

MAICO *aeronom*
Heat Recovery System
WS 250



Mounting and Operating instructions



Important tips relating to the instructions

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Always read these notes!

In all cases, these instructions should be read through carefully and completely before operating, installing or connecting the ventilation unit. Keep the instructions somewhere safe.

Operation: The first chapters are directed at the user. They contain important information about the ventilation system as well as the setting options at the operator unit.

Maintenance: The maintenance section contains important information about filter changes and the necessary cleaning and maintenance activities. As a rule, maintenance work is carried out by the users.

Installation: Containing important installation instructions and unit basic settings, the “Installation” and “Commissioning” chapters are directed at specialist installers.

Regulations for operation with fireplaces: Important information regarding operation with fireplaces is enclosed with these instructions in the separate accompanying leaflet “ZIV leaflet: Evaluation criteria for joint operation of fireplace – domestic ventilation – extraction hood”.

Planning: The Engineering office creates the planning required for the system calculation. Additional information can be requested from the manufacturer.

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A	Supplement: ZIV leaflet “Evaluation criteria for joint operation of fireplace – domestic ventilation – extraction hood”	

1. Introduction

1.1 Scope of delivery

- Ventilation unit
- Operator unit with room temperature sensor
- These installation, operation and maintenance instructions

1.2 Symbols in this manual



Danger to life. Non-observance can lead to death or serious bodily injuries.



Danger of injury. Non-observance can lead to serious bodily injuries.



Danger of injury. Non-observance can lead to minor or more serious bodily injuries.

NOTICE

Property damage. Non-observance can lead to property damage.



INFO symbol: Text passages marked with this symbol contain important information and tips.

1. Introduction

1.3 Application areas, application purpose

1.3 Application areas, application purpose

- The WS 250 is a ventilation unit with heat recovery system that provides controlled ventilation of apartments, offices or comparable rooms.
- The ventilation unit may only be used in line with the calculations/designs carried out by the Engineering office.
- The ventilation unit handles the air exchange within the building. The used air is transported to the outside and heat is extracted from it at the same time. During this process, up to 85 % of the exhaust air heat is recovered, i.e. it is supplied to the outside air as it flows past in the heat exchanger.
The ventilation unit is not suitable for drying out new builds.

1.4 Regulations for operation with fireplaces

The central WS 250 ventilation unit may only be installed in rooms, apartments and user units of a comparable size, in which air-ventilated fireplaces are installed, if:

1. a parallel operation of air-ventilated fireplaces for **liquid or gaseous fuel-** and the air-extracting equipment can be prevented by the use of safety equipment, or
2. the extraction of exhaust gas from the air-ventilated fireplace is monitored by special safety equipment. In the case of air-ventilated fireplaces **for liquid or gaseous fuels**, the fireplace or the ventilation unit must be switched off if the safety equipment is triggered. In the case of air-ventilated fireplaces for solid fuels, the ventilation unit must be switched off if the safety equipment is triggered.

Central WS 250 ventilation units for the controlled ventilation and air extraction of an apartment or comparable living unit may not be installed if there are air-ventilated fireplaces in the living unit that are connected to exhaust gas systems, which themselves have multiple connections.

In order to permit the intended operation of a ventilation system equipped with central WS 250 ventilation units, it must be possible to block off any combustion air ducts or exhaust gas ducts from solid fuel fireplaces. In the case of solid fuel fireplaces, any blocking device may only be operated manually. It must be possible to identify the position of the blocking device from the setting of the operating handle. This is considered to be fulfilled if a soot blocking device is deployed.

1.5 Predictable misuses

Maico is not liable for damages caused by usage not for the intended purpose. The unit should not be used:

- close to flammable materials, liquids or gases.
- for the conveying of chemicals, aggressive gases or vapours.
- in potentially explosive atmospheres
- in swimming pools
- for drying out new builds
- in combination with laboratory extractors.
- in combination with extractor hoods that are connected directly to the controlled domestic ventilation exhaust air channel.
- in outside air or exhaust air channels that are already connected to a ventilation unit or system. Multiple connections should be categorically avoided.

For reasons of energy usage, we recommend using extractor hoods in circulating air mode.

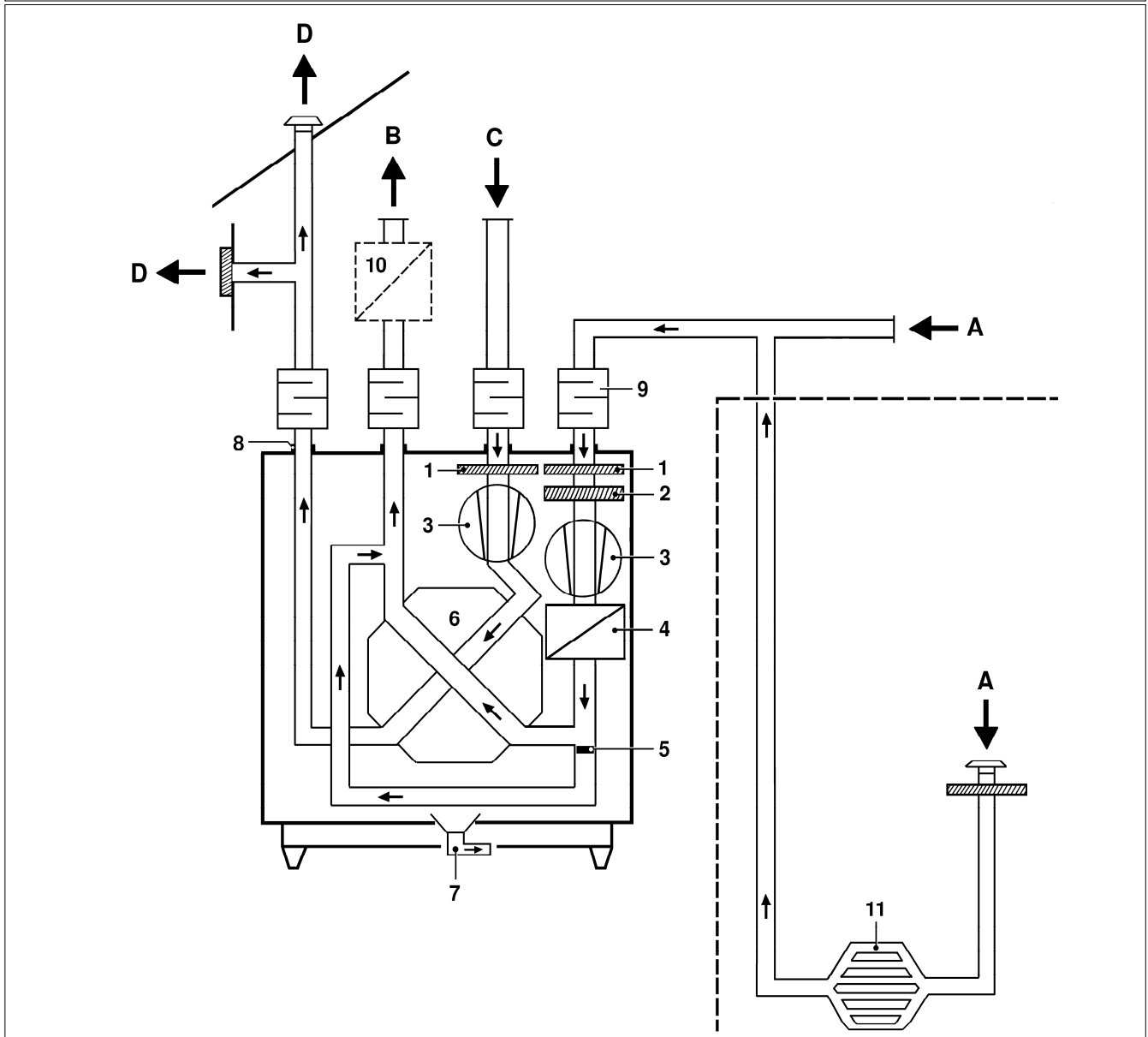
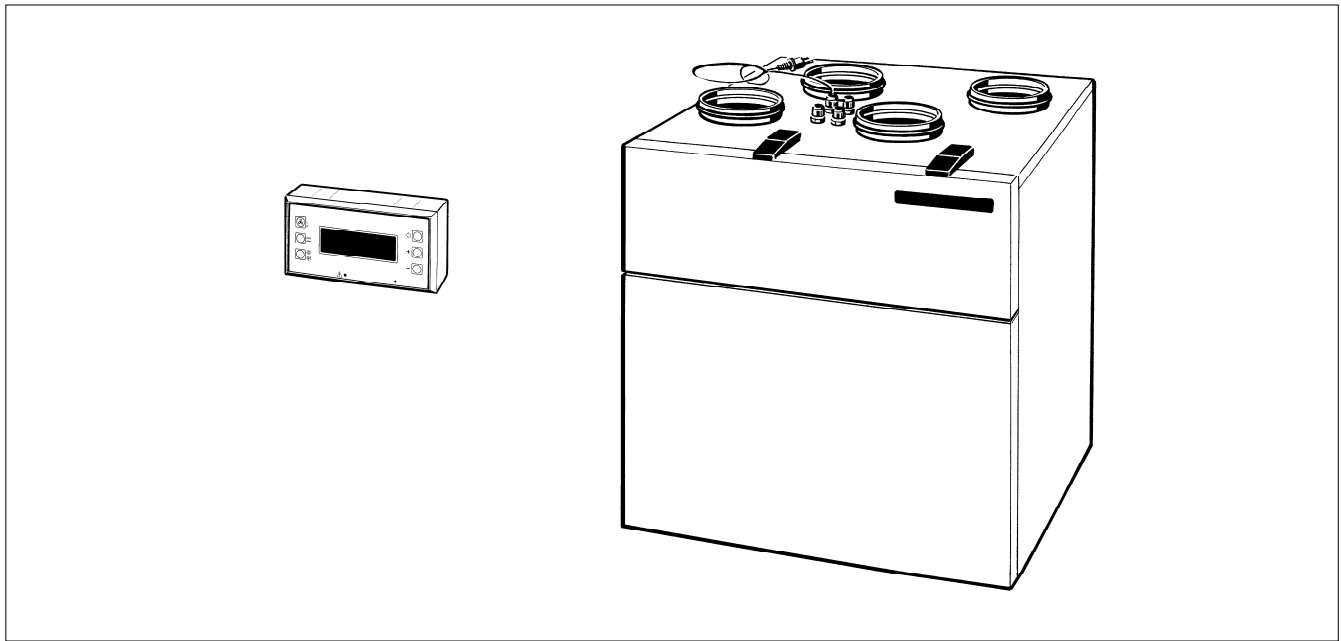
1.6 Safety instructions



1. Only use the ventilation unit in accordance with the application purpose described above.
2. Ask your installer to familiarise you with the unit and the operator unit once installation is completed.
3. The unit is not intended to be used by people whose physical, sensory or mental capabilities are insufficient to understand and implement the safety advice in these instructions. This restriction also refers to children. The unit can however be used by such people without danger, if they are monitored by someone who is responsible for their safety or if they have received suitable instruction.
- 4. Never operate the ventilation unit without a filter.**
5. Check the filter regularly for dirt and damage. See “Cleaning, maintenance” chapter.
6. Both coarse filters should be changed every 3 months and the dust filter should be changed every 6 months. They should also be changed if prompted to do so on the operator unit (“Filter change” message). If the unit is not used during the summer, the filter must be changed before starting up again for hygiene reasons.
7. Replacement filter: Only use original MAICO filters.
8. If the ventilation unit is damaged in any way, disconnect the mains plug. If the ventilation unit is damaged in any way, do not continue to operate, even in standby mode (standby mode with unit switched off).
9. Disconnect the ventilation unit’s mains plug before any cleaning or maintenance work. Disconnect connected extension components from the mains, deactivate the mains fuse if necessary.
10. Installation and repair work may only be carried out by authorized specialists. Only qualified electricians are permitted to make the electrical connections.
- 11. The 2-pin front cover safety switch automatically disconnects the fans when the front cover is opened. The switch must not be disabled. Otherwise rotating parts can be touched. There is a risk of injury from running fans.**
12. Be cautious and aware of the potential hazards when unscrewing the front cover.
13. Switch the unit off immediately if you discover damage or faults that could endanger persons or property. Further use must be prevented until a complete maintenance check has been carried out.
- 14. Never operate without duct connections and sound absorbers.** Only operate the ventilation unit when all duct connections are in place. Sound absorbers significantly reduce the noise emissions.
15. The ventilation unit may only be used in line with the calculations carried out by the Engineering office. These must comply with the Equipment and Product Safety Law as well as the pertinent regulations laid down by the EC Directives.
16. Take environmental effects into account. Do not install the unit near combustible liquids or gases, in swimming pools or under the influence of chemicals.
17. Never integrate extractors in the ventilation unit’s exhaust air or outgoing air circuit. They must be operated separately.
18. Operation with air-ventilated fireplaces: In the case of apartments with ventilation units, these are governed by DIN 1946, Part 6. Pay particular attention to the fire protection requirements and the ZIV leaflet in the Annex.
19. Modifications and alterations to the ventilation unit are not permitted and release the manufacturer from any guarantee obligations and liability.

2. The ventilation system

2.1 Overview



2. The ventilation system

2.1 Overview

2. The ventilation system

2.1 Overview

The picture at the top shows the ventilation system components included in the **scope of delivery** with the operator unit and ventilation unit.

The lower picture, shows the schematic construction of a ventilation system, combined with additional system components. The arrows show the direction of the air flows.

A	Outside air: Air that is drawn in from the outside.	1	Coarse filter
		2	Pollen filter
		3	Fan
B	Supply air: Warmed, fresh air that flows into the living area.	4	Antifreeze heating
		5	Bypass shutter
		6	Heat exchanger
C	Exhaust air: Used and warm air that is extracted from the living area.	7	Condensation drain
		8	Duct connection couplings
		9	Tubular sound absorber
D	Outgoing air: Used and cooled air that is returned to the outside.	10	External auxiliary heating
		11	Earth heat exchanger

2.2 System features

- Ventilation unit with passive energy house certificate.
- Convenient operator unit with integrated room temperature sensor.
- Degree of heat provision according to PHI (effective), approx. 85%.
- Integrated bypass for summer mode.
- Supply air and exhaust fans with particularly energy-saving direct current motor.
- Exhaust fan isolation function upon failure of the supply air fan.
- Electronic volumetric flow regulation for constant air flows. Volumetric flow range from 100 m³/h to approx. 250 m³/h. The pre-selected volumetric flow is maintained even in the case of system pressure changes caused, for example, by dirt in the filter.
- Integrated, pressure-dependent filter monitoring of coarse and pollen filters in outside air duct. The "Filter change" message appears on the text display once the set differential pressure level is reached.
- Filter change is possible without tools.
- Integrated antifreeze heating.

2. The ventilation system

2.3 System expansions (optional)

2.3 System expansions (optional)

Earth heat exchanger

An energy-optimised antifreeze for the ventilation unit can be ensured through earth heat exchangers and a contribution can be made to the supply of heat with cold, external temperatures. The cooling effect of the earth heat exchanger in the summer is minor and hardly perceivable by the user. Earth heat exchangers must be planned carefully in respect of energy efficiency and air hygiene. Attention must be paid to good cleanability and a suitable filter concept. The principle of the earth heat exchanger alone is shown on page 6.

External auxiliary heating

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 22°C heating 0
```

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 22°C heating 1
```

```
temperature: 23°C
winter mode auto
fan level 2
room 22°C heating 0
```

- An external auxiliary heating can be used to provide additional heating in living spaces, e.g. on very cold winter days. The auxiliary heating is controlled automatically based on the set setpoint temperature of the room, but only in winter mode.
- The sensor for detecting room temperature is in the operator unit. Alternatively an external sensor can also be connected up in another room.
- When an external auxiliary heating is fitted, in addition to the room temperature, line 4 of the display on the operator unit indicates “heating 0” when the auxiliary heating is off and “heating 1” when it is on.
- The supply air temperature is controlled in the auxiliary heating.
- When using the “External auxiliary heating” contact, a wire jumper must be connected to terminals “5a” and “5b”, see wiring diagram on page 35.
- The setpoint temperature value for the auxiliary heating is set on the operator unit.

External auxiliary heating: water-air heating / warm water heating register

- The water-air heating must be protected against freezing by an antifreeze circuit. If the air temperature upstream of the water-air heating falls below a minimum value, the ventilation system is switched off.
- When configuring a hydraulic re-heating register, the antifreeze circuit for the air/air heat exchanger must also be taken into account. At outgoing air temperatures of below 1 or 0.5 °C, the ventilation unit automatically switches to level 1, when outgoing air temperatures exceed 0.5 or 1 °C, the level set on the control unit is reactivated.
- When planning, the engineer must check whether the re-heating register needs to be configured such that the supply of residual heat can also be transported in level 1 by air in this configuration.
- **If the ventilation unit is installed with a hydraulic re-heating register (supply air) in a passive energy house, a thermostat (TH 10) has to be installed to protect against supply air that is too cold (see Chapter 7.7).**

2. The ventilation system

2.3 System expansions (optional)

Air quality controller

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 22°C
```

```
11:13 TH.01.31.02
winter mode auto
fan level 3 AQ
room 22°C
```

- The air quality controller is used to measure the concentration of various gases and odours in the living space.
- If the air quality in the living space falls below an adjustable level, the ventilation unit automatically switches into the next highest fan level, e.g. in the event of excess cigarette smoke.
- “AQ” also appears in line 3 of the operator unit.
- Once the quality falls below the value limit, the ventilation unit automatically switches down a level.
- When using an air quality controller always fit a relay (potential-free contact) between the controller and ventilation unit, see wiring diagram on page 35.

CO₂ sensor

```
11:13 TH.01.31.02
winter mode auto
fan level 1
room 24°C
```

```
11:13 TH.01.31.02
winter mode auto
fan level 2 CO2
room 24°C
```

- If the carbon dioxide value limit in the living space is exceeded, the CO₂ sensor responds and the ventilation unit automatically switches to the next highest fan level.
- “CO2” also appears in line 3 of the operator unit.
- Once the quality falls below the value limit, the ventilation unit automatically switches down a level.
- Always use a CO₂ sensor with potential-free contact, see wiring diagram on page 35.

Humidity sensor (Hygrostat)

```
11:13 TH.01.31.02
winter mode auto
fan level 1
room 24°C
```

```
11:13 TH.01.31.02
winter mode auto
fan level 3 HU
room 24°C
```

- When the set relative air humidity is exceeded, the ventilation unit switches to fan level 3 for 1 hour.
- “HU” also appears in line 3 of the operator unit.
- If using the HY5 hygrostat, the potential free contact on the HY5 can be connected directly to the X2 plug connection (connection 4a and 4b) on the ventilation unit. If using the HY10 hygrostat, a potential free contact must be installed between the ventilation unit and the HY10. See the wiring diagram on Page 35.

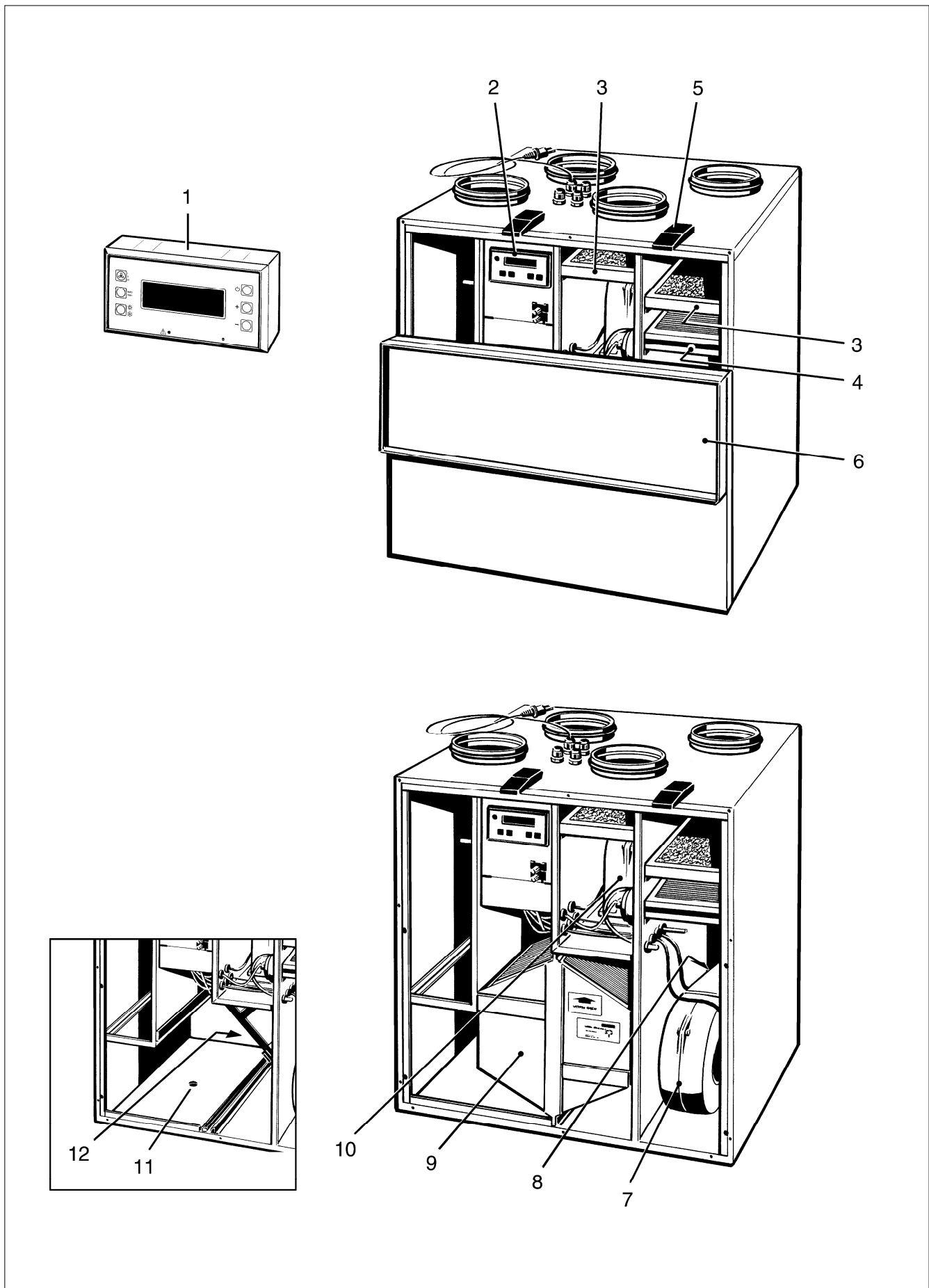
2.4 System accessories / Spare parts

i **Guarantee claims are only valid if genuine spare parts are used for repairs. You will find more information about system accessories online.**

- Wall bracket
- Sound absorber
- Replacement filter
- Electric air heating
- Air quality sensor
- Hygrostat
- Duct fixing cuff
- Electronic temperature controller
- Water-air heater

2. The ventilation system

2.5 Ventilation unit



2. The ventilation system

2.5 Ventilation unit

2.5 Ventilation unit

1. **Operator unit in living space:** You can undertake the settings for everyday use here. In automatic mode, the system runs fully automatically following daytime programs. In manual mode, you can e.g. increase the fan level to briefly vent the living spaces. The current operating statuses, faults and messages appear on the display. Indicator lights show operation (green), faults and filter change (red), see “Operation” chapter.
2. **Power module:** This is where the specialist installer programs the basic system settings, suitable for your application (house/apartment). Information about connected auxiliary units and fault messages appear on the display, see “Power module” chapter 4.
3. **Coarse filter (filter class G4):** Filters coarse dirt out of the outside air and exhaust air.
4. **Pollen filter (filter class F7):** Filters pollen, very fine particles of dirt and insects out of the outside air.
5. **Quick-release clip:** Allows the front cover to be opened quickly in order to change the filter.
6. **Front cover (2 parts):** Upper part can be folded down in order to change the filter. All of the front cover is removed for maintenance work.
7. **Supply air fan:** Feeds fresh air into the living rooms.
8. **Antifreeze heating:** Warms up the cold outside air such that the heat exchanger and condensation do not freeze. The antifreeze heating switches ON automatically when the outside air temperature falls below 0 °C and when the outgoing air temperature falls below the value of the set “antifrz.” parameter. The switching point of the set “antifrz.” parameter can be adjusted, see pages 22 and 23



If warm water heating registers are fitted, these must be protected from frost damage by means of an antifreeze circuit (see Chapter 7.7).

9. **Heat exchanger:** Extracts the heat from the exhaust air and transfers this to the supply air. The unit has a degree of heat provision (effective) of approx. 85%.
10. **Exhaust fan:** Conveys the used air to the outside.
11. **Condensation drain:** Collects the condensation that collects in the heat exchanger and drains this off via the drain hose and siphon.
12. **Bypass with shutter and servomotor:** In summer mode, cool outside air can be fed past the heat exchanger and into the supply air channel through the bypass channel (for cooling living spaces). The bypass channel is only opened when the minimum outside temperature is lower than the minimum room temperature (measured on the operator unit).

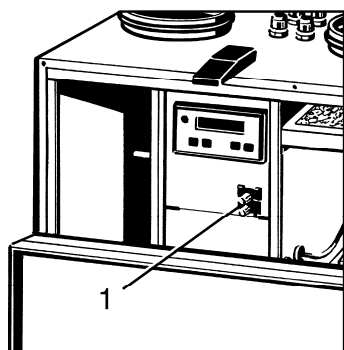
2. The ventilation system

2.6 Safety devices

2.6 Safety devices



- Safety devices should not generally be disabled.
- Switch the unit off immediately if you discover damage or faults that could endanger persons or property. Further use must be prevented until a complete maintenance check has been carried out. Maintenance work may only be carried out by a specialist installer.



Safety switch (1): The 2-pin safety switch is activated when the front cover is folded down. The two fans, antifreeze heating, bypass servomotor and any auxiliary heating connected are switched off immediately.

Thermal cut-off: The antifreeze heating has 2 thermal switches which interrupt the supply of power and deactivate the antifreeze heating at a temperature of 70 °C.

3. Operator unit

3.1 Important information about the operator unit

3. Operator unit

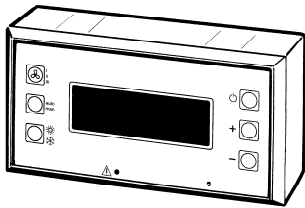
3.1 Important information about the operator unit

The operator unit with integrated room temperature sensor is located in the living space. The entire ventilation system can be easily operated or the settings programmed for automatic operations with 6 function keys. All the important operating data is shown on the display. The indicator lights indicate that the unit is ready for operation, faults/filter changes and an activated auxiliary heating.

NOTICE

Damage to the unit. Only plug the operator unit in when the ventilation unit is powered-off. Always pull the mains plug out first as otherwise the controller can be destroyed.

3.2 Operator unit keypad



- **4-line display:** indicates time and date, current operating modes and faults/messages.
- **Operating indicator light, green LED:** lights up constantly when unit is on.
- **Fault indicator light, red LED:** flashes when a fault occurs or when the filter change has been exceeded by 4 weeks.
- **FAN LEVEL button:** for switching between fan levels 1, 2 and 3 in manual mode. For activating intensive ventilation in automatic mode.
- **auto/man button:** for switching between automatic and manual mode. For moving the cursor when programming.
- **SUMMER/WINTER button:** for switching between summer and winter mode.
- **ON/OFF button:** for switching the unit on and off. When the unit is off, the unit switches into standby mode.
- **“+” and “-” buttons:** for changing the set values.
- **Programming mode:** to activate, press the auto/man and ON/OFF buttons at the same time. Daytime programs can be quickly and easily created here. A night reduction can be programmed if an external auxiliary heating is connected.

3.3 Display text (4 lines)

```
11:13 TH.01.31.02
summer mode auto
fan level 2
room 24°C heating 0
```

```
11:13 TH.01.31.02
error WR3223:
T1sensor outside air
```

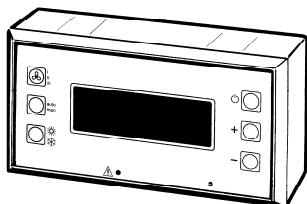
```
11:13 TH.01.31.02
message:
filter exchange
```

- Line 1: time and date
- Line 2: summer or winter mode, automatic or manual mode. If a fault occurs, the fault message, e.g. “error WR3223” appears here.
- Line 3: fan level 1, 2, 3 or also faults and messages (filter change).
- Line 4: room temperature. Temperature measured by the operator unit’s temperature sensor. If an external auxiliary heating is connected up, the “Heating 0” or “Heating 1” message also appears for auxiliary heating OFF/ON.

3. Operator unit

3.4 Switching unit on/off

3.4 Switching unit on/off



- Press the ON/OFF button. The unit is switched on. The last operating settings displayed appear on the display. The fan level assigned to the program also appears when in auto mode.
- Press the ON/OFF button again. The system is switched off, standby mode is active. Unit off appears on the display.

3.5 Setting time and date

```
11:13 TH.01.31.02
Unit
off
```

- Switch the unit off. You can only set the time and date when the unit is switched off.
- Use the auto/man button to position the cursor on the time or date field required (cursor flashes at current position).
- Use the “+” and “-” buttons to set the value you want.
- Press the ON/OFF button, the entries are saved and the unit runs. The setting process is complete once the cursor stops flashing.

```
11:13 TH.01.31.02
winter mode man.
fan level 2
room 24°C
```

Please take into account the following input formats:

- Times are entered in “hh:mm”
- Days of the week = “MO”, “TU”, “WE”, “TH”, “FR”, “SA” or “SU”
- Dates are entered in “MM.DD.YY” format

3.6 Auto/Manual mode

```
11:13 TH.01.31.02
winter mode man.
fan level 2
room 24°C
```

Do you want to change a setting or modify the program?

First activate the mode you require, then undertake the settings!

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 24°C
```

- Press the auto/man button to change mode.

3. Operator unit

3.7 Summer mode/Winter mode

3.7 Summer mode/Winter mode

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 24°C
```

During winter mode (with bypass shutter closed) all the supplied air passes via the heat exchanger.

```
11:13 TH.01.31.02
summer mode auto
fan level 2
room 24°C
```

In summer mode, the unit bypass shutter opens, depending on the outside air and inside temperature.

- Press the SUMMER/WINTER button to change operating mode.

3.8 Setting fan level 1, 2 or 3

```
11:13 TH.01.31.02
summer mode man.
fan level 2
room 24°C
```

Manual mode:

- Press the FAN LEVEL button until the fan level you want is set. The last setting applies until the FAN LEVEL button is pressed again.

```
11:13 TH.01.31.02
summer mode auto
fan level 3
room 24°C
```

Auto mode:

- Press the FAN LEVEL button. The ventilation unit automatically switches to level 3 (intensive ventilation).
- Press the FAN LEVEL button again to switch back to the previous fan level. The ventilation unit automatically switches back after 60 minutes.



During commissioning, the specialist installer modifies the fan levels to the particular circumstances of your building or apartment. Every fan level can have a volumetric flow of between 100 m³/h and 250 m³/h (set in 5 m³/h stages).

Factory settings for:

- Fan level 1 100 m³/h
- Fan level 2 150 m³/h
- Fan level 3 200 m³/h

3.9 Setting setpoint room temperature (for ventilation units with an external auxiliary heating only)

```
11:13 TH.01.31.02
winter mode auto
fan level 2
room 22°C heating 0
```

```
temperature: 23°C
winter mode auto
fan level 2
room 22°C heating 1
```

- Use the SUMMER/WINTER button to set winter mode.
- Press the “+” or “-” button, the setpoint room temperature appears on the operator unit display, e.g. 23 °C.
- Use the “+” or “-” button to set the setpoint room temperature you want.
- The temperature is automatically displayed after 1 minute, the time and date appear on the display again and the input value is saved.

3. Operator unit

3.10 Programming mode

3.10 Programming mode – day / week time program

The time programs for automatic mode are programmed in programming mode. 3 time ranges can be assigned to each day of the week. The fan levels required are then assigned to these time ranges. Fan level 2 (standard) is always activated if no other fan level has been selected, e.g. between 05:00 and 08:00 with the factory setting.

Factory setting:

- 23:00 to 05:00: fan level 1
- 08:00 to 12:00: fan level 1
- 14:00 to 16:00: fan level 1

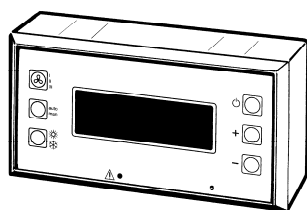
Factory setting for units with external auxiliary heating:

- 23:00 to 05:00: fan level 1, reduction temperature -3 °C
- 08:00 to 12:00: fan level 1, reduction temperature -0 °C
- 14:00 to 16:00: fan level 1, reduction temperature -0 °C



Programming information

- Use the auto/man button to position the cursor.
- Use the “+” or “-” button to change the input value at the cursor.
- Programming mode is automatically exited after 1 minute and the entered values saved if no buttons are first pressed.
- If an external auxiliary heating is connected, you can set a temperature reduction (night reduction) for preheated air of up to 8 K.
- You can also switch the ventilation off for periods (“FL0” fan level), if you only want to ventilate e.g. a holiday apartment or guest apartment for particular periods but do not want automatic ventilation at other times.



Activating programming mode

- To activate programming mode press the auto/ man and ON/OFF buttons at the same time (press the auto/man button first and then the ON/OFF button).
- The switching program for the current day pre-programmed when the unit was supplied appears on the display.

```
program MO-day
00:00-06:00 FL1
11:00-12:30 FL3
22:00-00:00 FL0
```

Changing day of the week

- Use the auto/man button to position the cursor on Monday (MO flashes).
- Use the “+” and “-” buttons to set the day of the week you want.

```
program MO-day
00:00-06:00 FL1
11:00-12:30 FL3
22:00-00:00 FL0
```

Changing times in the daily program

- Use the auto/man button to position the cursor on the time of the time range you want.
- Use the “+” and “-” buttons to set the time.

3. Operator unit

3.10 Programming mode

```
program MO-day
00:00-06:00 FL1
11:00-12:30 FL3
22:00-00:00 FL0
```

Changing fan levels in the daily program

- Use the auto/man button to position the cursor on the number after the fan level (FL) of the time range you want.
- Use the “+” and “-” buttons to set the fan level.
- Select fan level “0” if you want to switch the unit off for a particular time period.

```
program MO-day
00:00-06:00 FL1 -3°C
11:00-12:30 FL3 -0°C
22:00-00:00 FL0 -1°C
```

Changing night reduction in the daily program

If an external auxiliary heating is connected up, the reduction temperature also appears on the operator unit display. A temperature reduction of max. 8 K can be assigned here to each time range of a daily program.

- Use the auto/man button to position the cursor on the reduction temperature of the time range you want.
- Use the “+” and “-” buttons to set the reduction temperature.

```
program MO-day
00:00-06:00 FL1
11:00-12:30 FL3
22:00-00:00 FL0
```

Copying daily program

- Use the auto/man button to position the cursor on the last digit in the 4th line.
- Press the auto/man button again.
- Press the “+” button. The current day time program is copied for the following day of the week.

```
copy MO-day>TU-day
00:00-06:00 FL1
11:00-12:30 FL3
22:00-00:00 FL0
```

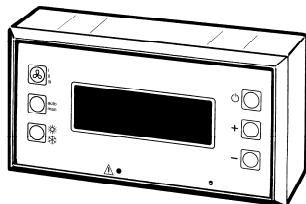
Deactivating programming mode

Press the ON/OFF button to deactivate programming mode, the values entered are saved.

3. Operator unit

3.11 Special functions (specialist installer)

3.11 Special functions



- Switch the unit off.
- Use the auto/man button to position the cursor on the year number field (cursor flashes at current position).
- Use the “-” button to set the year “94”.
- The values shown on the left appear on the display.

```
11:13   TH.09.21.03
Unit
off
```

```
11:13   TH.09.21.94
Unit
XYZ11  off  V2.xx
```

Display values

- X External auxiliary heating connected = 1
No auxiliary heating connected = 0
- Y External temperature sensor for auxiliary heating connected = 1
No external temperature sensor connected = 0
- Z Fault = 1, No fault = 0
- V2.xx = version number

```
L1= XXXXXh L2=XXXXXh
L3= XXXXXh AH=XXXXXh
AF= XXXXXh TT=XXXXXh
t=224 T=60m
```

- Now press the ON/OFF button. The unit is activated, the values shown on the left appear on the display.

Display values

- L1 Total runtime of fan level 1 (in hours)
- L2 Total runtime of fan level 2 (in hours)
- L3 L3 Total runtime of fan level 3 (in hours)
- AH Operating hours counter for external auxiliary heating (in hours)
- AF Operating hours counter for antifreeze heating (in hours)
- TT Total of operating hours counter for all fans (in hours)
- t Current room temperature of operator unit temperature sensor in °C.
For example: t = 224, room temperature = 22.4 °C.
Alternatively: room temperature of external temperature sensor when “Select ext. temp. sensor” is released at input E6.
- L Current runtime of fan level 3 timer (in minutes). Standard = 60 minutes.

```
L1= XXXXXh L2=XXXXXh
L3= XXXXXh AH=XXXXXh
AF= XXXXXh TT=XXXXXh
t=224 T=60m
```

RESET for operating hours counter

- Use the auto/man button to position the cursor on the “TT” field (cursor flashes at current position).
- Press the “-” button, all counters are reset to “0”.
- Press the ON/OFF button, the values are saved.

3. Operator unit

3.11 Special functions (specialist installer)

```
L1= XXXXXh L2=XXXXXh
L3= XXXXXh AH=XXXXXh
AF= XXXXXh TT=XXXXXh
t=224 T=60m
```

Setting timer of fan level 3

- Use the auto/man button to position the cursor on the “L” field (cursor flashes at current position).
- Use the “+” or “-” button to set the timer time you want (range = 10...120 minutes, in 10 minute steps).
- Press the ON/OFF button, the values are saved.

```
11:13 TH.09.21.94
Unit
XYZ11 off V2.XX
```

Exiting special functions menu

- Use the auto/man button to position the cursor on the “94” year field (cursor flashes at current position).
- Use the “+” button to set the current year number.
- The values shown on the left appear on the display.
- Press the ON/OFF button, the previous entries are saved and the unit runs. The setting process is complete once the cursor stops flashing.

```
11:13 TH.09.21.03
Unit
off
```



The special functions menu is closed automatically and the entries saved if you

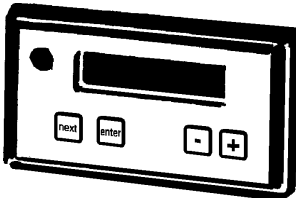
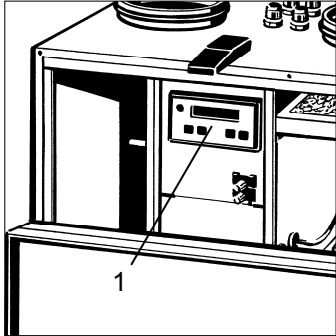
- do not press any buttons for one minute,
- press the FAN LEVEL button,
- press the SUMMER/WINTER button.

4. Power module

4.1 Power module keypad

4. Power module

4.1 Power module keypad



On the power module (1) you can select the ventilation unit's display parameters and find out the unit's current operating modes.

The basic system settings may only be changed by a specialist installer. Various operating and service parameters can be queried and set on the power module.

The keypad on the power module consists of the following components:

- **Display, one-line:** the settings, operating modes, measurements and fault messages appear here.
- **“next” button:** selects the next display or set parameters regardless of whether the unit is switched on or off on the operator unit.
- **“enter” button:** press this button to save settings.
- **“+” and “-“ buttons:** for changing set values, e.g. “volumetric flow entry (m³/h) for a fan level”.

4.2 Important tips



- Your specialist installer can program the volumetric flow for each fan level in a range of 100...250 m³/h on the power module (set in 5 m³/h steps). Speak to your specialist installer if you want a different setting.
- Once the front cover has been opened, the **“intakeAIRmissing” fault message** appears on the power module display because the safety switch switches the fans to de-energised. Simply press any button, the fault message will disappear and the parameters will be shown on the display.
- The factory settings on the power module **may only be changed by the specialist installer**. Incorrect settings may result in the unit malfunctioning.
- The ventilation unit can also be operated manually and directly from the power module without an operator unit, e.g. for checking and regulating the unit. However in order to do this, the operator unit must be deactivated from the power module – the automatic program and temperature sensor in the living space are deactivated.
- The safety switch must not be deactivated because e.g. the running fans could thereby cause you serious injury.
- The unit can only be set on the operator unit if the “cntrl. unit” set parameter is reset to “1” on the power module. This releases the operator unit again, the power module is not protected from unintended changes.
- When “cntrl. unit” = “0”, the “service mode” message appears on the operator unit.

4. Power module

4.3 Display parameters

4.3 Display parameters (order)



The operator unit is switched to active when the control unit parameter = 1

cntrl. unit = 1
reset code = 0

- room set¹⁾
- antifrz.
- AQx HUX AHx CO2x
- bypassOff1
- bypassOff2
- extern TMP²⁾
- **cntrl. unit = 1**
- fan level
- fan level1
- fan level2
- fan level3
- * aux.heating¹⁾
- rpm INfan
- rpm OUTfan
- outside T
- exhaustAir
- * winter mode
- * bypass closed
- **RESET code = 0**

cntrl. unit = 1
reset code = 1

- V adjust
- room set1)
- language
- CNW-Version
- antifrz.
- AQx HUX AHx CO2x
- bypassOff1
- bypassOff2
- extern TMP²⁾
- **cntrl. unit = 1**
- fan level
- fan level1
- fan level2
- fan level3
- V control
- * aux.heating¹⁾
- rpm INfan
- rpm OUTfan
- L3Tx AFx AHx ARx
- outside T
- exhaustAir
- * winter mode
- * bypass closed
- antifreeze off
- **RESET code = 1**



„*“ The current set value is displayed for parameters with „*“ .

1) Only appears if input E5 “Auxiliary heating available” is bridged.

2) Only appears if input E6 “Select external temperature sensor” is bridged.

4. Power module

4.4 Overview of parameters

4.4 Overview of parameters (factory settings in brackets)



- **Display parameters “D”:** parameters shown on the display but which cannot be changed. These give you an overview of the unit’s operating status.
- **Set parameters “S”:** parameters which can be changed by the specialist installer. Changes can only be undertaken when the operator unit is switched off.
- **When control unit parameter = 1,** the operator unit is released for input. The parameters and their current value can be displayed on the power module. Control unit must be set to “0” for settings to be changed.
- The current set value is displayed for parameters with „*“.
- Temperature switching points for minimum room temperature and minimum outside temperature can be changed on the power module using the bypassOff1 and bypassOff2 set parameters. Factory setting:
 - Temperature switching point for room temperature = 20 °C
 - Temperature switching point for outside temperature = 15 °C

Parameter	Type	Values	Description
V adjust (0m3)	D/S	-20 ... +20 m³/h	Increases or decreases the volumetric flow set in the factory for the 3 fan levels in 1 m³ steps.
room set ¹⁾ (20°C) – Option –	D	10 ... 35 °C	Setpoint room temperature setting for external auxiliary heating if operator unit is not connected (in winter mode only).
language (German)	D/S	Sprache deutsch englishlanguage langue francaise	Language setting: German=upon delivery, English or French
CNW-Version (13)	D/S		Selection of ventilation unit’s switchable power supply: 13 = switchable power supply CNW 015-AB02- 13 (13 select)
antifrz.	D/S	3 ... 10 °C	Factory setting = 6 °C
AQx HUx AHx CO2x	D	0/1	Status of inputs E2 to E5; x=0 (OFF), x=1 (ON) AQ = air quality controller, HU= humidity sensor, AH = auxiliary heating, CO2 = CO ₂ sensor
bypassOff1 (20°C)	D/S	15 ... 25 °C	Temperature switching point (room temperature) for bypass
bypassOff2 (15°C)	D/S	5 ... 20 °C	Temperature switching point (outside temperature) for bypass
externTMP ⁴⁾ (...°C) – Option –	D	-45 ... +80 °C	Current temperature of external temperature sensor T2. The temperature sensor in the operator unit is not functioning.

4. Power module

4.4 Overview of parameters

Parameter	Type	Values	Description
cntrl. unit 1/0 (1)	D/S	1/0	1 = operator unit is active. 0 = operator unit is not active, unit in Service mode. Set parameters can be changed. "Service mode" appears on the operator unit.
fan level (1)	D/S	0, 1, 2, 3	Ccurrent fan level. 0=unit OFF.
fan level1 (100m ³)	D/S	100 ... 250m ³ /h	Volumetric flow for fan level 1 (in 5 m ³ steps)
fan level2 (150m ³)	D/S	100 ... 250m ³ /h	Volumetric flow for fan level 2 (in 5 m ³ steps)
fan level3 (200m ³)	D/S	100 ... 250m ³ /h	Volumetric flow for fan level 3 (in 5 m ³ steps)
V control	D	0 ... 100%	Control voltage for switchable power supply (10 V = 100%)
* aux.heating ¹⁾ (OFF) – Option –	D/S	ON/OFF	Relay K5 can be switched on/off for test purposes (in winter mode only, only when safety switch is pressed). Becomes a display parameter when an ext. temperature sensor is connected.
rpm INfan	D	—	Current speed of supply air fan in n/min
rpm OUTfan	D	—	Current speed of exhaust fan in n/min
L3Tx AFx AHx ARx	D	1/0	Internal statuses, x=0 (OFF), x=1 (ON/active) L3T = fan level 3, timer, FS = antifreeze heating AH = external auxiliary heating, AR = air reduction (fan level -1)
outside T (...°C)	D	-45 ... +80 °C	Current outside air temperature in ventilation unit
exhaustAir (...°C)	D	-45 ... +80 °C	Current exhaust air temperature in ventilation unit
* winter mode	D/S	summer mode winter mode unit OFF	Operating mode can be set for test purposes. Otherwise the selection is made on the operator unit. The star indicates the current setting.
* bypass closed	D/S	open/closed	Setting of bypass shutter can be set for test purposes (in summer mode only, only when safety switch is pressed). Becomes a display parameter when an ext. temperature sensor is connected.
antifreeze off ³⁾	D	—	Status of antifreeze heating
antifreeze test? ⁴⁾	S	—	Press "enter", the antifreeze heating switches on for 2 sec.
reset code	D/S	0, 1, 11	1 = Other set parameters are released 0 = Exit programming (service mode) 11 = All parameters are reset to the status in which they were supplied (factory settings)

- 1) Only appears if input E5 "Auxiliary heating available" is bridged.
- 2) Only appears if input E6 "Select external temperature sensor" is bridged.
- 3) Only appears if operator unit is activated.
- 4) Only appears if operator unit is deactivated. For testing antifreeze heating.

5. Messages/faults and their rectification

5.1 Meldungen

5. Messages/faults and their rectification

5.1 Messages

```
11:13 TH.01.31.02  
message:  
filter exchange
```

Operator unit: “filter exchange”

Power module: “E1 filter change”

Cause:

- Coarse and pollen filters are contaminated by dust, pollen etc. The ventilation unit’s differential pressure switch registered a pressure difference of 80 Pa for more than 60 seconds upstream and downstream of the two dust filters – only if fan level 1 or 2 is activated.
- If the filter change has been exceeded by more than 4 weeks, the red fault indicator light also flashes.
- The “Filter change” message goes out for 1 minute if you press a button on the operator unit. The current operating statuses are shown on the display during this time and you can also undertake settings.

Remedy:

- Always change all 3 of the ventilation unit’s filters.
- Both coarse filters should be changed every 3 months and the dust filter should be changed every 6 months

5.2 Faults

i

A fault appears as follows:

- The relevant message texts appear on the operator unit and power module display.
- The red fault indicator light on the operator unit also flashes.

Operator unit: “Data transmission” fault

Power module: No fault message

Cause: The transfer of data between the ventilation unit and operator unit is faulty. The 5-wire connection cable between the ventilation unit and operator unit is defective or not correctly connected.

Remedy: Contact specialist installer. Correctly wire units.

Operator unit: “Data transmission” fault

Power module: No fault message

Cause 1: Control lines 3, 4 and 5 (data bus) incorrectly connected. The ventilation unit runs at the last fan level selected.

Remedy: Contact specialist installer. Correctly wire operator unit.

Cause 2: Control lines 3, 4 and 5 (data bus) not connected or interrupted. The ventilation unit runs at the last fan level selected.

Remedy: Contact specialist installer. Correctly wire units.

Operator unit: No display

Power module: No fault message

Cause 1: Control lines 1 and 2 (supply voltage) incorrectly connected. The fans remain stationary.

Remedy: Correctly wire units. Exchange control lines 1 and 2.

Cause 2: Control lines 1 and 2 (supply voltage) not connected or interrupted. The ventilation unit runs at the last fan level selected.

Remedy: Correctly wire units.

Cause 3: Short circuit in connection cable.

The fans remain stationary.

Remedy: Replace connection cable and correctly wire.

Operator unit: “T1sensor outside air”

Power module: “error T1 sensor”

Cause: The outside air temperature sensor or its connection cable is defective or not correctly connected.

Remedy: Press the “enter” button on the power module. If this message occurs again soon after, contact a specialist installer.

5. Messages/faults and their rectification

5.2 Faults

Operator unit: "T2sensor ext.temp."

Power module: "error T2 sensor"

Cause: The external temperature sensor or its connection cable is defective or not correctly connected.

Remedy: Press the "enter" button on the power module. If this message occurs again soon after, contact a specialist installer.

Operator unit: "T3sensor exhaust air"

Power module: "error T3 sensor"

Cause: The exhaust air temperature sensor or its connection cable is defective or not correctly connected.

Remedy: Press the "enter" button on the power module. If this message occurs again soon after, contact a specialist installer.

Operator unit: "no anti freeze"

Power module: "antifreeze error"

Cause: If this message appears for a longer time, the frost protection heating may be faulty.

Remedy: Contact specialist installer.

Operator unit: "no incomming air"

Power module: "extractAIR missg"

Cause: Supply and exhaust fans are stationary.

Remedy: Close the front cover so that the safety switch is pressed. If this message occurs again, contact a specialist installer.

Operator unit: "no incomming air"

Power module: "intakeAIRmissing"

Cause: Supply air fan is stationary.

Remedy: Contact specialist installer.

Operator unit: "no outcomming air"

Power module: "extractAIR missg"

Cause: Exhaust fan is stationary.

Remedy: Contact specialist installer.

Operator unit: "error sys xx yyy"

Power module: "error sys xx yyy"

Cause: The power module self-monitoring function detects a defect.

Remedy: Contact specialist installer. The power module must be sent in for repairs.

6. Cleaning, maintenance

6.1 Safety instructions

6. Cleaning, maintenance

6.1 Safety instructions



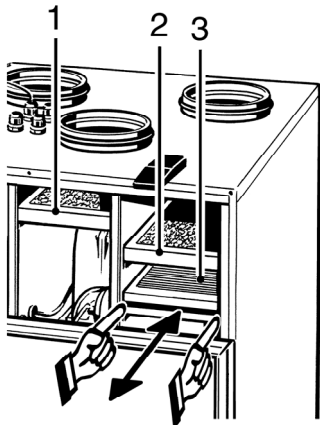
- Before any cleaning or maintenance work on the ventilation unit always disconnect the mains plug (not needed when changing the filter).
- **Never operate the ventilation unit without a filter**
- Further system components (earth heat exchanger, advance and re-heating register, etc.) must be cleaned and maintained in line with the corresponding instructions and regulations.
- Clean the disk valves with a damp, soft cloth.
- Behave in a security and safety-conscious way when unscrewing the front cover.

6.2 Filter change



Both coarse filters should be changed every 3 months and the dust filter should be changed every 6 months. Only use original replacement filters (filter class G4), see Chapter “2.4 System accessories”.

Procedure:



1. Loosen the 2 quick-release clips and fold down the front cover.
2. Take the two metal frames and coarse filters (1) and (2) out of the ventilation unit's housing. Then, take the filter inserts out of the metal frames and dispose of them in line with local regulations.
3. Clean the metal frames with a damp cloth and let them dry off.
4. Insert new filter inserts into the metal frames so that the filter lie flat right into the corners, without any folds.
5. Take out pollen filter (3) and replace. Dispose of used filter in accordance with local regulations.
6. Slide all 3 filters into the ventilation unit housing.
7. Fold up front cover and secure with quick-release clips.

6. Cleaning, maintenance

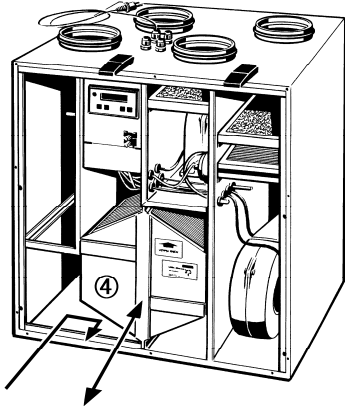
6.3 Heat exchanger change

6.3 Heat exchanger change



Depending on the level of contamination, we recommend cleaning the heat exchanger every year.

Procedure:



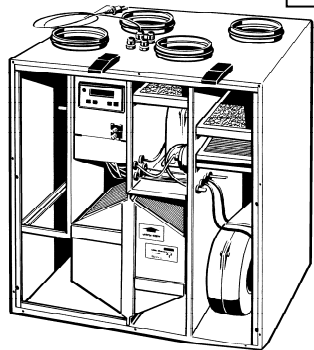
1. Remove front cover. To do this, unscrew the 4 screws, loosen the two quick-release clips, fold down upper part of front cover and then take off front cover.
2. Pull the heat exchanger (4) forwards and out. To do this, place your left hand on the heat exchanger and reach past and behind the heat exchanger (see arrow) and slide the heat exchanger from the back towards the front. At the same time support the heat exchanger at the front with your right hand.
3. Clean the heat exchanger carefully with luke-warm water and let it dry off completely. Make sure that the lamella are not damaged.
4. Apply thin coat of Vaseline to top rubber seal (heat exchanger) and bottom rubber seal (rail on tank base).
5. Push the heat exchanger carefully into the housing as far as it will go (see the sticker on the front side, that indicates the position). Make sure that the heat exchanger is dry before installing it.
6. Fit front cover.

6.4 Internal cleaning



Depending on the level of contamination, we recommend cleaning every year.

Procedure:



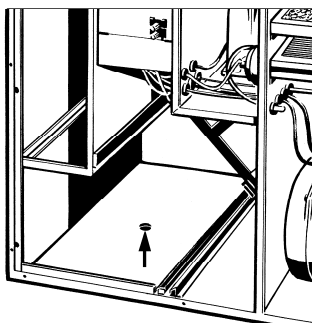
1. Remove front cover. To do this, unscrew the 4 screws, loosen the two quick-release clips, fold down upper part of front cover and then take off front cover.
2. Wipe out the inside with a cleaning cloth. Ensure that the position of the sensors and electric connection cables is not changed or damaged.
3. Fit front cover.

6.5 Condensation drain and siphon



Depending on the room temperatures and level of contamination, we recommend cleaning the siphon every year.

Procedure:



1. Remove front cover. To do this, unscrew the 4 screws, loosen the two quick-release clips, fold down upper part of front cover and then take off front cover.
2. Remove any deposits from inside the siphon.
3. To prevent the siphon smelling, refill with water.
4. Fit front cover.

7. Assembling the ventilation unit (specialist installer)

7.1 Before the installation

7. Assembling the ventilation unit

7.1 Before the installation

Transport



- The unit is delivered on an auxiliary palette.
- Make sure that the unit is not damaged, tipped or knocked over during transport.
- Observe the valid safety and accident prevention regulations during transport.

Requirements at the installation site

- Installation work may only be carried out by authorised specialists.
- Install the ventilation unit in a frost-free room or cellar or in the loft space. Ambient temperature +10...+40 °C.
- All on-site work (drain, floor construction, etc) must all have been completed before installation as the ventilation unit cannot be moved again once the ducting is connected.
- Make sure the installation location is flat and solid. This helps to avoid vibration-related noises.
- Install the unit at a slightly higher level to ensure good condensation drainage.
- Keep a space of at least 1 m in front of the unit for operating and maintenance work.
- Take account of the technical data.
- Wall bracket: a bracket can be used to fit the ventilation unit on a solid wall.
- Fit the unit as close as possible to the channel through the thermally insulated building envelope to prevent unnecessary loss of heat.

Important information relating to installation

- Make sure you use appropriate insulation, sound-absorbing and installation material such as suitable tubular sound absorbers, supply air and exhaust air valves, overflow openings, etc.
- Make a service opening in your duct system.
- When installing the unit within the thermally-insulated building envelope, the external and outgoing air ducts must be insulated for energy-usage reasons and to avoid the build-up of condensation (diffusion resistant). If installation is provided outside the thermally insulated building envelope, supply and exhaust air ducts must be insulated in the cold area.
- Additional insulation material should be used to insulate fixing cuffs. This prevents the build up of condensation.
- With roof outlets, make sure that no condensation can penetrate from outside or remains in the roof shell.
- Sound insulation: Decouple the wall and roof outlets with strips of insulation.
- Take the planning documents from the Engineering office into account.
- Use an external grille with fly screen.

7. Assembling the ventilation unit (specialist installer)

7.2 Setting up ventilation unit

Important installation instructions for passive energy houses

Frost protection equipment in the passive energy house

- Air that is flowing into the ventilation unit must be pre-heated, in order to ensure continuous operation.
- Pre-heating can be done electrically (installed in the unit as standard), water-based or through an earth heat exchanger.

Earth heat exchanger

- An energy-optimised frost protection for the ventilation unit can be ensured through earth heat exchangers and a contribution can be made to the supply of heat with cold, external temperatures.
- In summer, the earth heat exchanger provides a certain cooling function and dehumidifying of the outside air.
- Earth heat exchangers must be planned carefully in respect of energy efficiency and air hygiene. Attention must be paid to good cleanability and a suitable filter concept. An inspection opening must be provided.

7.2 Setting up ventilation unit

Procedure

1. Setting up the ventilation unit: locate the unit on the floor at the installation site or hang it on the wall.
2. Attach condensation drain, fill siphon with water.
3. Fit protective grille on external connections and connect piping to ventilation unit.
4. Fit operator unit, e.g. in living room and connect to power module. If necessary, install separate room temperature sensor.
5. Plug in ventilation unit's mains plug.
6. Start up ventilation unit and if necessary set the volumetric flow for the 3 fan levels on the power module.

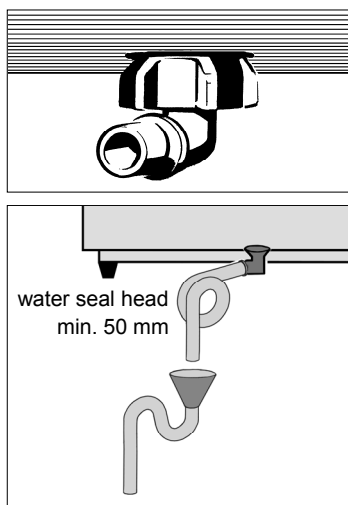
Setting up ventilation unit

- When delivered, the ventilation unit is assembled and ready for service.
- Place the ventilation unit in position and align it.
- The ventilation unit stands on 4 feet. The gap between the floor and the underside of the housing is 60 mm.

7. Assembling the ventilation unit (specialist installer)

7. 2 Setting up ventilation unit

Connecting condensation drain



- Remove the front cover. To do this, loosen the 2 quick-release clips and the 4 front cover screws.
- Have a sufficiently long ½" hose at the ready.
- Bend the end of the hose into a siphon with a water column of some 50 mm and fix this in place with suitable fixing material. The hose should not be kinked. Alternatively you can guide the hose into an existing siphon.
- Locate the drain hose on the angled piece on the floor panel of the ventilation unit. Fix the hose in place with a hose-clip.
- Locate the end of the hose above an open drip funnel (see figure). The drip funnel must be connected to the waste water pipe.
- Now pour water into the condensation drain in the ventilation unit. Check that the connection is not leaking. Top up the siphon with water to avoid any leaks.
- If required, insulate the drain hose and the condensation run-off connection to avoid the build up of condensation, particularly in rooms with high levels of humidity.
- Place the front cover in position, hinge it upwards and fix it in place with the two quick-release clips.

NOTICE

- The siphon (see figure above) needs a water seal head of at least 50 mm.
- Install an open drip funnel with another siphon at the drainage system, to receive the condensation. This disconnects the ventilation unit from the drainage system and it prevents a build up of germs at the unit.
- It is not permitted to install several siphons one after the other without duct separation.

Fit protective grille, connect piping



It is important that no objects fall in the couplings as this could result in the fans being damaged.

- Install a protective grille and/or fly grille at the external connections and a disk valve at the internal connections.
- Fix the tubular sound absorber in place using fixing cuffs and insulate it in the area of the fixing cuffs using insulation material supplied on-site.

7. Assembling the ventilation unit (specialist installer)

7.3 Electrical connection

7.3 Electrical connection



- Only qualified electricians are permitted to connect up the operator unit.
- Be sure to observe the relevant danger regulations for assembly and electrical installation; in particular VDE 0100 with the corresponding parts.
- The ventilation unit is supplied ready to plug in. It may only be operated using the rated voltage shown on the rating plate.
- The construction of the ventilation unit conforms to the safety-related requirements of the VDE within the scope of the Equipment and Product Safety Law, as well as the pertinent conditions of the EC Directives.



In the case of passive energy houses, a safety switch-off must be included in the case of supply air temperature that is too cold.

- If a hydraulic heat register is installed in the supply air channel, a safety switch-off is necessary in the case of supply air that is too cold.
- If the ventilation unit is installed with a hydraulic re-heating register (supply air) in a passive energy house, a thermostat (TH 10) has to be installed to protect against supply air that is too cold (see Chapter 7.5)

Fit operator unit and connect up / plug in mains plug

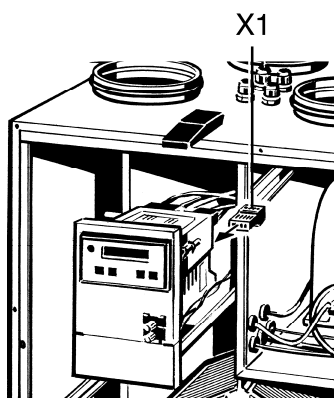


The room temperature sensor in the operator unit measures the current room temperature. Select a suitable installation location within the living space. Install the operator unit at eye level at a suitable location, i.e. not near equipment that will impact on temperatures, right next to a window or in a cupboard.



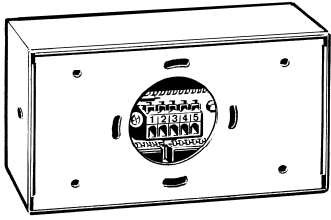
Damage to the unit. Only plug the operator unit in when the ventilation unit is powered-off. Always pull the mains plug out first as otherwise the controller can be destroyed

- The ventilation unit mains plug must not be plugged in – if necessary, unplug this!
- Route the supply cable from the ventilation unit to the operator unit's installation location (onsite supply cable = 5-wire, shielded cable, 5 x 0.5 mm², max. 100 m long).
- Remove the ventilation unit's front cover, pull out the drawer with power and circuit mains unit.
- Use a sharp object to push through the cable sleeve in feed-in point "A" (see page 33) of the housing's double wall from below.
- Plug the supply cable from above and through the feed-in point.
- Pull plug "X1" off the power module and wire the 5-wire cable on plug according to connection diagram on right. Plug in plug "X1" on power module and close the drawer.
- Remove cover from rear of operator unit. To do this loosen both screws from outsides of operator unit. Mark the 4 rear panel holes on the wall, drill the retaining holes in the wall and insert dowels. Take account of the circumstances on site (mounting material provided by customer).
- Guide the supply line from behind and through the operator unit's rear panel and secure rear panel to wall (mounting material provided by customer).



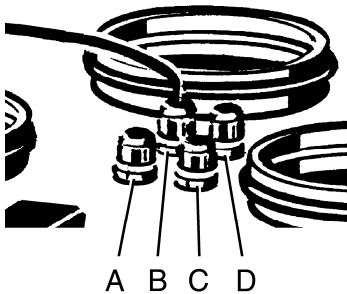
7. Assembling the ventilation unit (specialist installer)

7.4 Cable feed-in points on ventilation unit



- Wire cables onto connection terminal 1:1 according to power module plug arrangement 1...5. To do this, press the 5 small levers. Compare the order of the 5 control wires on the operator unit and on plug "X1". If necessary read the Fault rectification chapter for more details.
- Use 2 screws to secure the operator unit cover to the rear panel and plug in the mains plug. Corresponding messages appear on the operator unit and power module displays.

7.4 Cable feed-in points on ventilation unit



- A Operator unit in living space
- B Mains cable with protective contact plug
- C Electric auxiliary heating (optional)
- D Extra sensor (optional)

7.5 Temperature sensor T2 (KTY81-110, optional)

The room temperature is recorded with the temperature sensor in the operator unit or an optional temperature sensor T2.

The heat requirement for the auxiliary heating is determined in the room where the T2 temperature sensor is. The setpoint temperature value for the auxiliary heating is set and displayed at the operator unit, see Chapter 3.9.

T2 connection

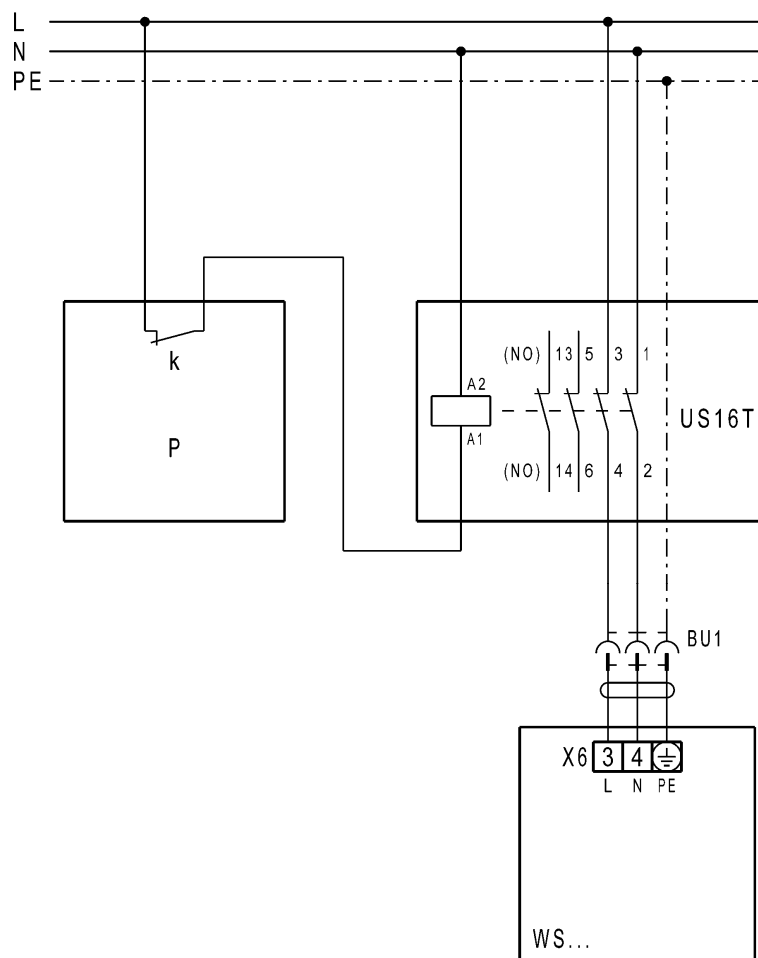
1. Release the input E6 "Select ext. temp. sensor" and input E5 "Auxiliary heating available" at the power module WR 3223. To do this, connect terminal contacts 6a and 6b and 5a and 5b on the plug connection X2, using a wire jumper. See the wiring diagram on Page 35.
2. Connect temperature sensor T2 to the terminal contacts 9a and 9b. See the wiring diagram on Page 35.

7. Assembling the ventilation unit (specialist installer)

7.6 Differential pressure controller (optional)

7.6 Differential pressure controller (optional)

- The differential pressure controller "P" is a safety device, which allows a ventilation system to be operated at the same time as an air-ventilated fireplace.
- The differential pressure controller, e.g. Wodtke DS 01 prevents a ventilation unit that is connected to this safety device being operated, if the living room pressure drops below the external pressure level.
- In the event of insufficient pressure, the relay contact "k" in the differential pressure controller opens and switches the ventilation unit off.



- P Differential pressure controller
e.g. Wodtke DS01, to be supplied by the customer
- US16T Universal contactor (to be supplied by the customer)
- BU1 Earthed socket (supplied by the customer)
- WS.. Ventilation unit WS 250

7. Assembling the ventilation unit (specialist installer)

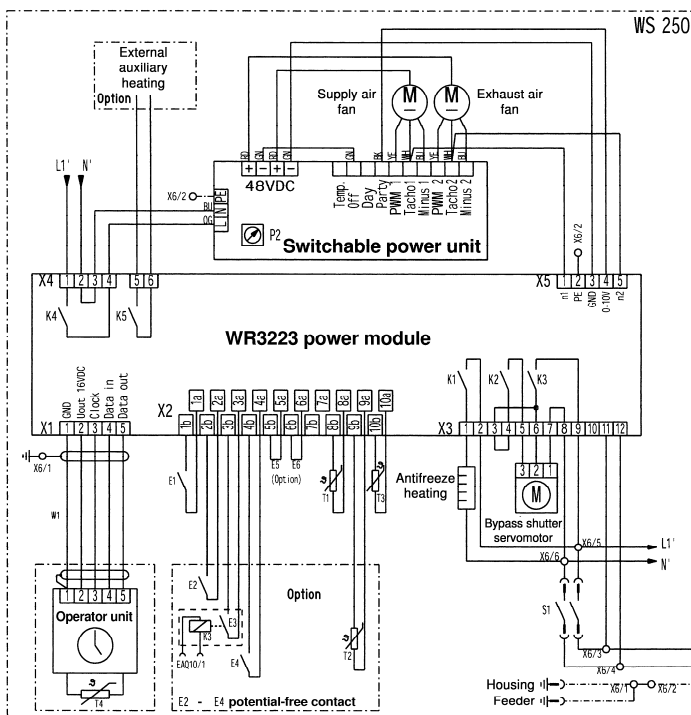
7.7 Circuit and wiring diagram

7.7 Circuit and wiring diagram



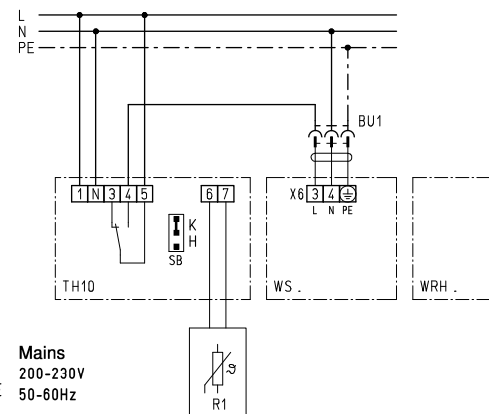
- Extension components are generally connected according to the connection diagram.
- The external temperature sensor T2 detects the room temperature in order to control the bypass shutter (summer mode), when input E6 is bridged (Select extern temp. sensor). Bridge E5 also has to be wired.

Ventilation unit



Antifreeze circuit: Ventilation unit with WRH.. in supply air channel

- TH10 Thermostat with temperature sensor R1
- R1 Temperature sensor, fitted in supply air channel
- SB Plug jumper for operating mode "K", relay switches off as unit temperature falls
- WS... Ventilation unit
- BU1 Safety plug (supplied by the customer)



- E1 Pressure sensor / filter
- E2 CO2 detector with potential-free contact Option
- E3 Air quality controller EAQ 10/1: Option
A Relay must be installed between EAQ 10/1 and unit with potential-free contact!
- E4 "Hygrostat HY5" humidity sensor Option
"Hygrostat HY10" humidity sensor Option
If using the HY10 hygrostat, a potential free contact must be installed between the ventilation unit and the HY10.
- E5 Auxiliary heating available: Option
Use a wire jumper in the case of external auxiliary heating, (bridge terminal contacts 5a and 5b)
- E6 Select ext. temp. sensor T2: Option
Use a wire jumper at E5 and E6 in the case of an external temperature sensor, (bridge terminal contacts 5a and 5b and 6a and 6b).

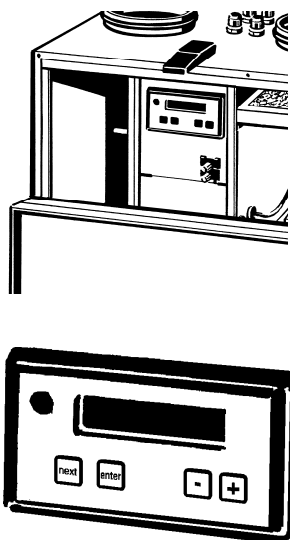
- T1 Outside air temp. sensor
- T2 External temp. sensor "KTY81-110" Option
- T3 Outgoing air temp. sensor
- T4 Room sensor for exhaust air
- K5 Switching contact for ext. auxiliary heating
- S1 Safety switch / activated via front plate
- W1 Connecting cable (provided by customer):
5-wire shielded cable (e.g. LiYCY 5 x 0.5 mm²)

- P2 Potentiometer.
– Stop on left (status upon delivery):
Fan 1 (supply air) and fan 2 (waste air) are controlled to the specified volumetric flow.
– Turn to the right: volumetric flow for fan 2 (exhaust air) is increased, up to 10 % depending on setting.

7. Assembling the ventilation unit (specialist installer)

7.8 Power module

7.8 Power module



The ventilation unit can also be operated manually from the power module without an operator unit.

To adjust the system's basic settings, first lock the operator unit so that you can check and adjust the unit – the automatic program and temperature sensor in the living space are then switched off.

The keypad on the power module consists of the following components:

- **Display, one-line:** the settings, operating modes, measurements and fault messages appear here.
- **“next” button:** selects the next display or set parameters regardless of whether the unit is switched on or off on the operator unit.
- **“enter” button:** press this button to save settings.
- **“+” and “-” buttons:** changes the set values, e.g. “Volumetric flow entry (m³/h) for a fan level”.

Important tips for the specialist installer



- The factory settings on the power module may only be changed by the specialist installer. Incorrect settings may result in the unit malfunctioning.
- Once the front cover has been opened, the “intakeAIRmissing” fault message appears on the power module's display because the safety switch switches the fans to de-energised. Simply press any button, the fault message disappears and the parameter display appears.
- The safety switch must not be deactivated because e.g. the running fans could thereby cause you serious injury.
- Every fan level can have a volumetric flow of between 100 and 250 m³/h (can be set in 5 m³/h steps). Factory setting for fan levels 1, 2 and 3 = 100 m³/h, 150 m³/h and 200 m³/h.
- Fan level 1, for basic ventilation, with reduced air flow. This guarantees a minimum ventilation of the building.
Fan level 2, for normal ventilation. Fan level is active if no other fan level has been selected manually or by automatic mode.
Fan level 3, for intensive ventilation with increased air volume: Intensive ventilation for brief but powerful ventilation of building in automatic mode.
- For fan level 1 set the lowest volumetric flow, for fan level 3 the highest. If the wrong order is used, malfunctions may arise and the heat exchanger may be damaged.
- The unit can only then be set at the operator unit once the “control unit” set parameter has been reset to “1” on the power module. When “control unit” = “0”, the “service mode” message appears on the operator unit.

7. Assembling the ventilation unit (specialist installer)

7.9 Commissioning

7.9 Commissioning



Before commissioning, the ventilation system must be fully connected up so that you can correctly set the unit.

Adjust the system parameters to the circumstances of the building or apartment as follows:

1. Check system components, correct setting if necessary.
2. On the power module, block entries on operator unit.
3. Set system parameters, e.g. adjust volumetric flow/fan level.
4. Release operator unit.
5. Set system time, see operating and maintenance instructions.
6. Program day time programs as requested by customer, see chapter 3.10.

1. Check system components before the setting and correct if necessary!

- Are the filters correctly fitted in the ventilation unit?
- Are the filters correctly fitted in the earth heat exchanger and are they clean?
- Are all inlet and outlet valves fitted correctly and are they open?
- If fire protection shutters are needed, are they open?
- Are all the ducts sealed?

2. Block operator unit entries → set parameters can be changed on power module!

```
11:13   TH.01.31.02  
  
Service  
mode
```

- Press “next” button until the following appears “cntrl. unit 1” on the display.
- Press “-” button, the following appears “cntrl. unit 0”
- Confirm with “enter” button. The operator unit is blocked for entries. The operator unit display is still in operation.
- This message appears on the display.

3. Set system parameters on power module (also refer to list of parameters on pages 21...23)

- Use the “next” button to select the set parameter required. E.g. press the “next” button until the fan level you want appears. “fan level 1 100m3”
- Use the “+” or “-” button to set the volumetric flow required, see “Important tips” section in the previous chapter.
- Confirm with “enter” button, the settings are saved.
- If necessary, set other parameters as described above.
- When reset code = 1, other service parameters are released.

8. Technical Data

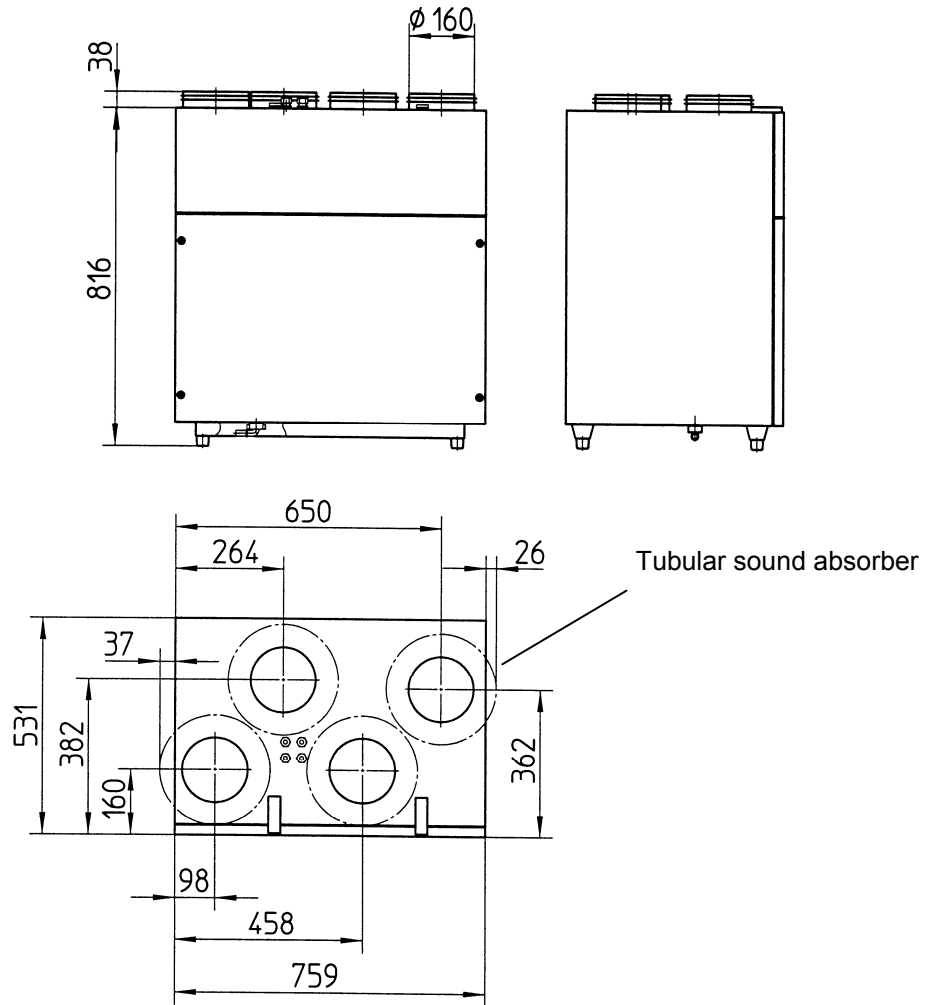
4. Releasing operator unit

- Press “next” button until the following appears “cntrl. unit 0”
on the display.
- Press “+” button, “cntrl. unit 1” appears “cntrl. unit 1”
- Confirm with “enter” button. The operator unit is released for entries.
- Job done. The basic settings are now complete.

8. Technical Data

Approval	Z-51.3-104
Operator unit	
Dimensions (W x H x D)	150 x 82 x 32 mm
Housing	
Dimensions (W x H x D)	759 x 854 x 531 mm
Design	sandwich construction with 20 mm thermal insulation
Material	galvanised sheet steel, partly powder-coated
Duct connections	DN 160 mm
Protection class	1
Degree of protection	IP 00
Permissible unit/ambient temperatures	+10...+40 °C
Outside air temperatures	-10...+40 °C
Weight	approx. 80 kg
Fan levels (basic settings)	
Fan level 1	100 m ³ /h
Fan level 2	150 m ³ /h
Fan level 3	200 m ³ /h
Volumetric flow range, can be set in 5 m ³ /h steps	100...250 m ³ /h
Electrical data	
Rated voltage, frequency	230 VAC, 50 Hz or 60 Hz
Power consumption at 50 Pa:	
100 m ³ /h	30 W
150 m ³ /h	50 W
250 m ³ /h	95 W
Power consumption of antifreeze heating	1.5 kW

Dimensions



9. Disposal

Packaging: Transport and protective packaging is, to a large extent, made of recyclable materials.

Dispose of the packaging materials in accordance with local regulations. Take the wooden pallets, for example, to your local recycling point.

Filters: Dispose of the filters with normal rubbish.

Old units: The old unit must be dismantled by a specialist company and disposed of correctly.



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