# LTR-3 eWind

Installation instructions for the ventilation unit

# CONTENTS

# READ FIRST

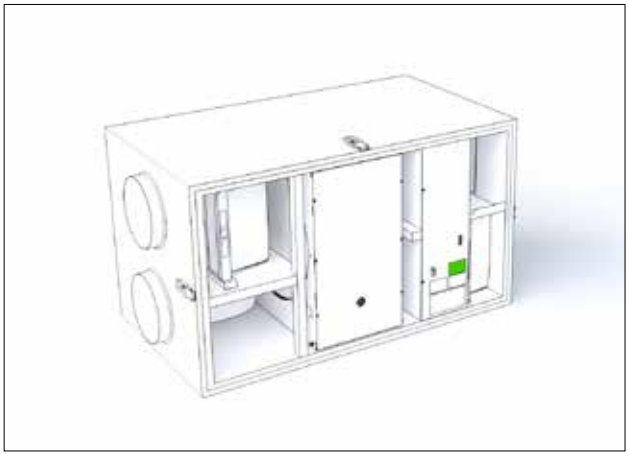
This instruction manual is intended for all the persons involved in the installation of the Enervent ventilation units. Only qualified professionals may install the equipment described in this manual in accordance with the instructions in this manual and the local laws and regulations. If the instructions provided in this manual are not followed, the warranty for the equipment becomes void and damages may be caused to persons or property.

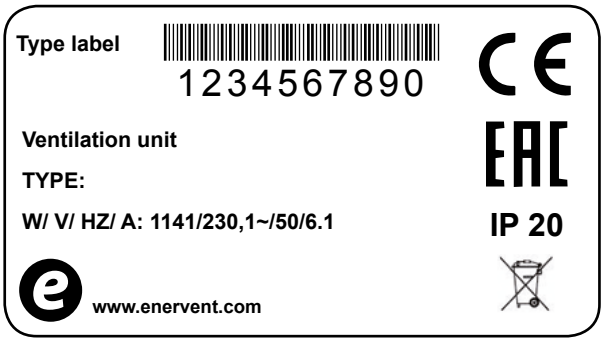
The equipment described in this manual may not be used by persons (including children) with reduced physical, sensory or mental capacity or without sufficient experience or knowledge, unless a person responsible for their safety is supervising and advising them in the use of the equipment.

## FOR YOUR INFORMATION

If the delivery does not contain all of the components listed in the section 'Contents of the delivery', please check the order and contact your distributor or Enervent before commencing installation.

# TYPE PLATE






If you need technical support, please check the equipment type and serial number from the type plate.

# SAFETY

## General information

**DANGER**

Always check that the supply voltage to the equipment is switched off before opening the service hatch.

**WARNING**

In case of a malfunction, always determine the reason for the malfunction before restarting the unit.

**WARNING**

When you have switched off the power to the unit, wait for two (2) minutes before starting the maintenance work. Even though the power is switched off, the fans continue running and the post-heating coil remains hot for a while.

## Electrical safety

**DANGER**

Only an authorised electrician may open the electrical box.

**DANGER**

Follow the local regulations on electrical installations.

**CAUTION**

Check that the unit is completely isolated from the mains supply before conducting any voltage tests, insulation resistance measurements or other electrical work or measurements. Such work may damage the sensitive electrical equipment.

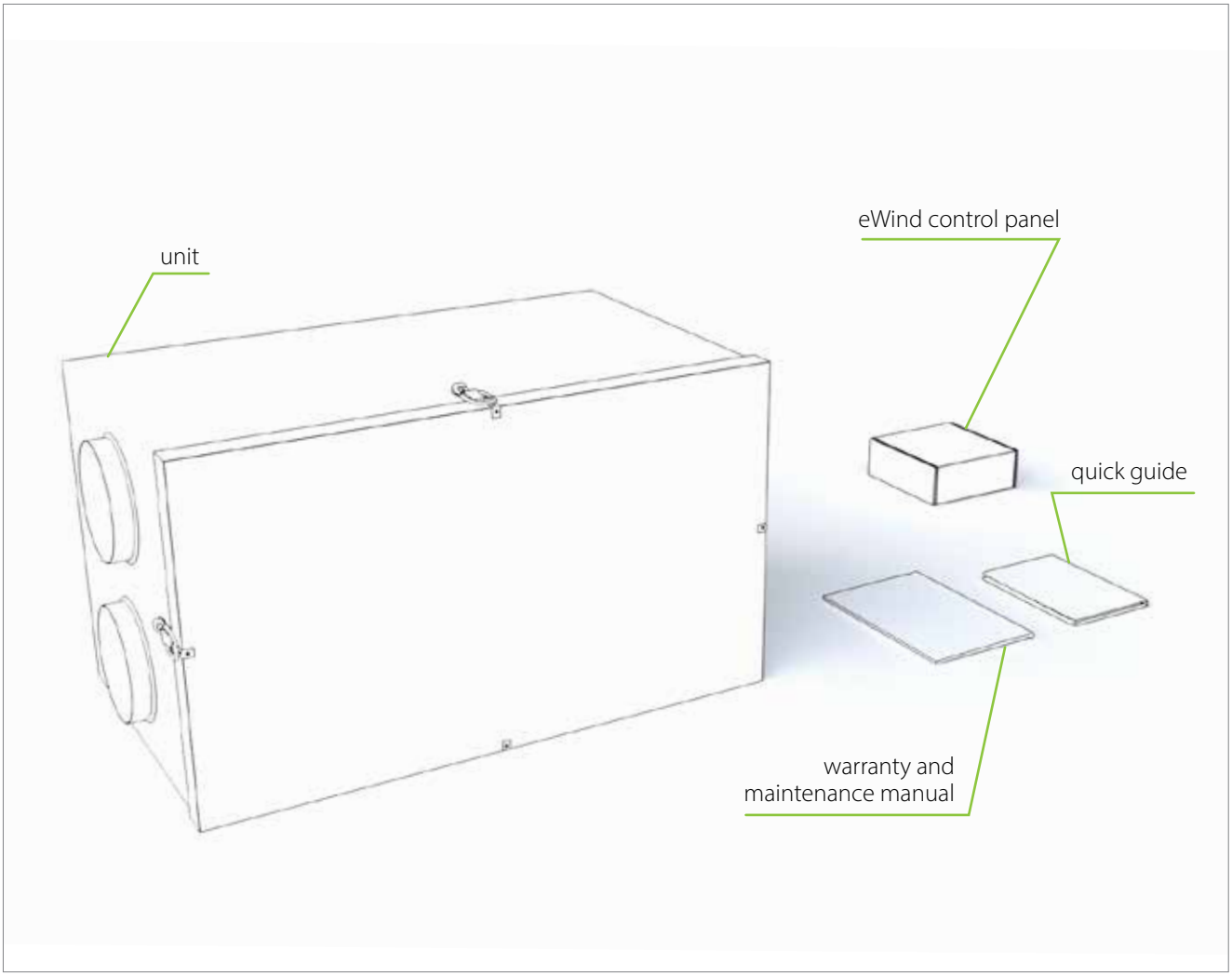
**CAUTION**

Control equipment used in the ventilation units may cause leakage current. This may affect the operation of the residual current protection.

**CAUTION**

All ventilation units containing a control system must be equipped with an overvoltage protector.

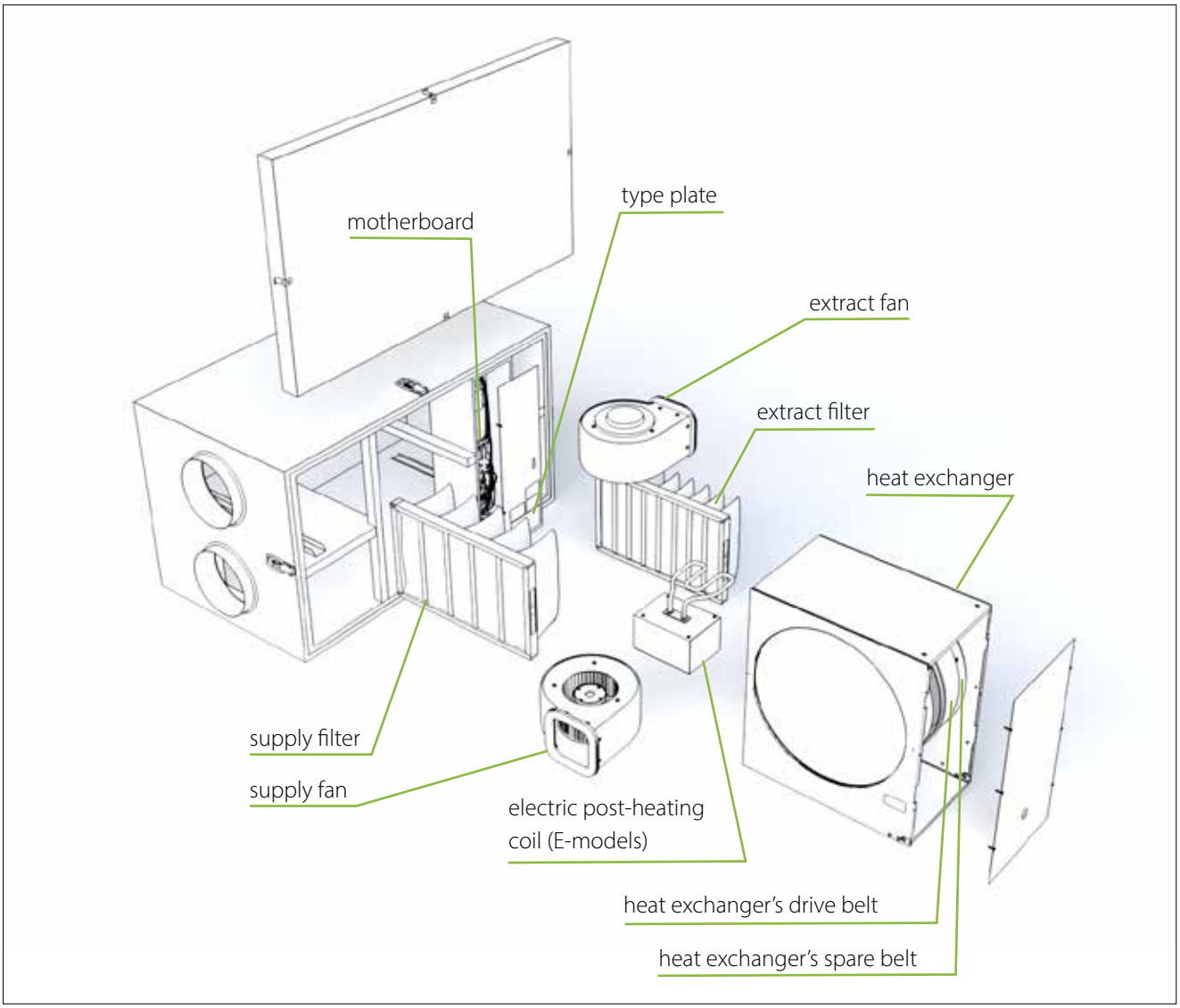
# CONTENTS OF THE DELIVERY




## Available accessories

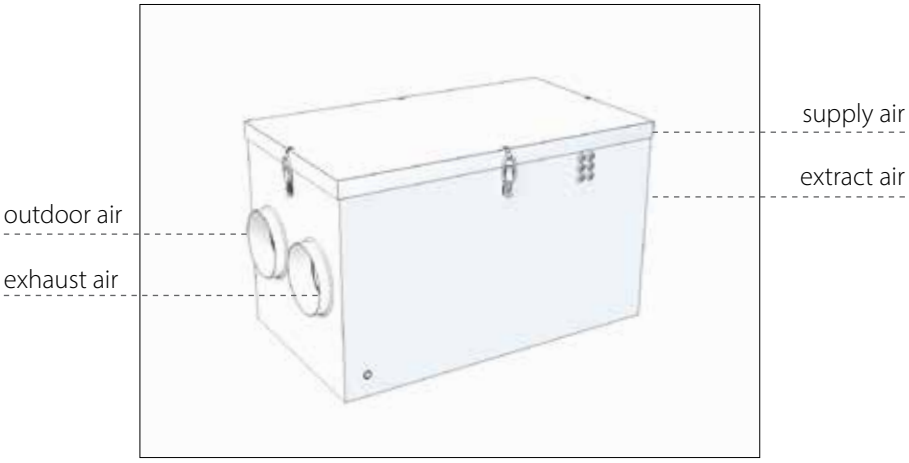
| Product number | Product name |
|---|---|
| K580040001 | eWind controller. The package contains a controller, surface mounting box and a 10-metre cable |
| K930030004 | $CO_2$ carbon dioxide transmitter for the room 0–10 V/24 V |
| K930030006 | %RH humidity transmitter 0–10 V/24 V |
| M230110002 | Humidity transmitter duct mounted KLK100 |
| K930030008 | Overpressure push button 'fireplace switch'/boost |
| K930030029 | KNX bus adapter |

# TECHNICAL SPECIFICATIONS OF THE UNIT




| | |
|---|---|
| Width | 470 mm |
| Depth | 840 mm |
| Height | 500 mm |
| Weight | 52 kg |
| Duct connection (duct size) | Ø 160 mm |
| Fans | 117 W, 1,05 A / 117 W, 1,05 A |
| Heat exchanger motor with thermal protection | 5 W, 0.04 A |
| Power of electric post-heating coil in E-models | 500 W / 230 V, 1~/50 Hz |
| Input power, E-model (post-heating coil) | 1140 W / 230 V, 1~/50 Hz/5.3 A |
| Circuit breaker | B10 A |
| Mains supply | 230 V, 1~/50 Hz/10 A |

## Duct connections



# BEFORE INSTALLATION

## Choosing the installation location

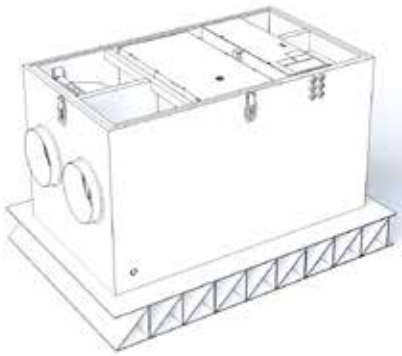
- Ensure that the ventilation system has been designed and realised in accordance with the building regulations.
- We recommend that the unit be installed in the technical facility.
- Do not install the unit in a room where the temperature and humidity are high. Under certain conditions, condensation may occur on the outer surface of the unit.
- Take the noise level of the unit into account when choosing the installation location.
- Do not install the ventilation unit directly outside the bedroom, as the unit is never completely silent, although it is quiet.
- Install an insulation plate behind the ventilation unit, or try to prevent the sound from being conducted to the structure by other means. Using soft foam sheets is recommended (not included in the delivery).
- Ensure that connecting the condensation water discharge pipe and water trap is possible. Remember to take the space required by the condensation water connection into account.
- Install the unit in a warm room (over +5°C).
- Ensure that at least 500 mm of free space is left in front of the unit for maintenance purposes.

### WOULD YOU LIKE TO KNOW MORE?

If you would like to know more about the construction of ventilation systems and the insulation of ventilation ducts, you can read about them on our website at **www.enervent.com**.

# INSTALLATION

1



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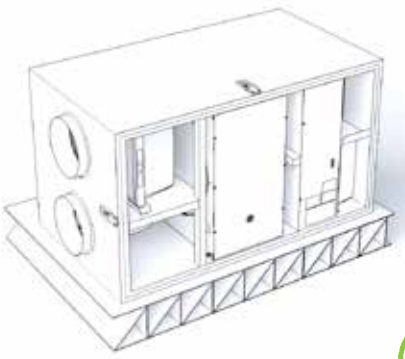

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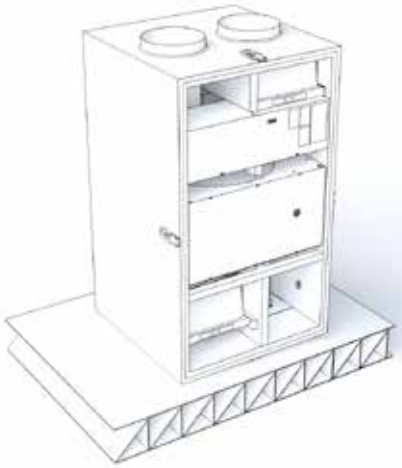

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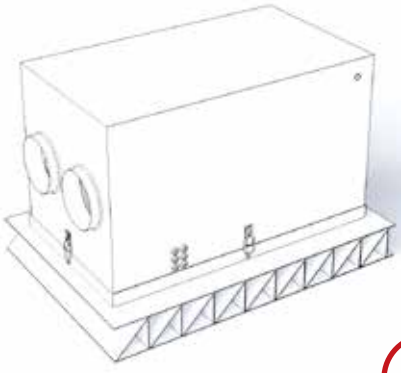


## CAUTION

Check before the installation of the ventilation unit that there are no foreign objects in the ventilation unit or ductwork.

Note the space needed for disposal of condensate water and the water trap.

- Make sure that there is enough space left in front of or above the maintenance hatch:
- Tilt the unit slightly in the direction of the condensation drain. The space needed is at least 50 cm.

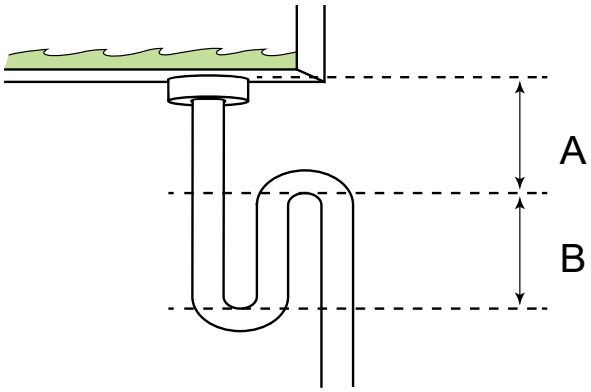
## Draining condensate water

All Enervent ventilation units must be drained. When air cools down (condenses), condense water forms. For example in winter time when humid inside air meets cold heat recovery wheel, or when warm outside air meets the cooling coil in the ventilation unit (if applicable).

**CAUTION**

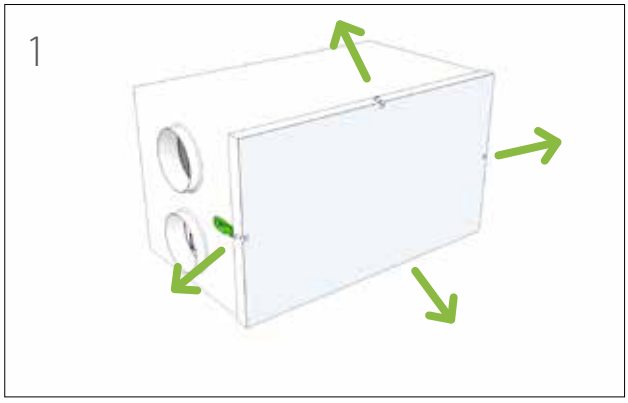
The condense water drain must not be directly connected to a sewer pipe.

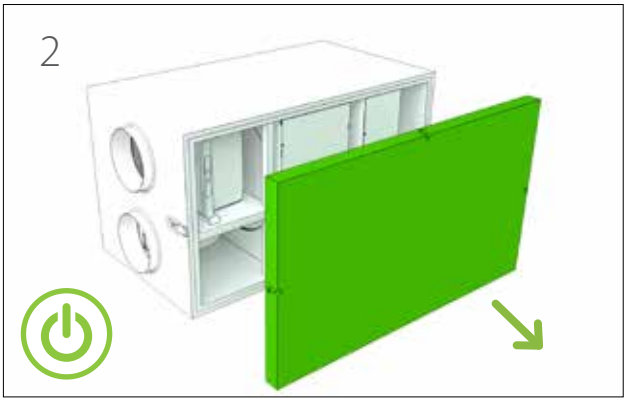
- The condensate water should be led in a falling, at least Ø15 mm pipe, through a water trap to a floor drain or such.
- The pipe must at all times lie lower than the condensate water drip pan / condensate water connection of the ventilation unit.
- There must not be any longer horizontal sections on the pipe.
- The condensation drain pipe must be insulated if mounted in spaces where freezing can occur.
- Only one water lock is allowed for each condensate water drain.
- If the unit is equipped with more than one condense water drains, each one must have a water lock of its own.
- There is underpressure in the ventilation unit. We recommend a height difference of (A) 75 mm, or at least the underpressure divided with 10 in millimeters (i.e. 500 Pa under pressure -> 50 mm), between the unit drain and the water lock drain.
- We recommend that the height of backwater in the water lock (B) is 50 mm, or at least the underpressure divided with 20 in millimeters (i.e. 500 Pa under pressure -> 25 mm height of backwater). The above also applies to duct coils for cooling mounted in the outside air duct or extract air duct.
- There are over pressure inside duct coils mounted in the supply air duct. We recommend the height difference (A) between the duct coil drain and the water lock drain is 25 mm. The water lock height of backwater (B) must be 75 mm, or at least the over pressure divided with 10 in millimeters (i.e. 500 Pa under pressure -> 50 mm).
- The water lock must be filled with water before starting up the unit. The water lock might dry up if water is not accumulated in it. If this happens, air might get into the pipe and hinder water from entering the water lock, which might result in an irritating "bubbling" sound.
- The functionality of the water lock must be checked every year before the heating season and also in the spring if the ventilation unit is equipped with cooling.

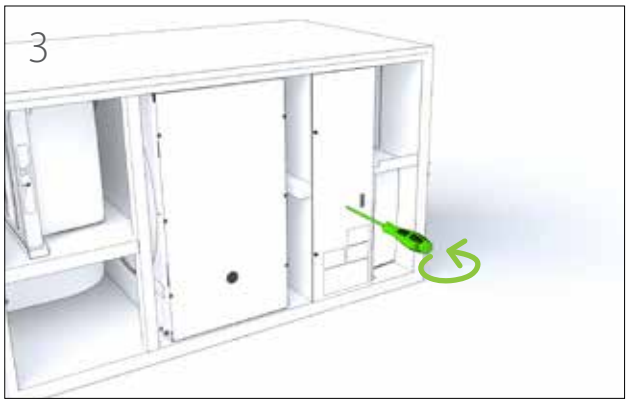


## Installation of the eWind control panel

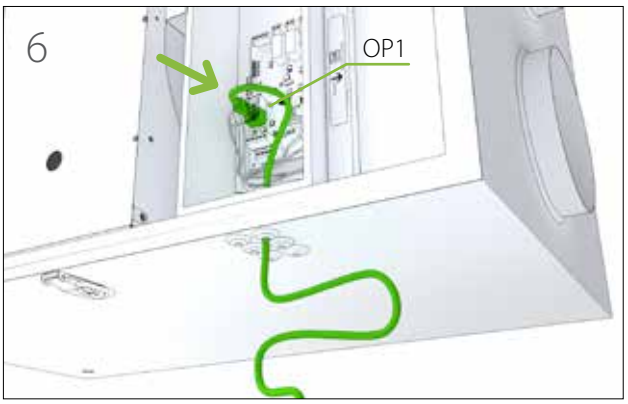
The eWind control panel (see section 'Control system and the eWind operation panel') is installed in a wall-mounted device box or using the surface-mounting box supplied with the accessory delivery. No more than two external control panels can be installed in the ventilation unit.

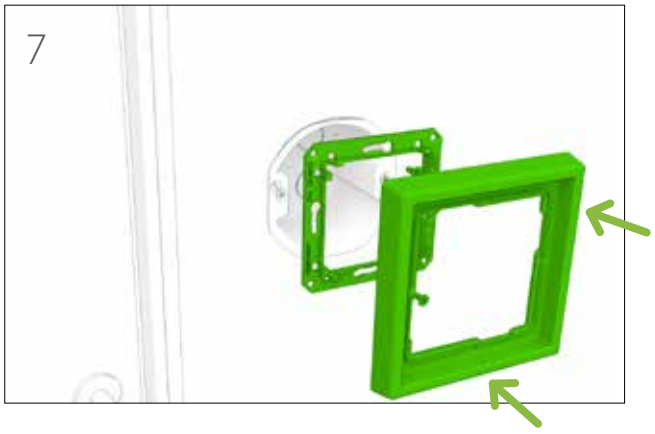


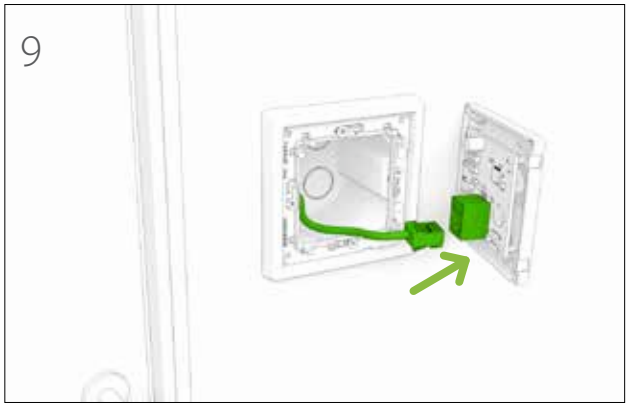



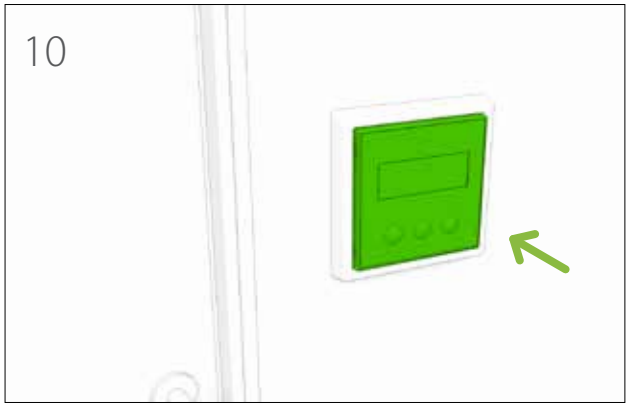





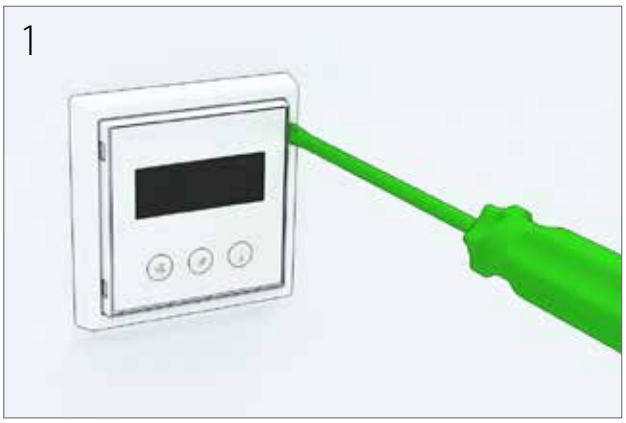



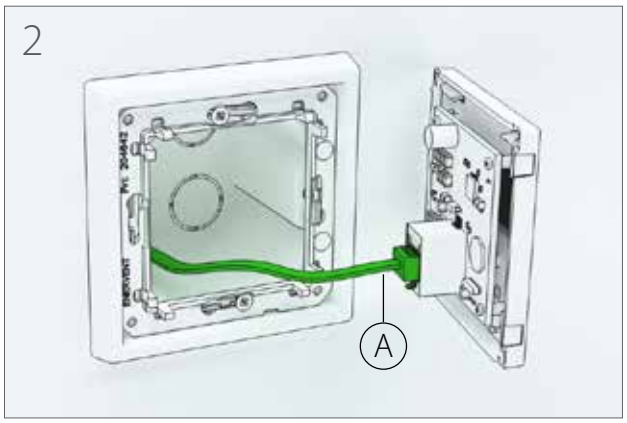



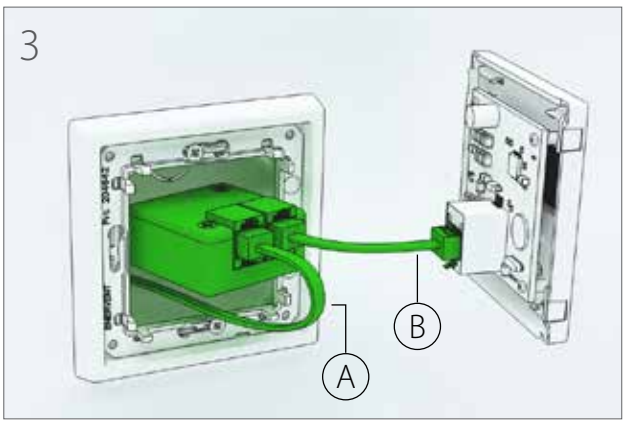



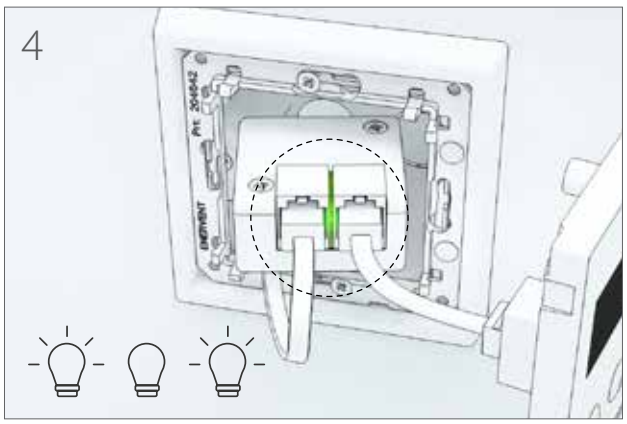




## Installation of the Wifi module



## Installation to the Modbus bus

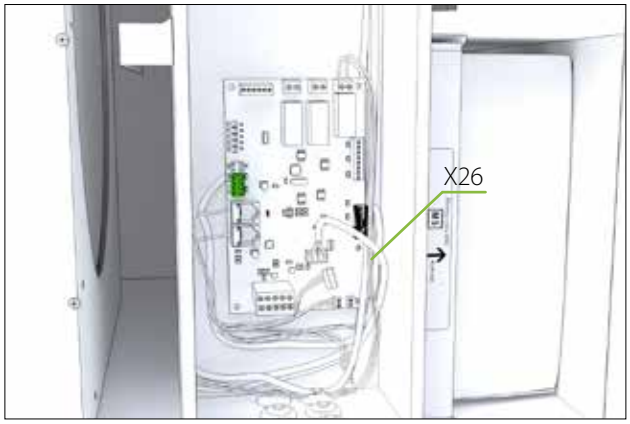
The ventilation unit can also be controlled via the Modbus connector X26.

Modbus specification:

- Modbus address 1 (default)
- Data transmission protocol RS485
- Modbus traffic via the motherboard's Modbus connector X26
- Speed 9,600, 19,200 or 115,200 bps
- 8-bit
- No parity or parity

The order of the poles in the Freeway connector is marked in the controller board.

***The Modbus registers are available on the Enervent website at www.enervent.com.***




**CAUTION**

Do not connect an external bus to the motherboard before the bus has been programmed and is compatible with the control of the unit.

### Setting the Modbus parameters to the control system

| | |
|---|---|
| 1 | Simultaneously press the buttons and three times in the control panel. |
| 2 | Using buttons and , choose the parameters c31-c32. • The meaning of each parameter is described in section 'Parameter list' on page 16. |
| 3 | Select the parameter to be adjusted by pressing button for 3 seconds. |
| 4 | Change the parameter value using buttons and . |
| 5 | Confirm the value by pressing button . |
| 6 | Exit the settings by simultaneously pressing buttons and . |

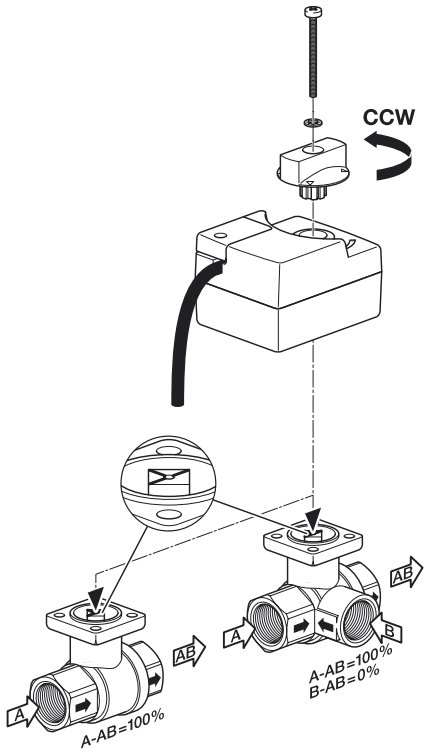
## Installing model eWind W

Principal, control and wiring diagrams for each model can be found at the end of this manual.

Check the principal charts for units with fluid coil. Install and connect the water pipes according to these charts.

**Installing:**

1. Install the dampers and damper motors.
2. Install and connect the water pipes.
3. Install the valve and the valve actuator.




Valve and actuator open counter-clockwise and close clockwise. Picture shows valve and actuator in the fully open position. Also shown is the allowed direction of the liquid flow.

NOTE

Do not install the actuator so that the manual control knob faces downwards.

4. Connect the water.
   - Do not connect where the water circulation stops, eg when hot water is produced.
5. Check the water coil and its connections for leaks immediately after the system has been filled with water.
   - The water heating coil needs a steady flow of sufficiently warm water without large temperature fluctuations. Be sure to check and adjust the water flow in the heating coil according to the technical features table at the end of this manual.
   - Do not connect to a point where the water circulation ends for example during hot water production. If the water is taken for instance from a ground source heat pump, the heating coil needs its own circulation pump.
   - If the installation is done in wintertime it is recommended not to let water in the coil until the ventilation is running. This in order to prevent cold air from entering the ventilation system and possibly freezing the coil.
6. Connect the external cables such as the cable between the unit and the control panel holder, external sensor(s), actuator and pump.
   - Do not connect Modbus until all installation and commissioning work is done.
7. Install over voltage protection to the unit.
8. Open the unit's maintenance hatch and make sure that
   - the unit is clean from the inside
   - there are no unwanted objects inside
   - the filters are in place and
   - the condensate drain works.
9. Close the hatch carefully.
10. Connect the unit to an appropriate electric supply.

NOTE

The valve and actuator must be in the same position when connected. When the valve is in open position, the actuator is turned counter-clockwise before connecting, and when the valve is closed, the actuator is turned cw before connecting.

## Installing geo-cooling equipment

If a geothermal heat pump is in use, the cold brine in the ground loop can be used in the summertime to cool the incoming air.

The system can be implemented in two ways:

- In a standard delivery, a separate pump is used (Option 1).
- Alternatively, the brine is circulated through the geothermal pump (Option 2).

The cooling coil can be either built in the ventilation unit or it can be a duct coil, depending on the model. A duct coil is mounted in the supply air duct after the ventilation device.

Detailed principal charts are found at the end of this manual.

**Option 1 (standard)**

A separate pump is used for circulating brine in the supply air coil.

The delivery includes:

- A relay for starting up the circulation pump for the ventilation unit's cooling coil.
- The relay is situated on the unit motherboard connection DO3.
- A 3-way control valve (Belimo R3) needed for cooling.
- An actuator (Belimo TR24-SR). The temperature is controlled using the ventilation unit's own automatic control. The ventilation unit controls the circulation pump and the 3-way valve.The heat pump is not started up for ventilation cooling.

To install:

1. Install the cooling coil in the supply air duct (in case of a duct coil).
2. Connect the condense water outlet.
3. Build a separate pump group with valve and actuator for circulating cool brine adjacent to the ventilation unit cooling coil.
4. Isolate the pipes carefully with vapour proof insulation to prevent condensation on the outside of the pipes in warm and semi-warm spaces.
   - Follow the principal chart at the end of this manual.

**NOTE**

The valve and actuator must be in the same position when connected. When the valve is in the open position, the actuator is turned counter-clockwise before connecting, and when the valve is closed, the actuator is turned clockwise before connecting. Figure 1 on page 15 shows the valve and markings on valve spindle in valve open (cooling/heating on max) position.

5. 5. Prepare / connect wiring between the ventilation unit, the geothermal pump and the actuator, as shown in the connection diagram at the end of this manual.

**Option 2**

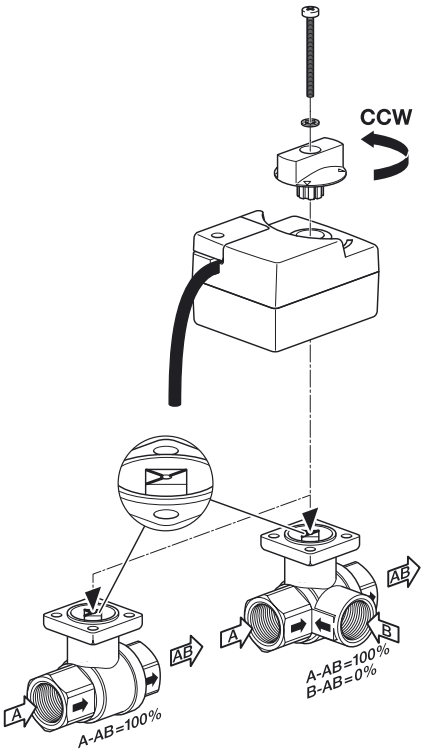
A geothermal heat pump is used for circulating brine also in the supply air coil.

The delivery includes:

- A relay for starting up the brine pump.
- The relay is situated on the unit motherboard connection DO3.
- A 3-way control valve (Termomix D32S) needed for cooling.
- An actuator (Belimo NRYD24-SR-W + installation set MS-NRE). The temperature is controlled using the ventilation unit's own automatic control. The ventilation unit controls the geothermal heat pump and the 3-way valve.

To install:

1. Install the cooling coil horizontally in the supply air duct (in case of a duct coil).
2. Isolate a separate loop for the cooling coil.
   - Make sure to include the one-way valve.
   - Follow the principal chart at the end of this manual.
3. Connect the condense water outlet.
4. Install the 3-way valve and the actuator in the ground collector's piping.
   - The actuator controls the brine flow to the cooling coil as needed.
5. Isolate the pipes carefully with vapour proof insulation to prevent condensation on the outside of the pipes in warm and semi-warm spaces.




Valve and actuator open counter-clockwise and close clockwise. The figure shows the valve and actuator in the fully open position. Also, shown is the allowed direction of the liquid flow.

## NOTE

The valve and actuator must be in the same position when connected. When the valve is in the open position, the actuator is turned counter-clockwise before connecting, and when the valve is closed, the actuator is turned clockwise before connecting. Figure above shows the valve and markings on valve spindle in valve open (cooling/heating on max) position.

## Installing duct coils

Check the principal diagrams at the end of this manual for correct mounting of duct coils.

Water duct coils for after heating are installed in the supply air duct (after the ventilation unit).

### Duct coil for fluids

When installing a duct coil

- Place the duct coil in the supply air duct after the ventilation unit or in the outside air duct before the ventilation unit depending on its function.
- Make sure there is a filter before pre-heater coils in the outside air duct to prevent dirt from entering the coil.
- Do not install the coil too close to a fan outlet or a bend in the ducting.
  - This can result in lower efficiency.
  - Connect the coil so that the system is easy to empty for maintenance.
- A duct heater can be fitted in a horizontal or a vertical duct with optional direction of airflow. To facilitate venting of the coil, the unit should be fitted with the longitudinal tubes horizontal.
- A duct cooler must be fitted in a horizontal duct and the airflow must be in the direction of the arrow.
  - The cooler must be insulated externally to prevent the formation of condensation.
  - The cooler must be connected to a condensate drain and water trap and tilted at an angle of 10-15 degrees to the horizontal in the direction of the drain.
- Insert the coil into standard spiral ducting and attach it to the ducting with screws. Support the weight of the coil.
  - Connect the coil with clamping ring connectors.
- Connect the water inlet to the lowest pipe connector in order to facilitate venting of the coil.
- Consult the principal drawings at the end of the manual on how to construct the hydronic circulating system.
- Install a venting valve near the coil or at the highest point in the system.
- Check the duct coil and its connections for leaks immediately after the system has been filled with liquide.
- Place the supply air temperature sensor (TE10) in the duct after the coil, and the water coil return water sensor (TE45) on the return water pipe of the coil, if the coil is mounted in the supply air duct.
- Place the outside air temperature sensor (TE01) in the outside air duct before the coil, if the coil is mounted in the outside air duct.
- Connect the sensor to the ventilation unit control circuit board.
- Refer to the electrical schematics at the end of this manual for correct connections.

## Requirements

**Operational requirements for the ventilation unit:**

- Supply and extract air temperature below +55°C.
- Extractair temperature at least +10°C
- Supply air temperature for heat recovery over +5°C
- Supply air temperature over +10°C
- All foreign objects have been removed from the ventilation system
- Both fans are running

## Air flow adjustment

When the unit has been switched on, the air flows must be adjusted to the designed values.

- The air flows are adjusted in connection with the commissioning of the ventilation unit.
- The adjustment is made separately for both fans in each operation mode (= at each fan speed).

Check the following during the adjustment:

- All filters are clean.
- All supply and extract air vents, the roof inlet, and the outdoor air grilles are in place.

### FOR YOUR INFORMATION

Do not cover the outdoor air grille with a mosquito net.

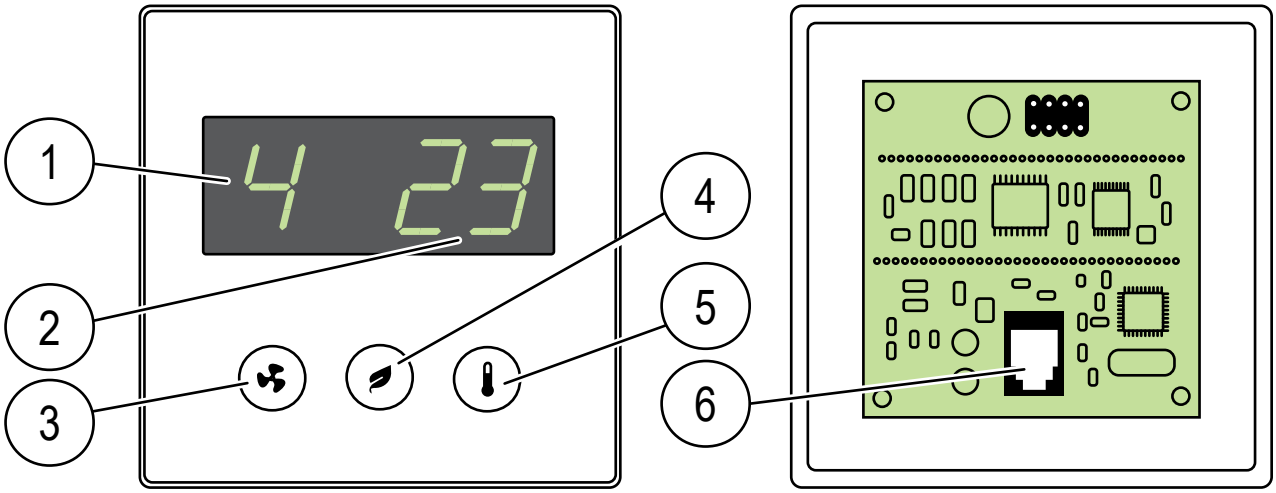
To achieve optimum adjustment values, the air flows must be measured at each duct opening. A suitable measurement device is a thermoanemometer or a differential pressure gauge. With the aid of the measurement values, the air flow can be adjusted to match the design values.

A correctly adjusted ventilation unit is quiet and provides a good thermal economy. In addition, it also maintains a slight negative pressure in the house. The negative pressure prevents humidity from entering the walls and ceiling.

## Commissioning checklist

| Measure | Inspected | Notes |
|---|---|---|
| The unit has been installed in accordance with the installation instructions provided by the manufacturer. | | |
| The condensation water discharge pipe has been connected to the water trap, and its operation has been tested. | | |
| Silencers have been installed in the supply and extract air ducts. | | |
| The terminal devices have been connected to the ductwork. | | |
| An outdoor air grille has been installed for the intake of fresh air. **NOTE**: Do not cover the grille with a mosquito net. It makes cleaning difficult. | | |
| The unit has been connected to an appropriate power supply. | | |
| The ventilation ducts have been insulated in accordance with the ventilation plan. | | |
| The airflows are adjusted according to the ventilation plan. | | |

## Control system and the eWind operation panel




| | | | | | |
|---|---|---|---|---|---|
| *1.* | *Mode (standard display)* | *2.* | *Temperature (standard display)* | *3.* | *Mode button* |
| *4.* | *Eco button* | *5.* | *Temperature button* | *6.* | *Cable connection* |

### Important information about the control system

The factory settings are suitable for most installations.

The fan speed settings for various operating modes are installation specific, and they must be specified and set separately in connection with each installation. In other cases, the factory setting must not be changed unless otherwise instructed in the ventilation system plan.

Make sure that all necessary information is available before starting to adjust the settings.

### Setting the operational parameters

The fan speed settings for different operation modes must be specified and set separately in connection with each installation. The settings are described in the parameter table.

| | |
|---|---|
| 1 | Simultaneously press buttons (leaf) and (thermometer) three times. |
| 2 | Using buttons (fan) and (leaf), choose the parameters c1-c32. • The meaning of each parameter is described in section 'Parameter list' on page 16. |
| 3 | Select the parameter to be adjusted by pressing button (thermometer) for 3 seconds. |
| 4 | Change the parameter value using buttons (fan) and (leaf). |
| 5 | Confirm the value and return to the selection of parameters c1–c32 by pressing button (thermometer). |
| 6 | Exit the settings by simultaneously pressing buttons (leaf) and (thermometer). |

| Parameter list | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Description** | **Factory setting** | **Note** | **Modbus register** | **Field setting** |
| c1 | Extract fan speed, mode 1, region: 20–100%, step: 1% | 36% | 'Away' mode | 102 | |
| c2 | Supply fan speed, mode 1, control range: 20–100%, step: 1% | 35% | 'Away' mode | 100 | |
| c3 | Extract fan speed, mode 2, control range: 20–100%, step: 1% | 56% | Home mode | 52 | |
| c4 | Supply fan speed, mode 2, control range: 20–100%, step: 1% | 55% | Home mode | 51 | |
| c5 | Extract fan speed, mode 3, control range: 20–100%, step: 1% | 83% | Maximum power also in the removal of humidity and carbon dioxide | 74 | |
| c6 | Supply fan speed, mode 3, control range: 20–100%, step: 1% | 80% | Maximum power also in the removal of humidity and carbon dioxide | 72 | |
| c7 | Extract fan speed, mode 4, control range: 20–100%, step: 1% | 100% | Manual boosting | 68 | |
| c8 | Supply fan speed, mode 4, control range: 20–100%, step: 1% | 100% | Manual boosting | 67 | |
| c9 | Time limit for manual boosting (mode 4), control range: 0–4 h, step: 1 h | 2 h | Setting the time limit 0 h prevents the use of mode 4 and activates the 3-speed external control | 66 | |
| c10 | Extract fan speed, fireplace/range hood mode, control range: 20–100%, step: 1% | 30% | | 55 | |
| c11 | Supply fan speed, fireplace/range hood mode, control range: 20–100%, step: 1% | 50% | | 54 | |
| c12 | Time limit for fireplace mode/selection of range hood, control range: 0–15 min, step: 1 min | 10 min | Setting time limit 0 min replaces the fireplace mode with the range hood mode. | 56 | |
| c13 | Heat recovery defrosting, on/off | Off | | Coil 55 | |
| c14 | Maintenance reminder interval 4 or 6 months | 4 | Register value in days | 538 | |
| c15 | CHG/AGH pre-heating and AGH precooling, on/off | On | | Coil 58 | |
| c16 | CHG/AGH outdoor temperature TE01, below which pre-heating is used, control range: 0–10°C, step 1°C (for pre-heating) | 5°C | | 592 | |
| c17 | CHG/AGH pre-heating is not in use when the outdoor air temperature (TE01) rises above value (c16) + (c17), control range: 1–5°C, step 1°C | 1°C | | 593 | |
| c18 | CG cooling or CHG pre-cooling, on/off | On | Applies to CG and CHG heat exchangers | Coil 52 | |
| c19 | Outdoor temperature TE01, above which pre-cooling/cooling is allowed | 17°C | | 164 | |
| c20 | AGH outdoor temperature, above which the earth duct is used, control range: 15–25°C, step 1°C, (for pre-cooling) | 20°C | | 629 | |
| c21 | AGH pre-cooling is not in use when the outdoor air temperature (TE01) drops below value (c20-c21), control range: 1–5°C, step 1°C | 2°C | | 630 | |
| c22 | Temperature setting for air temperature after the electric pre-heating, control range: –10...–20°C, step: 1°C | –15°C | | 591 | |
| c23 | Boosted operation for the removal of humidity, on/off | On | | Coil 19 | |

| Parameter list | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Description** | **Factory setting** | **Note** | **Modbus register** | **Field setting** |
| c24 | Threshold value for summer/winter temperature,<br>control range –10…+10°C, step 1°C | 4°C | The 24-hour average temperature of the outdoor air. Above the threshold value, the boosted operation for the removal humidity is in the summer mode, and below the threshold value, it is in the winter mode. | 137 | |
| c25 | Threshold value for dehumidification,<br>control range 10–100 %RH, step 5% | 45% | In the winter mode, the boosted operation for the removal of humidity starts when the humidity value exceeds the threshold value. | 69 | |
| c26 | Threshold value for starting dehumidification, control range: 5–30%, humidity exceeds the 48-hour average value, step 5% | 15% | In the summer mode, the boosted operation of for the removal of humidity starts when the relative humidity exceeds the 48-hour average value of humidity by the amount of the threshold value. | 70 | |
| c27 | Boosted operation for the removal of carbon dioxide, on/off | Off | | Coil 21 | |
| c28 | Threshold value for starting the carbon dioxide removal, control range: 600–1,200 ppm, step: 100 ppm | 1,000 ppm | | 76 | |
| c29 | Boosted operation for the removal of humidity with the rotating heat exchanger, on/off | Off | | Coil 24 | |
| c30 | Display dimmed in the standby mode, on/off | Off | Panel-specific setting off: dark display in the standby mode, on: dimmed display in the standby mode. | Internal | |
| c31 | Modbus address of the automation motherboard, control range: 1–99, step: 1 | 1 | | 640 | |
| c32 | Modbus bus speed, 1 = 9,600, 2 = 19,200, 3 = 115,200 | 2 | 19,200 bps | 733 | |

# Data display

You can view the available functions in the eWind info list on the data display.

## eWind info list

Opening:

1 Simultaneously press buttons and once. •
Parameter (n1..nn) is displayed.

2 Browse the info list using buttons and .

Return to the standard view:

3 Simultaneously press buttons and once.

### FOR YOUR INFORMATION

If you do not press any button, the menu will close in 5 minutes and the panel will return to the standard view.

| eWind info list | |
|---|---|
| **Marking** | **Definition** |
| n0 | Standard mode is on |
| n1 | Boosted ventilation for the removal of humidity |
| n2 | Boosted ventilation for the removal of carbon dioxide |
| n3 | Heat recovery is on |
| n4 | Post-heating with an electric or water coil is on |
| n5 | Outdoor air pre-heating with CHG/AGH or an electric pre-heater is on |
| n6 | Supply air CG, CHG, or AGH cooling is on |
| n7 | Cold recovery with the rotating heat exchanger is on |
| n8 | Ventilation boosted manually |
| n9 | Away mode is on |
| n10 | Dehumidification with rotor is on |
| n11 | Defrosting is on |
| n12 | Eco mode is on |
| n13 | Maintenance reminder: the time remaining until the next filter replacement in days |
| n14 | Unit is starting |

## Measurement display

You can monitor temperature, humidity, heat recovery efficiency and other measurement values in the eWind measurement list, which is displayed on the measurement display.

### eWind measurement list

Opening:

1. Simultaneously press buttons and two times. • Parameter (r1..rn) and the parameter values are displayed.
2. Browse the parameter list up or down by pressing button or .

Return to the standard view:

1. Simultaneously press buttons and once.

| eWind measurement list | | | | |
|---|---|---|---|---|
| **Marking** | **Definition** | **Marking in the chart and the connection in the automation motherboard** | **Note** | **Modbus register** |
| r1 | Outdoor air temperature, °C | TE01 | All models | 6 |
| r2 | Supply air temperature after heat recovery, °C | TE05 | All models | 7 |
| r3 | Supply air temperature, °C | TE10 | All models | 8 |
| r4 | Extract air temperature, °C | TE30 | All models | 10 |
| r5 | Exhaust air temperature, °C | TE32 | All models | 9 |
| r6 | Return water temperature of water-based heating coil, °C | TE45 | eWind W only. Other models display '0'. | 12 |
| r7 | Temperature of pre-heated outdoor air (CHG/AGH/electric pre-heater), °C | TE02 | Only if equipped with CHG/AGH or an electric pre-heater. | 32 |
| r8 | Relative humidity (RH) of extract air | RH30 | All models | 13 |
| r9 | Carbon dioxide level, ppm | | Without an external carbon dioxide sensor (accessory), '- -' is displayed | 23 |
| r10 | Measurement of external relative humidity, %RH | | Without an external humidity sensor (accessory), '- -' is displayed- | 23 |
| r11 | Temperature efficiency of the supply air heat recovery, % | | All models Calculated value | 29 |
| r12 | Temperature efficiency of the extract air heat recovery, % | | All models Calculated value | 30 |

## Commissioning documentation

- Fill in the warranty information.
- Mark the changes you have made to the factory settings in the column ***Field setting*** in the table 'Parameter list' on page 88.
- Fill in the air volume measurement document.

FOR YOUR INFORMATION

The warranty is not valid for units with no documented air volume measurement.

It is extremely important to record all the changes made to the parameters. This ensures that there are backup copies of the information in case the automation is damaged (e.g., by a lightning strike).

# TROUBLESHOOTING

| Problem | Reason | Help | Solution |
|---|---|---|---|
| **FILS**<br>Service reminder | Normal reminder with 4 or 6 month intervals (depending on the unit model) | | Change the filters and clean the unit from the inside and check if the unit is working. |
| **Err**<br>Temperature sensor malfunction | The temperature sensor is short-circuited or there is a break in the connection. | | Turn off the ventilation unit from the main switch, open the electrical box, and check that the quick couplings of the temperature sensors are connected. It is possible that the quick connectors have come loose during the installation of the unit.<br>Contact a service representive. |
| **oFFE**<br>Stop mode | The internal alarm of the heat pump unit is active. | | Find out the status of the external control system.<br>Contact a service representive. |
| **AL1**<br>The water heating coil is starting to freeze. NOTE! The ventilation unit does not start until the alarm state has been removed and the alarm has been reset by pressing any button on the control panel.. | The heat exchanger belt has broken. | The heat exchanger has a green belt. Check the heat exchanger rotor from the belt's control hole. If the belt is not visible, it is broken. | Change the belt. |
| | The heat exchanger belt-wheel is oily and the belt is slipping | The heat exchanger has a green belt. Check the heat exchangers rotor from the belt's control hole if the belt wheel is rotating even if the heat exchanger rotor is not rotating. | Change the belt. |
| | The extract fan has stopped. | Open the service hatch when the unit is running. The extract fan needs to be on. With the LTR unit you must push down the door coupling with a screwdriver and check if the unit starts. | Change the fans.<br>Contact a service representive. |
| | The extract filter is clogged. | Open the service hatch when the unit is not on. Remove the filters and check if they are dirty. | Change the supply air filter. |
| | The water heater's valve actuator is broken. | | Contact a service representive. |
| | The circulating water pump has stopped. | Check if the heating/cooling circulation pump is on. | Start the pump, contact a service representive if the problem persists. |
| | Error in the heat exchanger motor/ gearbox | Open the service hatch while the unit is on and listen if the noise is coming from the heat exchanger. | Contact a service representive. |
| | The heat exchanger belt wheel has come loose from the axel. | Check the heat exchanger rotor from the belt control hole if the axel is rotating freely and the belt wheel is stationary. | Tighten the belt wheel screw.<br>Contact a service representive. |

| Problem | Reason | Help | Solution |
|---|---|---|---|
| **AL2**<br>Supply air is cold after the rotary heat exchanger. | The heat exchanger belt has broken. | The heat exchanger has a green belt. Check the heat exchanger rotor from the belt's control hole. If the belt is not visible, it is broken. | Change the belt. |
| | The heat exchanger belt-wheel is oily and the belt is slipping | The heat exchanger has a green belt. Check the heat exchangers rotor from the belt's control hole if the belt wheel is rotating even if the heat exchanger rotor is not rotating. | Change the belt. |
| | Error in the heat exchanger motor/ gearbox | Open the service hatch while the unit is on and listen if the noise is coming from the heat exchanger. | Contact a service representive. |
| **AL3**<br>Supply air is cold | The extract fan has stopped. | Open the service hatch when the unit is running. The extract fan needs to be on. With the LTR unit you must push down the door coupling with a screwdriver and check if the unit starts. | Change the fans. |
| | The extract filter is clogged. | Open the service hatch when the unit is not on. Remove the filters and check if they are dirty. | Change the supply air filter. |
| | The ventilation unit runs with a too low fan speed. | The correct fan speed was chosen when the ventilation was balanced in your house. Check your ventilation installation sheet for the correct fan speeds. | Adjust the fan speed from the control panel.<br>Contact a service representive. |
| | The ventilation is adjusted incorrectly. | | Contact the company that has installed your ventilation unit and check if the houses airflow/valves has been adjusted correctly.<br>Contact a service representive. |
| **AL4**<br>Supply fan malfunction | The supply air fan has stopped | Open the service hatch when the unit is running. The extract fan needs to be on. With the LTR unit you must push down the door coupling with a screwdriver and check if the unit starts. | Contact a service representive. |
| **AL5**<br>Extract fan malfunction | The extract fan has stopped. | Open the service hatch when the unit is running. The extract fan needs to be on. With the LTR unit you must push down the door coupling with a screwdriver and check if the unit starts. | Change the fans.<br>Contact a service representive. |

| Problem | Reason | Help | Solution |
|---|---|---|---|
| **AL6**<br>The water heating coil is starting to freeze. NOTE! The ventilation unit does not start until the alarm state has been removed and the alarm has been reset by pressing any button on the control panel. | Insufficient isolation in the ducts. | | Check the thickness of the insulation in the supply air and the extract air ducts and improve the insulation when required.<br>Contact a service representive. |
| | The overheating protection of the afterheater has been activated | | Find out what has caused the error and reset the over-heating protection (® button on the coil)<br>Contact a service representive. |
| | The ventilation unit's door is open | | Close the door.<br>Contact a service representive. |
| | Low room temperature | | Nosta huonelämpötilaa.<br>Contact a service representive. |
| | TE-30 error int the temperature sensor | | Contact a service representive. |
| **AL7**<br>Supply air hot. Risk of fire. | Error in the electrical after heater | | Contact a service representive. |
| | The water heater's valve actuator is broken | | Contact a service representive. |
| | TE-10 error in the temperature sensor | | Contact a service representive. |
| | Fire risk | | Contact a service representive. |
| **AL8**<br>Electrical re-heater or pre-heater overheating | Error in the electrical after heater | | Contact a service representive. |
| | The supply air fan has stopped | Open the service hatch when the unit is running. The extract fan needs to be on. With the LTR unit you must push down the door coupling with a screwdriver and check if the unit starts. | Contact a service representive. |
| | The supply air filter is clogged | Open the service hatch when the unit is not on. Remove the filters and check if they are dirty. | Change the extract filter. |
| | The outside air grille is clogged | Check if there is something blocking the outside air grille. | Clean the outdoor air grille<br>Contact a service representive. |
| | The heater controller card is broken | | Replace the heater controller card<br>Contact a service representive. |

enervent

**EU DECLARATION OF CONFORMITY**

We declare that our products follows the provisions of low voltage directive LVD 2014/35/EU, electromagnetic compatibility directive EMC 2014/30/EU, machine directive MD 2006/42/EC, ROHS II directive 2011/65/EU and waste electrical and electronic equipment directive WEEE 2012/19/EU.

| | |
|---|---|
| Manufacturer: | Enervent Zehnder Oy |
| Manufacturer´s contact: | Kipinätie 1, 06150 Porvoo, FINLAND,<br>tel. +358 207 528 800, fax +358 207 528 844<br>enervent@enervent.com, www.enervent.com |
| Description of the product: | Ventilation unit with heat recovery |
| Trade name of the product: | LTR-3 eWind E, LTR-3 eWind W 35/25 °C |

The products are in conformity with the following standards:

**LVD** EN 60335-1:2012/A11:2014
EN 62233:2008/AC:2008

**EMC** EN 61000-3-2:2014 and EN 61000-3-3:2013
EN 61000-6-1:2007 and EN 61000-6-3:2007/A1:2011/AC:2012
EN 55014-1:2006/A2:2011 and EN 55014-2:1997/A2:2008

**MD** EN ISO 12100:2010

**ROHS** EN 50581:2012

The conformity of each manufactured product is taken care according our quality descriptions.

Product is CE-marked year 2019.

Porvoo 5th of July 2019

Enervent Zehnder Oy

Tom Palmgren
Technology manager

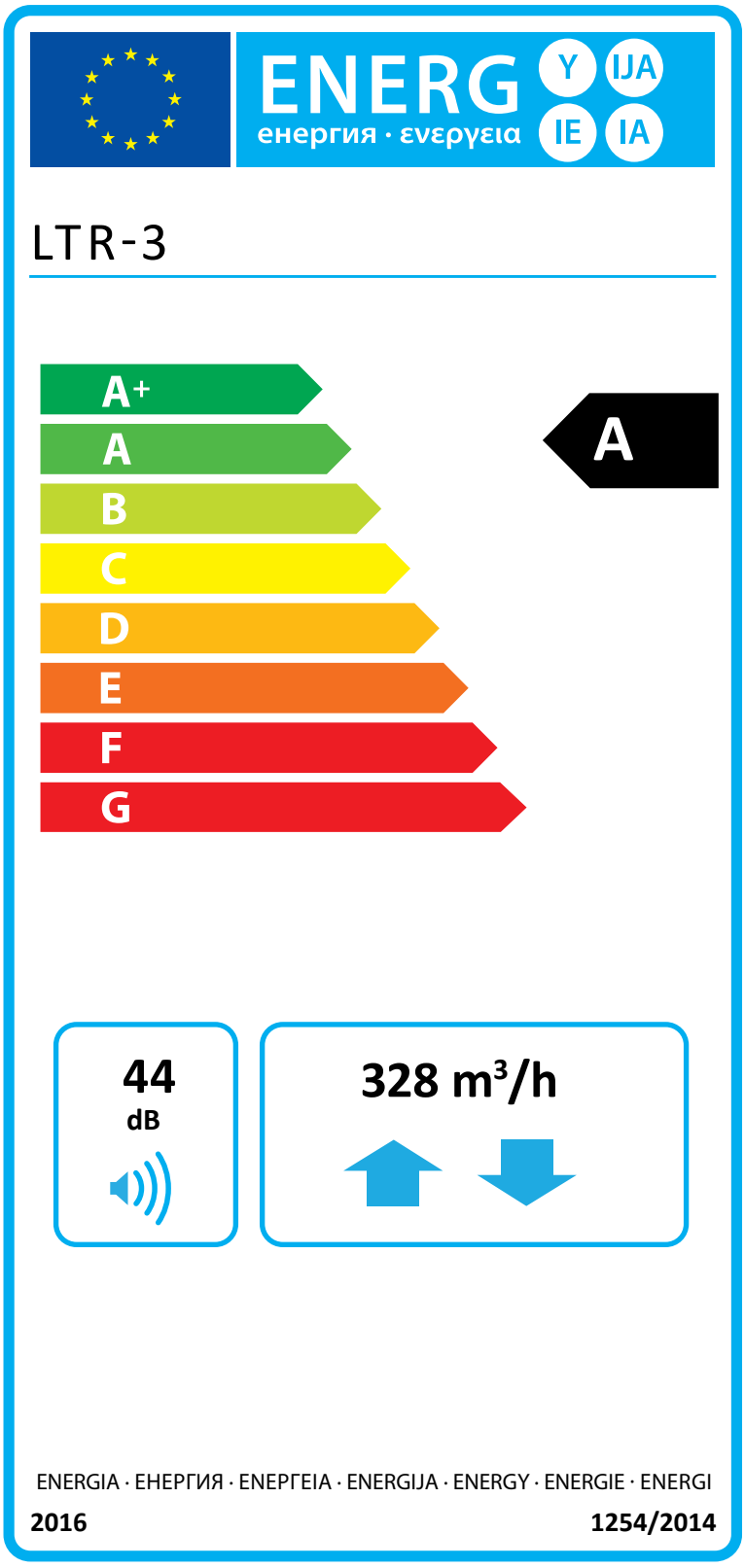
# Enervent LTR-3

A

## PRODUCT INFORMATION ACCORDING TO EU COMMISSION REGULATION NO 1253/2014 AND 1254/2014

| | |
|---|---|
| Supplier's name or trade mark | Enervent |
| Supplier's model identifier | LTR-3 |
| Specific energy consumption (sec) in kWh/(m$^2$.A)<br>• Cold climate<br>• Average climate<br>• Warm climate | <br>-82,05<br>-39,45<br>-15,04 |
| Declared typology in accordance with article 2 of this regulation | RVU / BVU |
| Type of drive installed or intended to be installed | Multi-speed drive |
| Type of heat recovery system | Regenerative |
| Thermal efficiency of heat recovery | 78,5 |
| Maximum flow rate in m$^3$/h | 328 |
| Electric power input of the fan drive, including any motor control equipment, at maximum flow rate (W) | 190 |
| Sound power level ($L_{WA}$), rounded to the nearest integer | 44 |
| Reference flow rate in m$^3$/s | 0,064 |
| Reference pressure difference in Pa | 50 |
| SPI in W/(m$^3$/h) | 0,39 |
| Control factor and control typology in accordance with the relevant definitions and classification in annex VIII, table 1 | 0,65 |
| Declared maximum internal and external leakage rates (%) for bidirectional ventilation units | <4% / <2% |
| Position and description of visual filter warning for rvus intended for use with filters, including text pointing out the importance of regular filter changes for performance and energy efficiency of the unit | Filter warning on control panel. Instructions in user manual. |
| Internet address for disassembly instructions as referred to in point 3 | https://doc.enervent.com/out/out.ViewFolder.php?folderid=957 |
| The annual electricity consumption (AEC) (in kWh electricity/a) | 204 |
| The annual heating saved (AHS) (in kWh primary energy/a) for each type of climate<br>• Cold climate<br>• Average climate<br>• Warm climate | <br>8716<br>4445<br>2015 |

The information on the energy label for this product has been defined with local demand control. Local demand control means that the ventilation unit continuously regulates the fan speed(s) and flow rates based on more than one sensor. Please remember to connect all local sensors (some sold as extra equipment) in order to achieve the declared energy class.


ENERG
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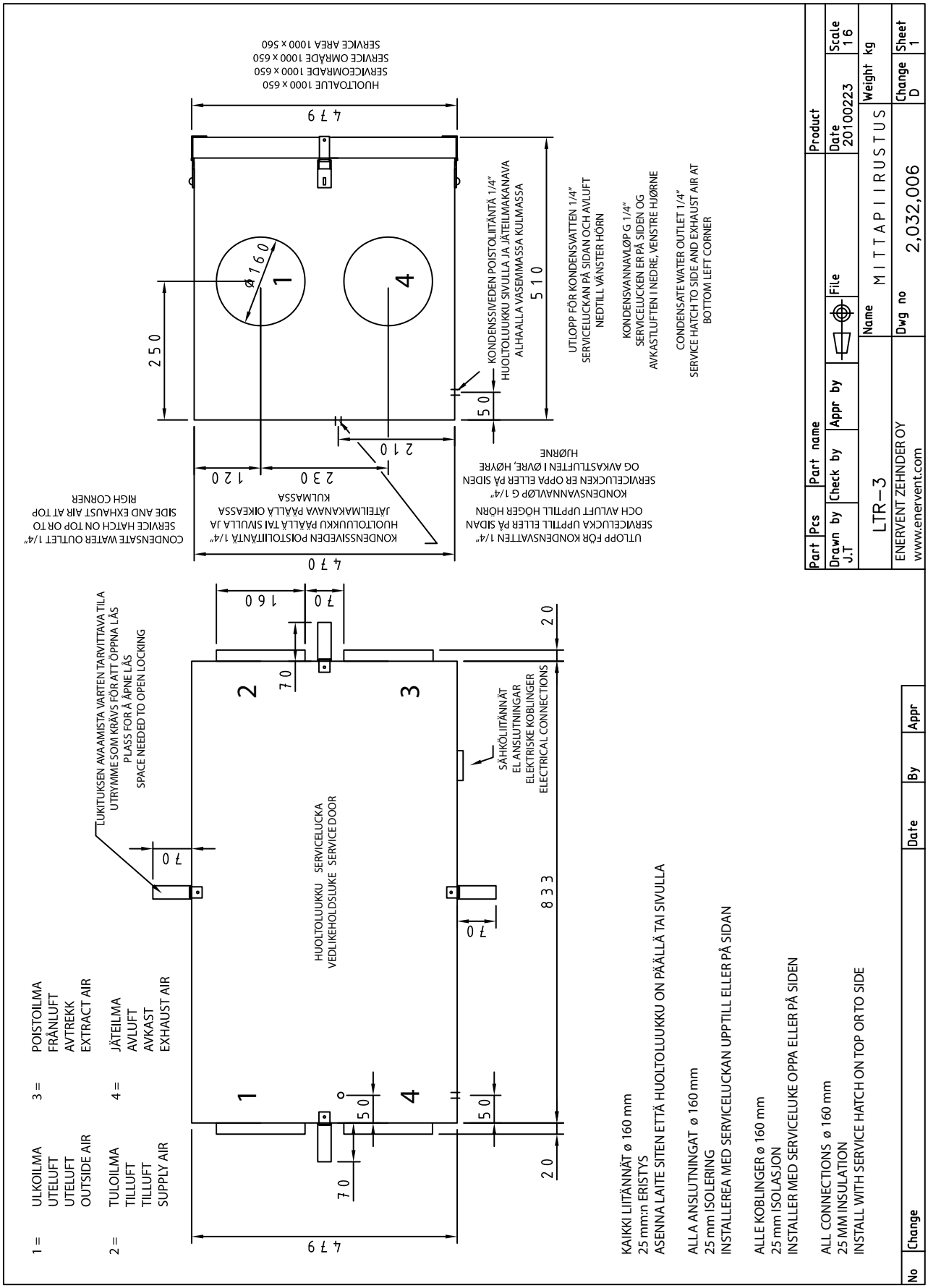
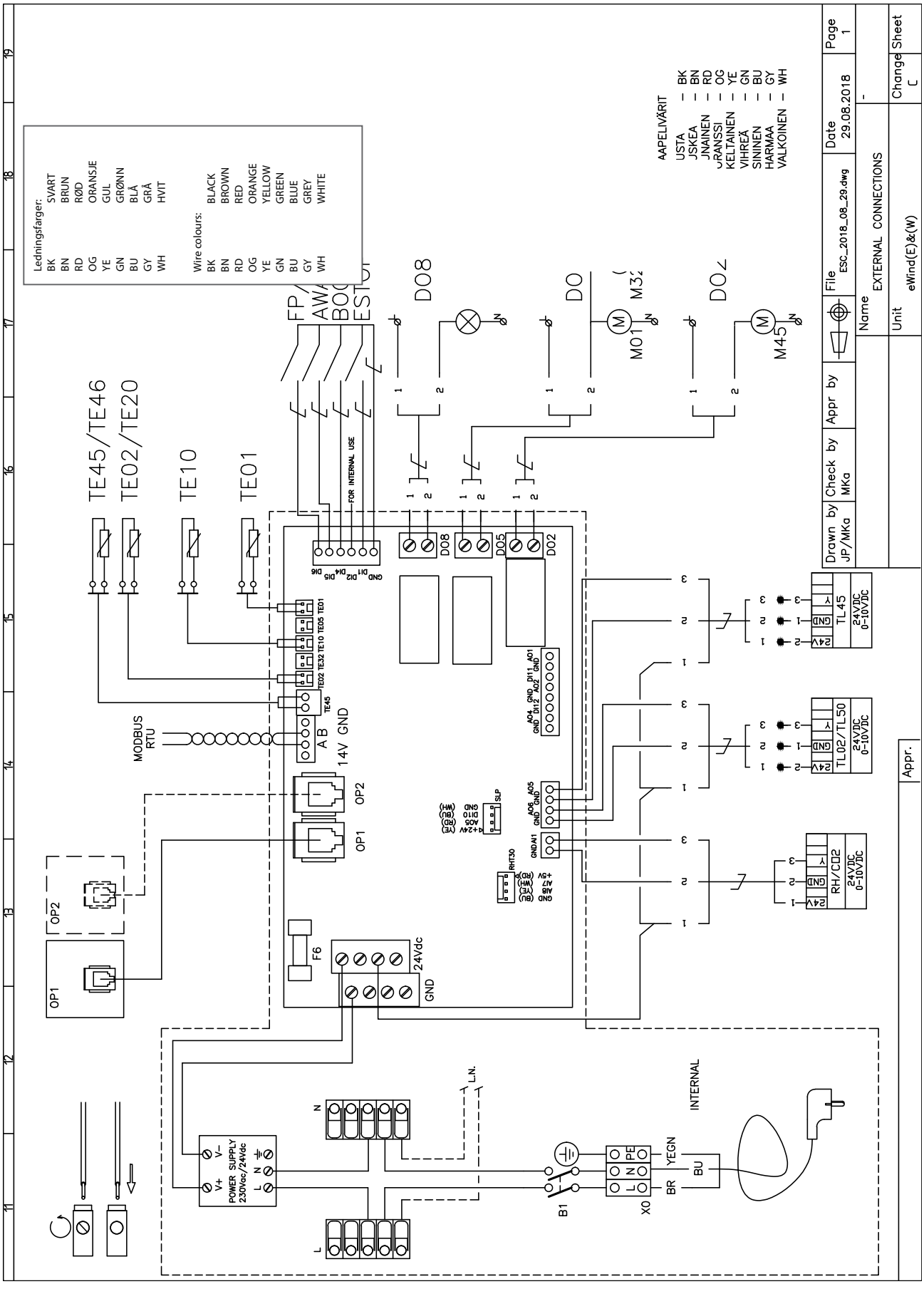
1254/2014

## Dimensional drawings

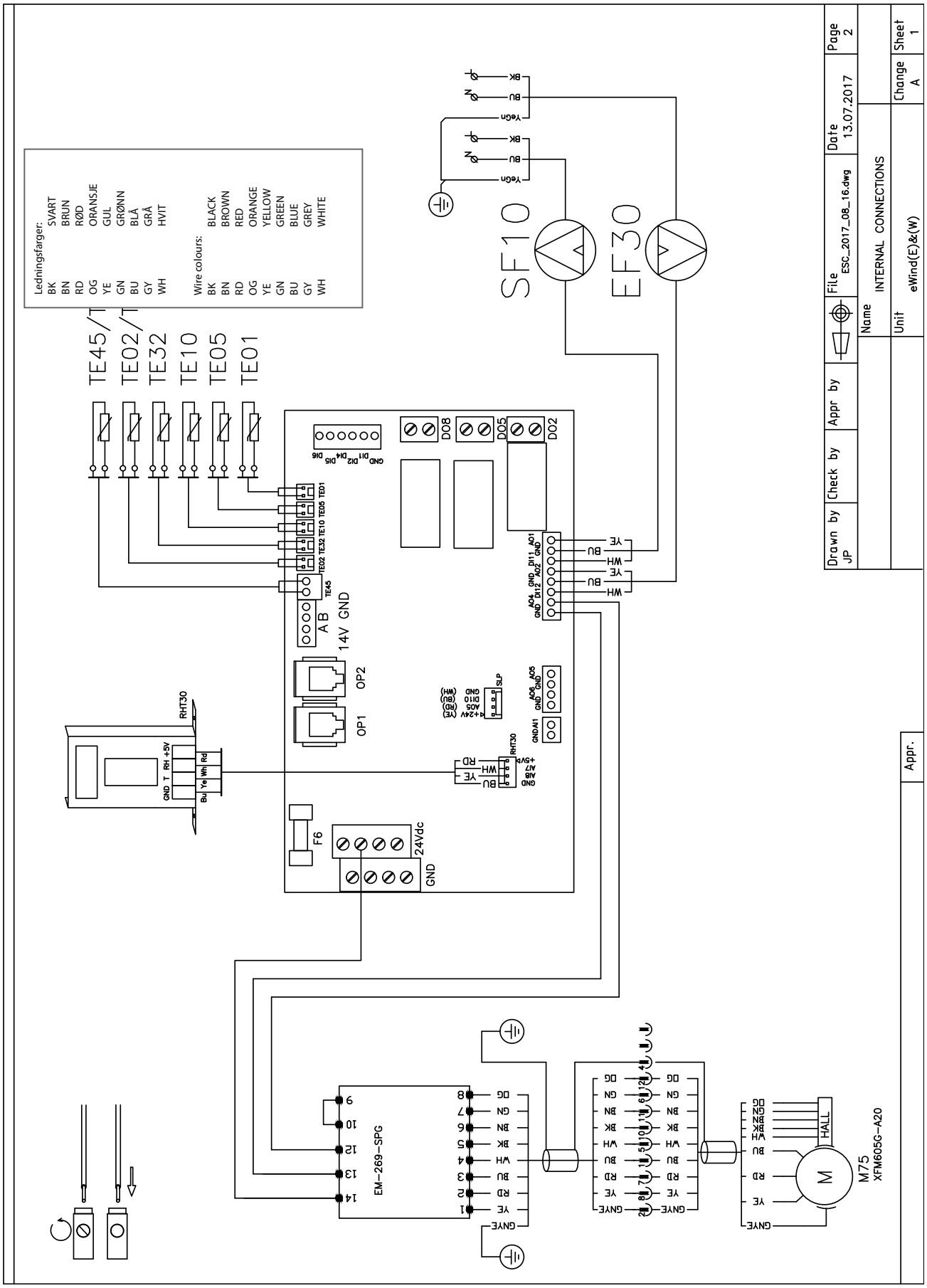


# Electrical diagrams

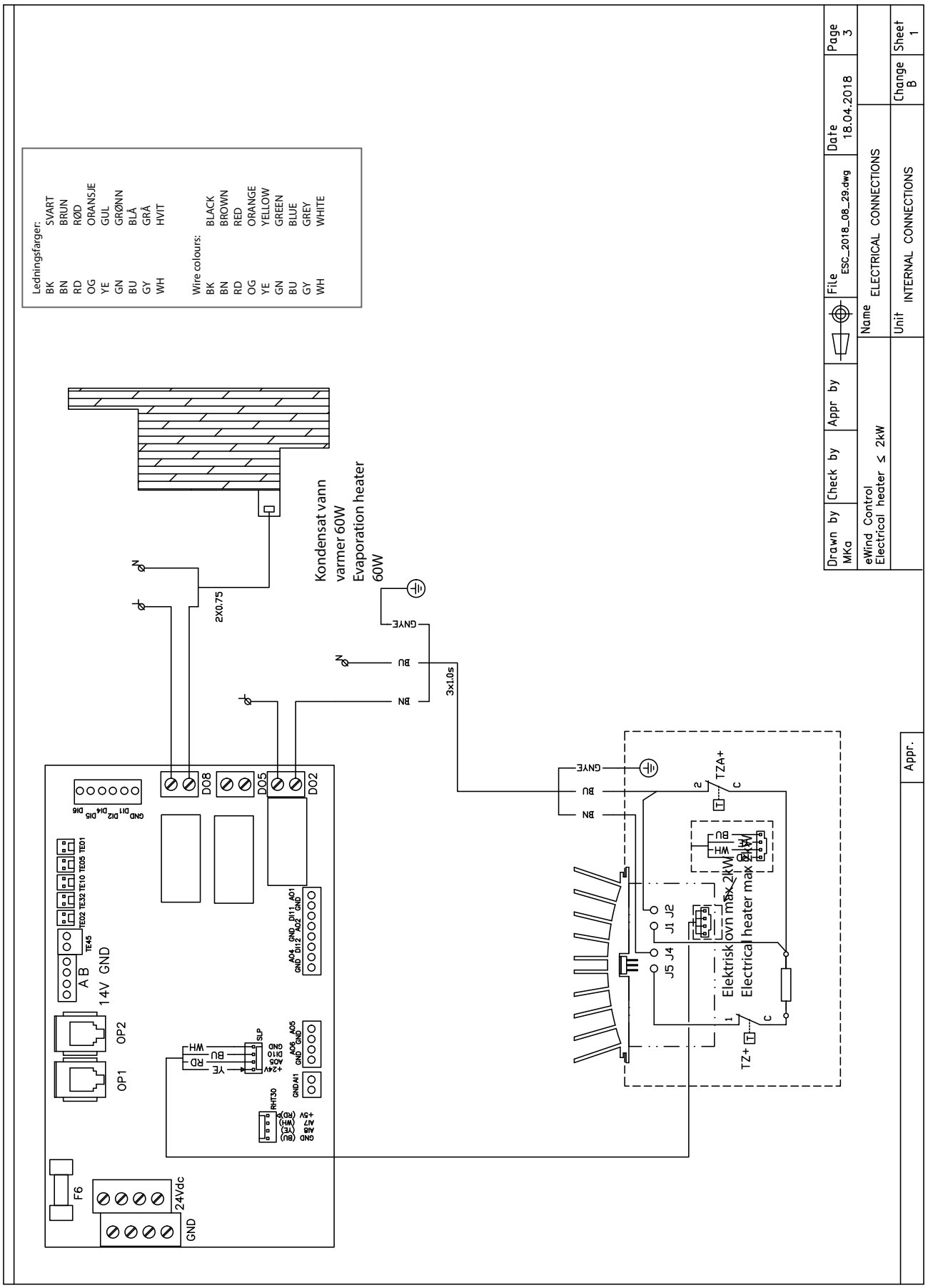
## External connections



## Internal connections

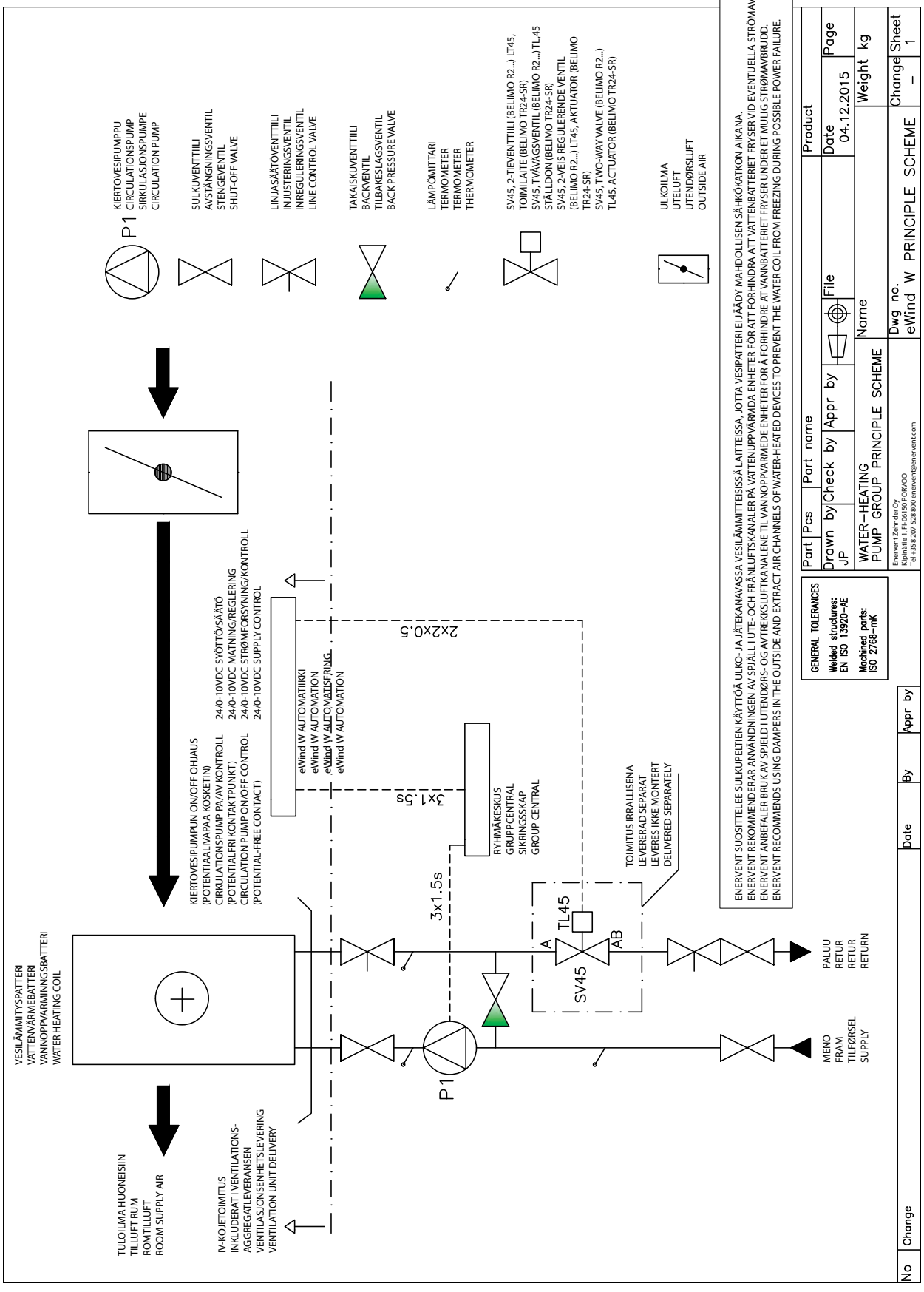


## Internal connections, electrical heaters



| Name | Definition | Marking on the circuit board |
|---|---|---|
| FP/EX | FIREPLACE/RANGE HOOD MODE | DI6 |
| AWAY | AWAY MODE | DI5 |
| BOOST | MANUAL BOOSTING | DI4 |
| ESTOP | EMERGENCY STOP | DI1 |
| TE01 | OUTDOOR AIR TEMPERATURE | TE01 |
| TE02 | PRE-HEATED OUTDOOR AIR TEMPERATURE, EXTERNAL PRE-HEATER | TE02 |
| TE05 | AIR TEMPERATURE AFTER THE HEAT RECOVERY HEAT EXCHANGER | TE05 |
| TE10 | SUPPLY AIR TEMPERATURE | TE10 |
| TE32 | EXHAUST AIR TEMPERATURE SENSOR | TE32 |
| TE45 | RETURN WATER TEMPERATURE SENSOR eWind W MODELS | TE45 |
| TE46 | RETURN WATER TEMPERATURE SENSOR eWind CG MODELS | TE45 |
| RH $CO_2$ | EXTERNAL HUMIDITY SENSOR AS DEFAULT (RH 0–100%). IF PARAMETER c27 IS ACTIVE, $CO_2$ SENSOR (200–2,000 ppm) (ACCESSORY) | AI1 |
| TL01<br>TL50 | PRE-HEATING ACTUATOR, CHG MODELS. COOLING ACTUATOR, CG MODELS | AO6 |
| TL45 | HEATING ACTUATOR, W MODELS | AO5 |
| DO8 | ALARM OUTPUT A AS DEFAULT PRE-HEATING ON/OFF CONTROL, CHG –AGH, ELECTRIC PRE-HEATER MODELS COOLING ON/OFF CONTROL, CG MODELS, CONDENSATE TRAY HEATER | DO8 |
| DO5 | OUTDOOR AIR AND EXTRACT AIR DAMPER CONTROL (ACCESSORY) | DO5 |
| DO2 | HEATING ON/OFF CONTROL eWind MODELS MAX 500-W PUMP | DO2 |
| OP1 | CONTROL PANEL (1) INCLUDED IN THE DELIVERY, 10-M CABLE ALSO INCLUDED IF THE CONTROL PANEL HAS NOT BEEN INSTALLED IN THE VENTILATION UNIT | OP1 |
| OP2 | CONTROL PANEL (ACCESSORY), 10-M CABLE INCLUDED IN THE DELIVERY | OP2 |
| RHT30 | EXTRACT AIR TEMPERATURE AND HUMIDITY SENSOR(RH 0-100%) | RHT30 |
| SF10 | SUPPLY AIR FAN | AO1,DI11 |
| EF30 | EXTRACT AIR FAN | AO2,DI12 |
| M75 | HEAT RECOVERY HEAT EXCHANGER MOTOR | AO4 |
| TZ+ | OVERHEAT PROTECTION AUTOMATIC RESET | |
| TZA | OVERHEAT PROTECTION MANUAL RESET | |
| TS02 | CAPILLARY THERMOSTAT | |

## eWind W principle schema



**RECORD OF MEASURING AIR AMOUNTS AND SOUND LEVELS**
**FORTEGNELSE OVER MÅLING AV LUFTMENGDE OG LYDNIVÅ**

Company / Sellskap:

Date / Dato:
Building / Objekt:
Ventilation unit / Ventilasjonsaggregat:
Serial number / Serienummer:

Performed by / Fremført av:

Filter: M5/M5 F7/M5 F7/F7 l/s $m^3/h$

| Room /measuring point / floor<br>Rom / målepunkt / etasje | Supply air / Tilluft | | | | | Extract air / Avtrekk | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Terminal device<br>Terminal enhet | Planned air amount<br>Planert luft-mengde | Measured air amount<br>Målt luft-mengde | p Pa | Setting<br>Innstilling | Terminal device<br>Terminal enhet | Planned air amount<br>Planert luft-mengde | Measured air amount<br>Målt luft-mengde | p Pa | Setting<br>Innstilling | Lpa dB(A) | Note! Merk! |
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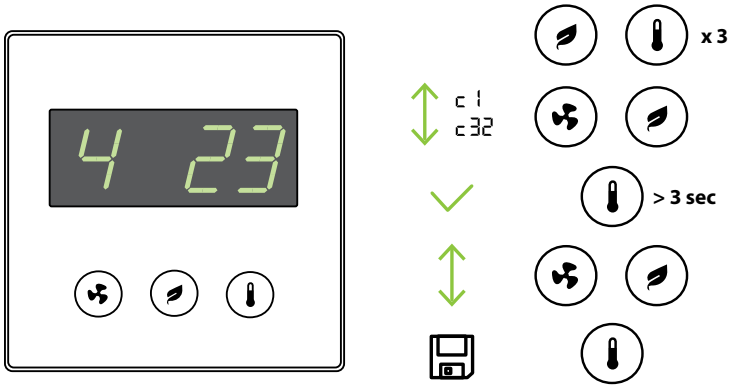
| | | | | | | | | | | | | |
| Total planned air amounts / Totalt planlagte luftmengde supply air / tilluft: extract air / avtrekk:<br>Total realized air amounts / Totalt realisert luftmengde supply air / tilluft: extract air / avtrekk: | | | | | | | | | | | | |
| Air amount / Luftmengde<br>Fanspeed+difference/<br>Viftehastighet+forskjell | | Home / Hjemme | | Away / Borte | | Forsterkning | | | | | | |
| | | | | | | | | | | | | |
| Measuring instrument / Måleinstrument: | | | | | | | | | | | | |
| Weather conditions / Værforhold: | | | | | | | | | | | | |
| Underpressure in the building / Undertrykk i bygningen: Pa | | | | | | | | | | | | |

**Asentajan pikaohje**

**Snabbguide för installatör**

**Hurtigveiledning for montøren**

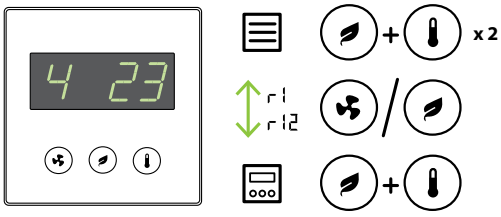
**Quick reference guide for the installer**

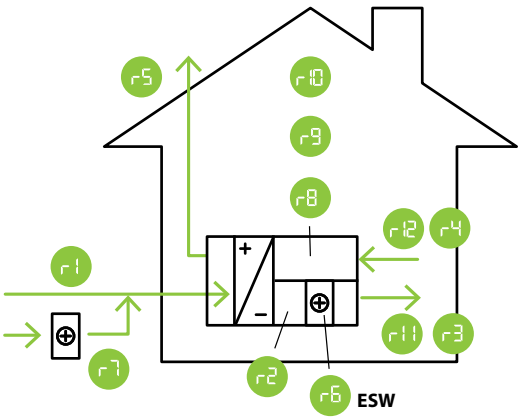



| | | |
|---|---|---|
| c1 | | 36% (20-100%) |
| c2 | | 35% (20-100%) |
| c3 | | 56% (20-100%) |
| c4 | | 55% (20-100%) |
| c5 | | 83% (20-100%) |
| c6 | | 80% (20-100%) |
| c7 | | 100% (20-100%) (120 min) |
| c8 | | 100% (20-100%) (120 min) |
| c9 | | 2 h (1...4 h) |
| c10 | | 30% (20-100%) |
| c11 | | 50% (20-100%) |
| c12 | | 10 min (5...15 min) |

| | | |
|---|---|---|
| c13 | | oFF (on / oFF) |
| c14 | | 4 (4 / 6) |
| c15 | | oFF (on / oFF) |
| c16 | <°C | => on, TE01 < °C, 5°C (0…10°C) |
| c17 | >°C | => off, TE01 > (c16 + c17), 1°C (1…5°C) |
| c18 | | on on / oFF |
| c19 | >°C | => on, TE01 > °C, 17°C |
| c20 | >°C | => on, TE01 > °C, 20°C (15…25°C) |
| c21 | <°C | => off, TE01 < (c20 - c21), 2°C (1…5°C) |
| c22 | <°C | -15°C (-10…-20°C) |

| | | |
|---|---|---|
| c23 | %RH | on (on / oFF) |
| c24 | °C %RH | 4°C (-10…+10°C) |
| c25 | %RH | 45% (10...100%RH) |
| c26 | 48h %RH | =>on, 48 h %RH + c26, 15% (5…30%) |
| c27 | $\%CO_2$ | oFF (on / oFF) |
| c28 | $\%CO_2$ | $CO_2$=> on, 1000 ppm (600...1200) |
| c29 | %RH | oFF (on / oFF) |
| c30 | | oFF (on / oFF) |
| c31 | **eWind Modbus** | 1 (1...99) |
| c32 | **Modbus** | 2 (1=9600, 2=19200, 3=115200) |




| | | |
|---|---|---|
| r1 | °C | TE01 |
| r2 | °C | TE05 |
| r3 | °C | TE10 |
| r4 | °C | TE30 |
| r5 | °C | TE32 |
| r6 | °C | TE45 |
| r7 | °C | TE02 |
| r8 | %RH | RH30 |
| r9 | $\%CO_2$ | |
| r10 | °C | |
| r11 | °C | |
| r12 | η% | |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EZ_INSTALLATION INSTRUCTION, LTR-3 eWind, en, 02/2022, subject to change without notice