall rest with the installer of the equipment.
- Normal wear and tear

Do not use the PKOM⁴ heat pump combi unit unless in perfect condition and use only as designated; be aware of safety issues and potential hazards and familiarise yourself with the notes and information contained in these Instructions.



4. Warranty

Our General Terms and Conditions shall strictly apply. The warranty period shall commence after commissioning (date of record of commissioning) but no later than one month after delivery and shall remain in force for 24 months maximum.

The manufacturer warrants full replacement of material in the event of material and/or manufacturing defects becoming evident during the warranty period. No claims shall, however, be recognised for compensation of services or replacement based on loss of comfort.

The warranty shall be subject to proof of services performed as per our instructions by a specialist and licensed installation company.

In the event of a warranty claim, the PKOM⁴ heat pump combi unit shall not be uninstalled without prior written consent of the manufacturer. The manufacturer's liability for spares shall be limited to parts installed by an installation company approved by the manufacturer.

The warranty shall automatically lapse at the end of the warranty period, following improper operation (such as operation with a very dirty or no filter), if parts other than original parts supplied by the manufacturer are installed, or if unauthorised changes or modifications have been made to the plant.

The warranty shall furthermore automatically lapse unless these Operating and Installation Instructions are heeded.

5. Safety



Any potentially unsafe operation of the unit is prohibited! To ensure safe operation, safety devices must not be removed or bypassed.

Do not use the heat pump combi unit unless in perfect condition and use only as designated; be aware of safety and potential hazards and familiarise yourself with the notes and information contained in these Instructions.

Keep the Operating and Installation Instructions near the unit. The specifications given in this document must not be changed.

All safety signs and warnings affixed to the unit or included in these instructions must be observed.



Non-observance of these Safety regulations, warnings, notes and instructions during installation, servicing or general work on the unit may result in personal injury or damage the heat pump combi unit.



Installation, commissioning, servicing and repairs may only be carried out by an **authorised specialist company (specialised heating/installation company)**. Over and above these Operating and Installation Instructions, the local and national regulations and generally applicable standards shall also be applicable without limitation to the operation of this unit.

When installation is complete, please request the installer of the plant to instruct you on the unit and its controller. The heat pump combi unit may only be used compliant with *Chapter 3 "Designated use"*.



5.1 SETTING UP THE UNIT

Regulations:



All national and local regulations must be complied with when installing and setting up the unit. The unit may only be installed compliant with the national installation regulations and the general locally applicable building, safety and installation regulations of the relevant local authorities or the water and electric utility and other facilities.

Observe the local building and fire protection provisions, regulations and standards. If necessary, appropriate measures should be taken when installing the unit on site, e.g. by including fire shutters in air ducts, etc.

5.2 ELECTRICAL CONNECTIONS



Electrical connections and work on electrical plant components may only be carried out by authorised electricians and in *compliance with national and local regulations*.

Before opening the unit and whilst carrying out any servicing or repairs etc., isolate the unit from mains (isolate all poles of the power supply) and secure against accidental switch-on before work on the unit is complete.

The electrical system with the warning and protective functions of the unit must be regularly checked for perfect functionality. The unit must be shut down

immediately in the event of malfunctions in the electrical power supply or detected defects such as loose connections or overheated cables.

Damaged or faulty power supply cables to the unit must be repaired immediately to avert potential danger.

The unit may not be operated unless safe operational conditions have been restored.

Fault finding and immediate remediation of defects may only be carried out by authorised electricians.



5.3 SAFETY DURING OPERATION

To guarantee safe plant operation, safety devices and covers may must remain functional and may not be by-passed or removed.

Malfunctions:

In case of malfunctions, faults or damage to the heat pump combi unit possibly hazardous to persons or objects, switch off the unit immediately and secure against accidental switch-on.

Further operation must be effectively prevented until repairs have been made! Faults must be remedied immediately!

After repairs and servicing, qualified staff must verify that the unit is safe to operate.



The heat pump combi unit may only be operated if all requisite connections together with the supplied subassemblies such as sound dampener etc. are set up properly.



The plant must be shut down immediately in case of malfunctions, fault messages or damage hazardous to persons or objects. Further operation must be effectively prevented until repairs have been made!

Service:

The heat pump combi unit must be checked and serviced regularly; it is advisable to conclude a service agreement with your specialised company.

Spare parts:

Attaching or installing additional components and assemblies is not allowed. Exclusively original spare parts shall be used.

Filter:

The heat pump combi unit may never be operated without an air filter. Air filters must be checked regularly for dirt and damage. They must be replaced when the "Replace filter" message is shown on the control unit. Depending on application, filters must be replaced two to four times a year.



Spare filter

Use only original replacement filters. If the plant is not used in summer, the air filters must for hygienic reasons be replaced prior to re-commissioning.

Health hazards posed by escaping refrigerant and refrigerant oil:

The unit is designed such that the refrigerant can never come into contact with drinking water, even in case of leaks in the refrigeration cycle. Leakages may, however, cause the refrigerant to enter the atmosphere.

- Never inhale gases or vapours.
- Avoid skin and eye contact



Refrigerant directly at the point of leakage may cause freezing in case of body contact. Wear protective gloves when working on the refrigeration cycle!



6. Product description

One device, 4 benefits:

Ventilating – heating – cooling – hot water

The PKOM⁴ heat pump combi unit unites these four functions on a footprint of less than 0.75 m². Controlled ventilation of living rooms will constantly ensure fresh and filtered outside air in the rooms and ensure hygienic exchange of air. The highly efficient heat recovery system is also optionally available as a design with recovery of waste air humidity.

To prevent overly high summer temperatures in the living rooms, heat recovery may also be bypassed during cooler night hours by means of a bypass flap.

We differentiate between 2 versions:

- PKOM⁴ classic: Version with household hot water.
- PKOM⁴ trend: Version without household hot water.

6.1 PKOM⁴ CLASSIC

The PKOM⁴ classic heat pump combi unit is the preferred compact overall solution for passive house construction homes with up to 130 m² living area. The volume of household hot water will comfortably provide for a family of 4.

A controlled heat pump will in addition condition the supply air, i.e. heated or cooled on demand. Another heat pump is used for efficient provision of household hot water. Both heat pumps may be operated in parallel to ensure uninterrupted provision of air and water.



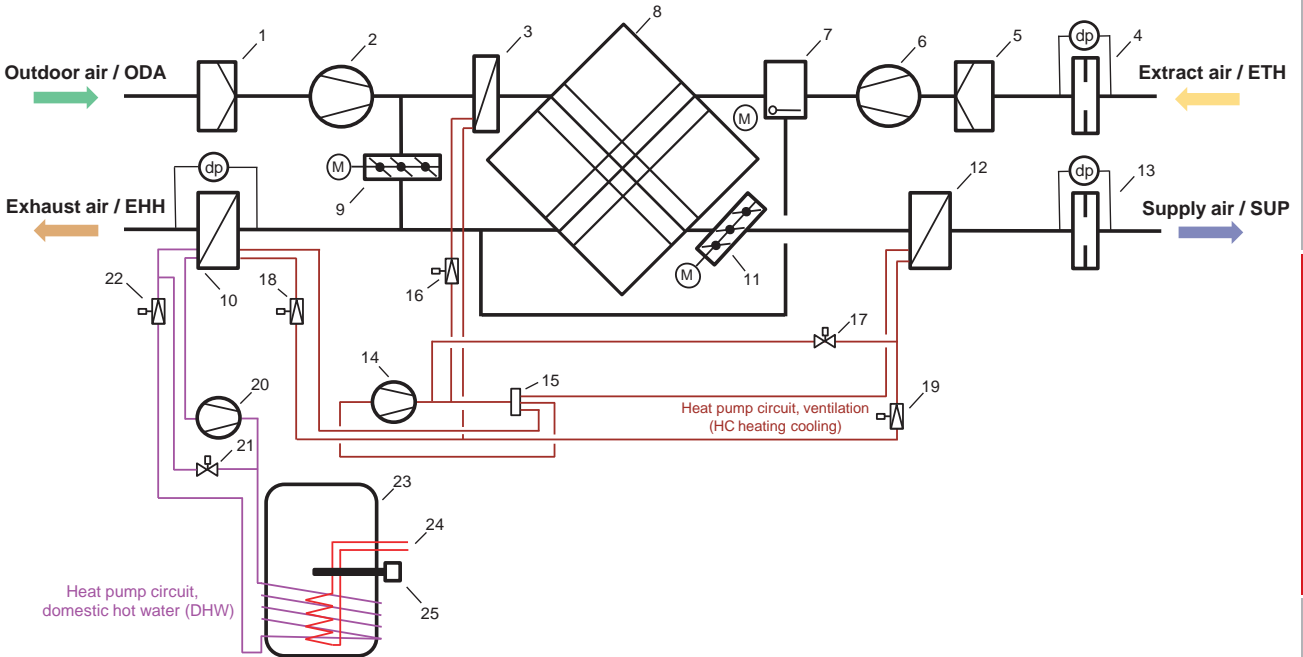
6.2 PKOM⁴ TREND

Household hot water storage and the associated heat pump are omitted in the PKOM⁴ trend unit version. The PKOM⁴ trend heat pump combi unit is the best alternative to conventional living room ventilation units. The supply air into the living rooms will be cooled and dehumidified during summer, as needed. The supplied air will be heated in the colder months.

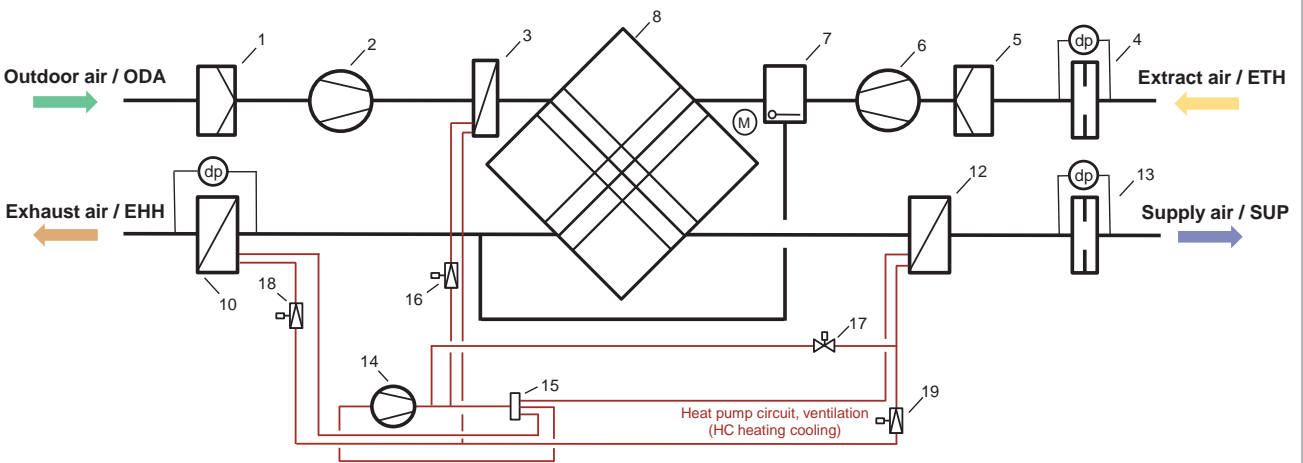


7. Functional diagrams

7.1 PKOM⁴ CLASSIC



7.2 PKOM⁴ TREND



- 1 Outdoor air filter M7
- 2 Outdoor air fan
- 3 Pre-heater battery for outdoor air
- 4 Air volume measurement, extract air
- 5 Extract air filter M5
- 6 Extract air fan
- 7 Bypass flap with servo motor
- 8 Counterflow heat exchanger
- 9 Outdoor air/exhaust air flap with servo motor
- 10 Heat exchanger in exhaust air
- 11 Outdoor air/exhaust air flap with servo motor
- 11 Heat exchanger in supply air
- 13 Air volume measurement, supply air
- 14 Compressor with frequency converter (HC circuit)

- 15 4-way switching valve (HC circuit)
- 16 Control valve pre-heating battery (HC circuit)
- 17 Solenoid valve, defrosting (HC circuit)
- 18 Expansion valve, heating (HC circuit)
- 19 Expansion valve, cooling (HC circuit)
- 20 Compressor circuit (DHW circuit)
- 21 Solenoid valve, defrosting (DHW circuit)
- 22 Expansion valve (DHW circuit)
- 23 Domestic hot water storage tank
- 24 Heating battery in domestic hot water storage tank
- 25 Electrical heating, domestic hot water

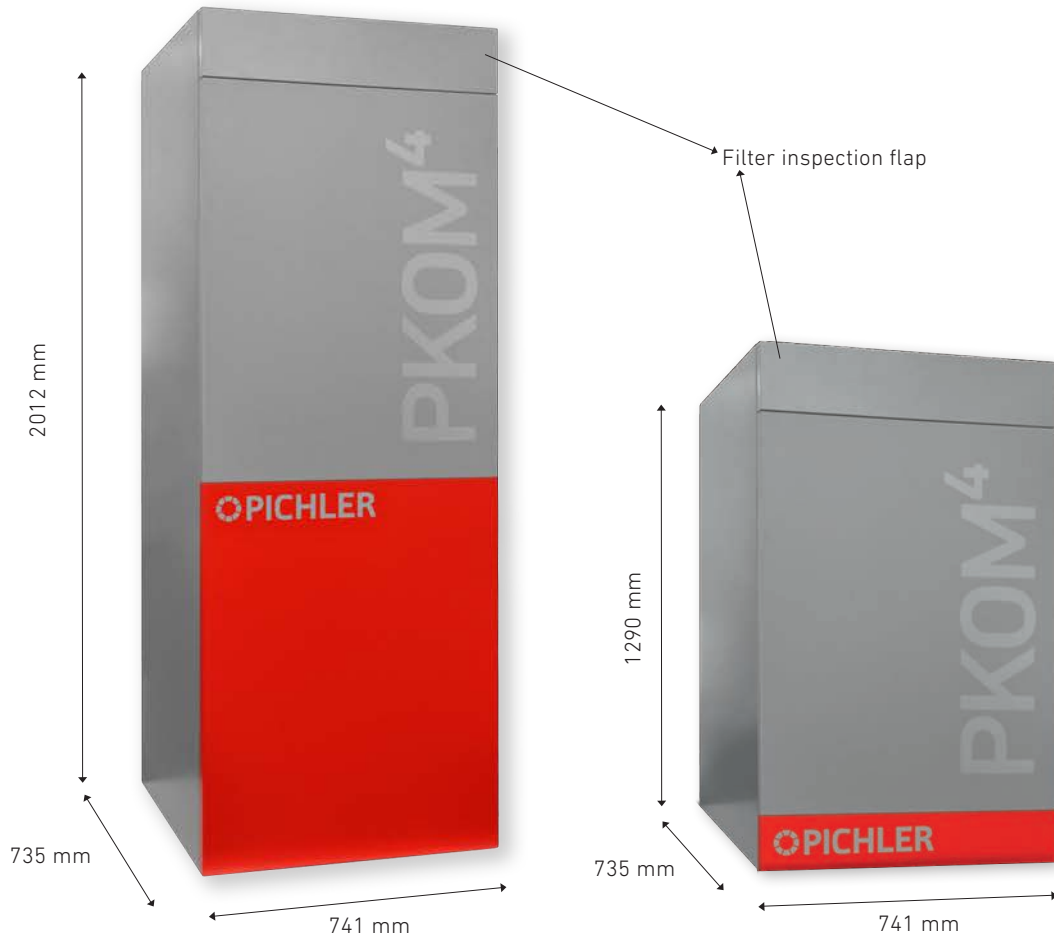
DHW = Circuit for domestic hot water
 HC = Circuit for supply air (heating / cooling)



GENERAL

USER

8. View of unit



SPECIALIST

9. Filter service

Clean and hygienic air filters are a prerequisite to high quality air. Unserved or poorly serviced filters significantly affect living comfort and increase power consumption of the fans. Heavily soiled filters may cause faults and malfunctions of the heat pump combi unit.

When must filters be replaced?

In your own interest you should check and replace the filters regularly. The extent of soiling of the filters varies depending on location, ambient and weather conditions and how the unit is operated. The filters must be replaced immediately if heavily soiled.



The condition of the air filters must be checked regularly!

WHAT	TASK	INTERVAL	WHO
Filter service	Check / replace	ca. 2-3 times p.a.	User / technical staff





The control unit will regularly remind you of a filter service!

Reset the filter message on the control unit after each filter replacement!



Must both filters always be replaced?

This is recommended since only the dust particles are detected with visual checks. Invisible micro particles and germs may nevertheless accumulate in the filter.

How are filters replaced?

Simply, by hand:

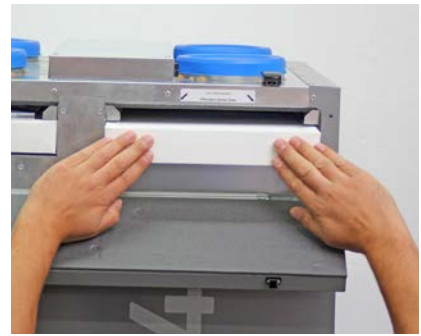
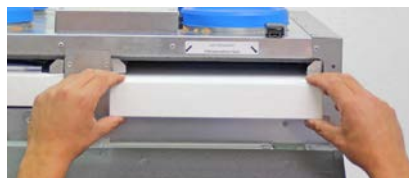
1. Open the two fasteners on top of the unit and carefully tilt the inspection flap down.



2. Remove the two push-pull devices.



3. Then remove the dirty filter.

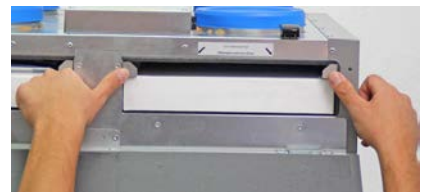


4. Insert the new filter.



Note air direction when inserting the new filter. This is indicated on the filter by an arrow.

5. Insert the push-pull device again.



6. Close the inspection flap and the fasteners.



7. Reset the filter replacement time counter. See Chapter 11 „Operation“ for details.

Where do I order the filters?

Use only original replacement filters and note the specified filter quality class.

Item		Item number
Extract air filter M5	synthetic	40LG050280
Outside air filter F7	glass fibre	40LG050290



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10. Control unit

PKOM⁴ heat pump combi unit operation is simple and clear via a TFT touch display. It should be installed in the centre of the residential building for good control and overview of messages. The integrated temperature sensor records the current room temperature to properly regulated heating or cooling of the supply air.



The temperature sensor is located at the bottom of the control unit. To ensure correct and pertinent room temperature recording, it is important to position the control unit such

- that it is not subjected to direct sunlight
- that it is not located directly above/next to a heat source (e.g. room heater).



Illustration: Wall mounted control unit „TOUCH“

11. Operation

All PKOM⁴ heat pump combi units are preconfigured ex factory and may in principle be operated without changing any settings. The top level is always the main overview (Home screen). The main information is displayed here at a glance.



Illustration: Control unit - overview

- 1 Date and time**
- 2 Current operating mode**
- 3 Ventilation level**
- 4 Room temperature**
- 5 Hot water**
- 6 Menu**

1 – DATE AND TIME

To change the date or time, go to Settings in the Menu. Switching between summer and winter time is done automatically.



2 – CURRENT OPERATING MODE (DISPLAY = CURRENT OPERATING MODE)



Press the button to change the selected operating mode. Different modes are available:

- *Off*: The plant is switched off.
- *Automatik*: automatic switching between winter and summer operation.

The drawn in fresh air (outdoor air) is viewed over 24 hours. If it is below the heating limit temperature, the controller switches to winter operation. If above, it switches to summer operation.

Summer:

The heat pump will not heat in this operating mode (except for frost protection!). Active cooling using the heat pump may optionally be enabled or blocked. The household hot water will be heated by the heat pump.

Winter:

In this operating mode the heat pump will heat whenever necessary. Cooling will be blocked. The household hot water will be heated by the heat pump.

Vacation:

The heat pump will heat in this operating mode. Cooling will be blocked. Hot water operations will be blocked. A desired room temperature may be entered for the period of absence specifically. The time of your return may also be set. On the day you return, the program will automatically switch to the operating mode selected prior to vacation mode.

Hot water:

Only water heating for domestic use will be active in this mode of operation. The ventilation system and the heat pump for heating and cooling will remain disabled.



Frost protection: Should the room temperature fall below 10°C or the outdoor temperature fall below the frost protection limit, the heat pump will automatically switch on and heat.

3 – VENTILATION LEVEL (DISPLAY = CURRENT VENTILATION LEVEL)



The desired ventilation level may be changed by pressing this button.

Automatic:

Die Anlage läuft mit den im Zeitprogramm hinterlegten Lüftungsstufen.

Ventilation level 1:

The plant will permanently run at level 1.

Ventilation level 2:

The plant will permanently run at level 2.

Ventilation level 3:

The plant will permanently run at level 3.

Ventilation level 4:

The plant will permanently run at level 4.



Heat pump operation: when the heat pump runs in heating or cooling mode, level 3 ventilation level will always be activated for this period. A minimum volume of air will be required to convey the required heating or cooling energy.



4 – ROOM TEMPERATURE (DISPLAY = CURRENTLY MEASURED ROOM TEMPERATURE)



The room temperature may be adjusted quickly by pressing this button.

Desired room temperature:

The desired room temperature may be set here if automatic mode is switched "off".

Room sensor:

Switching this to "off" will use the extract air temperature for room temperature control.

5 – HOT WATER (DISPLAY = CURRENTLY MEASURED HOT WATER TEMPERATURE)



Pressing this button will allow quick adjustments to hot water operation.

Quick heating:

Once-off electrical heating of the hot water tank to a higher temperature. This possible only if electrical heating is enabled!

Hot water required::

Set the desired hot water temperature here.

Enable E-heating:

The electric heating element may be enabled/disabled Enabling electrical heating will allow higher water temperatures. Enabling electrical heating will ensure hot water even should the heat pump fail.

6 – MENU

Menü Change to menu level.



Illustration: Control unit - Main menu



1 – INFORMATION



This sub-menu contains all the relevant information for operation of the heat pump unit.

Air:

Information on the ventilation part and the associated heat pump.

Hot water:

Information on the hot water part and the associated heat pump.

Additional function:

Information on optional solar heating circuit or duct heating battery.

Energy balance:

Information on the electrical energy consumption over the past 12 months.

Malfunctions:

Display of present malfunctions and the history of reported malfunctions.

Software & Kommunikation:

Display of the current installed software versions.

2 – SETTINGS



Settings may be made in this submenu.

a) Air volumes

- **Ventilation level 1:** desired supply air volume [m³/h]
- **Ventilation level 2:** desired supply air volume [m³/h]
- **Ventilation level 3:** desired supply air volume [m³/h]
- **Ventilation level 4:** desired supply air volume [m³/h]
- **Balance extract air:** Setting for different supply and extract air volumes. A setting of -10% will mean, for instance, that the extract air volume should be 10% less than the supply air
- **Timing schedule:** Programming the timing schedule

Programming the timing schedule



Illustration: Control unit – timing schedule

1 – Sub-menu

2 – Day on which the time schedule applies

3 – Starting time for the selected ventilation level or temperature

4 – Second starting time for the selected ventilation level or temperature

5 – A third starting time may be selected

6 – The schedule for this day will be applied on all days of the week

b) Room temperature:

- **Normal:** Desired room temperature in winter
- **Reduced:** Desired reduced room temperature in winter (e.g. at night)
- **Cooling:** Desired room temperature when cooling with the heat pump in summer. Displayed only when cooling is enabled.

• **Timing schedule:** Programming the timing schedule

c) Heating:

- **Heating enabled:** heating by the heat pump will be enabled if the outside temperature falls below the temperature set here.



d) Cooling:

- **Enabling cooling:** Cooling by the heat pump will be enabled if the outside temperature rises above the value set here.

e) Hot water:

- **Legionella protection:** Thermal disinfection of the drinking water may be activated/deactivated. With the function activated, the hot water will be heated to over 65°C.

- **Enabling hot water:** Heating of the hot water tank by the heat pump and electrical heating will be enabled during the selected period. Operating costs will be reduced especially when disabled at night in combination with solar systems.

f) Additional function:

- **Enabling time Heating circuit:** The heating circuit pump of the optional PKOM⁴ HBK33 heating module will be enabled for the selected period.

Info: The pump will run provided the tank has sufficient water and heating is required.

- g) Date and time:** Setting the current date and time.

- h) German:** Changing the language

3 – ACTIONS**Filter change complete::**

Early reset of the timer for filter change

Info: The filter change message will normally appear after ca. 2900 hours of operating.



12. Scope of supply, transport, storage and disposal

12.1 SCOPE OF SUPPLY

The *SYSTEM VENTECH PKOM⁴ trend* scope of supply includes:

- the heat pump combi unit
- the controller with touch display
- G4 extract air filter (already installed)
- F7 extract air filter (already installed)
- these Operating and Installation Instructions
- service instructions

Optional:

- CO₂ sensor to monitor room air quality and for demand based control
- Humidity sensor to monitor room humidity and demand based control
- External electrical duct heating battery

The *SYSTEM VENTECH PKOM⁴ classic* scope of supply includes:

- the heat pump combi unit with integrated hot water tank and electrical heating element
- the controller with touch display
- G4 extract air filter (already installed)
- F7 extract air filter (already installed)
- these Operating and Installation Instructions
- Service instructions

Optional:

- Heating battery in the hot water tank for solar or heating circuit connection
- Heating circuit module for connection to the heating battery
- CO₂ sensor to monitor room air quality and for demand based control
- Humidity sensor to monitor room humidity and demand based control
- External electrical duct heating battery

On delivery of the unit, please check that type and serial number on the nameplate correspond to the information on the order and delivery documents, that the equipment is complete, including any optional accessories, and that all parts have been delivered in perfect condition.



Illustration: Example of a Nameplate



Note: Any transport damage and/or missing parts must immediately be reported to the forwarder or supplier in writing.



GENERAL

12.2 TRANSPORT AND PACKAGING

The PKOM⁴ heat pump combi unit is delivered on a pallet with transport packaging. The safety signs on the packaging must be strictly observed.

Ensure that the unit is never damaged, tilted or knocked over. Avoid knocks and blows during transport.

Applicable safety and accident regulations must be complied with during transport. Ensure that reasonable human lifting and carrying capacity exists for manual transport.

USER

12.3 STORAGE

The unit must be stored in its packaging in suitable dry and dust-free rooms. Avoid storage times of longer than a year.

SPECIALIST

12.4 DISPOSAL

Dispose of the outer and inner packaging in an environmentally responsible manner and compliant with local regulations. Wooden pallets and cardboard should, for instance, be sent for recycling

Dispose of the air filters through residual waste collection.



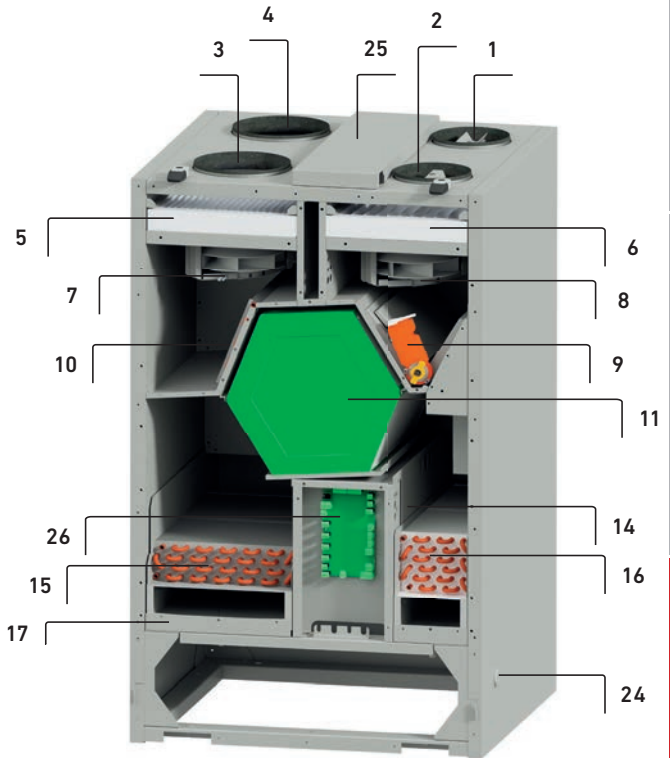
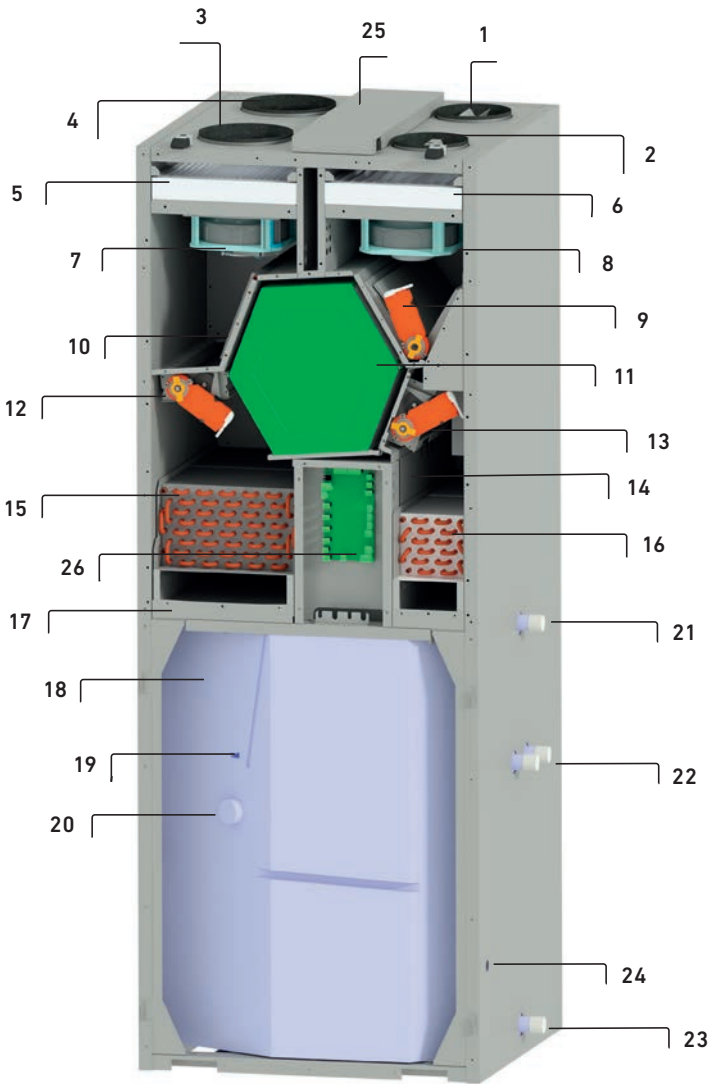
Equipment that is no longer functional must be uninstalled by a specialist firm and properly disposed of at a suitable facility. The Electrical and Electronic Equipment Act (EAG-V0), implementing Community law Directives 2002/95/EC (RoHS) and 2002/96/EC (WEEE Directive) applies.



13. Layout sketch

13.1 PKOM⁴ CLASSIC (RIGHT-HANDED VERSION)

13.2 PKOM⁴ TREND (RIGHT-HANDED VERSION)



- 1 Supply air
- 2 Extract air
- 3 Outdoor air
- 4 Exhaust air
- 5 Outdoor air filter F7
- 6 Extract air filter M5
- 7 Outdoor air fan
- 8 Extract air fan
- 9 Bypass flap with servo motor
- 10 Pre-heater battery for outdoor air
- 11 Counterflow heat exchanger
- 12 Outdoor air/exhaust air flap with servo motor
- 13 Outdoor air/supply air flap with servo motor
- 14 Compressor in housing
- 15 Heat exchanger in exhaust air
- 16 Heat exchanger in supply air
- 17 Condensate tray
- 18 Household hot water tank
- 19 Sacrificial anode
- 20 Electrical heating element with thermal cut-out
- 21 Hot water connection 1"AG
- 22 Heat exchanger connection 1"AG
- 23 Cold water connection 1"AG
- 24 Condensate drain
- 25 Electrical connection box with main PCB
- 26 Heat pump PCB

GENERAL

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14. Dimensions

14.1 PKOM⁴ CLASSIC

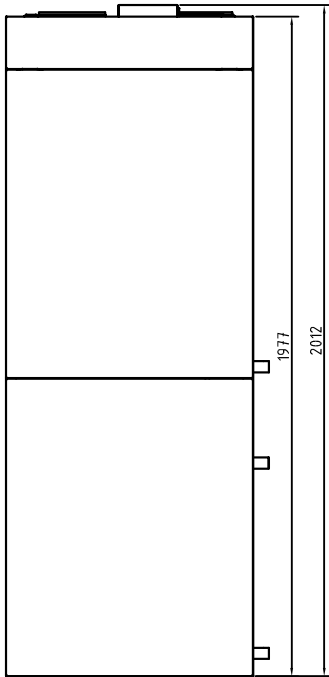
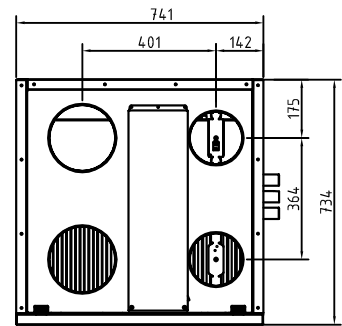
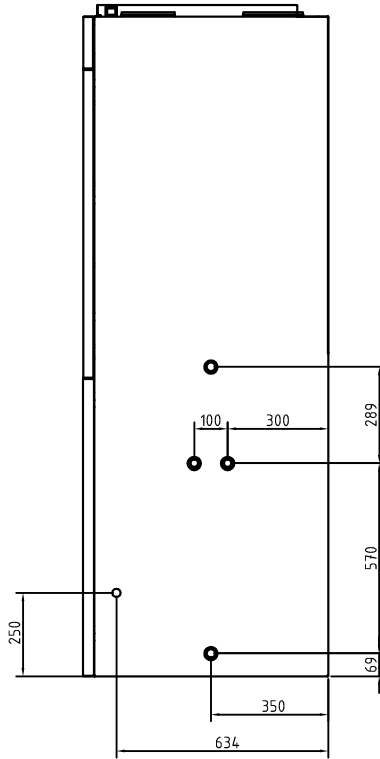


Illustration: PKOM⁴ classic (right-handed version)



14.2 PKOM⁴ TREND

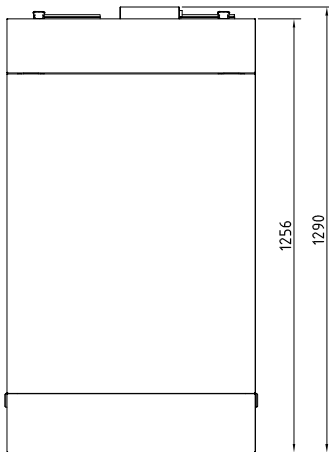
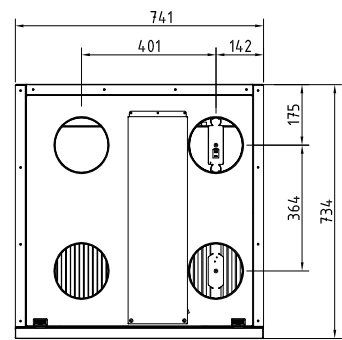
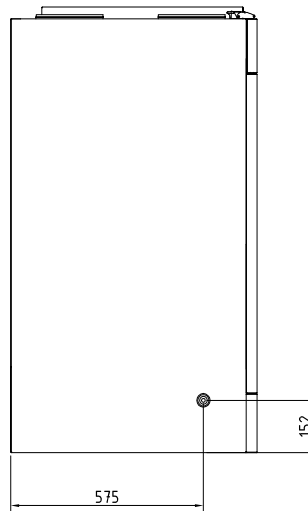


Illustration: PKOM⁴ trend (right-handed version)



SPECIALIST



15. Protecting the counterflow heat exchanger from freezing

Medium to serious frost will in winter pose a danger of freezing in the counterflow heat exchanger, depending also on the humidity and temperature of the extract air. The minimum values of external temperature for proper operation will differ, depending on the type of heat exchanger. At temperatures lower than these, the heat exchanger should be protected by taking suitable precautions.

Minimum fresh air temperature for **apparatus type S** (standard heat exchanger): -3°C

Minimum fresh air temperature for **apparatus type F** (enthalpy heat exchanger): -7°C

15.1 HOT GAS PRE-HEATING BATTERY

The standard configuration of heat pump combi equipment is with a hot gas pre-heating battery positioned in the counterflow heat exchanger directly at the fresh air inlet. The temperature of the incoming fresh air is monitored by a temperature sensor between the hot gas pre-heating battery and the counterflow heat exchanger. If this temperature is lower than the defined minimum temperature, the fresh air will

be warmed up by routing hot gas from heat exchanger circulation HK through the pre-heating battery.



Pre-heating fresh air via the heat pump will reduce the available supply air heating capacity. The shortfall in heating energy must be provided through external means.

15.2 GEOTHERMAL HEAT EXCHANGER

Highly effective frost protection may be achieved by incorporating a geothermal heat exchanger in the ventilation system.

Note the following when implementing a geothermal heat exchanger:

- The system must be buried using watertight piping down to frost-free depths, taking into account that the system must be accessible for cleaning.
- The manufacturer's installation guidelines must be followed.
- Condensate drainage must be provided.
- Ensure that moisture will not be allowed to penetrate through the air ducting apertures in outside walls.
- To avoid frost damage, lay to ensure adequate spacing from other structural components such as water pipes, foundations, etc.
- Do not use geothermal heat exchangers if the soil is contaminated.
- To ensure energy efficiency and air hygiene, geothermal heat exchangers must be carefully planned and implemented.



16. System extension with auxiliary heating

The heat pump combi unit will already provide a passive house with a large part of its required heating and cooling power. Supplementary heating may be necessary during lengthy periods of negative outside temperatures.

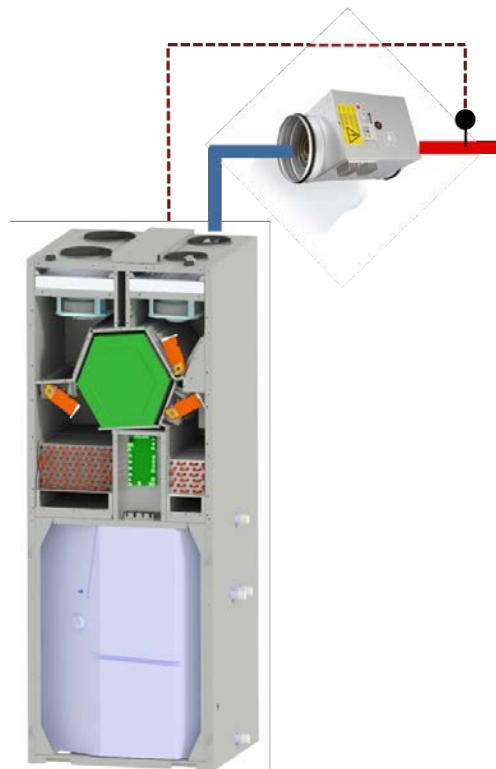
16.1 DUCT HEATING BATTERY

The duct heating battery will be installed in the supply air duct. Should the heat pump not be able to supply the supply air at the required temperature, the duct heating battery will switch on automatically. The heating power will in this case be continuously controlled up to 1200 W heating.

This type of operation requires an external temperature sensor in the air duct after the duct heating battery, connected to the main PC board.

Item	Item number
Duct heating exchanger PKOM ⁴	08CV16121MTXL
Duct temperature sensor NTC	40LG041920

Max. power	1200 W
Output control	0 – 10 V
Minimum air volume	110 m ³ /h
Duct connection	Ø 160 mm
Installation length	375 mm



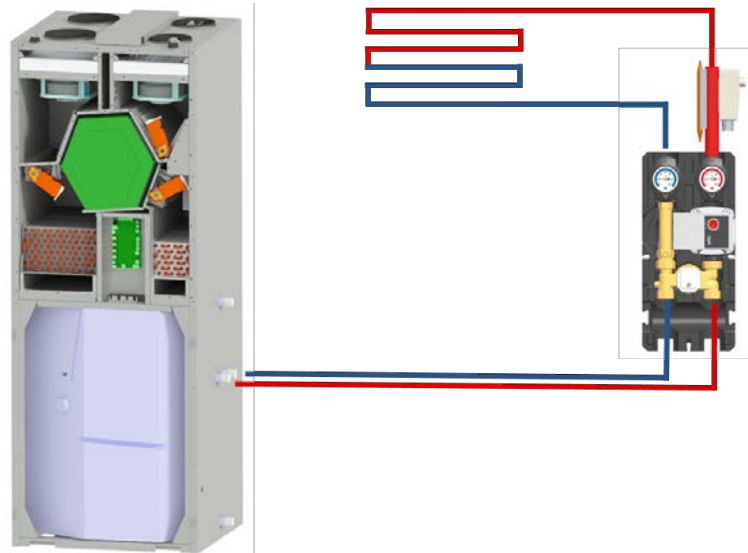
16.2 HEATING CIRCUIT MODULE

The heating circuit module allows connection of the PKOM⁴ classic heat pump combi unit to a small water-filled heating circuit (e.g. underfloor heating in the bathroom, towel dryer, etc.)

delivering up to 500W heating power. The module will be connected to the heating battery of the household hot water tank.

Item	Item number
PKOM ⁴ heating circuit module	08PKOM4HBK33
Wall bracket set	08PKOM4WHHBK33

Pump	Wilo-Yonos PARA RS15/6
Gravity reverse brake	200 mmWs
3-way mixer	Setting range 20 – 50°C
Connections, Inlet (bottom)	1" AG, flat seal
Connections, outlet (top)	3/4" IG
Centre spacing	90 mm
w x h	180 x 385 mm



16.3 ROOM-TEMPERATURE SENSOR

The room-temperature sensor records the room temperature in the area in which the underfloor heating is installed. For this room, an individual temperature setpoint

can be specified on the control unit. The underfloor heating provides for a comfortable indoor climate and an agreeable floor temperature.



Item	Item number
Room-temperature sensor	07RTF49357
Colour	white
Dimensions (w x h x d)	85 x 85 x 35 mm



17. Demand-driven air volume control

The air volume flow may be either manually set or controlled by a timer – *see Chapter 11 "Operation"*. Up to two different additional sensors may optionally be installed for demand-driven control.

17.1 CO₂ SENSOR

Air volumes are in principle specified via the timing program or via manually selected values.

Air volumes will automatically be increased should the pre-set CO₂ threshold values be exceeded.



Item	Item number
CO ₂ sensor	07RCO248330

Colour	white
Measuring range	0 – 2000 ppm
Dimensions (w x h x d)	85 x 33 x 35 mm

17.2 HUMIDITY SENSOR

Air volumes are in principle specified via the timing program or via manually selected values.

When the pre-set maximum relative humidity is exceeded or when the pre-set minimum relative humidity is not reached, air volumes will automatically be respectively increased or reduced.



Item	Item number
Humidity sensor	07RHF49360

Colour	white
Measuring range	0 – 2000 ppm
Dimensions (w x h x d)	85 x 33 x 35 mm



18. Electrical connection



The electrical connection work as well as work on the electronic parts of the system may only be performed by authorised electricians.

The respective, valid national and local regulations and standards must be complied with for the installation and electrical installation.

The model of the ventilation unit complies with the safety-related requirements within the scope of the Equipment and Product Safety Act as well as the relevant regulations of EC guidelines.

The heat pump combi unit *System VENTECH PKOM⁴* is designed for a voltage supply of 230 V/50 Hz. The unit is not designed for connection to a three-phase network with 400 V/50 Hz.

Only genuine fuses with the prescribed current strength and dimensions may be used.

After the performance of any electrical work the protection measures on the unit must be checked (e.g. earthing resistance etc.).

The safety directions in point 5 and in particular in point Electrical connection work have to be complied with for all electrical work.

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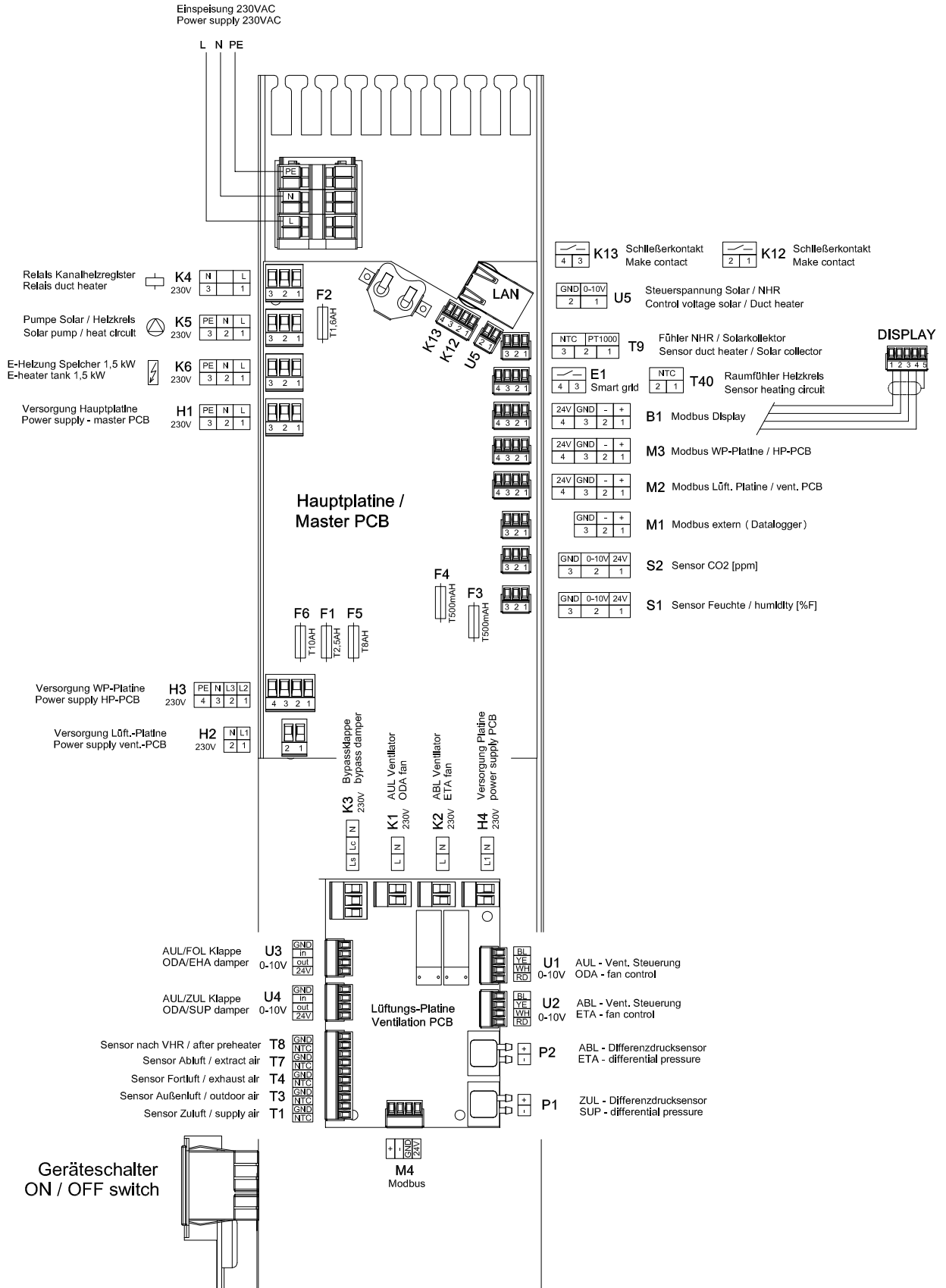


18.1 ELECTRICAL CONNECTION DIAGRAM PKOM⁴ (LEFT VERSION)
MAIN PCB & VENTILATION PCB

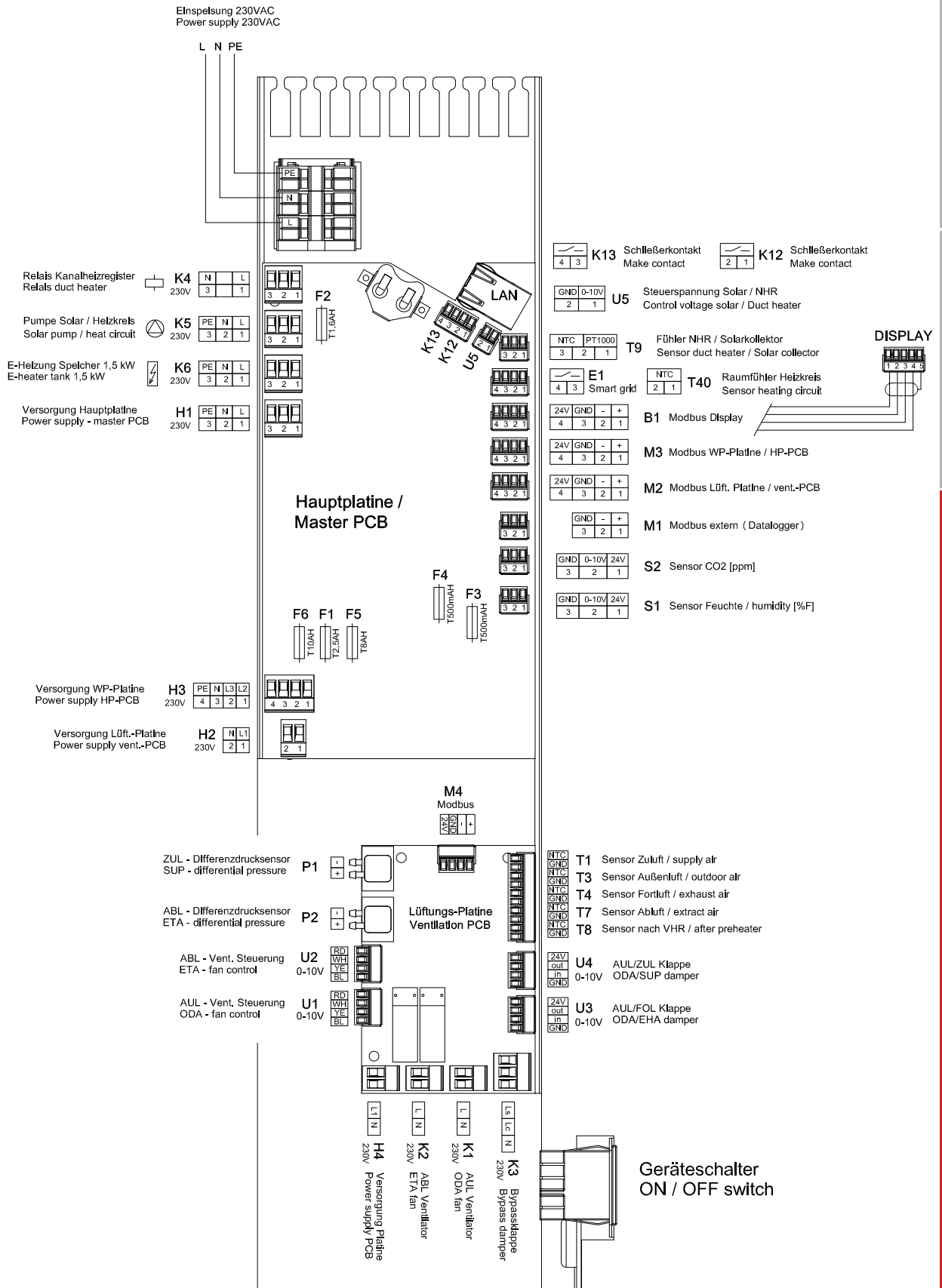
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18.2 ELECTRICAL CONNECTION DIAGRAM PKOM⁴ (RIGHT VERSION)
 MAIN PCB & VENTILATION PCB



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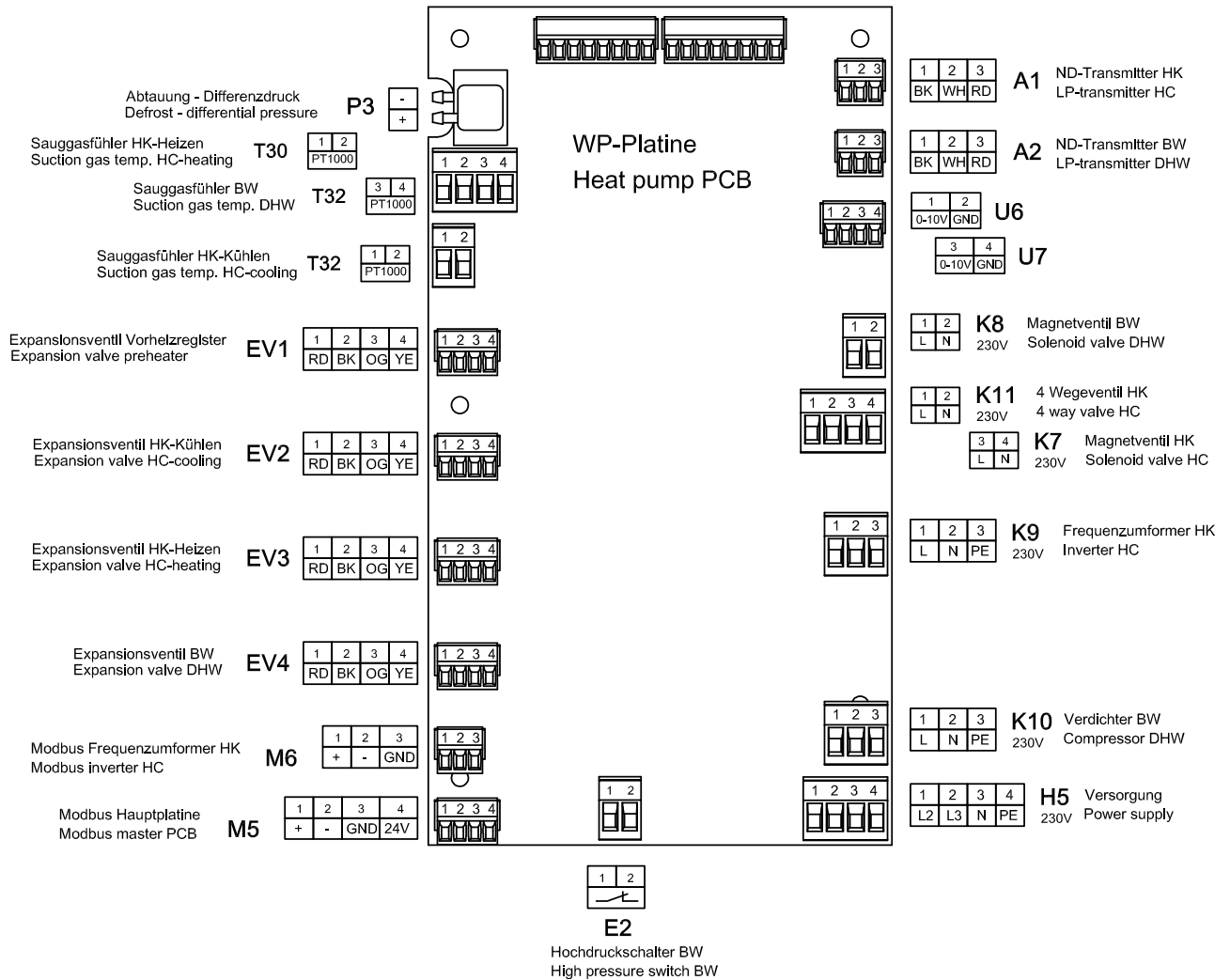


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18.3 ELECTRICAL CONNECTION DIAGRAM PKOM⁴
HEAT PUMP PCB

- T13 Verdichter HK / Compressor HC
- T22 Verdichter BW / Compressor DHW
- T6 Lamellen WT3 / fin temp. WT3
- T5 Lufteintritt WT3 / air inlet WT3
- T21 BW Speicher Mitte / DHW tank center
- T20 BW Speicher unten / DHW tank bottom
- T10 Lamellen WT2 / fin temp. WT2
- T12 Lufteintritt WT2 / air inlet WT2



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19. Servicing and Cleaning



Always switch off the apparatus for cleaning and maintenance of the heat pump combi unit.

Be acutely aware of hazards and safety when opening or unscrewing the front hood or covers.

If possible, use a vacuum cleaner to remove dirt and dust. Applying

force or using compressed air for cleaning may damage components and surfaces.

Never expose the electrical components to moisture or wet conditions

Heed the Safety notes in *Section 5* and especially *Section 5.2 – Electrical connections* when performing any electrical work.

19.1 OVERVIEW OF SERVICING TASKS

WHAT	TASK	INTERVAL	WHO
Filter service	Check / replace	ca. 2-3 times p.a.	User / technical staff
Counterflow heat exchanger	Check / clean	annually	Technical staff
Heat exchanger, condensate trays, condensate drainage	Check / clean	annually	Technical staff
Heat pump circuit	Inspection	annually* (recommended)	Technical staff
Household hot water storage tank - Sacrificial anod	Check / clean	annually	Technical staff

*) EU Regulation 517/2014 does not prescribe regular checks for leakage in the refrigerant circulation if the fill quantity is < 5 t CO₂ equivalent. GWP for 134a: 1.430

See Chapter 9 for detail on Filter service.



19.2 CHECKING AND CLEANING THE COUNTERFLOW HEAT EXCHANGER

Soiling of the counterflow heat exchanger will normally be only slight if the air filters are regularly serviced.

- Remove the front hood. To do this, unscrew the securing screws.
- Remove the sealing plate.



Figure: Sealing plate

- Use the strap to carefully extract the counterflow heat exchanger from its bracket.



Figure: Counterflow heat exchanger

- Then clean by simply rinsing with lukewarm water.
- Under no circumstances use aggressive cleaning agents.
- Blowing out with compressed air may destroy the heat exchanger.
- Carefully return the counterflow heat exchanger after drying.
- Ensure that the sealing profiles are properly seated.



19.3 CHECKING AND CLEANING THE HEAT EXCHANGER AND CONDENSATE TRAYS

- Use only lukewarm water to clean the supply air and exhaust air parts of the heat exchanger.
- Do not expose electrical components such as expansion valves, solenoids and frequency converters to water!
- Under no circumstances use aggressive cleaning agents.
- Blowing out with compressed air may destroy the heat exchanger.

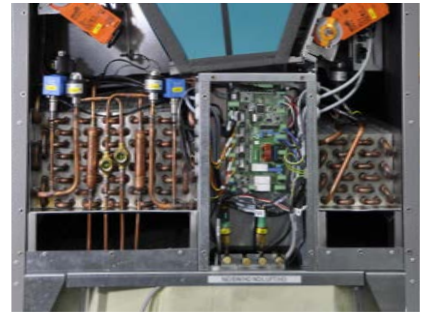


Figure: Heat exchanger and condensate trays

- Preferably use a moist cloth to clean the condensate trays.

19.4 CHECKING AND CLEANING THE CONDENSATE DRAINAGE

The condensate drainage pipes and systems must operate perfectly to ensure proper operation of the plant. Check the functioning at regular intervals.

Remove any deposits or clogging in the drainage pipes and siphon.

- Rinse the condensate drainage hoses with lukewarm water.

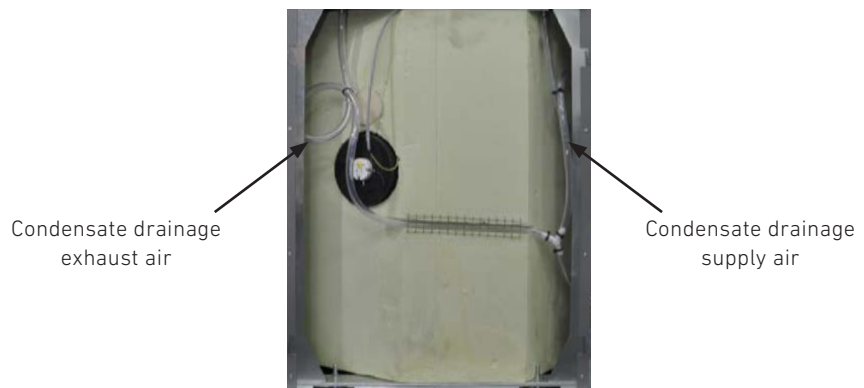


Figure: PKOM⁴ classic condensate drainage, right-hand design

- After cleaning, use water to check for proper drainage of condensate.
- Fill the condensate tray with sufficient water to do this.
- Make sure that the water in the tray flows safely into the drain via the condensate drainage pipe.
- Ensure that the system will not leak. The siphon must be filled with water before switching the plant on again to effectively counteract odours and leakages.

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19.5 INSPECTION OF THE HEAT PUMP CIRCUIT

Refrigerant circulation of the heat pumps is basically maintenance-free. *Certified technical staff* should, however, regularly check proper

functionality of the apparatus in the course of inspections.

19.6 HOUSEHOLD HOT WATER STORAGE TANK - SACRIFICIAL ANODE

The magnesium anode protects the inner wall of the hot water tank from corrosion. It dissolves over time in the water and should therefore be checked regularly.



USER

19.7 PROOF OF SERVICING

Document the services performed in the table below.

Warrantees shall be null and void unless regular servicing can be verified!

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DATE	SERVICES PERFORMED	COMPANY	SIGNATURE



20. List of parameters

ID	PARAMETER	UNIT	WORKS	SET	COMMENT
A01	Operating mode	-	0		0 = Off 1 = Summer 2 = Winter 3 = Automatic
A02	Damping, outside temperature	%	60		
A03	Heating limit	°C	14		No heating allowed above
A04	Hysteresis	K	2		
A05	Equipment type	-	0/1		0 = Trend 1 = Classic
A06	Switch-on hysteresis, cooling	K	1		
A07	Switch-on hysteresis, heating	K	0,5		
A08	Switch-off hysteresis, heating	K	0,5		
A09	Enable – active cooling	-	0		0 = no 1 = yes
A10	Room set-point, override	°C	22		
A11	Room set-point - cooling	°C	26		
A12	Room set-point, normal operation	°C	22		
A13	Room set-point, lowering operation	°C	20		
A14	Room set-point - holiday	°C	18		
A15	Room set-point, frost protection	°C	15		
A16	Room temperature sensor	-	0		0 = Display 1 = Room sensor
A17	Room sensor	-	0		0 = over A16 1 = extract air sensor
A18	Demand-driven control	-	0		0 = no 1 = CO ₂ controlled 2 = RF controlled 3 = CO ₂ & RF controlled
B11	Min. fresh air volume for enablement of active cooling	°C	25		Cooling not enabled below this
C08	Air volume ventilation level 1 (SUP)	m ³ /h	85		
C09	Air volume ventilation level 2 (SUP)	m ³ /h	120		
C10	Air volume ventilation level 3 (SUP)	m ³ /h	160		
C11	Air volume ventilation level 4 (SUP)	m ³ /h	200		
C12	Extract air balance	%	0		Balancing extract/supply air
D02	Min. supply air, cooling	°C	15		
D05	Max. supply air temperature, heating	°C	40		
E07	Supply air volume in defrost operation	%	40		
F01	VHR fresh air temperature before WRG	°C	-8/-3		With enthalpy / standard exchanger
G01	Min. fresh air temperature Bypass	°C	12		No bypass operation below this
J01	CO ₂ concentration threshold	ppm	1000		Increase air volume
J02	Relative humidity high	%	70		Increase air volume
J03	Relative humidity low	%	30		Reduce air volume
V01	Additional function	-	0		0 = none 1 = Solar system 2 = Heating circuit 3 = Duct heating battery 4 = Heating circuit & duct heating battery

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V02	Min. storage temperature, Heating circuit enabled	°C	35		
V03	Heating circuit hysteresis	K	0,5		
V04	Set-point, heating circuit	°C	23		
V05	Solar hysteresis	K	5		
V06	Max. tank temperature, solar	°C	80		
V07	Delta T, solar collector to tank	K	10		
V13	Duct heating battery delay	Sec.	1800		
W01	Hot water set point temperature	°C	50		
W02	Hot water heating with WP	°C	55		
W03	Hot water heating with EHP	°C	65		
W04	Hot water set-point ECO tariff	°C	65		Smart Grid contact E1
W05	Enable EHP (E-heater)	-	0		0 = off 1=on
W08	EHP - Hysteresis	°C	10		Reference: Tank centre
W09	Min. tank temperature EHP on	°C	40		Reference: Tank centre
W10	Hysteresis, heat pump	K	7		Referenz: Tank bottom
W11	Delta T centre - bottom	K	7		Delay, heat pump start
W12	Legionella protection function	-	0		0 = off 1= on
W13	Legionella protection interval	Days	14		
Y2	Filter life	Months	4		Filter replacement interval



21. Product fiches

21.1 HEAT PUMP COMBI UNIT: PKOM⁴.S/F

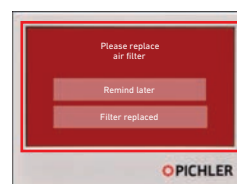
supplier's name or trade mark	J. Pichler GmbH
model identifier	PKOM ⁴ .S/F
declared load profile	L
water heating energy efficiency class	A
water heating energy efficiency class	95%
the annual electricity consumption in kWh in terms of final energy	1112 kWh
temperature settings, as placed on the market	55 °C
the sound power level LWA in dB, indoors	52 dB(A)
able to work only during off-peak hours	no
precautions when assembled, installed or maintained	see operating and installation instructions
Storage volume in litres	212 l

Filter change

The filters are to be replaced as soon as the command to replace the filters appears on the display of the operator control unit (marked red in the picture alongside).

CAUTION:

If the filters are not changed regularly, the system can not work efficiently and the power consumption increases.



Operator control unit "TOUCH"

Waste disposal

Units that are no longer in working order have to be dismantled and properly disposed of by a specialized company via suitable collection centres and in compliance with the waste electrical and electronic equipment ordinance (WEEE), which provides for ratification of community law, directive 202/95/EC (RoHS) and the directive 2002/96/EC (the WEEE directive).

Information based on the current state of knowledge of EU Regulation 812/2013

Download from: www.pichlerluft.at



22. Technical specifications

22.1 VENTILATION PART WITH HEAT PUMP

	PKOM ⁴ classic	PKOM ⁴ trend
Air volume per stage	85 – 250 m ³ /h variabel	85 – 250 m ³ /h variabel
Ventilation stages	4	4
Max. external compression at V _{max}	> 200 Pa	> 200 Pa
Permissible outside air temperature	-15 bis +40 °C	-15 bis +40 °C
Max. heating power, heat pump with A2 and V _{max}	1.300 W	1.300 W
Max. cooling power, heat pump with A35 and V _{max}	1.300 W	1.300 W
Refrigerant	R134a	R134a
Fill volume	1.000 g	1.000 g

VALUES AS PER EN13141-7		
Nominal air volume	175 m ³ /h	175 m ³ /h
Percent temperature change η_1 (standard/enthalpy)	88 / 84 %	88 / 84 %
Specific input power SEL (standard/enthalpy)	0,31 / 0,27 W/(m ³ /h)	0,31 / 0,27 W/(m ³ /h)
Leakage external / internal	1,64% / 0,48%	1,64% / 0,48%
COP heating at A7 incl. WRG	6,8	6,8
EER cooling at A35 incl. WRG	4,2	4,2

VALUES AS PER PHI		
Nominal air volume	157 m ³ /h	157 m ³ /h
Degree of heat provision $\eta_{WRG,eff}$ (standard/enthalpy)	88 / 85 %	88 / 85 %
Electrical efficiency	0,33 W/(m ³ /h)	0,33 W/(m ³ /h)
Air tightness external/internal	1,4% / 0,8%	1,4% / 0,8%

22.2 HOT WATER PART WITH HEAT PUMP

	PKOM ⁴ classic
Storage tank volume	212 l
Heating exchanger (optional)	0,8 m ²
Max. household hot water temperature with heat pump	55°C
Max. heating power, heat pump	1.600 W
Max. household hot water temperature with EHP	65°C
Electric-heating EHP	1.500 W
Legionella protection	yes
Refrigerant	R134a
Fill volume	1.000 g
Consumption pattern	L (Large)
Energy efficiency class	A
Energy efficiency	95 %

22.3 ELECTRICAL

	PKOM ⁴ classic	PKOM ⁴ trend
Electrical connection	230V ~ 1/50 Hz	230V ~ 1/50 Hz
Max. power consumption [W]	2.800	750
Max. current consumption [A]	12,8	3,8
Earth leakage circuit breaker	Type A – current impulse sensitive	Type A – current impulse sensitive
Line fuse	C16A	C16A

22.4 HOUSING

	PKOM ⁴ classic	PKOM ⁴ trend
Material	Powder coated sheet steel	Powder coated sheet steel
Duct connections supply air / extract air	Ø 160 mm	Ø 160 mm
Duct connections outside air / exhaust air	Ø 200 mm	Ø 160 mm
Dimensions (l x w x h)	741 x 734 x 2012 mm	741 x 734 x 1290 mm
Weight	240 kg	140 kg



23. EC Declaration of Conformity

Hersteller / Manufacturer:	J. Pichler Gesellschaft m.b.H.
Anschrift / Address:	Karlweg 5 , 9021 Klagenfurt am Wörthersee
Bezeichnung / Product description:	Heat pump combi unit PKOM ⁴ System VENTECH with integrated control unit
Ausführungen / Type:	PKOM ⁴ .S/F / PKOM ⁴ .S / PKOM ⁴ .F with control unit type „TOUCH“

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischen Richtlinien überein:

The products described above in the form as delivered are in conformity with the provisions of the following European Directives: EN 60335-1:2002 + A11:2004 + A1:2004 + A12:2006 + A2:2006 + A13:2008 + A14:2010; EN50366:2003 + A1:2006; EN 62233:2008; EN55014-1:2006 + A1:2009; EN 55014-2:1997 + A1:2001 + A2:2008; EN61000-3-2:2006 + A1:2009 + A2:2009; EN61000-3-3:2008

2014/35/EU	Zur Harmonisierung der Rechtsvorschriften der Mitgliedsstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt <i>On the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits</i>
2014/30/EG	Zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit <i>On the harmonisation of the laws of the Member States relating to electromagnetic compatibility</i>
2009/125/EG	Richtlinie des Europäischen Parlaments und des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten zur Schaffung eines Rahmens für die Festlegung von Anforderungen an die umweltgerechte Gestaltung energieverbrauchsrelevanter Produkte <i>Council Directive on the approximation of the laws of the Member States establishing a framework for the setting of ecodesign requirements for energy-related products</i>

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen und Verordnungen:
Conformity to the Directives is assured through the application of the following standards and regulations:

VO 1253/2014/EU Verordnung (EU) der Kommission zur Durchführung der Richtlinie 2009/125/EG des Europäischen Parlaments und des Rates hinsichtlich der Anforderungen an die umweltgerechte Gestaltung von Lüftungsanlagen
COMMISSION REGULATION (EU) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units

VO 1254/2014/EU zur Ergänzung der Richtlinie 2010/30/EU des Europäischen Parlaments und des Rates im Hinblick auf die Kennzeichnung von Wohnraumlüftungsgeräten in Bezug auf den Energieverbrauch
VO 1254/2014/EU supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units

ÖVE / ÖNORM EN 60335-1	ÖVE / ÖNORM EN 62233
ÖVE / ÖNORM EN 60335-2-30 (sinngemäß)	ÖVE / ÖNORM EN 55014-1
ÖVE / ÖNORM EN 60335-2-65 (sinngemäß)	ÖVE / ÖNORM EN 55014-2
ÖVE / ÖNORM EN 60335-2-80 (sinngemäß)	ÖVE / ÖNORM EN 61000-3-2
ÖVE / ÖNORM EN 50366	ÖVE / ÖNORM EN 61000-3-3

Eine vom Lieferzustand abweichende Veränderung des Gerätes führt zum Verlust der Konformität.
Product modifications after delivery may result in a loss of conformity.

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Die Sicherheitsinformationen der mitgelieferten Produktdokumentation sind zu beachten. This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.

J. Pichler Gesellschaft m.b.H.
Geschäftsleitung / General Manager

Klagenfurt, 08.09.2015



Notes

ALLGEMEIN

USER

SPECIALIST



Notes

ALLGEMEIN

USER

SPECIALIST





klimaaktiv
Partner

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