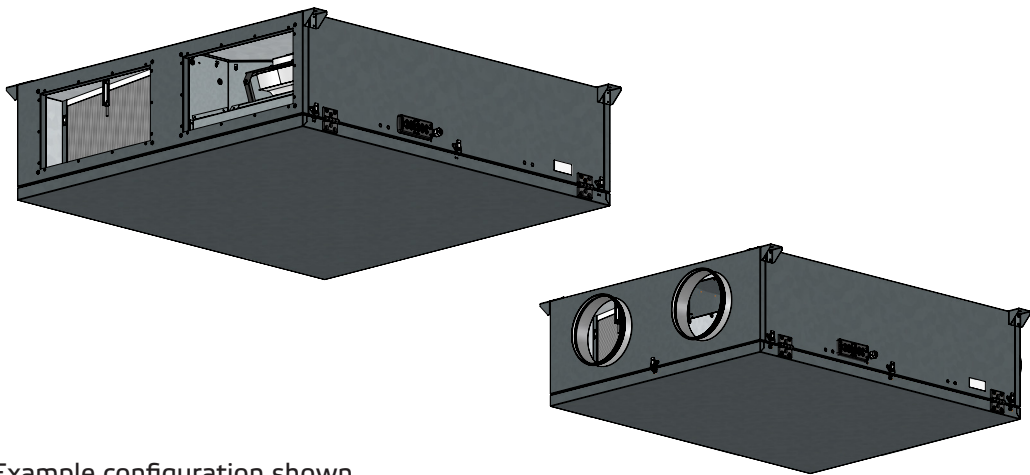


# PHE ... F C

## Air handling unit with heat recovery



Example configuration shown



Made in EU



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The original instructions were created in the  
German language.  
Information updated  
print 10.03.2026  
Subject to change

## 1. FOREWORD

---

Dear customers,

Thank you for choosing our device.

Before operating the unit, please read carefully these installation, operating and maintenance instructions. If you have any questions, please contact: (Contact details see page 1)

The data provided in these installation, operating and maintenance instructions are for the product description only. A statement about a certain condition or a suitability for a certain application cannot be derived from our information. The information does not release the user from his own assessments and examinations.

All rights reserved by the manufacturer, even in the event of industrial property rights.

Any disposal such as copying and distribution rights lies with us.

## 2. IMPORTANT INFORMATION

---

This manual contains important information on the safe and appropriate assembly, transport, commissioning, operation, maintenance, disassembly and simple troubleshooting of the product.

The product has been manufactured according to the accepted rules of current technology.

There is, however, still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings before the steps contained in these instructions are not complied with.

- Read these instructions completely and thoroughly before working with the product.
- Keep these instructions in a location where they are accessible to all users at all times.
- Always include the operating instructions when you pass the product on to third parties.

### 2.1. Applicable Documents

---

The following documents and information on the device must be observed in addition to the installation, operating and maintenance instructions:

#### Nameplate

#### Other applicable standards:

- DIN VDE 0100-100
- DIN EN 60204-1
- DIN EN ISO 13857
- DIN EN ISO 12100
- VDMA 24186-1

#### Available documents at

- Installation, operating and maintenance instructions
- EC Declarations of conformity
- EC-Declaration of Incorporation (Directive 2006/42/EC)
- Commissioning report
- Call to Tender
- Dimensioned drawing
- Technical drawing DWG
- Technical drawing DXF
- 3D STEP



## 2.2. Provisions and regulations

When properly installed and operated, the device complies with the applicable standards and EU Directive at the time of its placing on the market.

In addition, observe generally valid, legal and other binding regulations of the European or national legislation as well as the regulations in your country for accident prevention and environmental protection.

## 2.3. Warranty and liability

Our devices are manufactured to the highest technical level in accordance with the generally accepted rules of technology. They are subject to constant quality controls. Because the products are being constantly developed, we reserve the right to make changes to the products at any time and without prior announcement. We assume no liability for the correctness or completeness of these installation, operating and maintenance instructions.

To ensure your warranty claims, it is imperative to provide a commissioning report and a maintenance record.

Warranty and liability claims for personal injury and property damage are excluded if they are due to one or more of the following causes:

- Improper use
- Improper mounting, commissioning, operation and maintenance
- Operating the device with defective and / or non-functional safety and protective devices
- Failure to observe the instructions regarding transportation, installation, operation and maintenance
- Unauthorized structural changes to the device
- Poor monitoring and replacement of maintenance parts
- Improperly performed repairs
- Disasters and force majeure

## 3. GENERAL SAFETY INSTRUCTIONS

Planners, plant engineers and operators are responsible for ensuring that the product is installed and operated correctly.

- Use our devices only in perfect technical condition.
- Check the device for obvious defects, such as cracks in the housing or missing rivets, screws, caps or other application-relevant defects.
- Only use the device in the power range specified in the technical data and on the nameplate.
- Protection against contact and being sucked in and safety distances should be provided in accordance with DIN EN 13857.
- Generally prescribed electrical and mechanical protection devices are to be provided by the client.
- The locking latch can and must only be locked or unlocked with an Allen key SW8. The latches must always be locked after closing the lids..
- Safety components must not be bypassed or put out of operation.
- The product may be operated by personnel with limited physical, sensory or mental capacities only if they are supervised or have been instructed by responsible personnel.
- Children must be kept away from the product.

### 3.1. Intended use

Our devices are incomplete machineries as defined in the EU Machinery Directive 2006/42/EC (partly completed machinery). The product is a not ready-for-use machine in terms of the machine directive.

It is intended exclusively for installation in a machine or in ventilation equipment and installations or for combination with other components to form a machinery or installation. The product may be commissioned only if it is integrated in the machinery/system for which it is designed and the machinery/system fully complies with the EC machinery directive.

**Observe the operating conditions and performance limits specified in the technical data.**

Conveying and ambient temperatures must be observed according to the technical data and the nameplate.

The units are designed for use in comfort ventilation applications.

The units must not be used for ventilation of buildings where humidity is continuously high such as swimming pools, saunas, spas.

**Intended use also implies that you have fully read and understood this manual.**



**Improper use may result in danger to the life and limb of the user or third parties or damage to the system or other property.**

### 3.2. Improper use

Any use of the product other than described in chapter "Intended use" is considered as improper.

The following points are improper and dangerous:

- Delivery of explosive and flammable media or operation in potentially explosive atmospheres.
- The conveyance of greasy and moist media (over 90% relative humidity).
- Delivery of aggressive and abrasive media.
- The installation in wet rooms.
- Operation without the duct system.
- Operation with closed air connections.
- The use on vehicles, aircrafts and ships.

### 3.3. Personnel qualifications

Assembly, commissioning, operation, disassembly and service (including maintenance and repair) require basic mechanical and electrical knowledge, as well as knowledge of the appropriate technical terms. In order to ensure operating safety, these activities may therefore only be carried out by qualified technical personnel or a person under the direction and supervision of qualified personnel. Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience, as well as their understanding of the relevant conditions pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area.

### 3.4. Safety instructions in this manual

In this manual, there are safety instructions before the steps whenever there is a danger of personal injury or damage to the equipment. The measures described to avoid these hazards must be observed.

Safety instructions are set out as follows:

Safety sign (warning triangle) - Draws attention to the risk.

● Type of risk! - Identifies the type or source of the hazard.

» Consequences - Describes what occurs when the safety instructions are not complied with.

→ Precautions - States how the hazard can be avoided.

## Safety sign (warning triangle)



### General warning!

Indicates possible hazardous situations. Failure to observe the warnings may result in personal injury and / or damage to property.



### Electricity warning (hazardous voltage)!

Indicates possible hazards due to electricity. Failure to observe the warnings may result in death, injury and/or damage to property.



### Hot surface warning!

Indicates possible hazards due to high surface temperatures. Failure to observe the warnings may result in personal injury and/or damage to property.



### Finger-Crushing Warning!

Indicates possible hazards due to moving and rotating parts. Failure to observe the warnings may result in personal injury.



### Overhead load warning!

Indicates possible hazards due to overhead loads. Failure to observe the warnings may result in death, injury and/or damage to property.



### Follow important information!

Instructions for safe, optimum use of the product.



#### ● General warning

- » Failure to observe the warnings may result in personal injury and / or damage to property.
- Unauthorized repairs may cause personal injury and / or damage to property, in which case the manufacturer's guarantee or warranty will not apply.



#### ● Electricity warning (hazardous voltage)!

- » Failure to observe the hazard may result in death, injury or damage to property.
- Before performing any work on conductive parts, always disconnect the unit completely from the electricity supply and make sure that it cannot be switched back on again.



#### ● Caution! Burning hazard.

- » Failure to observe the hazard may result in personal injury and/or damage to property.
- Do not touch the surface until the motor and heater have cooled.



#### ● Never reach into the impeller or other rotating or moving parts.

- » Failure to observe the hazard may lead to serious injury.
- Work may only be performed once the impeller has come to a complete halt.



#### ● Never reach into the impeller or other rotating or moving parts.

- » Failure to observe the hazard may lead to serious injury.
- Work may only be performed once the impeller has come to a complete halt.



#### ● Never clean the internal space with flowing water or a high-pressure cleaner. Do not use aggressive or easily flammable products for cleaning (impellers/housing).

- Only use mild soapsuds. The impeller should be cleaned with a cloth or brush.



Read the operating manual before commissioning the product.



Connection condensate drainage



Air filter (Panel Filter) Filter class ISO ePM1 (F7)



Heat exchanger (Counter cross-flow heat exchanger)



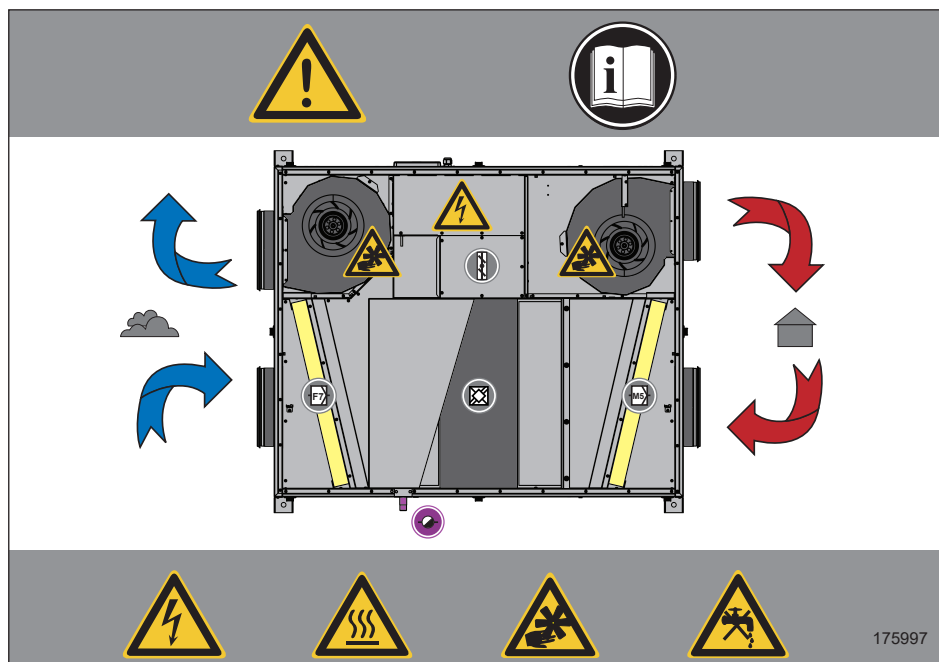
Air filter (Panel Filter) Filter class ISO ePM10 (M5)



Bypass

### 3.5. Safety labels on the product

Fig. 3-1  
Safety labels  
Units without heating/cooling



## 4. ADHERE TO THE FOLLOWING INSTRUCTIONS

### 4.1. General instructions

---

- Persons who assemble, operate, disassemble or maintain our devices must not be under the influence of alcohol, drugs or pharmaceuticals that may affect perception and responsiveness.
- Responsibilities for the operation, maintenance and regulation of the product should be clearly determined and observed so that there can be no unclear areas of responsibility with regard to safety.

### 4.2. Indications assembly

---

- Disconnect all of the product's poles from the mains before installing the product or connecting or removing plugs. Make sure that the product cannot be switched back on again.
- Lay cables and lines so that they cannot be damaged and no one can trip over them.
- Information signs must not be changed or removed.

### 4.3. Indications Commissioning

---

- Make sure that all electrical connections are either used or covered. Commission the product only if it is installed completely.
- The power switch must always be fully functional and easy accessible!

### 4.4. Indications during operation

---

- Only authorized personnel is allowed to operate the setting mechanisms of the components or parts, under the provision that the system is used as intended.
- In an emergency, or if there is a fault, or other irregularities, switch the equipment off and make sure it cannot be switched back on again.
- The technical data given on the rating plate must not be exceeded.

## 5. PRODUCT INFORMATION

---

### Description:

The unit is an air handling unit with integrated counterflow heat exchanger for optimal heat recovery. Large-area panel filters ISO ePM1/ ePM10 and control electronics are integrated in the unit. The device has a remote control for controlling and setting the operating parameters. The high quality housing consists of a frameless sheet metal structure with smooth internal and external walls. The housing is insulated with 25 mm mineral wool. The control system, in conjunction with external sensors, enables demand-based ventilation.

- Frameless casing manufactured from galvanized steel sheet.
  - Extractable counter cross-flow heat exchanger.
  - Extractable large panel filters ISO ePM10 (M5) / ISO ePM1 (F7)
  - Controller installed, wired, ready to plug in.
  - External control unit with control cable.
- 
- PWW heating module or electric heating module are available as accessories.
  - Cooling possible via external DV or cold water cooling module.

## 5.1. Device description

1. Housing
2. Housing cover
3. EC-fan
4. Cable glands
5. Hinge
6. Tension lock
7. Unit suspension
8. Rating plate
9. Connection supply air
10. Connection extract air
11. Condensate drip tray / Connection condensate drainage
12. Remote control
13. Remote control cable
14. Temperature sensor fresh air
15. Controller board
16. Safety labels
17. Switchboard cover
18. Extracted air temperature sensor
19. Air filter ISO ePM10 (M5) - extract air
20. Counter cross-flow heat exchanger
21. Bypass damper
22. Air filter ISO ePM1 (F7) - supply air
23. Connection intake air
24. Connection exhaust air

Fig. 5-1

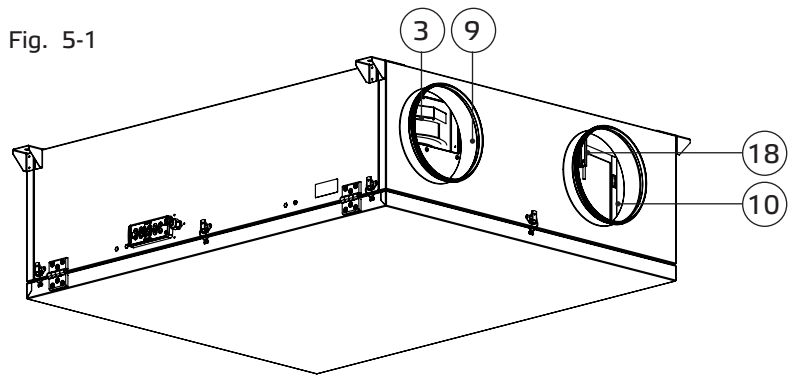


Fig. 5-2

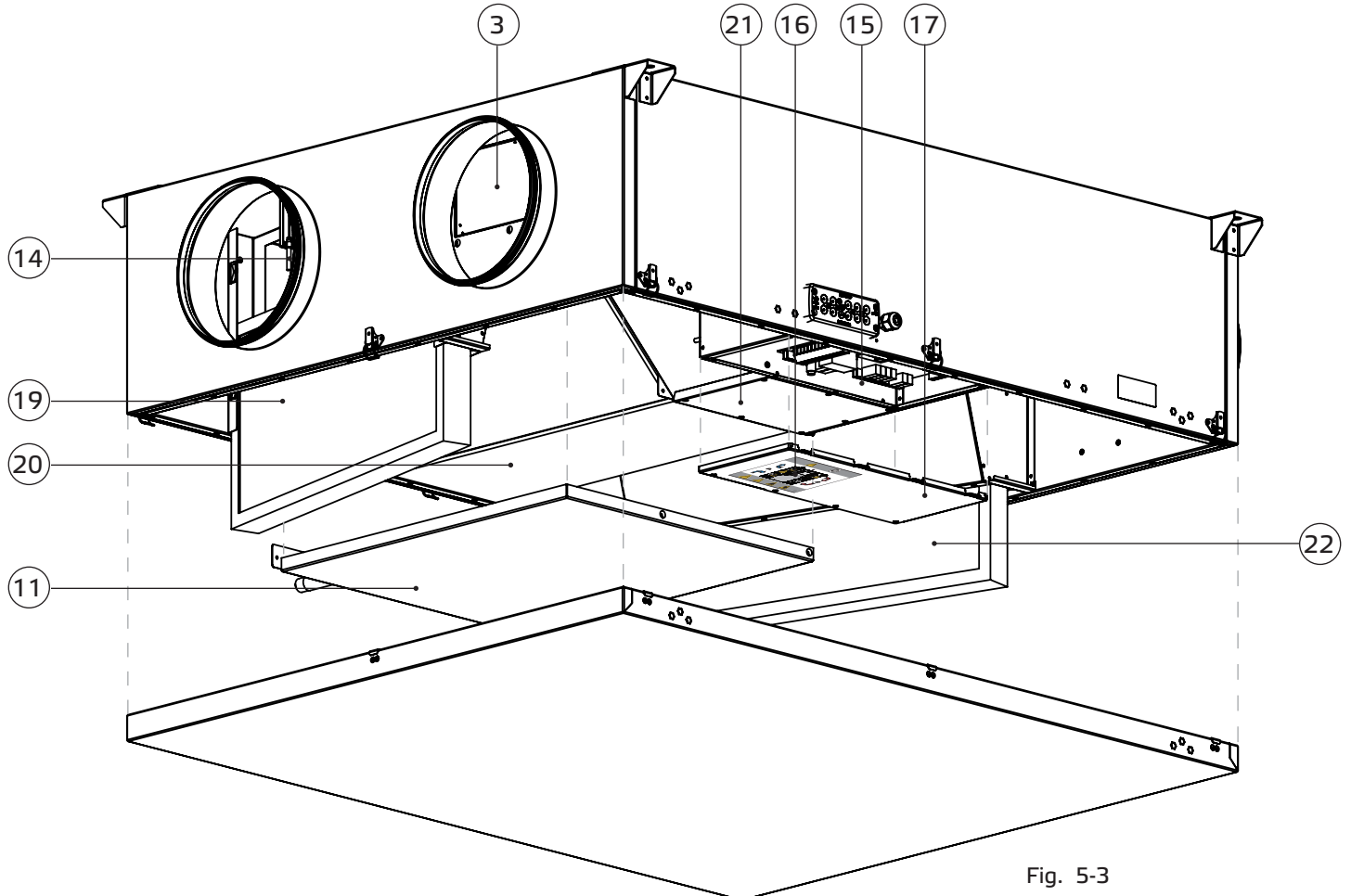
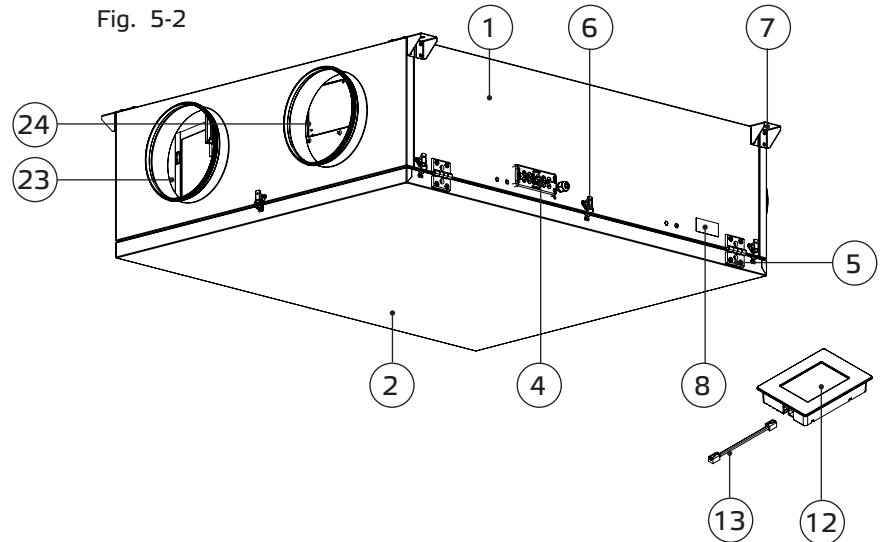
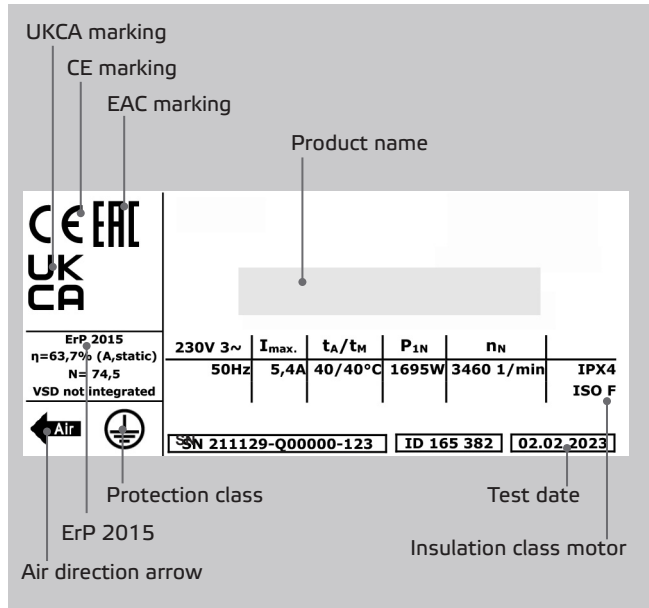


Fig. 5-3

## 5.2. Nameplate

ATTENTION! The information on the nameplate must always be observed!



### Legend:

- $I_{max}$  Max. current consumption
- $t_A / t_M$  Max. ambient temperature / Max. medium temperature
- $P_{1N}$  Rated power consumption
- $n_N$  Rated speed
- ErP Data ErP Conformity, if required according to Reg. 327/2011
- $\eta$  Overall efficiency
- N Efficiency at the optimum energy efficiency
- ID Item number
- SN Serial number

Fig. 5-4 Nameplate

## 6. DELIVERY CONTENTS

- 1 x Ventilation unit with heat recovery
  - 2 x EC Fan
  - 1 x panel filter ISO ePM10 (M5)
  - 1 x panel filter ISO ePM1 (F7)
  - 1 x counter cross-flow heat exchanger
  - 1 x bypass flap with actuator
- 1 x remote control with control cable
- 1 x Installation, operating and maintenance instructions
- EC Declarations of conformity
- EC-Declaration of Incorporation (Directive 2006/42/EC)

## 7. TECHNICAL DATA

|                                           |  | PHE 500 F C 00 JR | PHE 700 F C 00 JR | PHE 1100 F C 00 JR |
|-------------------------------------------|--|-------------------|-------------------|--------------------|
| Product name                              |  |                   |                   |                    |
| Item number                               |  | 175547            | 174541            | 175271             |
| Voltage $U_N$                             |  | V 230V ~          | 230V ~            | 230V ~             |
| Frequency $f_N$                           |  | Hz 50             | 50                | 50                 |
| Rated power consumption $P_N$             |  | W 370             | 360               | 560                |
| Max. motor current $I_{max}$              |  | A 3               | 3,2               | 3,91               |
| Fuse device                               |  | 1x16A             | 1x16A             | 1x16A              |
| Fuse external electric heater             |  | -                 | -                 | -                  |
| Max. medium temperature $t_M$             |  | °C 40             | 40                | 40                 |
| Max. air volume                           |  | m³/h 555          | 870               | 1180               |
| RPM                                       |  | 1/min 2530        | 3450              | 3095               |
| Max. primary static pressure              |  | Pa 600            | 1000              | 820                |
| Sound power level supply air $L_{WA\ 6}$  |  | dB(A) 77          | 77                | 85                 |
| Sound power level extract air $L_{WA\ 5}$ |  | dB(A) 59          | 59                | 68                 |
| Sound power level outdoor air $L_{WA\ 5}$ |  | dB(A) 60          | 59                | 69                 |
| Sound power level exhaust air $L_{WA\ 6}$ |  | dB(A) 82          | 81                | 83                 |
| Sound power level casing $L_{WA\ 2}$      |  | dB(A) 62          | 57                | 66                 |
| Weight                                    |  | kg 74,5           | 98,0              | 120,0              |
| Wiring diagrams No.                       |  | 176027            | 176027            | 176027             |



## 8. DIMENSIONS

### PHE ... F C

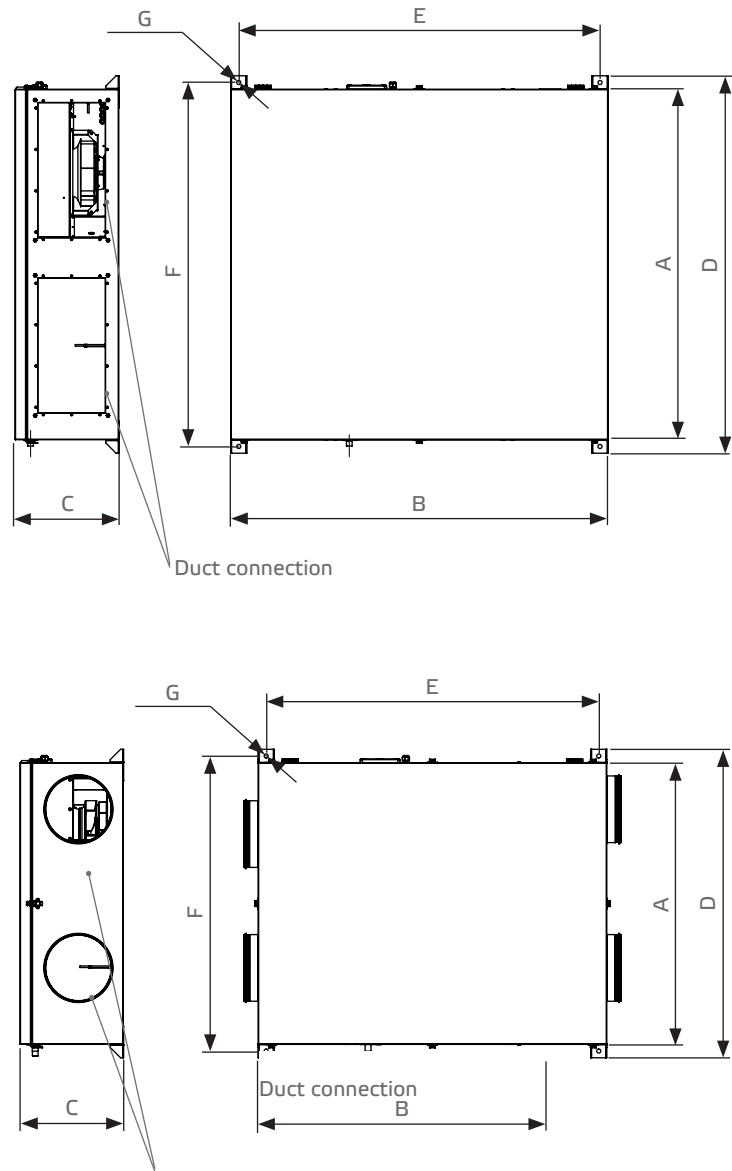


Fig. 8-1  
Dimensions of the supply air unit

| Product name       | Item number | Duct connection | A    | B    | C   | D    | E    | F    | G       |
|--------------------|-------------|-----------------|------|------|-----|------|------|------|---------|
|                    |             | mm              | mm   | mm   | mm  | mm   | mm   | mm   | mm      |
| PHE 500 F C OO JR  | 175547      | NW 200          | 800  | 1150 | 345 | 900  | 1090 | 850  | 4 x Ø15 |
| PHE 700 F C OO JR  | 174541      | NW 250          | 1050 | 1300 | 385 | 1150 | 1240 | 1100 | 4 x Ø15 |
| PHE 1100 F C OO JR | 175271      | 300 x 500       | 1300 | 1400 | 385 | 1400 | 1340 | 1350 | 4 x Ø15 |

## 8.1. Dimensions Control unit

|               |       |    |               |
|---------------|-------|----|---------------|
| Size          | LxBxH | mm | 122 x 89 x 23 |
| Assembly size | Ø A   | mm | 60            |
|               | Ø D   | mm | 27,9          |

Fig. 8-2  
Outside dimensions of the control unit.

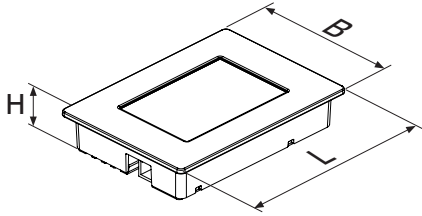
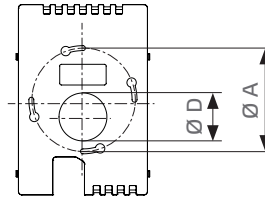


Fig. 8-3  
Installation dimensions of the control unit.



## 9. TRANSPORT AND STORAGE

Transport and storage should only be performed by specialist personnel in accordance with the assembly and operating manual and regulations in force.

The following points should be noted and followed:

- Check the delivery according to the delivery note to ensure it is complete and correct and check for any damage. Any missing quantities or damage incurred during transport should be confirmed by the carrier. No liability is accepted if this is not observed.
- For weight see technical data
- It should be transported with suitable lifting equipment in the original packaging or on the transport equipment indicated.
- If transported with a forklift, it should be ensured that the product is resting with the basic profile or base frame completely on the forks or on a pallet and the product's centre of gravity is between the forks.
- The driver must be authorized to drive a forklift.
- Do not go beneath the suspended load.
- Never lift and transport the unit by the door handles, covers or other mounting parts!
- Avoid damage or deformation of the housing.
- The product must be stored in a dry area and protected from the weather in the original packaging. Open pallets should be covered with tarpaulins. Even weatherproof modules should be covered because their weather resistance is only guaranteed after complete installation. If moisture has penetrated into the original packaging, remove it immediately.
- Storage temperature between +5 °C and +40 °C. Avoid severe temperature fluctuations.
- If the product has been in storage for more than a year, check the smooth running of impellers and valves by hand.

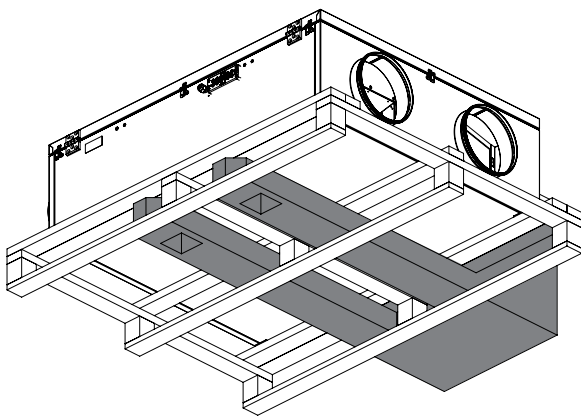


Fig. 9-1  
Unit transported on a pallet with a forklift.

## 10. ASSEMBLY

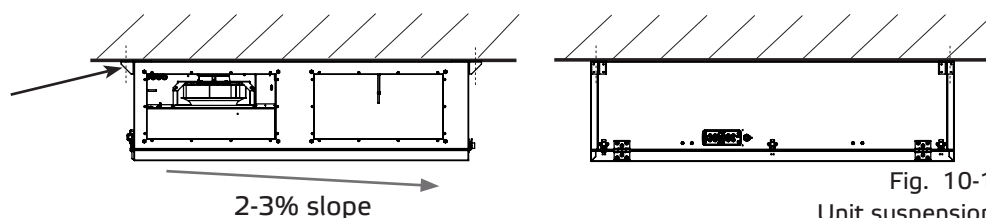
Assembly work may only be performed by specialist personnel in accordance with the installation and operating manual and the regulations and standards in force.

The following points should be noted and followed:

- Mount and align the unit with the aid of a water level. Proper condensate drainage can only be guaranteed for units with a 2-3% slope towards the condensate drain.
- Only suitable installation aids, in accordance with regulations, should be used.
- The device must be installed in such a way that it is easily accessible for maintenance and cleaning purposes.
- The unit should only be installed with authorized and suitable fastening materials at all fastening points.
- Do not distort the unit when installing.
- The unit should be suitably secured.
- Just use the indicated mounting and fixing places. No holes should be made in the housing or any screws screwed into it.
- The duct system must not be supported on the housing.
- It is recommended that the duct system is attached with flexible connections or connection collars in order to isolate any structure-borne noise. For floor or wall mounting, all units should be mounted to isolate structure-borne noise.
- Make sure that the intake duct has direct access to the intake air. Warning: branches in the intake duct, to other fan units for example, may, if the dimensions are too small, lead to low pressure in the duct and therefore malfunction of the unit.
- The pressure loss in the duct system must not exceed the capacity of the unit! The pressure loss in the duct should not be more than 2/3 the unit's maximum pressure so that an adequate air output can still be achieved. This will prevent malfunction. Pressure losses in the duct system are adversely affected by: the length of the duct system, small duct cross-section, elbows, additional filters, valves, etc.

### 10.1. Unit suspension / Permitted installation positions

Install insulated against structure-borne sound



Only ceiling mounting possible.

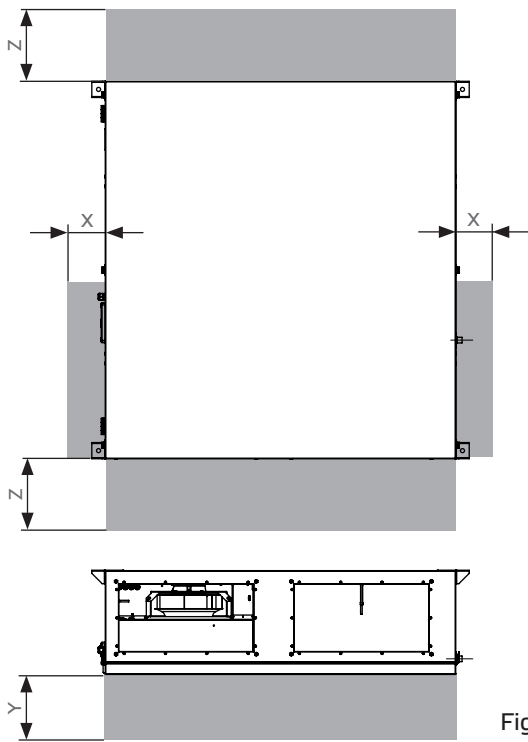


Before suspending the unit, check that the ceiling is suitable for the load. Only fastening materials appropriate to the load and suitable for the nature of the ceiling may be used.

The unit must be installed with a 2-3% slope in the direction of the condensate drain.

| Product name | Quantity fasteners | Weight Devices<br>kg |
|--------------|--------------------|----------------------|
| PHE 500 F C  | 4                  | 74,5                 |
| PHE 700 F C  | 4                  | 98                   |
| PHE 1100 F C | 4                  | 120                  |

## 10.2. Minimum distance for maintenance works



Product name

|              | Connection cable min. | Condensate drain connection min. | Open door min. | Remove filter min. | Slide the door min.. | Slide the door max. |
|--------------|-----------------------|----------------------------------|----------------|--------------------|----------------------|---------------------|
|              | X                     | X                                | Y              | Y                  | Y                    | Z                   |
|              | mm                    | mm                               | mm             | mm                 | mm                   | mm                  |
| PHE 500 F C  | 150                   | 200                              | 850            | 275                | 42                   | 213                 |
| PHE 700 F C  | 150                   | 200                              | 1200           | 315                | 42                   | 258                 |
| PHE 1100 F C | 150                   | 200                              | 1350           | 315                | 42                   | 285                 |

Fig. 10-2  
Minimum distance for maintenance works

## 10.3. Duct connections

Duct connections should be made such way that no condensate can get into the unit via the ducts.

- Insulate cold ducts in warm rooms
  - Insulate warm ducts in cold rooms
  - Ground heat exchangers should be equipped with a controlled condensate drain positioned before the unit
- The air connections must be matched to the duct connections. (see under „Technical data“)

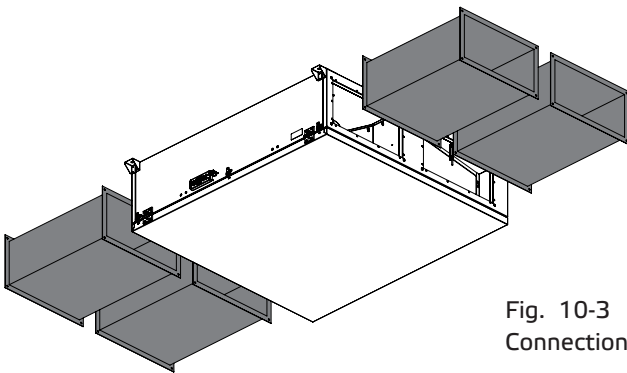
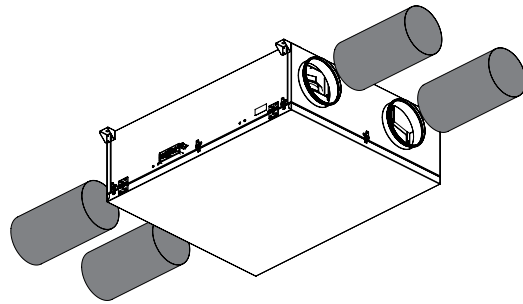


Fig. 10-3  
Connection air duct



## 10.4. Operating limits

Operating limits indoor installation

Fresh air temperature -20 °C / 95% rH to +40 °C / 20% rH

Installation place: min. +5°C / 80% rH

Extract air class EN 13779 ETA 1 / ETA 2

Absolute humidity extract air max. 12g/kg

For the ventilation of rooms where the emission sources are human metabolism or building materials and structures, e.g. offices, spaces for public service, meeting rooms as well as in rooms where smoking is allowed.

The suitability for enclosure condensation has to be checked by the customer, it is possible that suitable measures like ventilation of the installation area, or an additional insulation of the outdoor air intake area, are going to be necessary.

Ventilation unit not suitable for outdoor installation.

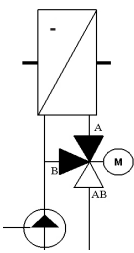
## 10.5. Medium connections / Heating Coil (For versions with PWW heating module)

- Before connecting heating coil, the duct system must be thoroughly cleaned.
- Use only permitted sealants (DIN EN 751-2, DVGW tested).
- When connecting the pipelines on the water side, the counterflow principle must be observed.
- When making pipe connections to the unit with screw connections, a wrench, for example, must be used to hold against the tightening torque.
- The connection must be executed without tension.
- Air bleeding must be done on site.
- All pipes and fittings of the medium connections must be insulated.

### Hydraulic circuits

For air conditioning applications, there are three basic circuits:

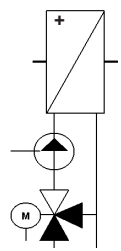
Fig. 10-4



#### Bypass circuit

With the bypass circuit, only the hot water is fed to the heating coil. The rest of the water supplied by the pump, bypasses the heating coil. This can lead to a temperature difference between top and bottom of the heating coil if the flow of water through it is very small. The resulting temperature gradients can lead to false temperature measurements in the duct or to draught effects in the room. The bypass circuit is usually used in air coolers. In air coolers, the air is partly cooled below the dew point and thereby dehumidified.

Fig. 10-5

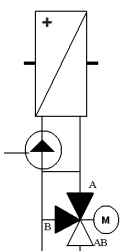


#### Admixture circuit

In the admixture circuit, the circulating pump always supplies the full amount of water required by the heating coil with an amount of hot water determined by the valve setting. The temperature control is thus much better. Furthermore, the risk of frost damage when the pump is running is reduced as the continuous circulation and increased pressure reduce the freezing point of the water.

The only advantage of the bypass circuit over the admixture circuit arises when the pipe lengths between three-way ball valve and water heater are very long. Because the pump is ahead of the valve, there is always hot water available at the valve that can be immediately fed to the heat exchanger if required. It is possible that the water in the pipe to the valve cools during admixture circuit. When heating is required there is a short delay before hot water gets into the heating coil.

Fig. 10-6



#### Injection circuit

The combination of these circuits is the injection circuit which is generally recommended.

## 10.6. Condensate drainage

- The counter cross-flow heat exchanger is equipped with a stainless steel condensate pan.
- A drainage connection from the condensate pan is brought out of the unit.
- To avoid corrosion, the drain pipe from this connection should be in stainless steel, copper or plastic.
- A siphon for negative pressure must be installed at the condensate drain pipe.
- The water seal height in the siphon depends on the pressure inside the unit, the minimum is 60 mm. If the pressure in the device exceeds 400 Pa, please use the sealing water heights from the table.

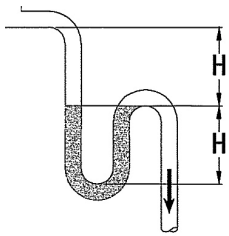


Fig. 10-7  
Water seal height H

| $\Delta p_{st}$ [Pa] | H [mm] |
|----------------------|--------|
| 300                  | 60     |
| 400                  | 60     |
| 500                  | 66     |
| 600                  | 76     |
| 700                  | 86     |
| 800                  | 97     |

Table: Water seal height H in siphon as a function off pressure.

The water seal height can also be determined by calculation, provided the minimum of 60 mm is maintained:

Example calculation::

$$\Delta p_{st} = \Delta p_t - \Delta p_d$$

$$\Delta p_{st} = 500 \text{ Pa (see technical data)}$$

$$1 \text{ mm water gauge equals } 9,81 \text{ Pa}$$

Water seal H:

$$H = \Delta p_{st} / 9,81 \text{ Pa/mm} + 15 \text{ mm}$$

$$H = 500 \text{ Pa} / 9,81 \text{ Pa/mm} + 15 \text{ mm}$$

$$H = 66 \text{ mm}$$

#### Legend

$\Delta p_{st}$  = Static pressure [Pa]

$\Delta p_t$  = Total pressure [Pa]

$\Delta p_d$  = Dynamic pressure [Pa]

H = Water seal [mm]

For hygienic reasons, it is recommended to use the suitable siphon SYS 02 for the unit. This siphon provides sufficient water seal height and is equipped with a self-closing ball siphon.

The water seal height for on site siphons can also be determined by calculation, provided the minimum water seal height of 60 mm is maintained.

## 10.7. Ball siphon installation

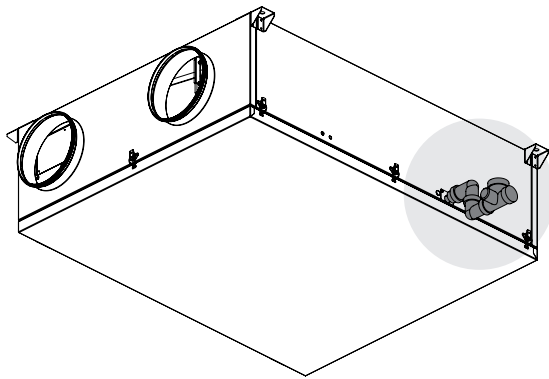
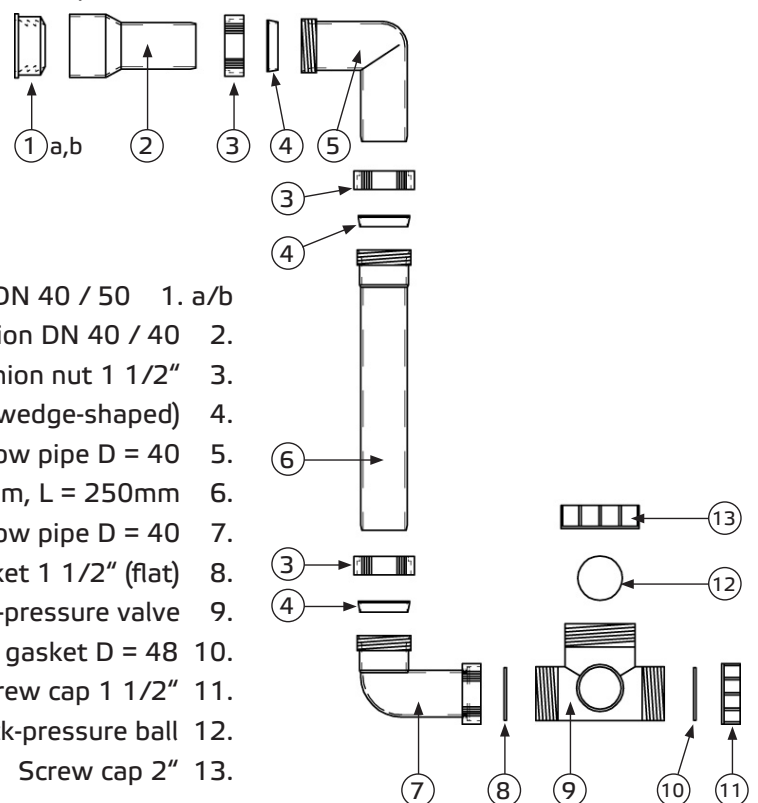


Fig. 10-8  
ball siphon

Fig. 10-9  
Systemskizze  
ball siphon SYS 02



Rubber collar DN 30 / 50 / Rubber collar DN 40 / 50 1. a/b

Connection DN 40 / 40 2.

Union nut 1 1/2" 3.

Combo gasket D = 40 (wedge-shaped) 4.

Elbow pipe D = 40 5.

Immersion pipe D = 40mm, L = 250mm 6.

Elbow pipe D = 40 7.

Gasket 1 1/2" (flat) 8.

Back-pressure valve 9.

Round rubber gasket D = 48 10.

Screw cap 1 1/2" 11.

Back-pressure ball 12.

Screw cap 2" 13.

## 11. ELECTRICAL CONNECTION



- Electricity warning (hazardous voltage)!
- » Failure to observe the hazard may result in death, injury or damage to property.
- Before performing any work on conductive parts, always disconnect the unit completely from the electricity supply and make sure that it cannot be switched back on again.

The electrical installation may only be carried out by qualified electricians in compliance with the installation, operating and maintenance instructions and the applicable national regulations, standards and guidelines:

- ISO, DIN, EN and VDE specifications, including all safety requirements.
- Technical connection conditions.
- Safety at work and accident prevention requirements.

**This list does not claim to be complete.**

**Requirements should be applied under one's own personal responsibility.**

- The electrical connections must be made as shown in the corresponding wiring diagrams and terminal diagrams.
- The type of cable, size of cable and method of laying should be determined by an authorized electrician.
- Low and extra-low voltage cables should be laid separately.
- If no repair switch is integrated in the device, an all-pole mains disconnecting switch with min. 3 mm contact opening must be provided in the supply line.
- Use a separate cable inlet for each cable.
- Any cable inlets that are not used must be sealed so that it is airtight.
- All cable inlets must have strain relief.
- Create equipotential bonding between the unit and the duct system.
- Check all protective measures after the electrical connection work (earthing resistance, etc.)
- Motor current and motor power must not exceed the values stated on the motor nameplate. The specified max. fan speed must never be exceeded, otherwise the motor and fan will be destroyed by this overload and dissolved or flying parts can destroy other components.

### Connection compartment / Connections on the unit

The connection compartment is inside the unit. You must first remove the housing cover and the terminal box cover. Each lead that is connected must pass through a separate cable gland..

For this, use the supplied cable glands, fittings and cover plate. Cables that carry mains voltage must be fastened with the tension relief devices available.

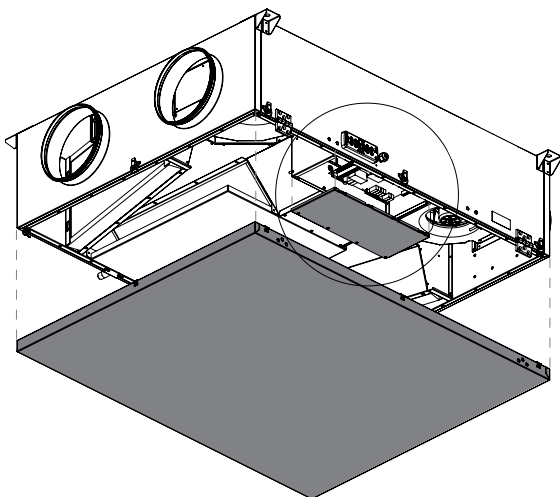


Fig. 11-1  
Connection compartment

## Unit supply cable

Connect the mains supply cable as shown in the wiring diagram. For the dimensioning of the line, observe the unit's rating plate and the relevant guidelines. Appropriate protection with correctly dimensioned automatic safety breakers (circuit protection breaker) must be provided.

The device must be connected according to the wiring diagram. For fans which are controlled by external control devices, the corresponding operating instructions of the manufacturer must be observed.

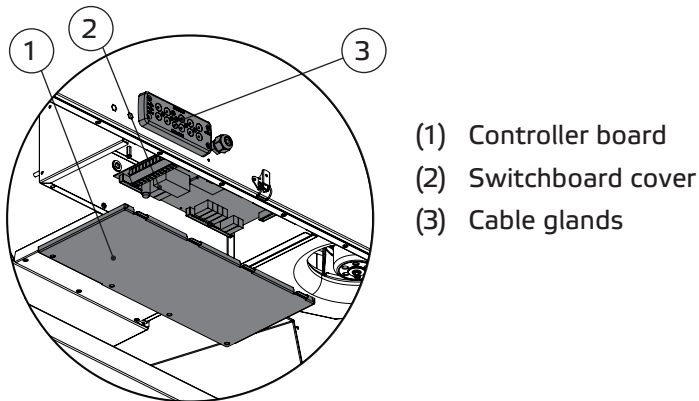


Fig. 11-2  
Connection compartment

### 11.1. Overcurrent protection

- The unit may only be operated with the correct overcurrent protection.
- This must be established by a qualified electrician.
- The recommended fuse can be found in the technical data.

### 11.2. Description external inputs and outputs

#### 11.2.1. Inputs

##### Unit enabling

The unit can be switched on and off with an external potential-free contact (see wiring diagram). An external voltage must never be applied to this connection. The control system would be destroyed. Any devices providing a potential-free contact (e.g. central building control system) can be used to control the unit. This contact must be securely isolated from external voltages because otherwise dangerous conditions might occur in the event of a fault.

The extra-low voltage control cables must be laid separately from the mains cables.

##### Motion detector

See description „Party Input“.

External, potential-free contact.

##### Fire detector

An external, potential-free fire detection contact switches the device off. The control unit display shows „Fire protection fault“. This signals requires a manual reset.

##### Frost protection via supply air sensor

If the supply air temperature drops below 4°C, the unit goes into the preheating mode. The outdoor air dampers are closed, the fans are switched off, the circulation pump is switched on and the heating valve is opened. If the supply air temperature is still below 4°C after 20 minutes, the system switches off completely and the fault message F7 Frost protection appears on the control panel. The circulation pump remains switched on and the heating valve opened. If the supply air temperature rises again within 20 minutes, the device returns to normal operation.



### External 0 - 10V input

An external measuring transducer can be connected to the 0 - 10V input for demand controlled ventilation.

### External pressure sensor

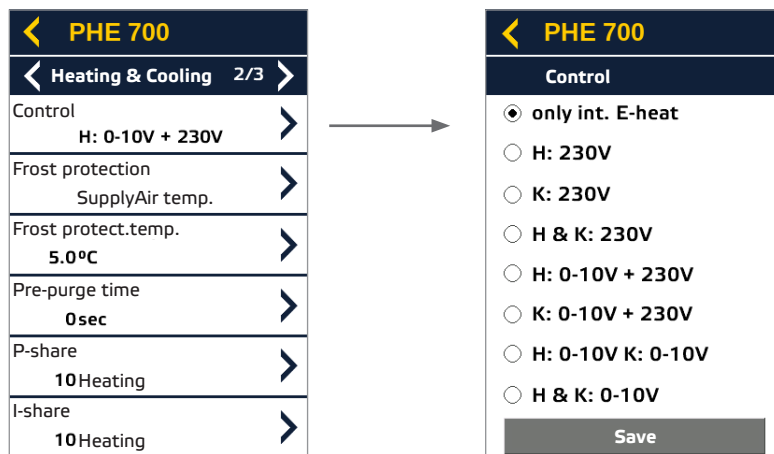
Two pressure sensors can be connected to the control unit for the operation with constant pressure control. One sensor for extract air pressure, one sensor for supply air pressure.

## 11.2.2. Outputs

### Control outputs for heating and cooling

The following configurations for controlling the outputs for heating and cooling are possible.

|                     |                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------|
| H: 0-10 V K: 0-10 V | Heating 3-way mixing valve 0-10V output (X15:4,8)<br>Cooling 3-way mixing valve 0-10V output (X15:5,9)                       |
| H & K: 0-10 V       | Heating and cooling 0-10V output (X15:5,9)<br>Enable cooling device open = heating<br>Enable cooling device closed = cooling |



### Enable circulation pump heating

A circulation pump can be connected to the controller (see circuit diagram). If heating is required, the heating valve is opened by the controller and the circulation pump output is activated. Any pump connected must be inherently safe and block-proof.

Electrical connection with  $V_{max} = 230 \text{ VAC}$  and  $I_{max} = 2 \text{ A}$ .

### Enable circulating pump cooling

A circulation pump can be connected to the controller (see circuit diagram). When cooling is required, the control system opens the cooling valve and activates the „Circulation pump“ output. Any pump connected must be inherently safe and block-proof.

Electrical connection with  $V_{max} = 230 \text{ VAC}$  and  $I_{max} = 2 \text{ A}$ .

### 3-way valve heating

Temperature control for the optional heater LPHW, e.g. active heating to cover the heating demand by the ventilation system.

### 3-way valve cooling

Temperature control for the optional cooler LPCW, e.g. active outdoor air cooling by the ventilation system. Control output 3-position.

### Unit malfunction

If there is a unit malfunction, an error message appears on the display and at the same time switches a relay. A closing and opening signal is available (see wiring diagram). Electrical connection of the changeover contact with U - 230 VAC and  $I_{max} = 2A$ . (There is not any double insulation on the mains cables).

## 11.2.3. Interfaces

### Control unit

The control unit is connected to the supply air unit's control system with a control cable.

A connector on the control cable is plugged directly into the socket on the control unit from beneath (see Fig. 13-1 ). On the unit, the control cable is first fed through a cable gland (see Fig. 11-1), placed in the cable duct and then connected to the RJ10 socket provided in the controller board. The control cable must not be shortened. Any excess length must be stowed outside of the housing. If the cable is too short, extensions can be ordered from the manufacturer or supplier. Alternatively, a 4-wire data cable with 120 Ohm resistance can also be connected. Max. cable length 100 m. This is fed through the back wall of the control unit and connected to the spring-loaded terminals. In the unit, instead of being connected to the controller board in the RJ10 socket, the cable is connected in the spring-loaded terminals next to it (see wiring diagram).

### Modbus RTU

The communication interface with Modbus RTU protocol is already integrated as standard. The central building control system can be connected directly to the integrated interface via Modbus.

## 12. COMMISSIONING



Commissioning by trained technical personnel may only be performed after any risk has been ruled out. The following checks should be performed in accordance with the installation and operating manual and the regulations in force:

- Correctly sealed installation of the unit and duct system.
- Check the duct system, unit and medium lines, if present, remove any foreign bodies if necessary.
- The intake opening and inflow into the unit must be clear.
- Check all mechanical and electrical protection measures (e.g. earthing).
- Voltage, frequency and type of current must correspond with the rating plate.
- Check all electrical connections and wiring.
- Check any electrical, switching, safety and control devices connected.
- The unit may not be switched on when the housing is open.
- Measure electricity consumption at operating speed and compare with the rated current.
- Check the fan for excessive vibrations and noise generation.

## 13. OPERATION

### 13.1. Control unit

The control unit allows the selection and the command of various unit functions. A setpoint sensor for measuring the room temperature and humidity is integrated in the control panel. The display shows the various operating parameters and error messages. You can switch between displaying different menu points and make changes to your unit settings and values.

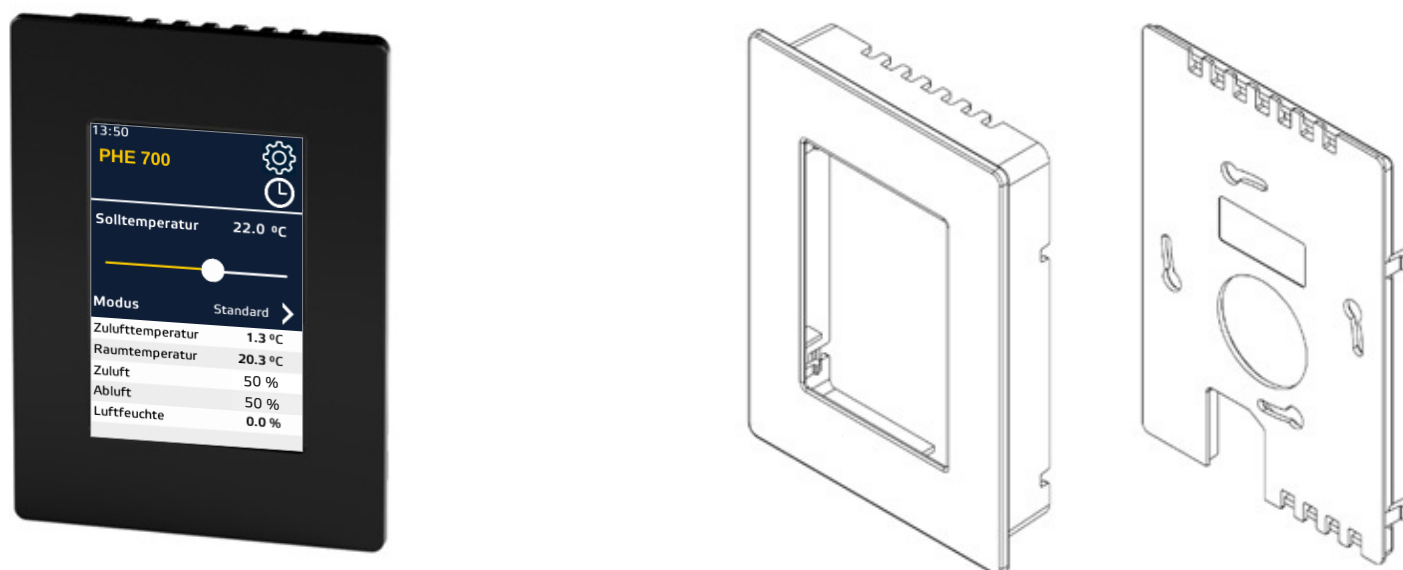
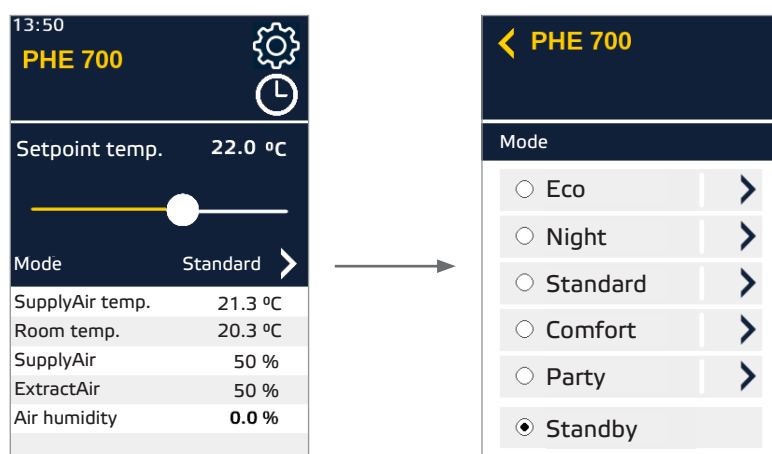


Fig. 13-1  
Control unit

#### 13.1.1. Mode selection

Preconfigured modes (Eco, Night, Standard, Comfort, Party) with flow rates, temperatures, sensor setpoints. In User 2 can only be selected the different modes, changes can only be made in User 3

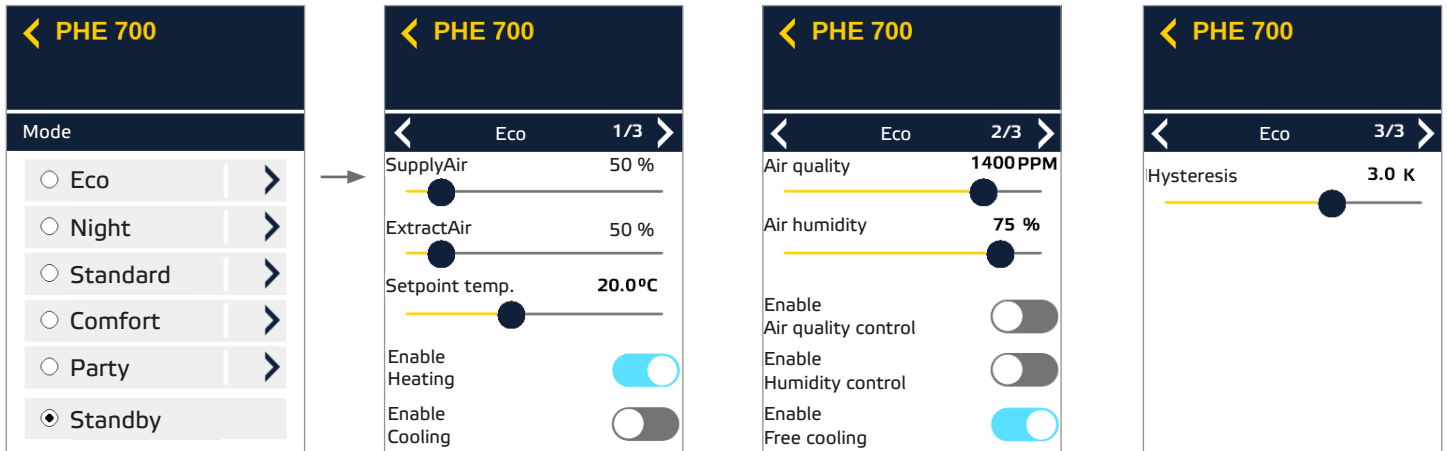


### 13.1.2. Adjust Mode setpoint

The setpoints for volume flow, temperature and demand-based control (with additional sensors) stored in the respective mode as well as permissions can be set here.

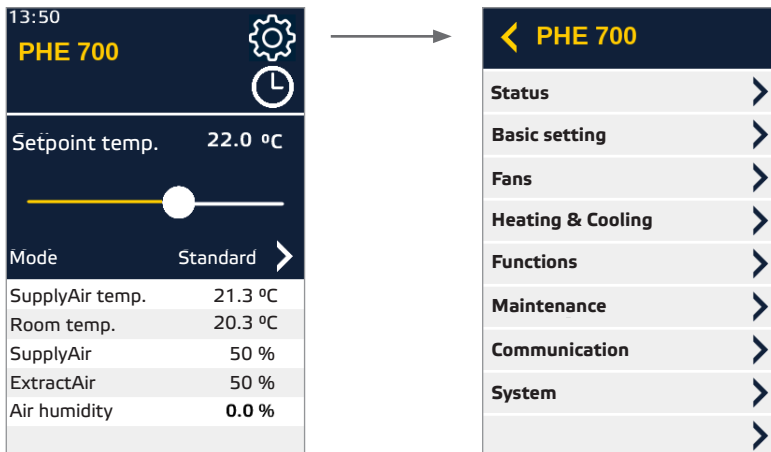
Can only be changed at user level „User 3“ or higher.

The setpoint value for the volume flow corresponds to the basic ventilation setting. This value is not exceeded in the set mode, but can be exceeded up to the maximum volume flow rate through demand-based control.



### 13.1.3. Main menu overview

Overview page with all relevant settings. This is opened by clicking on the cogwheel symbol.

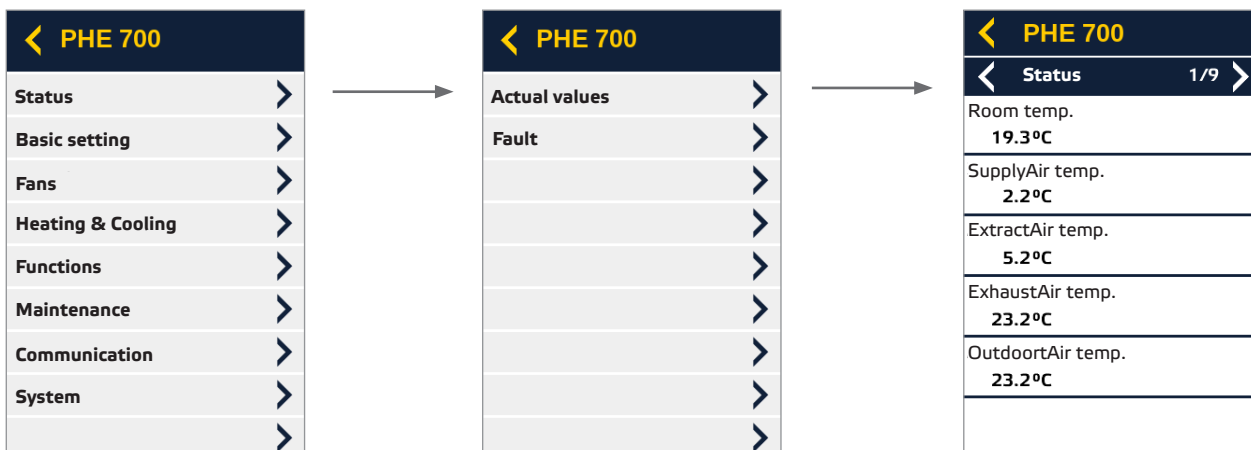


### 13.1.4. Status display actual values / Malfunctions

All measured values and status of the inputs/outputs can be viewed under Settings/Status.

Display of the currently measured sensor values of the ventilation unit, as well as display of faults.

Visible for all user levels.

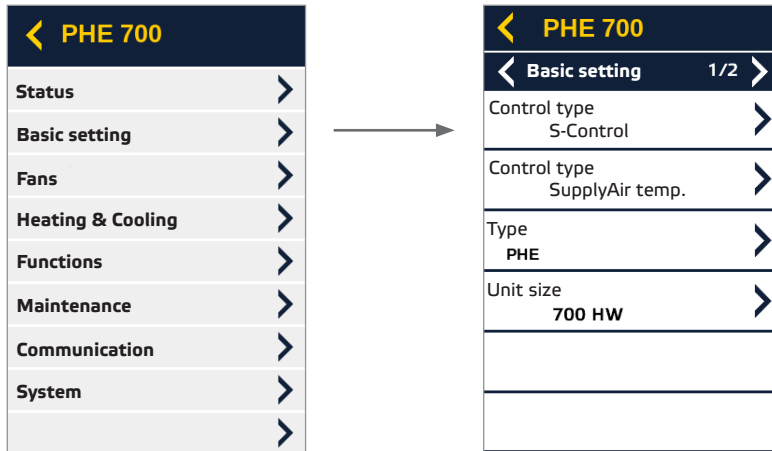


### 13.1.5. Basic settings

Under Settings/ Basic settings, the most important basic parameters such as unit type and minimum or maximum setpoints can be set.

Can only be changed at user level „Service“.

Individual unit parameters can only be set by the factory customer service.

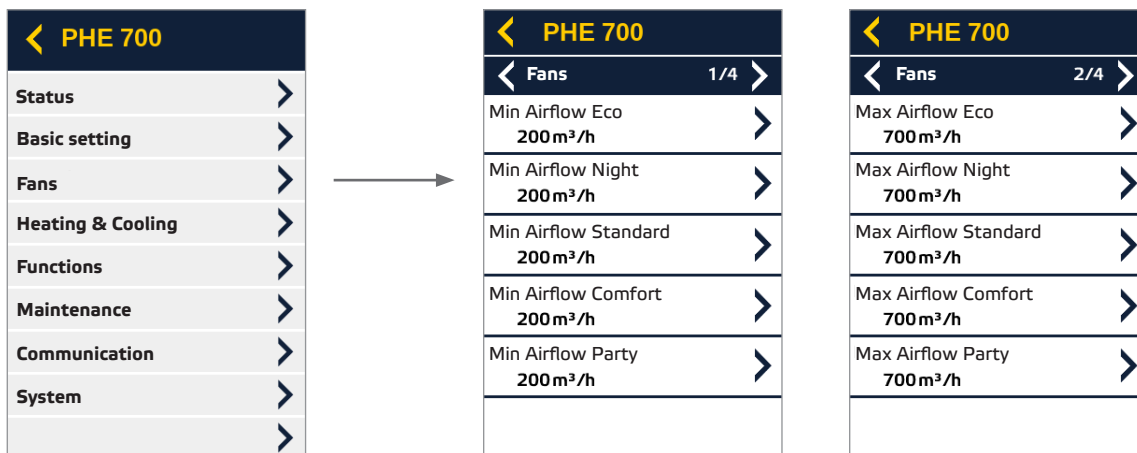


### 13.1.6. Fan settings

All parameters related to the fans, such as control types, minimum and maximum volume flows or correction factors, can be set here.

Can only be changed at user level „Service“.

Individual unit parameters can only be set by the factory customer service.



### 13.1.7. Heating & Cooling

Type of temperature control, heating/cooling mode and related control parameters can be set.

Can only be changed at user level „Service“.

Individual unit parameters can only be set by the factory customer service.

The parameters for ‘minimum cooling temperature’ and ‘maximum heating temperature’ are limit values for the supply air temperature.

| < PHE 700           |  | < PHE 700                 |  | < PHE 700                 |  | < PHE 700                 |  |
|---------------------|--|---------------------------|--|---------------------------|--|---------------------------|--|
| Status >            |  | < Heating & Cooling 1/3 > |  | < Heating & Cooling 2/3 > |  | < Heating & Cooling 3/3 > |  |
| Basic setting >     |  | Min. temp. >              |  | Control >                 |  | P-share >                 |  |
| Fans >              |  | 16.0°C >                  |  | H: 0-10V + 230V >         |  | 10Cooling >               |  |
| Heating & Cooling > |  | Max. temp. >              |  | Frost protection >        |  | I-share >                 |  |
| Functions >         |  | 26.0°C >                  |  | SupplyAir temp. >         |  | 10Cooling >               |  |
| Maintenance >       |  | Hysteresis Min >          |  | Frost protect.temp. >     |  | Correct. SupplyAir >      |  |
| Communication >     |  | 1.0°C >                   |  | 5.0°C >                   |  | 0.0°C >                   |  |
| System >            |  | Hysteresis Max >          |  | Pre-purge time >          |  | Correct. ExtractAir >     |  |
|                     |  | 4.0°C >                   |  | 0sec >                    |  | 0.0°C >                   |  |
|                     |  | Min.temp. cooling >       |  | P-share >                 |  | Correction room >         |  |
|                     |  | 15.0°C >                  |  | 10Heating >               |  | 0.0°C >                   |  |
|                     |  | Max.temp. heating >       |  | I-share >                 |  |                           |  |
|                     |  | 40.0°C >                  |  | 10Heating >               |  |                           |  |

### 13.1.8. Functions

Under Settings/ Functions all parameters for further functionality, such as air quality control with external sensor, overrun or automatic restart are accessible.

Can only be changed at user level „Service“.

Individual unit parameters can only be set by the factory customer service.

| < PHE 700           |  | < PHE 700             |  |
|---------------------|--|-----------------------|--|
| Status >            |  | < Functions 1/5 >     |  |
| Basic setting >     |  | Autorestart >         |  |
| Fans >              |  | Off >                 |  |
| Heating & Cooling > |  | Autorestart mode >    |  |
| Functions >         |  | Mode as before >      |  |
| Maintenance >       |  | Auto operation >      |  |
| Communication >     |  | Off >                 |  |
| System >            |  | Auto operation mode > |  |
|                     |  | LQ-Control >          |  |
|                     |  |                       |  |
|                     |  |                       |  |

Autorestart:

If Autorestart is activated, the unit switches back on automatically after a voltage drop. With the selection „Autorestart Mode“ you can determine in which mode the unit starts.

### Auto operation:

When Auto operation mode is activated, the unit automatically switches to Standard mode if the setpoint for the sensor set under „Auto operation mode“ is not reached.

Auto mode is activated outside the set operating times if one or more set threshold values of the sensor inputs are exceeded. When this function is activated, the device automatically switches to Standard mode. Up to three sensor values can be monitored (temperature, humidity, air quality).

|                                                                                                                                                                     |                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 14:16                                                                                                                                                               |                        |
| <b>PHE 700</b>                                                                                                                                                      |                        |
|   |                        |
| Setpoint temp.                                                                                                                                                      | 26.0 °C                |
|                                                                                     |                        |
| Mode                                                                                                                                                                | <b>AUTO</b> Standard > |
| SupplyAir temp.                                                                                                                                                     | 21.3 °C                |
| Room temp.                                                                                                                                                          | 20.3 °C                |
| SupplyAir                                                                                                                                                           | 0 m³/h                 |
| ExtractAir                                                                                                                                                          | 0 m³/h                 |
| Air humidity                                                                                                                                                        | 52.6 %                 |
| Air quality                                                                                                                                                         | 2205 PPM               |

When auto mode is active, the 'Auto' symbol appears on the home screen of the remote control unit.

|                      |              |
|----------------------|--------------|
| < <b>PHE 700</b>     |              |
| < <b>Functions</b>   | 2/5 >        |
| Night cooling        | Off >        |
| NightCool.temp.      | 21.0°C >     |
| NightCool.SupplyAir  | 75 % >       |
| NightCool.ExtractAir | 75 % >       |
| Night cooling mode   | Room temp. > |
| OutdoortAir sensor   | Off >        |

### Night cooling:

The night cooling function is intended to save energy in the summer months. By using the cool air during the night hours, it is possible to cool down heated rooms. If the unit is in standby mode and the night cooling function is activated, it switches on for a few minutes every hour between 00:00 and 05:00 to check whether the room can be passively cooled. If this is the case, the system runs either until the setpoint is reached in the room or until 06:00 at the latest.

|                     |            |
|---------------------|------------|
| < <b>PHE 700</b>    |            |
| < <b>Functions</b>  | 3/5 >      |
| ExtractAir Qsensor  | Off >      |
| Minimum value 0V    | 0 PPM >    |
| Maximum value 10V   | 2000 PPM > |
| ExtractAir rHsensor | Off >      |
| Minimum value 0V    | 0 % >      |
| Maximum value 10V   | 100 % >    |

### Demand-led control according to air quality or humidity:

Activation of an external air quality sensor (CO<sub>2</sub>, VOC) or humidity sensor and setting of the measuring range. The desired setpoints can be set in each mode.

|                                |
|--------------------------------|
| <b>&lt; PHE 700</b>            |
| <b>&lt; Functions 4/5 &gt;</b> |
| Party input<br>On              |
| Party Input Mode<br>Party      |
| Party Input Function<br>Mode 1 |
| Run-On time<br>5 min           |
|                                |
|                                |

### Party Input:

If Party Input is activated, the unit switches to the operating mode set under „Party Input Mode“ after the external input „Motion Detector“ X15:6,7 is closed. If the contact is opened again, the unit switches back to the previously set mode after the overrun time has elapsed.

With the parameter „Party Input Function“, you can select whether the function should also be active when the system is in standby mode.

Mode 1 = Only active when the unit is already running.

Mode 2 = Additionally active when the unit is in standby mode.

|                                                                                                 |
|-------------------------------------------------------------------------------------------------|
| 09:48                                                                                           |
| <b>PHE 700</b>                                                                                  |
| Setpoint temp. 21.0 °C                                                                          |
| Mode  Standard |
| SupplyAir temp. 21.3 °C                                                                         |
| Room temp. 20.3 °C                                                                              |
| SupplyAir 0 m³/h                                                                                |
| ExtractAir 0 m³/h                                                                               |
| Air humidity 52.2 %                                                                             |

While the motion detector contact is still closed or the follow-up time is active, the normally open contact symbol appears on the start page of the remote control unit.

|                                 |
|---------------------------------|
| <b>&lt; PHE 700</b>             |
| <b>&lt; Functions 5/5 &gt;</b>  |
| External control<br>Off         |
| Minimum<br>75 %                 |
| Maximum<br>75 %                 |
| Extern control mode<br>Standard |
|                                 |
|                                 |

### External control:

When external control is activated, the setpoint for the volume flow is specified via an external 0-10V signal at input X15:3.9.

The parameter „External control mode“ can be used to select whether the mode can be selected manually or whether a fixed mode is always used.

|                           |
|---------------------------|
| 11:13                     |
| <b>PHE 700</b>            |
| Mode <b>Ext.</b> Standard |
| SupplyAir temp. 21.3 °C   |
| Room temp. 20.3 °C        |
| SupplyAir 0 m³/h          |
| ExtractAir 0 m³/h         |
| Air humidity 52.7 %       |

When external control is activated, the symbol 'Ext.' appears on the start page of the remote control unit.



### 13.1.9. Maintenance

All settings related to the maintenance of the device can be made here, such as calibrating the filters and the maximum pressure loss of the filter. The set pressure loss corresponds to a contamination level of 100%.

Can only be changed at user level „Service“.

| < PHE 700            |   |
|----------------------|---|
| < Functions 1/2 >    |   |
| Filter SupplyAir 1   | > |
| Pressure measurement | > |
| FilterCal.SupplyAir1 | > |
| Off                  | > |
| Pres.Sup.AirFilter1  | > |
| 75 PA                | > |
| Filter ExtractAir 1  | > |
| Pressure measurement | > |
| FilterCal.Extr.Air1  | > |
| Off                  | > |
| Pres.Extr.AirFilter1 | > |
| 75 PA                | > |

### 13.1.10. Communication

Modbus communication parameters can be set here.

Can only be changed at user level „Service“.

| < PHE 700         |   | < PHE 700             |   |
|-------------------|---|-----------------------|---|
| Status            | > | < Communication 1/1 > |   |
| Basic setting     | > | Modbus address        | > |
| Fans              | > | 1                     |   |
| Heating & Cooling | > | Modbus baud rate      | > |
| Functions         | > | 9600                  |   |
| Maintenance       | > | Parity                | > |
| Communication     | > | NO 1 Stop Bit         |   |
| System            | > |                       |   |
|                   | > |                       |   |
|                   | > |                       |   |

### 13.1.11. System settings

Permissions, language settings, display settings, time and unit name can be set.

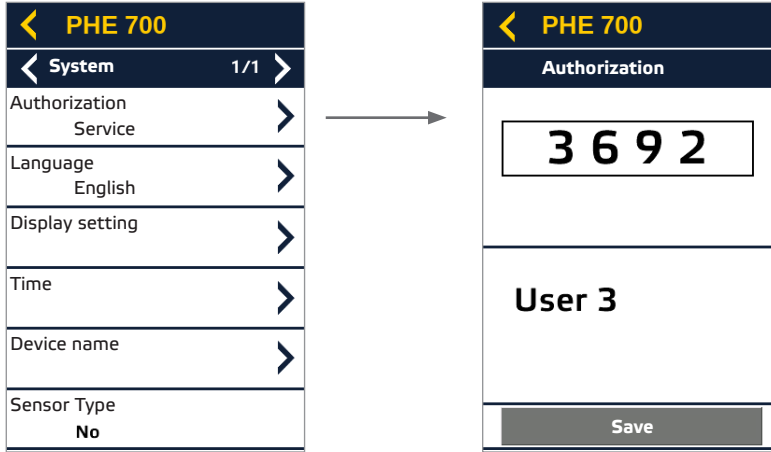
Can only be changed at user level „Service“.

Individual unit parameters can only be set by the factory customer service.

| < PHE 700         |   | < PHE 700       |   |
|-------------------|---|-----------------|---|
| Status            | > | < System 1/1 >  |   |
| Basic setting     | > | Authorization   | > |
| Fans              | > | Service         |   |
| Heating & Cooling | > | Language        | > |
| Functions         | > | English         |   |
| Maintenance       | > | Display setting | > |
| Communication     | > |                 |   |
| System            | > | Time            | > |
|                   | > |                 |   |
|                   | > | Device name     | > |
|                   | > |                 |   |
|                   | > | Sensor Type     | > |
|                   | > | No              |   |

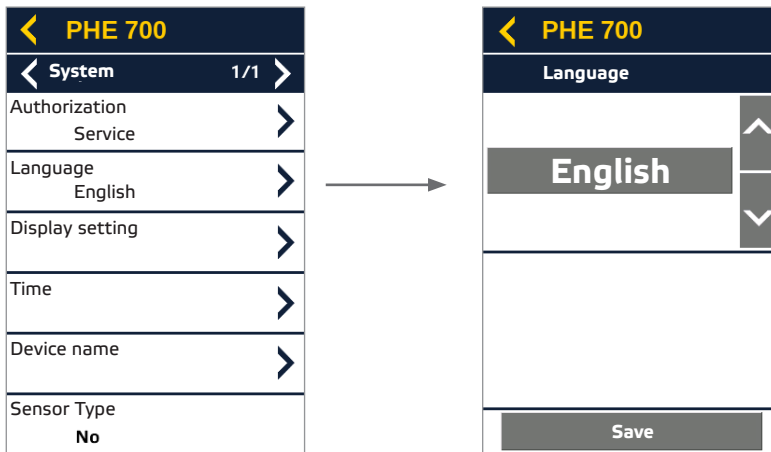
### 13.1.12. User levels

Four different user levels available (default user 3).



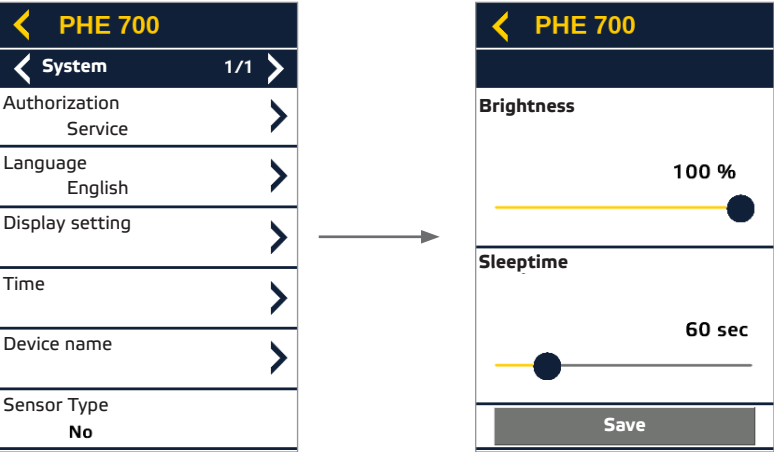
| Authorization | Password                 | Explanation                                                                                                                                                                                   |
|---------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User 1        | 1111 or any other number | <ul style="list-style-type: none"> <li>■ Settings are possible only in the timer.</li> <li>■ Cannot make settings in the mode or in the settings menu. Cannot change the set mode.</li> </ul> |
| User 2        | 2222                     | <ul style="list-style-type: none"> <li>■ Settings are possible only in the timer.</li> <li>■ Cannot make settings in the mode or in the settings menu. Can change the set mode.</li> </ul>    |
| User 3        | 3692                     | <ul style="list-style-type: none"> <li>■ Can make settings in the timer and mode.</li> <li>■ Can change the set mode.</li> <li>■ Cannot make settings in the settings menu.</li> </ul>        |
| Service       | 4826                     | <ul style="list-style-type: none"> <li>■ Can make settings in the timer and mode.</li> <li>■ Can change the set mode.</li> <li>■ Can make settings in the settings menu.</li> </ul>           |

### 13.1.13. Language selection



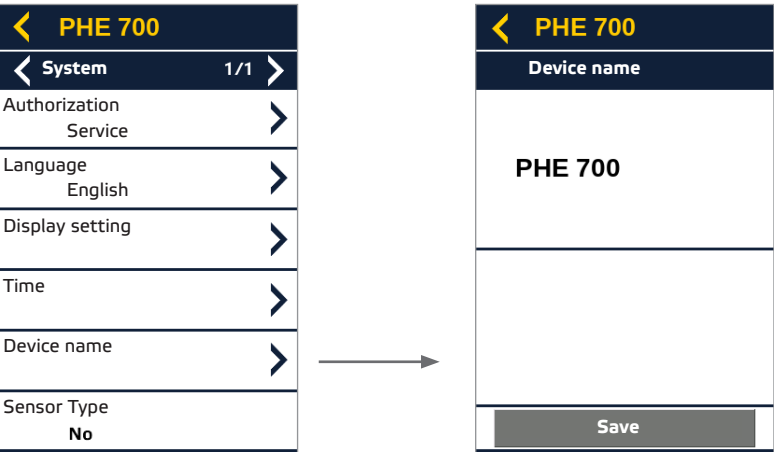
### 13.1.14. Display setting

Display brightness and stand-by time can be set.



### 13.1.15 Device name

Device name can be set.

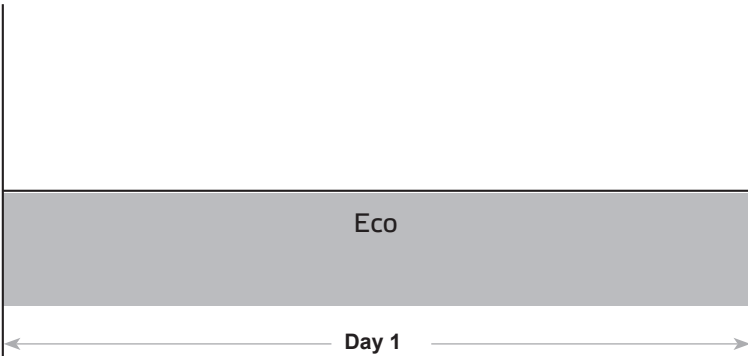
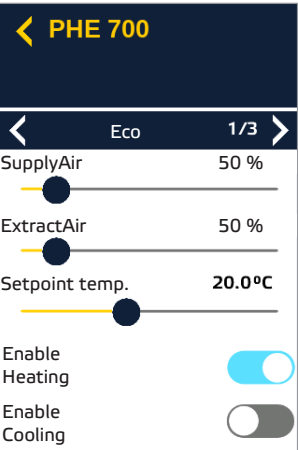


## 13.2. Fan control types

The fan control mode can be changed in the main menu under Basic settings. The following types of control are possible.

#### Constant speed control (S-Control)

If schedules are not used, a constant speed can be set - separately for supply and extract air. This control mode is pre-set for the unit in the delivery state.



### CO<sub>2</sub>/VOC-guided air volume control

CO<sub>2</sub>/VOC-guided air quality control is possible via a room or duct sensor with 0-10V output. If the measured CO<sub>2</sub>/VOC content is below the setpoint, the unit runs with the minimum set air volume. If the measured CO<sub>2</sub>/VOC content rises above the setpoint, the air volume is increased by the control system to reduce the CO<sub>2</sub>/VOC content in the building back to the setpoint. This type of control is particularly suitable for meeting rooms, restaurants, schools and kindergartens.

| < PHE 700           |   |
|---------------------|---|
| < Functions 3/5 >   |   |
| ExtractAir Qsensor  | > |
| Off                 |   |
| Minimum value 0V    | > |
| 0PPM                |   |
| Maximum value 10V   | > |
| 2000PPM             |   |
| ExtractAir rHsensor | > |
| Off                 |   |
| Minimum value 0V    | > |
| 0%                  |   |
| Maximum value 10V   | > |
| 100%                |   |

With the parameter minimum value 0V and maximum value 10V, the measuring range of the sensor used must be set to 0-10V.

(Factory setting CO<sub>2</sub> sensor: 0 – 2000PPM → 0 – 10V)

### Humidity-guided volume flow control

For humidity-controlled regulation, an external humidity sensor can be installed in the extract air duct or in the room. If no external humidity sensor is activated and connected, the measured humidity is used and displayed in the control panel as a control variable.

If the measured humidity is below the setpoint, the unit runs with the minimum set air volume. If the measured humidity rises above the setpoint, the air volume is increased by the control to lower the humidity in the room back to the setpoint.

### External volume flow control

With external volume flow control, the air volume is controlled by an external 0-10V signal. The preset volume flow is changed proportionally to the external signal. At 2 V control voltage, the set minimum volume flow is supplied, at 10 V the maximum volume flow. If the control voltage is less than 1.5 V, the unit is switched off.

### Constant pressure control P (P-Control)

The constant pressure control P-Control is designed for operation of the ventilation unit with variable air flow rates through individual volume flow controllers. The desired pressure setpoint for supply air and extract air can be set on the control unit. Two SEN P pressure sensors are required as accessories for this operating mode. The air volume balance of the supply air and extract air strings is not balanced by the control. For the P-Control operation mode, the use of a heating coil is recommended.

| < PHE 700             |   |
|-----------------------|---|
| < Basic setting 1/2 > |   |
| Control type          | > |
| S-Control             |   |
| Control type          | > |
| SupplyAir temp.       |   |
| Type                  | > |
| PHE                   |   |
| Unit size             | > |
| 700 HW                |   |
|                       |   |
|                       |   |

→

| < PHE 700                                  |  |
|--------------------------------------------|--|
| Control type                               |  |
| <input checked="" type="radio"/> S-Control |  |
| <input type="radio"/> Not available        |  |
| <input type="radio"/> P-Control            |  |
| <input type="radio"/> Not available        |  |
| <input type="radio"/> Not available        |  |
| <input type="radio"/>                      |  |
| <input type="radio"/>                      |  |
| <input type="radio"/>                      |  |
| Save                                       |  |

### 13.3. Temperature control modes (supply air, extract air or room temperature control).

The temperature measured at the sensors is compared with the setpoint temperature. The deviation between the setpoint and actual temperature causes an increased or reduced heating power. The desired control mode can be selected under Settings/Heating & Cooling.

← PHE 700

← Basic setting 1/2 →

Control type  
S-Control

Control type  
SupplyAir temp.

Type  
PHE

Unit size  
700 HW

→

← PHE 700

Control type

☐ Room temp.

☒ SupplyAir temp.

☐ ExtractAir temp.

☐

☐

☐

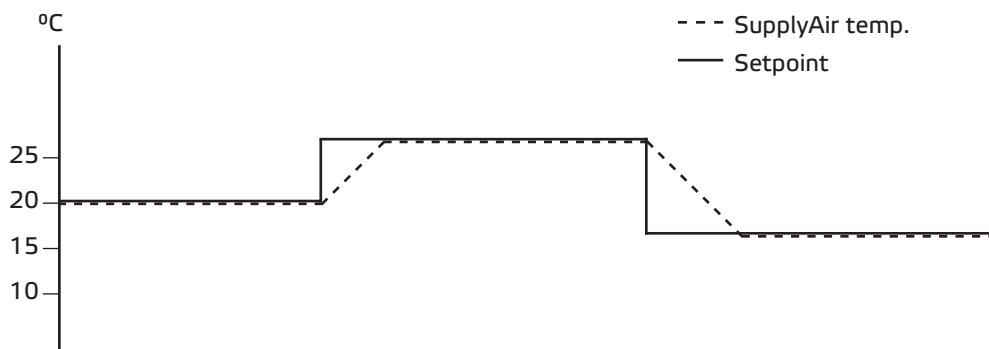
☐

☐

Save

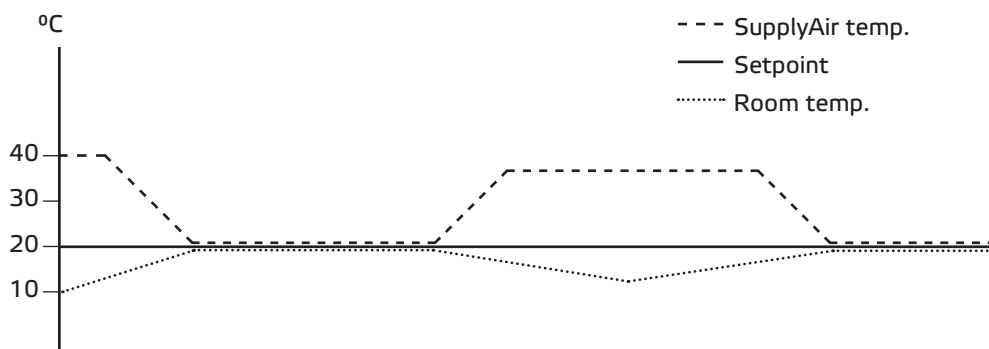
#### Supply air temperature control

External heat occurring in the room is not taken into account in the supply air temperature control. The supply air temperature is fixed.



#### Room temperature control

External heat occurring in the room is compensated by correcting the supply air temperature. The temperature sensor is integrated in the remote control unit.



## 13.4. Time and schedules

The time can be set and is maintained even in the event of an interruption in the input voltage.

**< PHE 700**

**< System 1/1 >**

Authorization Service >

Language English >

Display setting >

Time >

Device name >

Sensor Type No

→

**< PHE 700**

**Time**

Day dd . mm . yyyy  
11 . 10 . 2022

+1 +1 +1  
-1 -1 -1

Time hh : mm  
10 : 54

+1 +1  
-1 -1

Save

Schedules with up to 6 changes of mode per day - individually for 7 days of the week.

13:50

**PHE 700**

Setpoint temp. 22.0 °C

Mode Standard >

SupplyAir temp. 21.3 °C

Room temp. 20.3 °C

SupplyAir 50 %

ExtractAir 50 %

Air humidity 0.0 %

→

**< PHE 700**

Daytime timer >

☐ Active

→

**< PHE 700**

**< Monday >**

SP 1 Not Set >

SP 2 Not Set >

SP 3 Not Set >

SP 4 Not Set >

SP 5 Not Set >

SP 6 Not Set >

→

**< PHE 700**

**Switching point**

Party Not Set

Standby

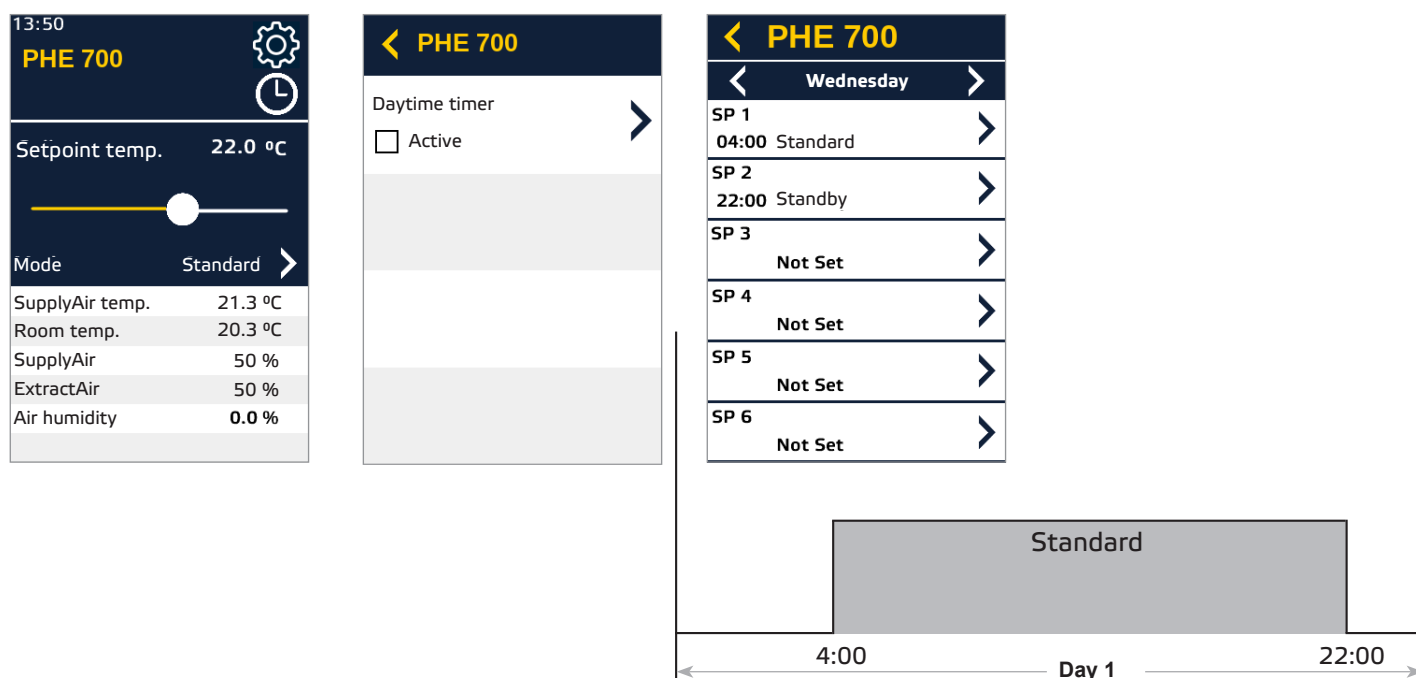
00 : 00

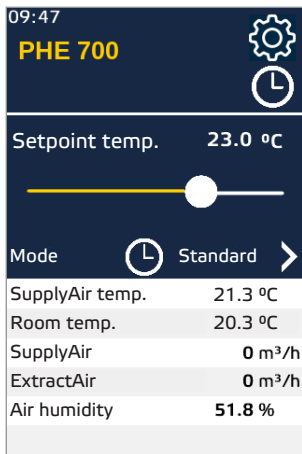
+1 +5  
-1 -5

Save

### 13.4.1. Switch on/off with schedule

Schedules can be used to switch the ventilation unit on and off at specific times.

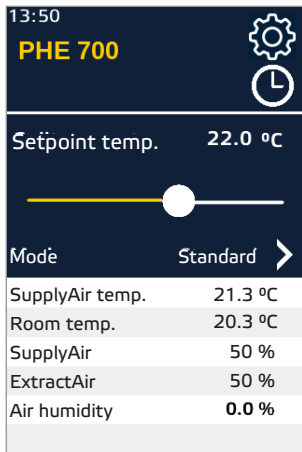




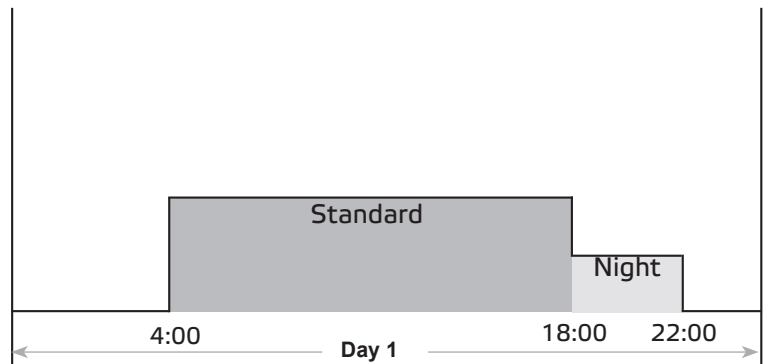
If the device mode has been changed by the timer, the clock symbol appears on the display of the remote control unit.

### 13.4.2. Night setback

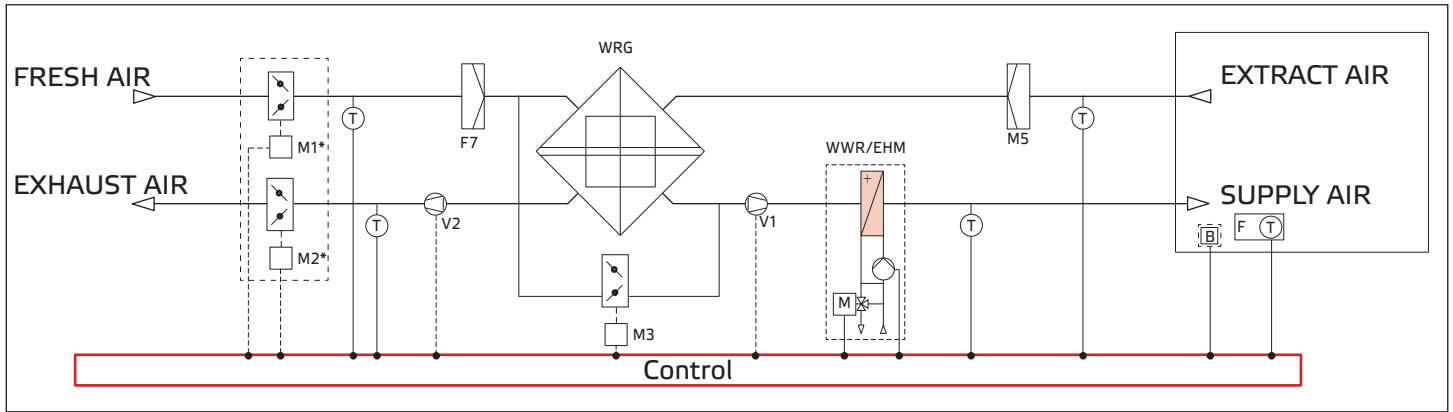
For the night setback function, the „Night“ mode can be selected in the schedules. In this, the volume flow for basic ventilation is set as the default setting. The volume flows for supply air and extract air can basically be lowered or increased. In addition, the setpoint temperature can be adjusted if required. The night cooling function is particularly suitable for energy-saving operation of the ventilation unit with reduced volume flow, or for free cooling with increased volume flow in the summer months.



| < PHE 700      |   |
|----------------|---|
| < Wednesday >  |   |
| SP 1           | > |
| 04:00 Standard | > |
| SP 2           | > |
| 18:00 Night    | > |
| SP 3           | > |
| 22:00 Standard | > |
| SP 4           | > |
| Not Set        | > |
| SP 5           | > |
| Not Set        | > |
| SP 6           | > |
| Not Set        | > |



## 13.5. Connection diagram



|          |                                                 |
|----------|-------------------------------------------------|
| M1 - M2* | Flap system drive (Accessories)                 |
| V1 - V2  | EC-fan                                          |
| M5/ F7   | Air filter Class ISO ePM10 (M5) / ISO ePM1 (F7) |
| WRG      | Heat exchanger                                  |
| M3       | Bypass Actuators Damper system                  |
| WWR*     | Warm water heating coil (Accessories)           |
| EHM*     | Electric heater (Accessories)                   |
| M        | 3-way valve with actuator                       |
| ⊙        | Temperature sensor                              |
| F ⊙      | Remote control with room temperature sensor     |
| ⊙ *      | Fire detector (Accessories)                     |

Fig. 13-2  
Connection diagram

\*Optimal depending on the type.

## 13.6. Functions

### 13.6.1. Fan error message contact

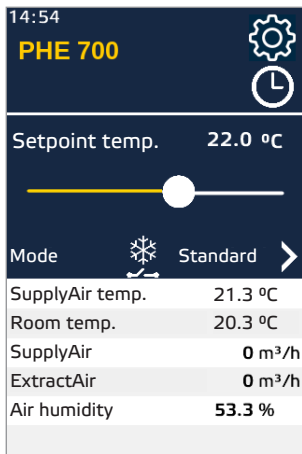
Each motor has an error message contact which is closed during fan operation. The unit switches off when the contact opens. After correction of the fault (see Fault diagnosis chart), the unit can then be restarted.

If a fault occurs regarding the fans, the device will switch off, and an error message will be displayed. To reset the fan, the electricity supply must be switched off at the main switch for at least 20 s.

### 13.6.2. Hot water coil / frost protection (For versions with PWW heating module)

The power of the heater is steplessly regulated with the heating valve. An installed heater is protected against icing by temperature monitoring or by an optional frost protection thermostat. If the supply air temperature drops below the temperature set on the anti-freeze controller, the valves close and the circulating pump runs constantly, the heating valve opens and a fault message is given. The device automatically runs „PRE-RINSING“ until heating provides the desired operation temperature. The unit restarts then automatically. If the desired operating temperature cannot be achieved after 20 min., an error message is displayed. Afterwards, the unit turns itself completely off until the fault is repaired. (see Error table F7)





When the device is in pre-rinse mode, the snowflake and lock symbols appear on the display of the remote control unit. The pre-rinse mode is activated if the contact for the frost protection thermostat is open or if the temperature of the supply air has fallen below the frost protection temperature.

### 13.6.3. Safety temperature limiter for types with electrical heating coil



- Electricity warning (hazardous voltage)!
  - » Failure to observe the hazard may result in death, injury or damage to property.
  - Before performing any work on conductive parts, always disconnect the unit completely from the electricity supply and make sure that it cannot be switched back on again.

Depending on the type and in case of a fault, the safety temperature limiter (STL) switches off the electrical heating coil when the temperature reaches 75 °C. Once the safety temperature limiter has been tripped, it has to be reset manually (see Fig. 13-3/4). Before resetting the STL and reinstalling the electrical heating coil, the cause for tripping of the STL needs troubleshooting and debugging.

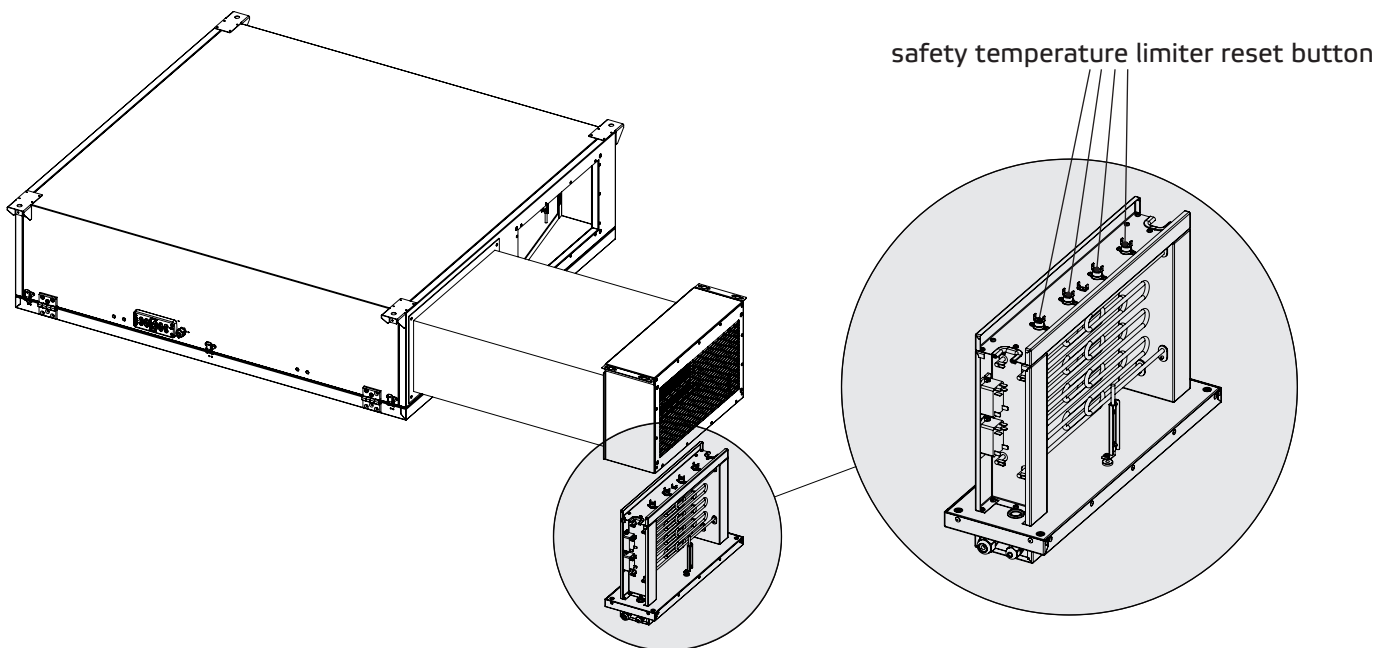


Fig. 13-3  
Position reset button STL

| Product name | Safety temperature limiter |
|--------------|----------------------------|
| PHE 500 F C  | 2                          |
| PHE 700 F C  | 2                          |
| PHE 1100 F C | 4                          |



**CAUTION:** Tripping of the STL indicates no direct error message. (Possibly in conjunction with error F18.)

Possible cause for tripping of the STL:

- Regulation fault
- Relay fault
- Supply air fan failure
- Air duct is blocked

### 13.6.4. For version with electric heating module (EHM)

#### Air connections

When installing a heating module, the following must be observed:

- For the duct diameter transition, accessories are used.
- Fasten transition piece to the housing (Rotoline) with 4 hexagon-head bolts (M8x20).
- The heating module must maintain a minimum distance (L) of between 0.50m and 4.00m from the air handling unit.

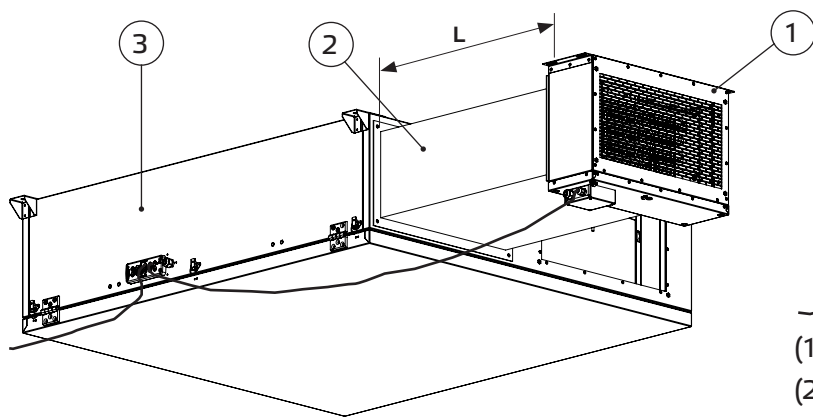
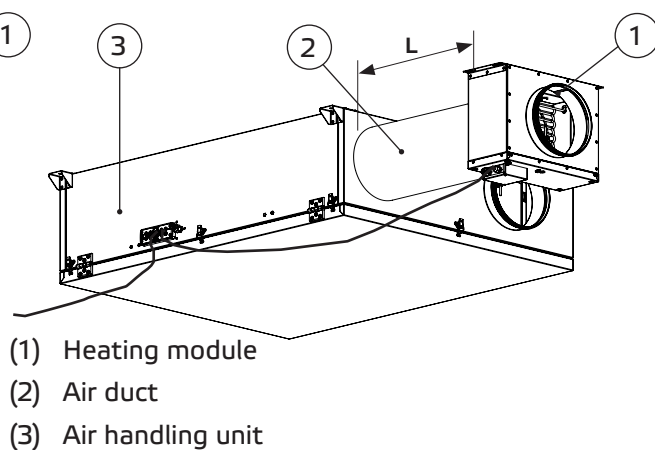


Fig. 13-5  
Connection EHM to device



## Electrical connection



- Electricity warning (hazardous voltage)!
  - » Failure to observe the hazard may result in death, injury or damage to property.
  - Before performing any work on conductive parts, always disconnect the unit completely from the electricity supply and make sure that it cannot be switched back on again.

The electrical installation may only be carried out by qualified electricians in compliance with the installation, operating and maintenance instructions and the applicable national regulations, standards and guidelines:

- ISO, DIN, EN and VDE specifications, including all safety requirements.
- Technical connection conditions.
- Safety at work and accident prevention requirements.

**This list does not claim to be complete.**

**Requirements should be applied under one's own personal responsibility.**

- The electrical connections must be made as shown in the corresponding wiring diagrams and terminal diagrams.
- Connect the supply air sensor of the EHM according to the wiring diagram.
- The type of cable, size of cable and method of laying should be determined by an authorized electrician.
- Low and extra-low voltage cables should be laid separately.
- If no repair switch is integrated in the device, an all-pole mains disconnecting switch with min. 3 mm contact opening must be provided in the supply line.
- Use a separate cable inlet for each cable.
- Any cable inlets that are not used must be sealed so that it is airtight.
- All cable inlets must have strain relief.
- Create equipotential bonding between the unit and the duct system.
- Check all protective measures after the electrical connection work (earthing resistance, etc.)

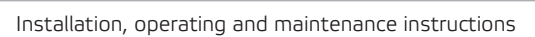
### Connection compartment / Connections on the unit

The connection compartment is inside the unit. You must first remove the housing cover and the terminal box cover. Each lead that is connected must pass through a separate cable gland. The cable glands can be on either the left or the right side of the unit. Use the cable glands and fittings supplied for this purpose.

### Unit supply cable

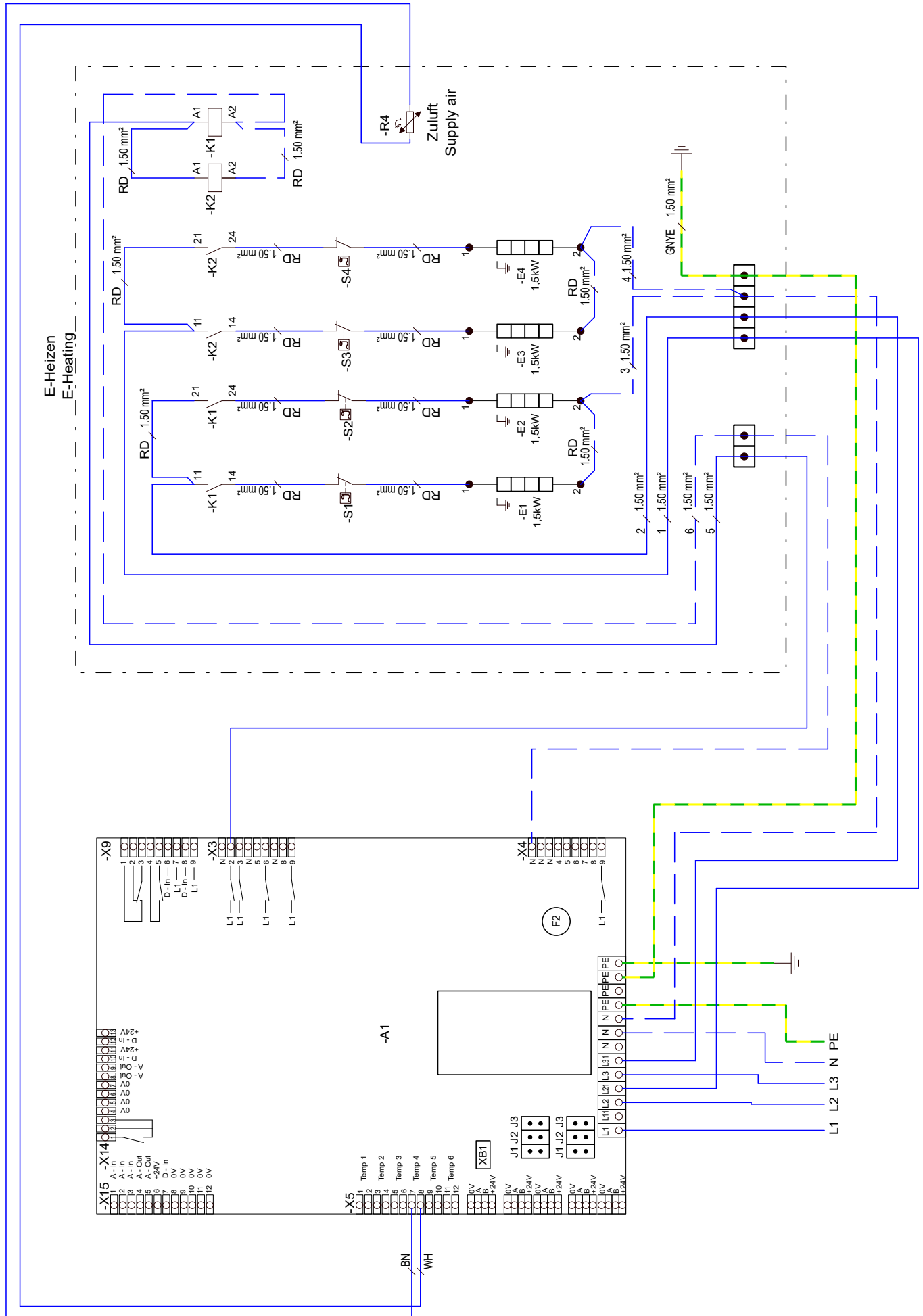
Connect the mains supply cable as shown in the wiring diagram. For the dimensioning of the line, observe the unit's rating plate and the relevant guidelines. Suitable fuse protection should be provided. A qualified electrician must determine the necessary fuse requirements.

**Low voltage control leads must be installed so that they are separated from mains leads.**



## Wiring diagram Electric heating

PHE 1100 F C



## Commissioning



- Electricity warning (hazardous voltage)!

- » Failure to observe the hazard may result in death, injury or damage to property.

- Before performing any work on conductive parts, always disconnect the unit completely from the electricity supply and make sure that it cannot be switched back on again.



- Caution! Burning hazard.

- » Failure to observe the hazard may result in personal injury and/or damage to property.

- Do not touch the surface until the motor and heater have cooled.

Commissioning by trained technical personnel may only be performed when any risk has been ruled out. The following checks should be performed in accordance with the installation and operating manual and the regulations in force:

- Correctly sealed installation of the unit and duct system.
- Check the duct system, unit and medium lines, if present, remove any foreign bodies if necessary.
- The intake opening and inflow into the unit must be clear.
- Check all mechanical and electrical protection measures (e.g. earthing).
- Voltage, frequency and type of current must correspond with the rating plate.
- Check all electrical connections and wiring.
- Check any electrical, switching, safety and control devices connected.
- The unit may not be switched on when the housing is open.

### 13.6.5. For versions with PWW heating module

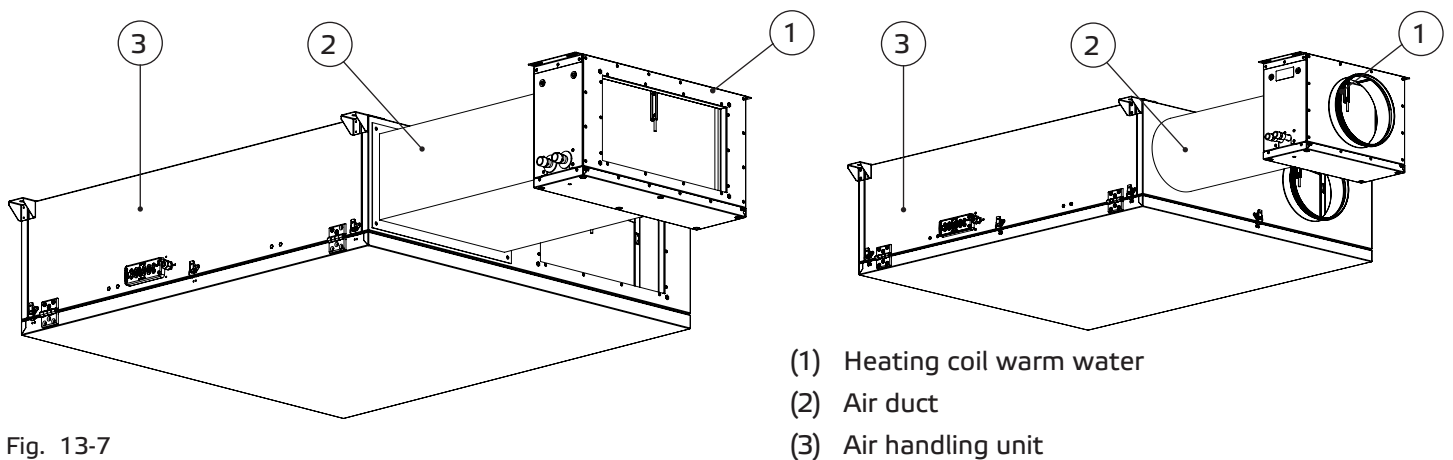


Fig. 13-7  
Connection PWW heating module to the unit

- Connect the supply air sensor of the PWW heating module according to the wiring diagram.

## 14. MAINTENANCE AND CLEANING



**Servicing, troubleshooting and cleaning may only be performed by specialised personnel in accordance with this installation and operating manual and the regulations in force.**



- Make sure that no connections or components are loosened unless the device is disconnected from the mains. Make sure that the equipment cannot be switched back on again.



- Individual components must not be interchanged. For example, the components intended for one product may not be used for other products.



- The regular maintenance and care of our devices is designed to ensure proper function, value retention and avoidance of damage. Keep a maintenance log.

- Perform the specified maintenance on the unit at the specified intervals.

Our devices require little maintenance when operated properly.

The following work should be performed at regular intervals, in accordance with health and safety regulations:

- Check the operation of the control system and safety devices.
- Check electrical connections and wiring for damage.
- Remove any dirt from the fan impeller or impellers and from inside the fan housing in order to prevent any unbalance or reduction in output.
  - Do not use aggressive or easily flammable products for cleaning (impellers/housing).
  - Preferably only water (not flowing water) or mild soapsuds should be used.
  - The impeller should be cleaned with a cloth or brush.
  - Never use a high-pressure cleaner.
  - Balancing clips must not be moved or removed.
  - The impeller and fittings must not be damaged in any way.
- Check the operation of the bearing with a visual inspection and by checking running noise.
- Check the unit for leaks on the air side.
- Check the correct running of the counter cross-flow heat exchanger.

Before putting the unit back into operation after maintenance and servicing work, carry out a visual inspection as described in section 11. and 12.

## 14.1. Open the housing cover

Option 1: Fold open the housing cover

1. Open all tension locks
2. The housing cover fold open at the hinges

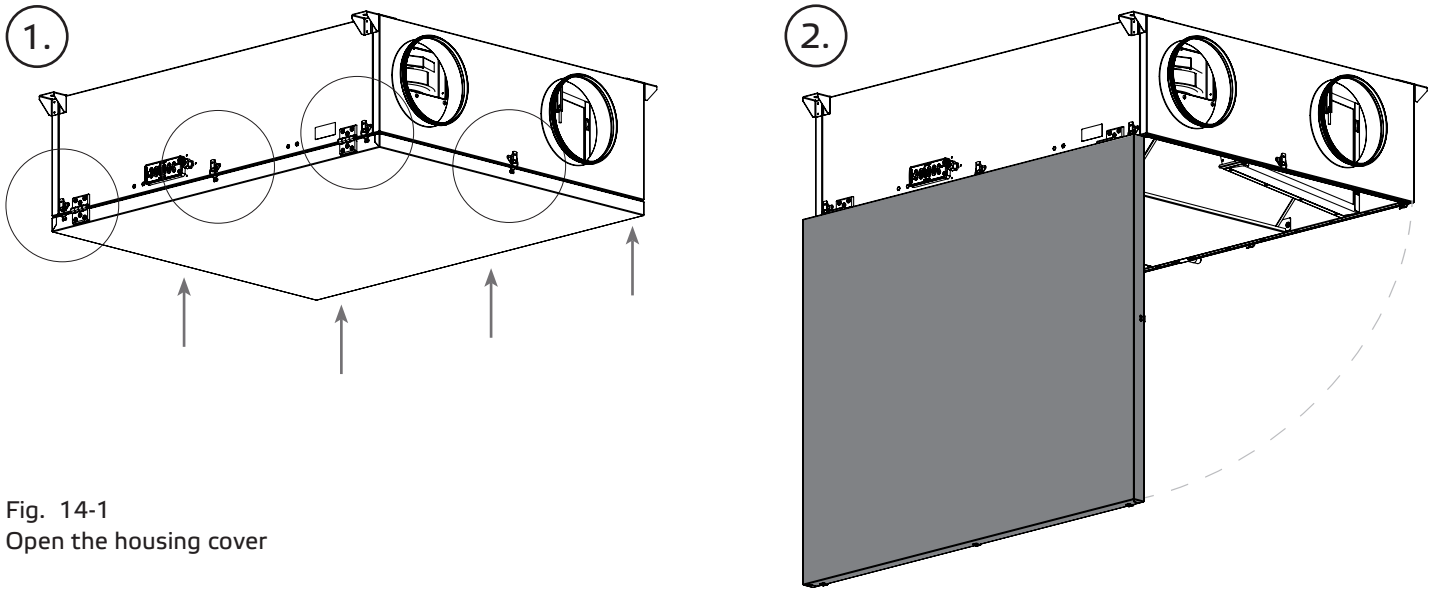


Fig. 14-1  
Open the housing cover

Option 2: Remove the housing cover completely

1. Remove hinges completely (see detail)
2. Hold the housing cover firmly and open all tension locks (2 people may be required)
3. Remove the housing cover

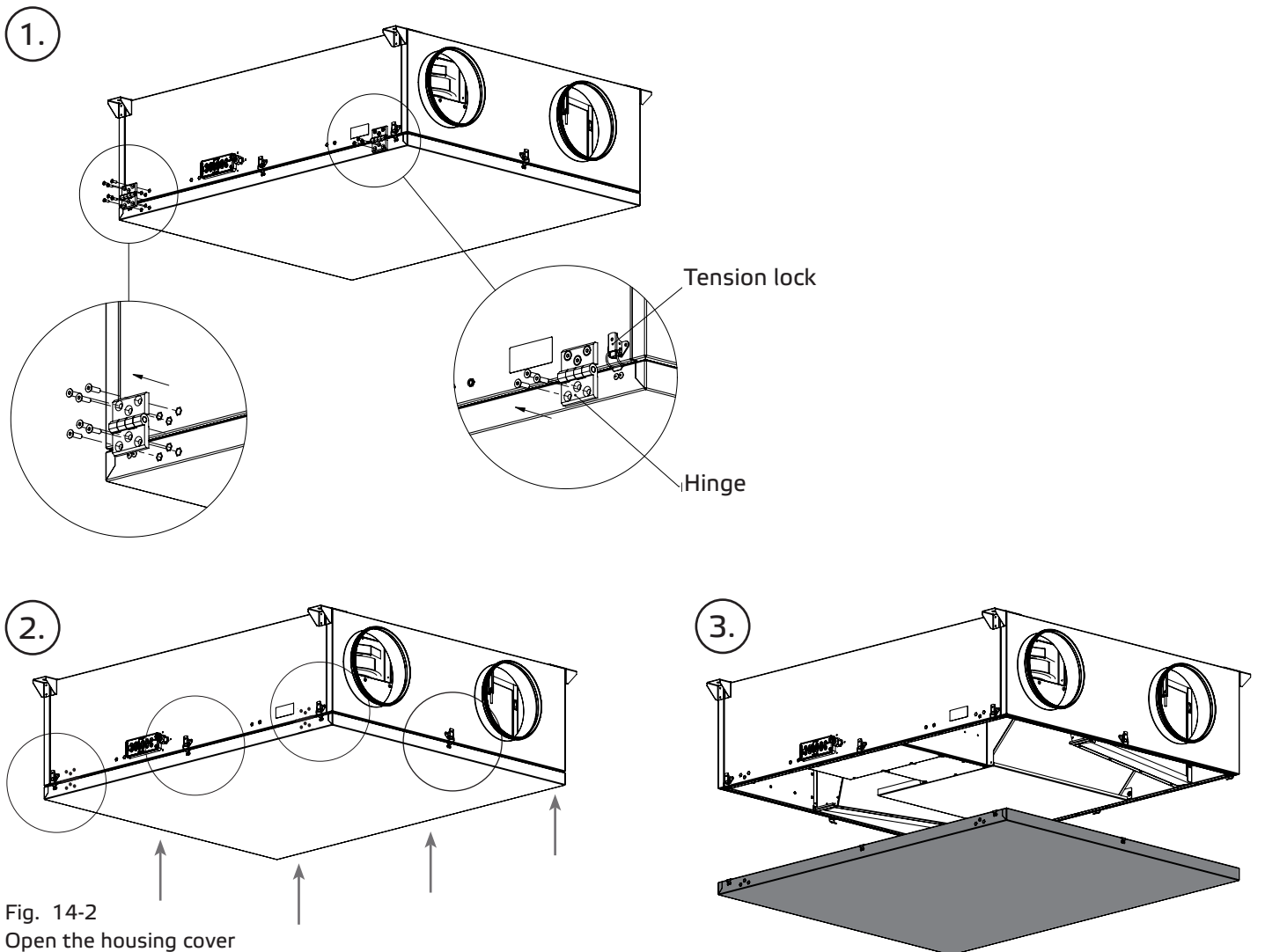


Fig. 14-2  
Open the housing cover



### Option 3: Slide on the housing cover

1. Remove hinges completely (see detail), Mount the sliding door bracket from the accessory pack
2. Open all tension locks
3. Slide on the housing cover and replace the filter

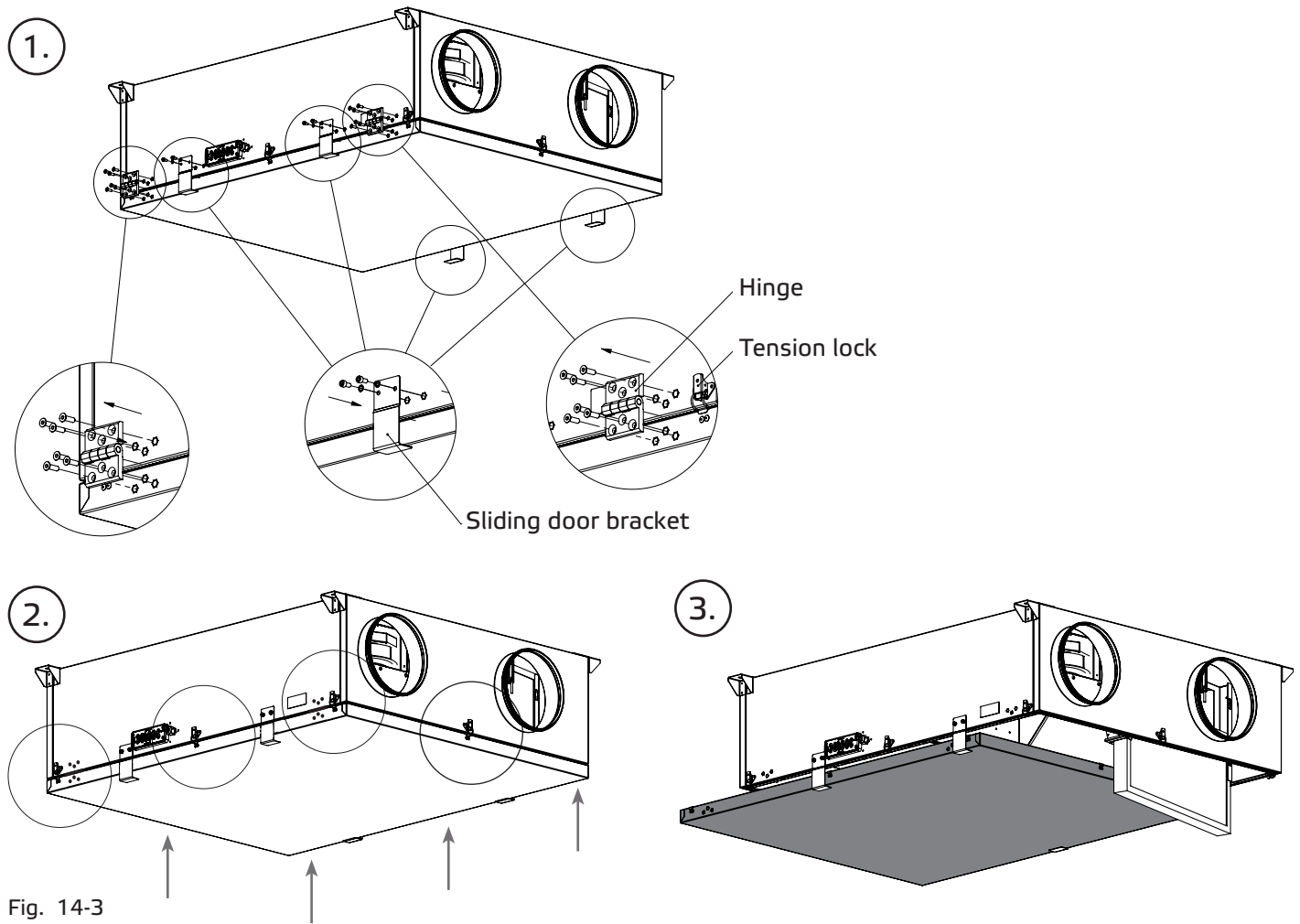


Fig. 14-3  
Open the housing cover

## 14.2. Counter cross-flow heat exchanger

Counter cross-flow heat exchangers generally require no maintenance. For hygienic reasons, cleaning of the exchanger is occasionally recommended. Damage to the blades should always be avoided. Use warm, flowing water for cleaning.

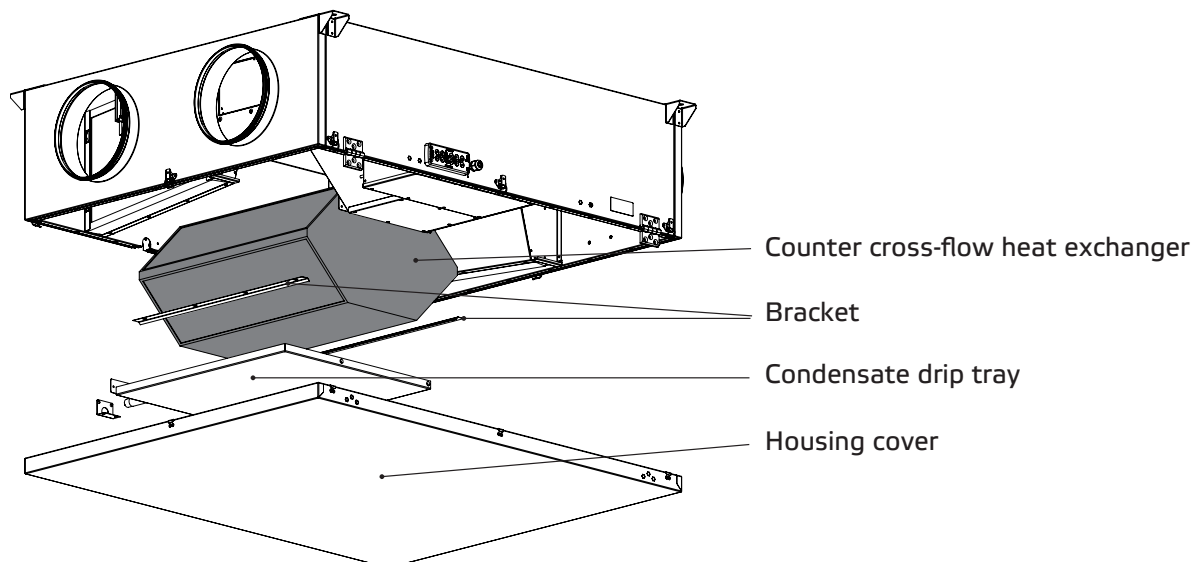


Fig. 14-4  
Demounting counter cross-flow heat exchanger

### 14.3. Air filters

To ensure that the air filter is changed correctly, proceed as follows:

- The air filter can be removed without the use of tools.
- The air filter should be replaced if severely clogged.
- When changing the filter, make sure that the filter frame is sitting correctly on the guide rail in the device.

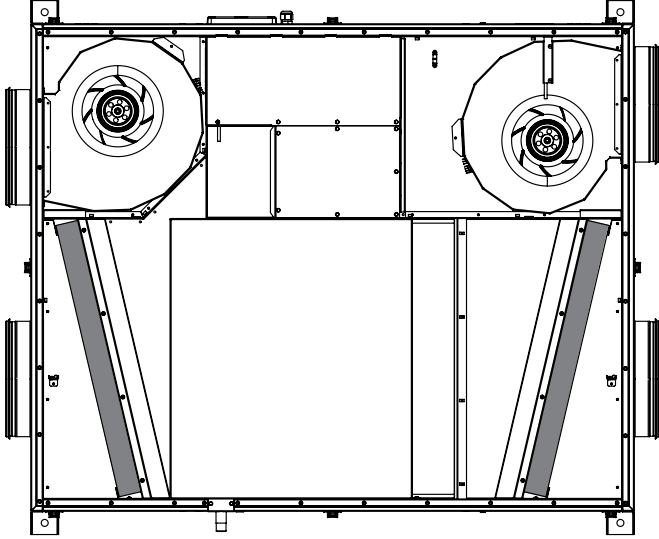


Fig. 14-5  
Position air filter

### 14.4. Changing the battery

Change the battery as follows:

- Remove the control cable (1) from the control unit.
- Open the control unit by removing the cover (2).
- The holder (3) for the battery is on the board. Take the battery out and replace it with a new one, as shown in the image.
- The control unit can now be closed again and the control cable connected again.
- You only have to reset the current time. The battery symbol disappears from the status display. Your control unit is fully functional again.

Note: requires a 3 V lithium CR 1220 button cell battery.

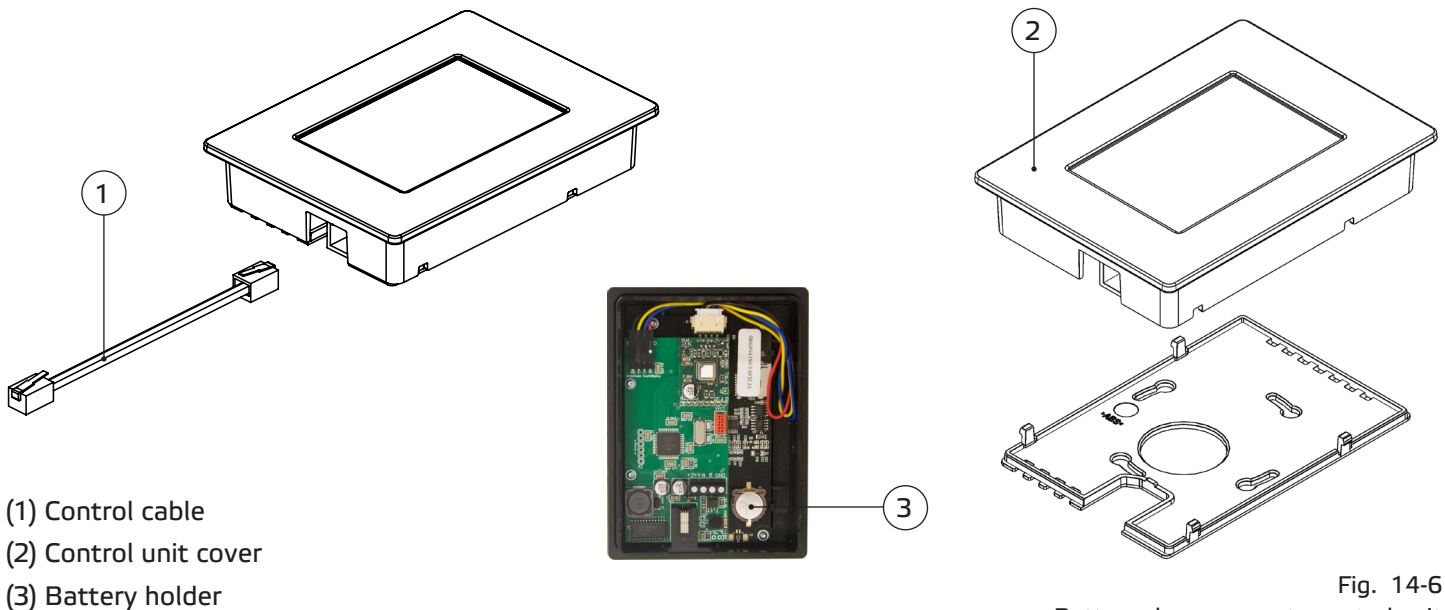


Fig. 14-6  
Battery change remote control unit

## 15. MODBUS COMMUNICATION INTERFACE

### 15.1. Wiring diagram

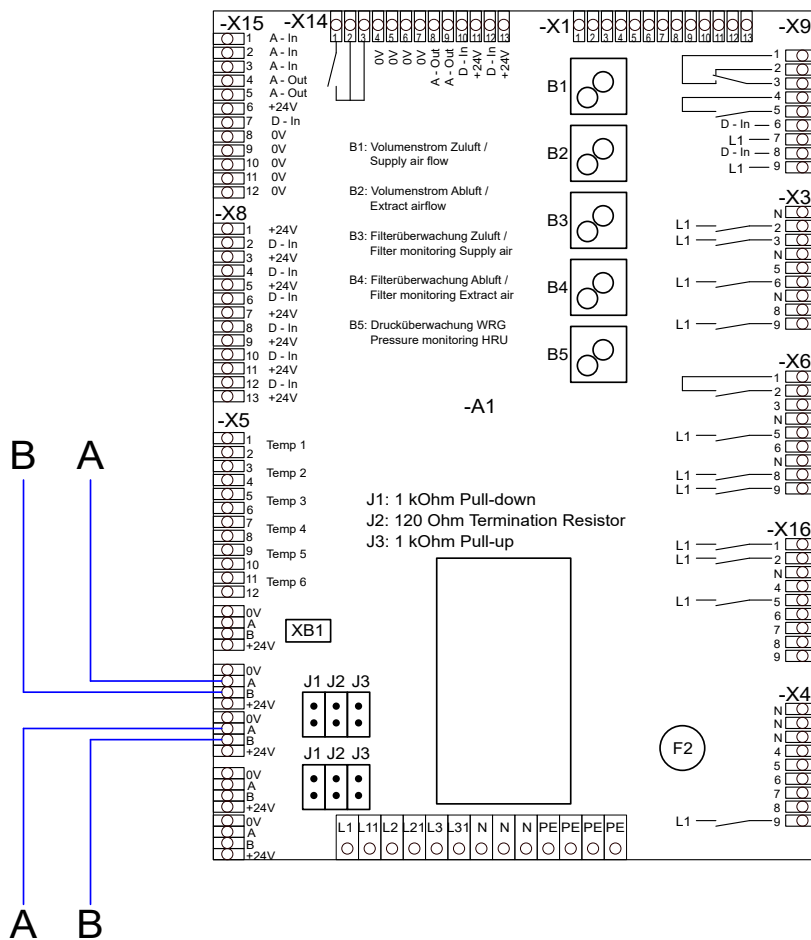


Fig. 15-1  
Connection diagram ModBus

### 15.2. Interface information

The device works as a Modbus RTU slave. The interface configuration is 8N1, 9600Baud, slave address 1. The address and the baud rate can be set via parameters P7 and P8. As bus line is recommended a twisted pair data cable with 120 Ohm impedance.

### 15.3. Functions implemented

| Function code | Name                    | Description                                  |
|---------------|-------------------------|----------------------------------------------|
| 03 Hex        | Read Hold Register      | Read device parameter                        |
| 04 Hex        | Read Input Register     | Read current value                           |
| 06 Hex        | Write Single Register   | Write device parameter word by word          |
| 10 Hex        | Write Multiple Register | Write several device parameters word by word |

| Function code | Name                   | Sub-function | Description                    |
|---------------|------------------------|--------------|--------------------------------|
| 08 Hex        | Return Query Dat       | 00           | Send the received message back |
| 08 Hex        | Restart Communications | 01           | Restart communication          |
| 08 Hex        | Force Listen Only Mode | 04           | Switch to listen-only mode     |

## 15.4. Parameter table

| Register address | Protocol address | Parameter name                   |          | Value range                                                                   | Data type | Authority |
|------------------|------------------|----------------------------------|----------|-------------------------------------------------------------------------------|-----------|-----------|
| 40101            | 100              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40110            | 109              | Operating mode                   |          | 0 - 5 (0 = Standby, 1 = Eco, 2 = Night, 3 = Standard, 4 = Comfort, 5 = Party) | integer   | R/W       |
| 40111            | 110              | Set-point temperature 1          | Eco      | Parameter 232 - 233                                                           | integer   | R/W       |
| 40112            | 111              | Set-point temperature 2          | Night    | Parameter 232 - 233                                                           | integer   | R/W       |
| 40113            | 112              | Set-point temperature 3          | Standard | Parameter 232 - 233                                                           | integer   | R/W       |
| 40114            | 113              | Set-point temperature 4          | Comfort  | Parameter 232 - 233                                                           | integer   | R/W       |
| 40115            | 114              | Set-point temperature 5          | Party    | Parameter 232 - 233                                                           | integer   | R/W       |
| 40116            | 115              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40117            | 116              | Hysteresis 1                     | Eco      | Parameter 234 - 235                                                           | integer   | R/W       |
| 40118            | 117              | Hysteresis 2                     | Night    | Parameter 234 - 235                                                           | integer   | R/W       |
| 40119            | 118              | Hysteresis 3                     | Standard | Parameter 234 - 235                                                           | integer   | R/W       |
| 40120            | 119              | Hysteresis 4                     | Comfort  | Parameter 234 - 235                                                           | integer   | R/W       |
| 40121            | 120              | Hysteresis 5                     | Party    | Parameter 234 - 235                                                           | integer   | R/W       |
| 40122            | 121              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40123            | 122              | Set point humidity 1             | Eco      | 40 - 80%                                                                      | integer   | R/W       |
| 40124            | 123              | Set point humidity 2             | Night    | 40 - 80%                                                                      | integer   | R/W       |
| 40125            | 124              | Set point humidity 3             | Standard | 40 - 80%                                                                      | integer   | R/W       |
| 40126            | 125              | Set point humidity 4             | Comfort  | 40 - 80%                                                                      | integer   | R/W       |
| 40127            | 126              | Set point humidity 5             | Party    | 40 - 80%                                                                      | integer   | R/W       |
| 40128            | 127              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40129            | 128              | Target air quality 1             | Eco      | 600 - 1600 PPM                                                                | integer   | R/W       |
| 40130            | 129              | Target air quality 2             | Night    | 600 - 1600 PPM                                                                | integer   | R/W       |
| 40131            | 130              | Target air quality 3             | Standard | 600 - 1600 PPM                                                                | integer   | R/W       |
| 40132            | 131              | Target air quality 4             | Comfort  | 600 - 1600 PPM                                                                | integer   | R/W       |
| 40133            | 132              | Target air quality 5             | Party    | 600 - 1600 PPM                                                                | integer   | R/W       |
| 40134            | 133              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40147            | 146              | Set point pressure supply air 1  | Eco      | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40148            | 147              | Set point pressure supply air 2  | Night    | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40149            | 148              | Set point pressure supply air 3  | Standard | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40150            | 149              | Set point pressure supply air 4  | Comfort  | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40151            | 150              | Set point pressure supply air 5  | Party    | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40152            | 151              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40153            | 152              | Set point pressure extract air 1 | Eco      | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40154            | 153              | Set point pressure extract air 2 | Night    | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40155            | 154              | Set point pressure extract air 3 | Standard | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40156            | 155              | Set point pressure extract air 4 | Comfort  | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40157            | 156              | Set point pressure extract air 5 | Party    | 25 - 250 Pa                                                                   | integer   | R/W       |
| 40158            | 157              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40159            | 158              | Target percent supply air 1      | Eco      | 25 - 100%                                                                     | integer   | R/W       |
| 40160            | 159              | Target percent supply air 2      | Night    | 25 - 100%                                                                     | integer   | R/W       |
| 40161            | 160              | Target percent supply air 3      | Standard | 25 - 100%                                                                     | integer   | R/W       |
| 40162            | 161              | Target percent supply air 4      | Comfort  | 25 - 100%                                                                     | integer   | R/W       |
| 40163            | 162              | Target percent supply air 5      | Party    | 25 - 100%                                                                     | integer   | R/W       |
| 40164            | 163              | Reserved                         |          |                                                                               | integer   | R/W       |
| 40165            | 164              | Target percent extract air 1     | Eco      | 25 - 100%                                                                     | integer   | R/W       |
| 40166            | 165              | Target percent extract air 2     | Night    | 25 - 100%                                                                     | integer   | R/W       |

| Register address | Protocol address | Parameter name               |          | Value range                                                                                                                  |                                | Data type | Authority |
|------------------|------------------|------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------|-----------|
| 40167            | 166              | Target percent extract air 3 | Standard | 25 - 100%                                                                                                                    |                                | integer   | R/W       |
| 40168            | 167              | Target percent extract air 4 | Comfort  | 25 - 100%                                                                                                                    |                                | integer   | R/W       |
| 40169            | 168              | Target percent extract air 5 | Party    | 25 - 100%                                                                                                                    |                                | integer   | R/W       |
| 40170            | 169              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40171            | 170              | Enable heating 1             | Eco      | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40172            | 171              | Enable heating 2             | Night    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40173            | 172              | Enable heating 3             | Standard | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40174            | 173              | Enable heating 4             | Comfort  | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40175            | 174              | Enable heating 5             | Party    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40176            | 175              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40177            | 176              | Enable cooling 1             | Eco      | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40178            | 177              | Enable cooling 2             | Night    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40179            | 178              | Enable cooling 3             | Standard | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40180            | 179              | Enable cooling 4             | Comfort  | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40181            | 180              | Enable cooling 5             | Party    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40182            | 181              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40183            | 182              | Enable free cooling 1        | Eco      | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40184            | 183              | Enable free cooling 2        | Night    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40185            | 184              | Enable free cooling 3        | Standard | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40186            | 185              | Enable free cooling 4        | Comfort  | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40187            | 186              | Enable free cooling 5        | Party    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40188            | 187              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40189            | 188              | Enable humidity control 1    | Eco      | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40190            | 189              | Enable humidity control 2    | Night    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40191            | 190              | Enable humidity control 3    | Standard | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40192            | 191              | Enable humidity control 4    | Comfort  | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40193            | 192              | Enable humidity control 5    | Party    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40194            | 192              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40195            | 194              | Enable LQ control 1          | Eco      | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40196            | 195              | Enable LQ control 2          | Night    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40197            | 196              | Enable LQ control 3          | Standard | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40198            | 197              | Enable LQ control 4          | Comfort  | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40199            | 198              | Enable LQ control 5          | Party    | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40200            | 199              | Reserved                     |          |                                                                                                                              |                                | integer   | R/W       |
| 40214            | 213              | Automatic restart enable     |          | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40215            | 214              | Automatic restart mode       |          | 0 - 5 (0 = Mode as before, 1 = Eco, 2 = Night, 3 = Standard, 4 = Comfort, 5 = Party)                                         |                                | integer   | R/W       |
| 40233            | 232              | Min. set point temp.         |          | 0 - 200                                                                                                                      | corresponds to 0°C - 20,0°C    | integer   | R/W       |
| 40234            | 233              | Max. set point temp.         |          | 200 - 400                                                                                                                    | corresponds to 20,0°C - 40,0°C | integer   | R/W       |
| 40235            | 234              | Min. hysteresis              |          | 0 - 25                                                                                                                       | corresponds to 0°C - 2,5°C     | integer   | R/W       |
| 40236            | 235              | Max. hysteresis              |          | 25 - 100                                                                                                                     | corresponds to 2,5°C - 10,0°C  | integer   | R/W       |
| 40237            | 236              | Auto operation               |          | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40238            | 237              | Auto Operation Mode          |          | see table Auto Operation Mode                                                                                                |                                | integer   | R/W       |
| 40239            | 238              | external control enable      |          | 0 - 1                                                                                                                        | 0 = OFF, 1 = ON                | integer   | R/W       |
| 40240            | 239              | external regulation min      |          | see table volumetric flow range                                                                                              |                                | integer   | R/W       |
| 40241            | 240              | external regulation max      |          | see table volumetric flow range                                                                                              |                                | integer   | R/W       |
| 40242            | 241              | external control mode        |          | 0 - 5 (0 = Mode manually selectable, 1 = fixed Eco, 2 = fixed Night, 3 = fixed Standard, 4 = fixed Comfort, 5 = fixed Party) |                                | integer   | R/W       |

| Register address | Protocol address | Parameter name                     | Value range                                                                                                   | Data type | Authority |
|------------------|------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------|-----------|
| 40243            | 242              | LQ extract air sensor enable       | 0 - 1    0 = OFF, 1 = ON                                                                                      | integer   | R/W       |
| 40244            | 243              | Min sensor value                   | 0 - 500 PPM                                                                                                   | integer   | R/W       |
| 40245            | 244              | Max sensor value                   | 2000 - 5000 PPM                                                                                               | integer   | R/W       |
| 40251            | 250              | Extract air humidity sensor enable | 0 - 1    0 = OFF, 1 = ON                                                                                      | integer   | R/W       |
| 40252            | 251              | Min sensor value                   | 0 - 20 %                                                                                                      | integer   | R/W       |
| 40253            | 252              | Max sensor value                   | 60 - 100 %                                                                                                    | integer   | R/W       |
| 40269            | 268              | Motion detector enable             | 0 - 1    0 = OFF, 1 = ON                                                                                      | integer   | R/W       |
| 40270            | 269              | Motion detector mode               | 0 - 4 (0 = Eco, 1 = Night, 2 = Standard, 3 = Comfort, 4 = Party)                                              | integer   | R/W       |
| 40271            | 270              | Motion detector functionality      | 0 - 1 (0 = Only active when unit is running, 1 = Always active)                                               | integer   | R/W       |
| 40272            | 271              | Motion detector overrun time       | 0 - 60 min                                                                                                    | integer   | R/W       |
| 40273            | 272              | Modbus address                     | 1 - 240                                                                                                       | integer   | R/W       |
| 40274            | 273              | Modbus baud rate                   | 0 - 4 (0 = 2400, 1 = 4800, 2 = 9600, 3 = 14400, 4 = 19200)                                                    | integer   | R/W       |
| 40275            | 274              | Modbus parity                      | 0 - 3 (0 = 8N1, 1 = 8N2, 2 = 8E1, 3 = 8O1)                                                                    | integer   | R/W       |
| 40276            | 275              | Night cooling enable               | 0 - 1    0 = OFF, 1 = ON                                                                                      | integer   | R/W       |
| 40279            | 278              | Night cooling set temp             | Parameter 232 - 233                                                                                           | integer   | R/W       |
| 40280            | 279              | Night cooling supply air volume    | see table volumetric flow range                                                                               | integer   | R/W       |
| 40281            | 280              | Night cooling extract air volume   | see table volumetric flow range                                                                               | integer   | R/W       |
| 40282            | 281              | Night cooling control mode         | 0 - 1 (0 = Room temperature control, 1 = Extract air temperature control)                                     | integer   | R/W       |
| 40284            | 283              | Outdoor air sensor enable          | 0 - 1    0 = OFF, 1 = ON                                                                                      | integer   | R/W       |
| 40290            | 289              | Fan control type                   | 0 - 4 (0 = S-Control, 1 = V-Control, 2 = P-control, 3 = PV-Control SUP, 4 = PV-Control ETA)                   | integer   | R/W       |
| 40303            | 302              | Temperature control mode           | 0 - 2 (0 = Room temperature control, 1 = Supply air temperature control, 2 = Extract air temperature control) | integer   | R/W       |
| 40305            | 304              | Control heating and cooling coils  | see table Control heating and cooling coils                                                                   | integer   | R/W       |
| 40310            | 309              | Pre-rinsing time                   | 0 - 3000 corresponds to 0 - 300 sec                                                                           | integer   | R/W       |
| 40311            | 310              | P-share heating                    | 5 - 20                                                                                                        | integer   | R/W       |
| 40312            | 311              | I-share heating                    | 5 - 20                                                                                                        | integer   | R/W       |
| 40313            | 312              | Max temp heating                   | 350 - 500 corresponds to 35,0°C - 50,0°C                                                                      | integer   | R/W       |
| 40317            | 316              | P-share cooling                    | 5 - 20                                                                                                        | integer   | R/W       |
| 40318            | 317              | I-share cooling                    | 5 - 20                                                                                                        | integer   | R/W       |
| 40319            | 318              | Min temp cooling                   | 0 - 200 corresponds to 0,0°C - 20,0°C                                                                         | integer   | R/W       |
| 40320            | 319              | Temperature correction supply air  | -50 - 50 corresponds to -5,0°C - 5,0°C                                                                        | integer   | R/W       |
| 40321            | 320              | Temperature correction extract air | -50 - 50 corresponds to -5,0°C - 5,0°C                                                                        | integer   | R/W       |
| 40322            | 321              | Temperature correction room air    | -50 - 50 corresponds to -5,0°C - 5,0°C                                                                        | integer   | R/W       |
| 40341            | 340              | Parameter_Save                     | 12439 = Save parameter, value changes to 0 after saving                                                       | integer   | R/W       |
| 40342            | 341              | Control word1                      | 32 = Clear fault, Value change after saving under 0                                                           | integer   | R/W       |
| 40401            | 400              | Set 1 SP1                          | 0000 - 2359 corresponds to 00:00 h - 23:59 h                                                                  | integer   | R/W       |
| 40402            | 401              | Set 1 SP2                          | "                                                                                                             | integer   | R/W       |
| 40403            | 402              | Set 1 SP3                          | "                                                                                                             | integer   | R/W       |
| 40404            | 403              | Set 1 SP4                          | "                                                                                                             | integer   | R/W       |
| 40405            | 404              | Set 1 SP5                          | "                                                                                                             | integer   | R/W       |
| 40406            | 405              | Set 1 SP6                          | "                                                                                                             | integer   | R/W       |
| 40407            | 406              | Set 2 SP1                          | "                                                                                                             | integer   | R/W       |
| 40408            | 407              | Set 2 SP2                          | "                                                                                                             | integer   | R/W       |
| 40409            | 408              | Set 2 SP3                          | "                                                                                                             | integer   | R/W       |



| Register address | Protocol address | Parameter name   | Value range                                                                                                             | Data type | Authority |
|------------------|------------------|------------------|-------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| 40410            | 409              | Set 2 SP4        | "                                                                                                                       | integer   | R/W       |
| 40411            | 410              | Set 2 SP5        | "                                                                                                                       | integer   | R/W       |
| 40412            | 411              | Set 2 SP6        | "                                                                                                                       | integer   | R/W       |
| 40413            | 412              | Set 3 SP1        | "                                                                                                                       | integer   | R/W       |
| 40414            | 413              | Set 3 SP2        | "                                                                                                                       | integer   | R/W       |
| 40415            | 414              | Set 3 SP3        | "                                                                                                                       | integer   | R/W       |
| 40416            | 415              | Set 3 SP4        | "                                                                                                                       | integer   | R/W       |
| 40417            | 416              | Set 3 SP5        | "                                                                                                                       | integer   | R/W       |
| 40418            | 417              | Set 3 SP6        | "                                                                                                                       | integer   | R/W       |
| 40419            | 418              | Set 4 SP1        | "                                                                                                                       | integer   | R/W       |
| 40420            | 419              | Set 4 SP2        | "                                                                                                                       | integer   | R/W       |
| 40421            | 420              | Set 4 SP3        | "                                                                                                                       | integer   | R/W       |
| 40422            | 421              | Set 4 SP4        | "                                                                                                                       | integer   | R/W       |
| 40423            | 422              | Set 4 SP5        | "                                                                                                                       | integer   | R/W       |
| 40424            | 423              | Set 4 SP6        | "                                                                                                                       | integer   | R/W       |
| 40425            | 424              | Set 5 SP1        | "                                                                                                                       | integer   | R/W       |
| 40426            | 425              | Set 5 SP2        | "                                                                                                                       | integer   | R/W       |
| 40427            | 426              | Set 5 SP3        | "                                                                                                                       | integer   | R/W       |
| 40428            | 427              | Set 5 SP4        | "                                                                                                                       | integer   | R/W       |
| 40429            | 428              | Set 5 SP5        | "                                                                                                                       | integer   | R/W       |
| 40430            | 429              | Set 5 SP6        | "                                                                                                                       | integer   | R/W       |
| 40431            | 430              | Set 6 SP1        | "                                                                                                                       | integer   | R/W       |
| 40432            | 431              | Set 6 SP2        | "                                                                                                                       | integer   | R/W       |
| 40433            | 432              | Set 6 SP3        | "                                                                                                                       | integer   | R/W       |
| 40434            | 433              | Set 6 SP4        | "                                                                                                                       | integer   | R/W       |
| 40435            | 434              | Set 6 SP5        | "                                                                                                                       | integer   | R/W       |
| 40436            | 435              | Set 6 SP6        | "                                                                                                                       | integer   | R/W       |
| 40437            | 436              | Set 7 SP1        | "                                                                                                                       | integer   | R/W       |
| 40438            | 437              | Set 7 SP2        | "                                                                                                                       | integer   | R/W       |
| 40439            | 438              | Set 7 SP3        | "                                                                                                                       | integer   | R/W       |
| 40440            | 439              | Set 7 SP4        | "                                                                                                                       | integer   | R/W       |
| 40441            | 440              | Set 7 SP5        | "                                                                                                                       | integer   | R/W       |
| 40442            | 441              | Set 7 SP6        | "                                                                                                                       | integer   | R/W       |
| 40457            | 456              | Reserved         |                                                                                                                         | integer   | R/W       |
| 40491            | 490              | Day timer On Off | 0 = Timer deactivated<br>255 = Timer activated                                                                          | integer   | R/W       |
| 40496            | 495              | Save timer data  | 1243 = Save timer data, value changes to 0 after saving.                                                                | integer   | R/W       |
| 40501            | 500              | Set 1 Modus 1    | 0 - 7 (0 = Standby, 1 = Eco, 2 = Night, 3 = Standard, 4 = Comfort, 5 = Party, 6 = Reserve, 7 = Switch point not active) | integer   | R/W       |
| 40502            | 501              | Set 1 Modus 2    | "                                                                                                                       | integer   | R/W       |
| 40503            | 502              | Set 1 Modus 3    | "                                                                                                                       | integer   | R/W       |
| 40504            | 503              | Set 1 Modus 4    | "                                                                                                                       | integer   | R/W       |
| 40505            | 504              | Set 1 Modus 5    | "                                                                                                                       | integer   | R/W       |
| 40506            | 505              | Set 1 Modus 6    | "                                                                                                                       | integer   | R/W       |
| 40507            | 506              | Set 2 Modus 1    | "                                                                                                                       | integer   | R/W       |
| 40508            | 507              | Set 2 Modus 2    | "                                                                                                                       | integer   | R/W       |
| 40509            | 508              | Set 2 Modus 3    | "                                                                                                                       | integer   | R/W       |

| Register address | Protocol address | Parameter name | Value range | Data type | Authority |
|------------------|------------------|----------------|-------------|-----------|-----------|
| 40510            | 509              | Set 2 Modus 4  | "           | integer   | R/W       |
| 40511            | 510              | Set 2 Modus 5  | "           | integer   | R/W       |
| 40512            | 511              | Set 2 Modus 6  | "           | integer   | R/W       |
| 40513            | 512              | Set 3 Modus 1  | "           | integer   | R/W       |
| 40514            | 513              | Set 3 Modus 2  | "           | integer   | R/W       |
| 40515            | 514              | Set 3 Modus 3  | "           | integer   | R/W       |
| 40516            | 515              | Set 3 Modus 4  | "           | integer   | R/W       |
| 40517            | 516              | Set 3 Modus 5  | "           | integer   | R/W       |
| 40518            | 517              | Set 3 Modus 6  | "           | integer   | R/W       |
| 40519            | 518              | Set 4 Modus 1  | "           | integer   | R/W       |
| 40520            | 519              | Set 4 Modus 2  | "           | integer   | R/W       |
| 40521            | 520              | Set 4 Modus 3  | "           | integer   | R/W       |
| 40522            | 521              | Set 4 Modus 4  | "           | integer   | R/W       |
| 40523            | 522              | Set 4 Modus 5  | "           | integer   | R/W       |
| 40524            | 523              | Set 4 Modus 6  | "           | integer   | R/W       |
| 40525            | 524              | Set 5 Modus 1  | "           | integer   | R/W       |
| 40526            | 525              | Set 5 Modus 2  | "           | integer   | R/W       |
| 40527            | 526              | Set 5 Modus 3  | "           | integer   | R/W       |
| 40528            | 527              | Set 5 Modus 4  | "           | integer   | R/W       |
| 40529            | 528              | Set 5 Modus 5  | "           | integer   | R/W       |
| 40530            | 529              | Set 5 Modus 6  | "           | integer   | R/W       |
| 40531            | 530              | Set 6 Modus 1  | "           | integer   | R/W       |
| 40532            | 531              | Set 6 Modus 2  | "           | integer   | R/W       |
| 40533            | 532              | Set 6 Modus 3  | "           | integer   | R/W       |
| 40534            | 533              | Set 6 Modus 4  | "           | integer   | R/W       |
| 40535            | 534              | Set 6 Modus 5  | "           | integer   | R/W       |
| 40536            | 535              | Set 6 Modus 6  | "           | integer   | R/W       |
| 40537            | 536              | Set 7 Modus 1  | "           | integer   | R/W       |
| 40538            | 537              | Set 7 Modus 2  | "           | integer   | R/W       |
| 40539            | 538              | Set 7 Modus 3  | "           | integer   | R/W       |
| 40542            | 539              | Set 7 Modus 4  | "           | integer   | R/W       |
| 40541            | 540              | Set 7 Modus 5  | "           | integer   | R/W       |
| 40542            | 541              | Set 7 Modus 6  | "           | integer   | R/W       |



## 15.5. Current value table

| Register address | Protocol address | Parameter name                 | Value range            | Data type | Authority |
|------------------|------------------|--------------------------------|------------------------|-----------|-----------|
| 30101            | 100              | Reserved                       |                        | integer   | R         |
| 30111            | 110              | Unit identification            |                        | integer   | R         |
| 30112            | 111              | Room temperature               |                        | integer   | R         |
| 30113            | 112              | Supply-air temperature         |                        | integer   | R         |
| 30114            | 113              | Extract-air temperature        |                        | integer   | R         |
| 30115            | 114              | Exhaust-air temperature        |                        | integer   | R         |
| 30116            | 115              | Outdoor-air temperature 1      |                        | integer   | R         |
| 30127            | 126              | CO2 value                      |                        | integer   | R         |
| 30128            | 127              | VOC value                      |                        | integer   | R         |
| 30129            | 128              | Extract air humidity           |                        | integer   | R         |
| 30135            | 134              | Duct pressure supply air       |                        | integer   | R         |
| 30136            | 135              | Duct pressure extract air      |                        | integer   | R         |
| 30137            | 136              | Control supply air fan         |                        | integer   | R         |
| 30138            | 137              | Control extract air fan        |                        | integer   | R         |
| 30139            | 138              | Control heating                |                        | integer   | R         |
| 30140            | 139              | Cooling control                |                        | integer   | R         |
| 30149            | 148              | Total power                    |                        | integer   | R         |
| 30150            | 149              | Inputs                         | see table inputs       | integer   | R         |
| 30151            | 150              | Outputs                        | see table outputs      | integer   | R         |
| 30152            | 151              | Error number                   | see table fault number | integer   | R         |
| 30153            | 152              | Status                         |                        | integer   | R         |
| 30154            | 153              | Program version 1              |                        | integer   | R         |
| 30155            | 154              | Program version 2              |                        | integer   | R         |
| 30156            | 155              | Hours of operation             |                        | integer   | R         |
| 30162            | 161              | Control value External control |                        | integer   | R         |
| 30163            | 162              | Differential pressure HRU      |                        | integer   | R         |

**Auto Operation Mode Protocol address 237**

|   |                        |
|---|------------------------|
| 0 | LQ-Control             |
| 1 | RH-Control             |
| 2 | LQ + RH-Control        |
| 3 | LQ + RH + Temp-Control |
| 4 | Temp-Control           |
| 5 | LQ + Temp-Control      |
| 6 | RH + Temp-Control      |

**Control heating and cooling coils Protocol address 304**

|   |                                                                                                                                                      |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | not available                                                                                                                                        |
| 1 | not available                                                                                                                                        |
| 2 | not available                                                                                                                                        |
| 3 | not available                                                                                                                                        |
| 4 | not available                                                                                                                                        |
| 5 | not available                                                                                                                                        |
| 6 | Heating 3-way mixing valve 0-10V output (X15:4,8)<br>Cooling 3-way mixing valve 0-10V output (X15:5,9)<br>Heating and cooling 0-10V output (X15:5,9) |
| 7 | Enable cooling device open = heating<br>Enable cooling device closed = cooling                                                                       |

**Inputs Protocol addresses 149**

|        |                            |
|--------|----------------------------|
| Bit 0  | 1 = External enable        |
| Bit 1  | 1 = Fault relay fans ok    |
| Bit 2  | 1 = Thermal contact fan ok |
| Bit 3  | 1 = Frost protection OK    |
| Bit 4  | 1 = Motion detector closed |
| Bit 5  | 1 = Fire detector ok       |
| Bit 6  | Reserved                   |
| Bit 7  | Reserved                   |
| Bit 8  | Reserved                   |
| Bit 9  | Reserved                   |
| Bit 10 | Reserved                   |
| Bit 11 | 1 = Night cooling active   |
| Bit 12 | Reserved                   |
| Bit 13 | Reserved                   |
| Bit 14 | Reserved                   |
| Bit 15 | Reserved                   |

### Outputs Protocol addresses 150

|        |                       |
|--------|-----------------------|
| Bit 0  | Reserved              |
| Bit 1  | Pump cooling          |
| Bit 2  | Enable cooling device |
| Bit 3  | Bypass open           |
| Bit 4  | Bypass closed         |
| Bit 5  | Heating valve open    |
| Bit 6  | Heating valve closed  |
| Bit 7  | Pump heating          |
| Bit 8  | Unit defective        |
| Bit 9  | Damper closed         |
| Bit 10 | Damper open           |
| Bit 11 | Cooling valve open    |
| Bit 12 | Cooling valve closed  |
| Bit 13 | E-heating on          |
| Bit 14 | Reserved              |
| Bit 15 | Reserved              |

### Error number Protocol address 151

|    |                                          |
|----|------------------------------------------|
| 0  | No error                                 |
| 1  | Supply-air temperature sensor defective  |
| 2  | Room-air temperature sensor defective    |
| 3  | Exhaust-air temperature sensor defective |
| 4  | Outdoor-air temperature sensor defective |
| 5  | Extract-air temperature sensor defective |
| 6  | Reserved                                 |
| 7  | Frost protection fault                   |
| 8  | Safety thermostat triggered              |
| 9  | Thermal switch for ventilator triggered  |
| 10 | Fan defective                            |
| 11 | Reserved                                 |
| 12 | Not enabled                              |
| 13 | Reserved                                 |
| 14 | Fault fire detector                      |
| 15 | Reserved                                 |
| 16 | Reserved                                 |
| 17 | Supply-air temperature too low           |
| 18 | Supply-air temperature too hot           |
| 19 | Reserved                                 |
| 20 | Fault heat exchanger                     |

## 16. EXPANSION AND RECONFIGURATION

The unit must not be reconfigured.

The warranty only applies to the configuration delivered.

The warranty will cease to apply after any reconfiguration or expansion.

## 17. LIFETIME AND DISPOSAL

### 17.1. Product life

The motors are equipped with maintenance-free, permanently lubricated ball bearings. Under normal operating conditions, the expected lifetime is about 40,000 operating hours.

The information given here depends strongly on the respective field of application as well as the environmental conditions.

### 17.2. Decommissioning and disposal



**When disassembling, parts under voltage are exposed, which can lead to electric shock when touched. Before disassembly, disconnect the unit from the mains and secure it against being switched on again!**

Parts and components of the device that have reached their lifetime, e.g. due to wear, corrosion, mechanical stress, fatigue and/or all other, not directly recognizable effects, must be disposed of professionally and properly after disassembly in accordance with national and international laws and regulations. The same applies to excipients in use such as oils and fats or other substances. The conscious or unconscious reuse of used components such as e.g. impellers, rolling bearings, motors, etc. can lead to a risk to persons, the environment as well as machinery and equipment. The applicable local operating regulations must be observed and applied.

### 17.3. Spare parts (motor + impeller)

Replacement may only be carried out by trained and authorized personnel.

## 18. TROUBLESHOOTING

| Fault                                                    | Possible cause                                                                                                                                                                                                                           | Remedy methods                                                                                                                                                                   |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ■ Fan does not start                                     | ■ No power supply<br>■ Impeller does not rotate freely                                                                                                                                                                                   | ■ Check mains supply / connections<br>■ Find out the causes and, if possible, remove the fault. If not possible, contact the supplier.                                           |
| ■ Motor overheated / temperature protection is triggered | ■ Fault of the ball bearings<br>■ Too high operating temperature<br>■ Air flow is too low, motor cannot cool down                                                                                                                        | ■ Contact the supplier<br>■ Observe the data on the nameplate<br>■ See fault „Low air flow“                                                                                      |
| ■ Device too noisy / casing vibrations                   | ■ Dirt deposits on the impeller<br>■ Imbalance of the impeller<br>■ Connection with intake or exhaust pipe / duct causes vibrations / oscillations<br>■ Fixing screws released<br>■ Fault of the ball bearings<br>■ Loose impeller blade | ■ See chapter maintenance and cleaning<br>■ Contact the supplier<br>■ Install fan with vibration dampers<br>■ Tighten screws<br>■ Contact the supplier<br>■ Contact the supplier |

| Fault         | Possible cause                                                                                                                                                                                                                                                                                                               | Remedy methods                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ■ Low airflow | <ul style="list-style-type: none"> <li>■ Impeller runs in the wrong direction (wrong air transport direction)</li> <li>■ High pressure losses in the system</li> <li>■ Return flaps closed or only partially open</li> <li>■ Duct system clogged</li> <li>■ Speed control incorrectly set / incorrectly connected</li> </ul> | <ul style="list-style-type: none"> <li>■ Note the marking on the device / nameplate. Check electrical connections</li> <li>■ Improve piping configuration or select a more powerful fan</li> <li>■ Check drive system / installation position of the return flap</li> <li>■ Remove blockage / clean protective grille</li> <li>■ Check settings / switching unit and possibly adjust / connect</li> </ul> |

Please note the following instructions:

- Proceed systematically and purposefully when troubleshooting, even under time pressure.
- In the worst case, randomly and indiscriminately dismantling and changing settings may result in it no longer being possible to determine the original cause of the fault.
- Get an overview of the unit's operation in conjunction with the overall installation.
- Try to clarify whether the unit provided the required function in the overall installation before the fault occurred.
- Try to find any changes to the overall system in which the unit is installed:
  - Have the unit's operating conditions or operating range been changed?
- Have any changes (e.g. reconfigurations) or repairs been performed on the overall system (installation, electrics, control) or to the unit? If yes: what?
  - Has the unit been operated correctly?
  - How does the fault appear?
- Form a clear idea of the cause of the fault. If necessary, question the immediate operator or the installation operator.

If you have not been able to remove the fault, please contact the manufacturer. The contact address can be found on the back of these installation, operating and maintenance instructions.

### 18.1. Low-current fuses

There is one low-current fuse built-in at the controller circuit board to protect the electrical equipment. If the fuse blows, the fault can be located and repaired by using the following table. A low-current fuse must be changed by specialised personnel.

The low-current fuses must comply with EN 60127, dimensions 5 x 20 mm.

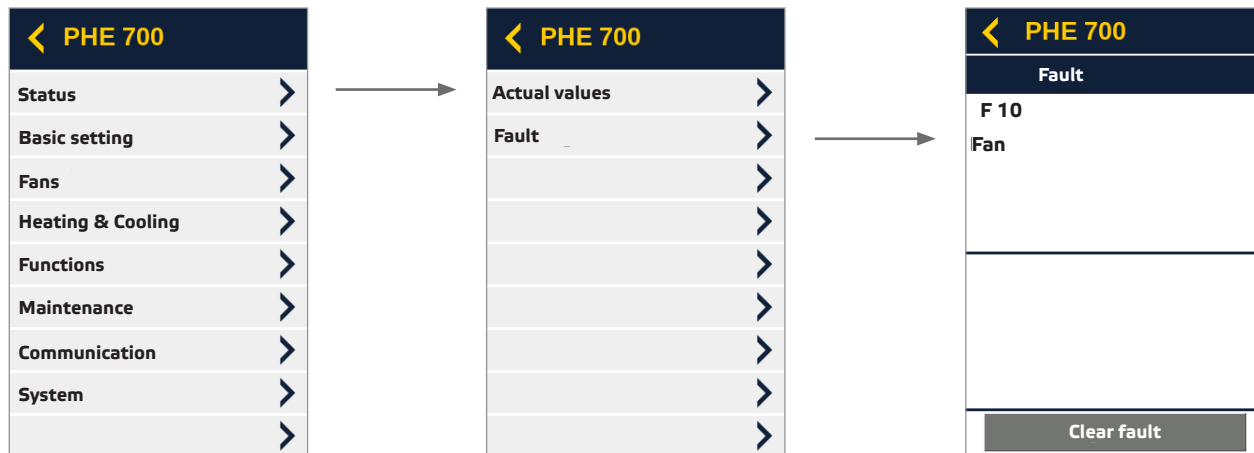
For position of microfuse see wiring diagrams.

| Fuse         | Possible cause                                                                                                                                                           | Fault correction                                                                                                                                                            |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F2 / T 6,3 A | <ul style="list-style-type: none"> <li>■ Valve gear and cable defect.</li> <li>■ Circulating pump and cable defect.</li> <li>■ Damper drive and cable defect.</li> </ul> | <ul style="list-style-type: none"> <li>■ Replace valve gear and cable.</li> <li>■ Replace circulating pump and cable.</li> <li>■ Replace damper drive and cable.</li> </ul> |

## 18.2. Fault diagnosis chart

If a fault occurs on the unit, one or more fault messages will appear on the display. The error is acknowledged with the „Clear fault“ button. It is not possible to use the control unit until all of the faults have been removed and acknowledged. Depending on the priority of the fault, the installation will either switch off or continue working with the last settings.

The following faults might be shown on the display:



| Error message | Type of fault and repair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <b>ERROR</b> <ul style="list-style-type: none"> <li>» The control unit has no connection.</li> <li>» Check the connection or replace the cable if necessary.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
| F 1           | Supply air temperature sensor fault <ul style="list-style-type: none"> <li>» The supply air temperature sensor is defective or the cable is broken.</li> <li>» Replace the defective temperature sensor or replace the broken cable if necessary.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                                                                              |
| F 2           | Room temperature sensor fault. <ul style="list-style-type: none"> <li>» The room temperature sensor malfunctions.</li> <li>» Replace the remote control unit.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                                                                                                                                                                  |
| F 3           | Exhaust air temperature sensor fault. <ul style="list-style-type: none"> <li>» The exhaust air temperature sensor is defective or the cable is broken.</li> <li>» Replace the defective temperature sensor or replace the broken cable if necessary.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                                                                           |
| F 4           | Outside air temperature sensor fault. <ul style="list-style-type: none"> <li>» The outside air temperature sensor is defective or the cable is broken.</li> <li>» Replace the defective temperature sensor or replace the broken cable if necessary.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                                                                           |
| F 5           | Extracted air temperature sensor fault. <ul style="list-style-type: none"> <li>» The extracted air temperature sensor is defective or the cable is broken.</li> <li>» Replace the defective temperature sensor or replace the broken cable if necessary.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                                                                       |
| F 7           | Error frost protection <ul style="list-style-type: none"> <li>» The air temperature has fallen below the value set on the antifreeze thermostat. The fans will be switched off, the air flaps closed, the heating valve fully opened and the circulating pump switched on.</li> <li>» Check fuse F2.</li> <li>» After the failure reason is remedied, the failure must be confirmed with „Clear fault“.</li> </ul>                                                                                                                                                           |
| F 8           | Fault in the safety thermostat - electric heating element temperature monitoring <ul style="list-style-type: none"> <li>» The housing temperature is higher than 75 °C. The control circuit is broken, the electric heater is switched off. Possible cause: defective supply air valve, fan has failed, etc.</li> <li>» Repair supply air valve, check fuses F2.</li> <li>» After the failure reason is remedied, the reset button of the safety thermostat has to be reset manually, and the failure has to be confirmed at the control unit with „Clear fault“.</li> </ul> |

## Error message    Type of fault and repair

|                                                                                   |                                                                                                                                                                     |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F 9                                                                               | Fault, fan thermal contact                                                                                                                                          |
|                                                                                   | » The thermal contact has been tripped, device will be switched off. Possible cause: motor overheating or defective. (X9: 6,7,8,9)                                  |
|                                                                                   | » The power supply must be switched off at the main switch for at least 20 s. Check fuse F2, replace the motor if necessary.                                        |
|                                                                                   | » After the failure reason is remedied, the failure must be confirmed with „Clear fault“.                                                                           |
| F 10                                                                              | Error fan                                                                                                                                                           |
|                                                                                   | » Error monitoring of a fan has been triggered.                                                                                                                     |
|                                                                                   | » Switch the unit off, check wiring and fans and if needed, replace damaged fan.                                                                                    |
|                                                                                   | » After the failure reason is remedied, the failure must be confirmed with „Clear fault“.                                                                           |
| F 14                                                                              | Fire protection signal                                                                                                                                              |
|                                                                                   | » The fire protection contact is open. The fire detector has tripped.                                                                                               |
|                                                                                   | » After the fire detection has been remedied, you have to confirm with „Clear fault“.                                                                               |
| F 17                                                                              | Insufficient temperature of supply air                                                                                                                              |
|                                                                                   | » The maximum set supply air temperature (12 °C) was undershot longer than 30 minutes.                                                                              |
|                                                                                   | » After the failure reason is remedied, the failure must be confirmed with „Clear fault“.                                                                           |
| F 18                                                                              | Excess temperature, supply air                                                                                                                                      |
|                                                                                   | » The maximum supply air temperature of 80 °C was exceeded longer than 10 sec. or the cable of the air supply temperature sensor is broken.                         |
|                                                                                   | » Switch off the device, check fans.                                                                                                                                |
|                                                                                   | » After the failure reason is remedied, the failure must be confirmed with „Clear fault“.                                                                           |
| F 12                                                                              | Not Enabled                                                                                                                                                         |
|                                                                                   | » The release contact is not closed.                                                                                                                                |
|                                                                                   | » Close the release contact. The unit can then be started.                                                                                                          |
|                                                                                   | Device is off and cannot be switched on                                                                                                                             |
|                                                                                   | » SENSORTYP stands at EXT. REG. (external controls)                                                                                                                 |
|                                                                                   | » Check the setting SENSOR TYPE in the operating parameters.                                                                                                        |
|  | Pre-rinse                                                                                                                                                           |
|                                                                                   | » The frost protection thermostat or the supply air temperature sensor has triggered the frost protection function due to the supply air temperature being too low. |

14:54

NAME





Setpoint temp. 22.0 °C



Mode  Standard 

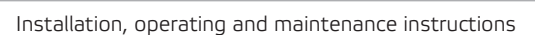
SupplyAir temp. 21.3 °C

Room temp. 20.3 °C

SupplyAir 0 m³/h

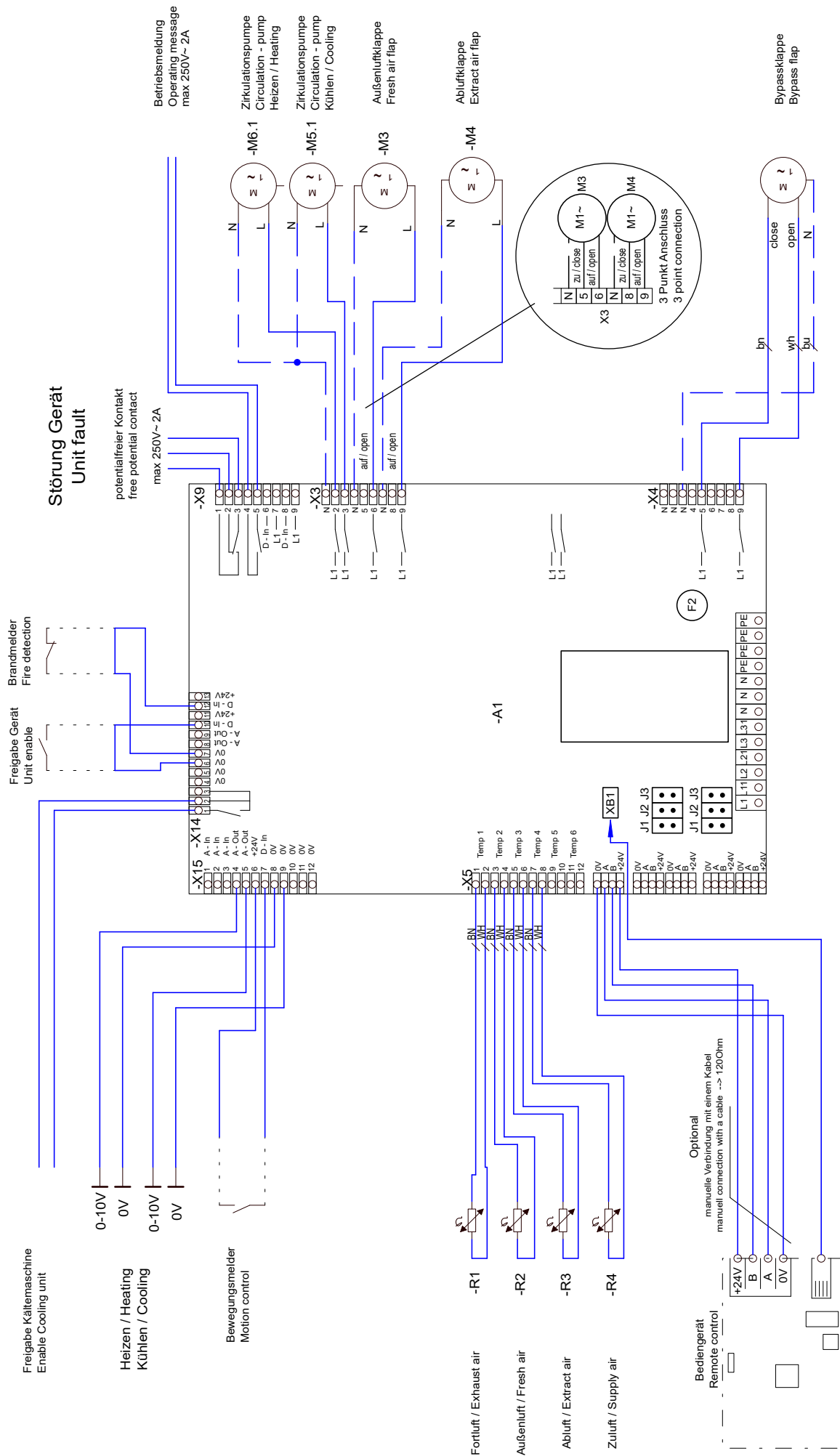
ExtractAir 0 m³/h

Air humidity 53.3 %



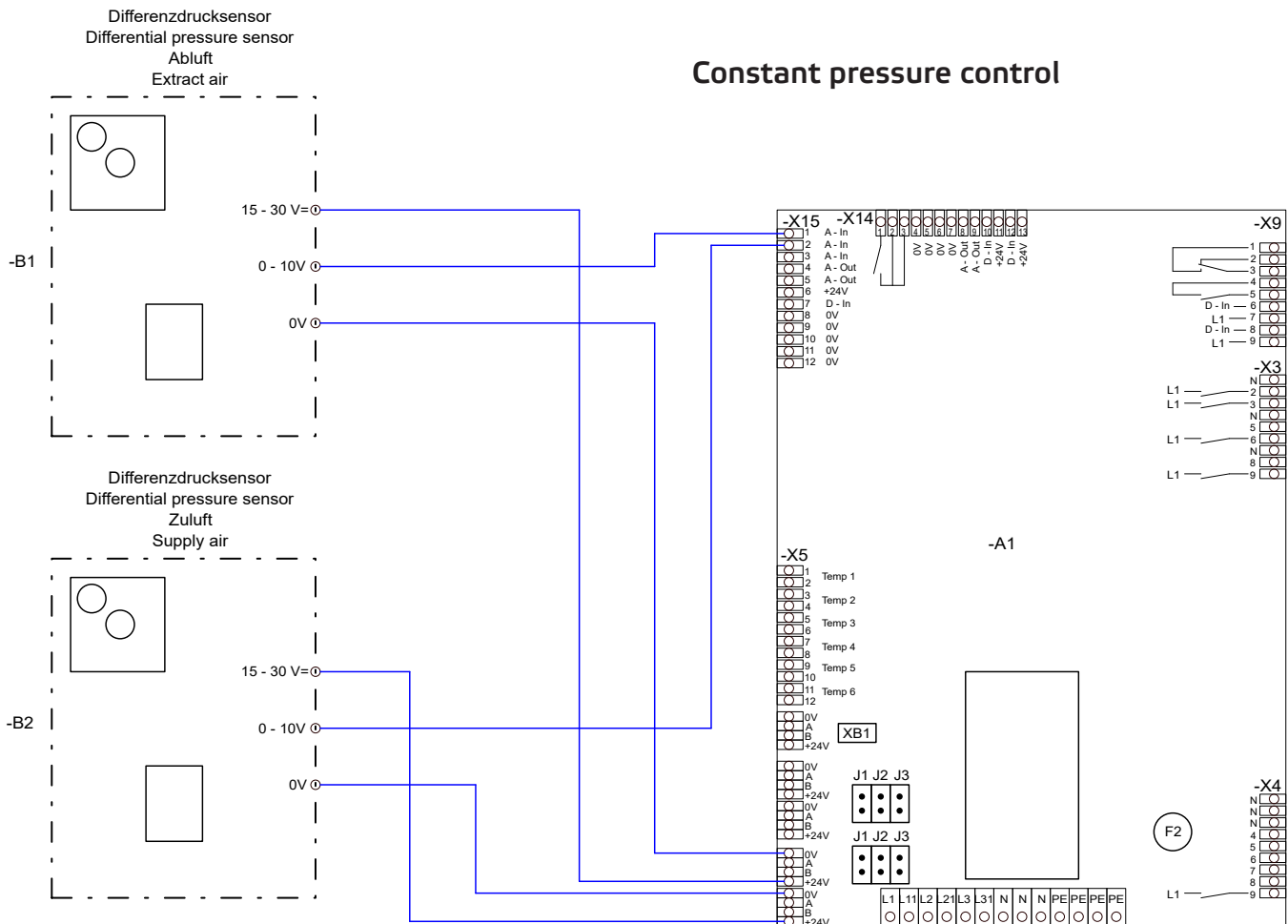


## Circuit diagram controls

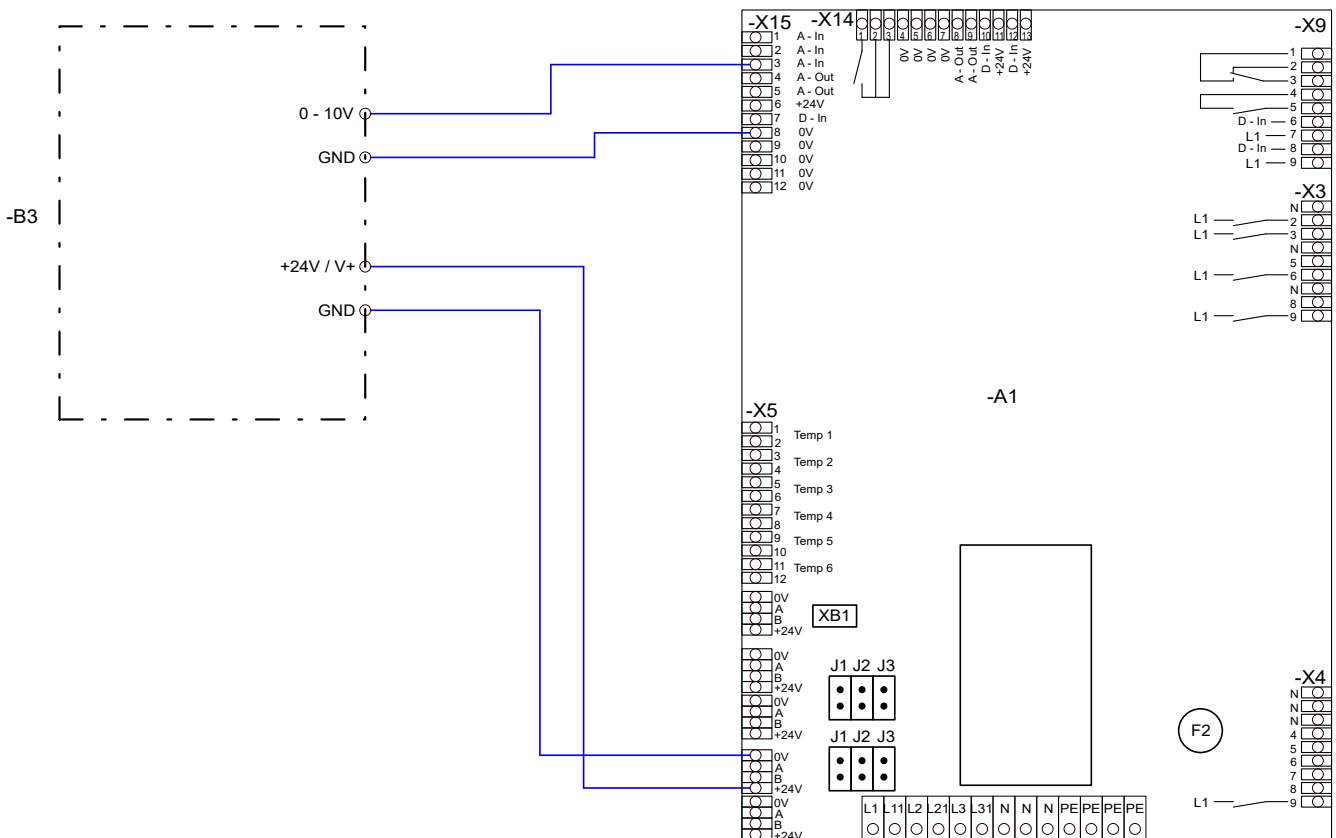


## External sensor (differential pressure)

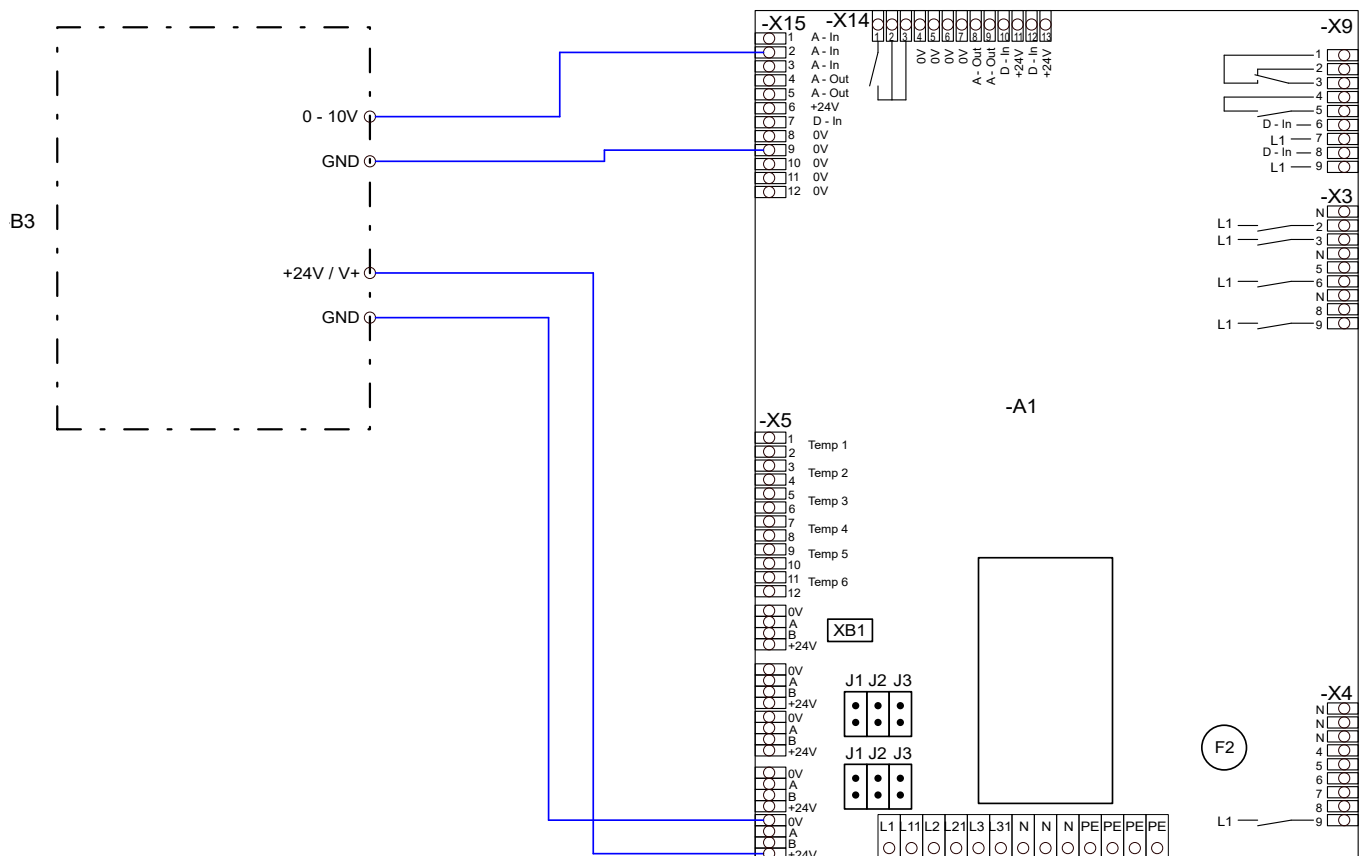
### Constant pressure control



## External sensor (CO2, VOC)



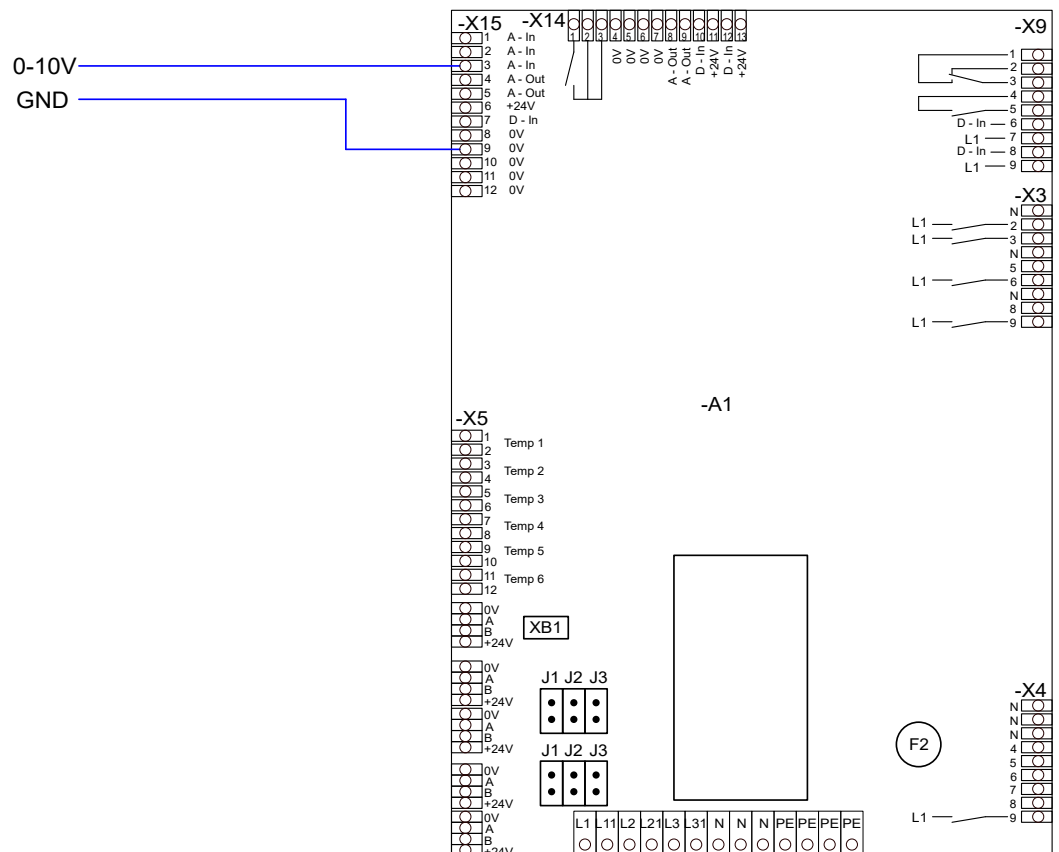
### External set-point (humidity)



## External volume flow control

10V: max. Volumenstrom  
2V : min. Volumenstrom  
<2V: Gerät Aus

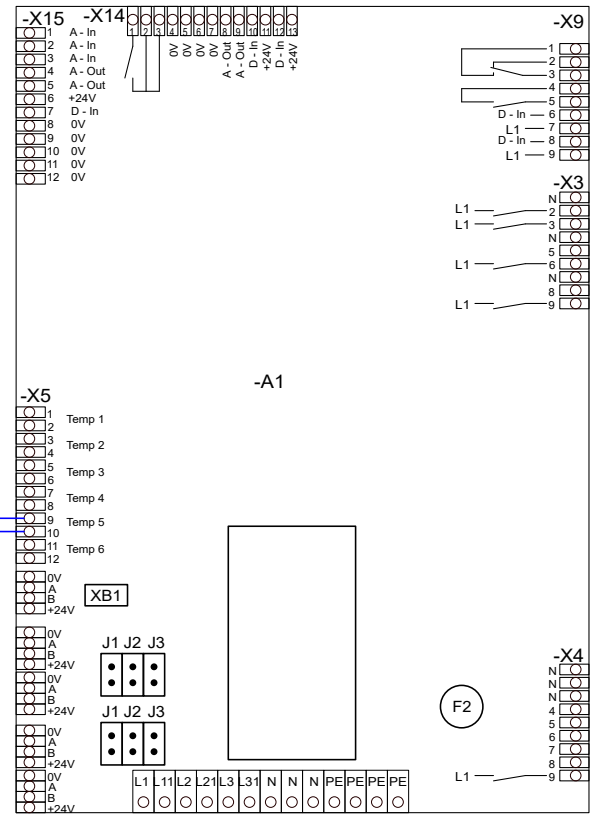
0-10V-  
GND -



## Connection Roomtemperatur Sensor

Optionaler / Optional  
Raumtemperatur / Roomtemperatur

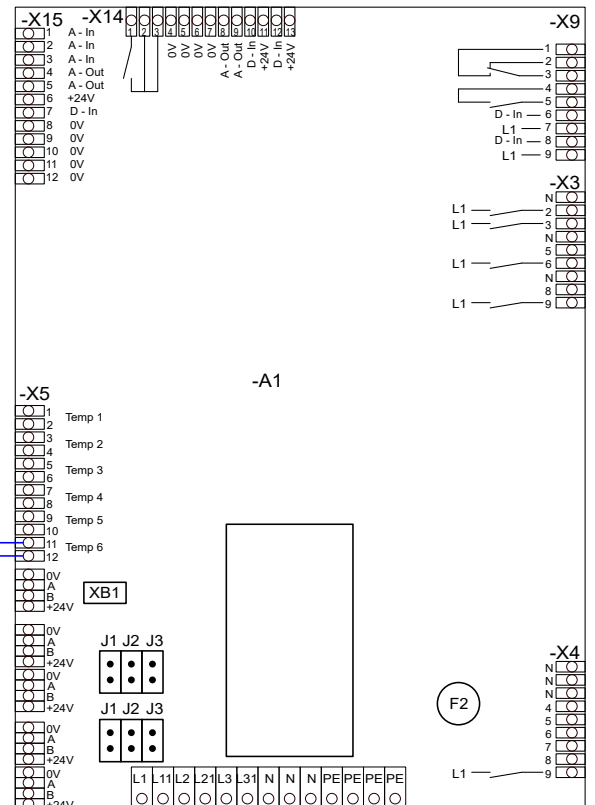
-R5



## Connection Outsidetemperatur Sensor

Optionaler / Optional  
Außentemperatur / Outsidetemperatur

-R5



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We reserve the right to make changes

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