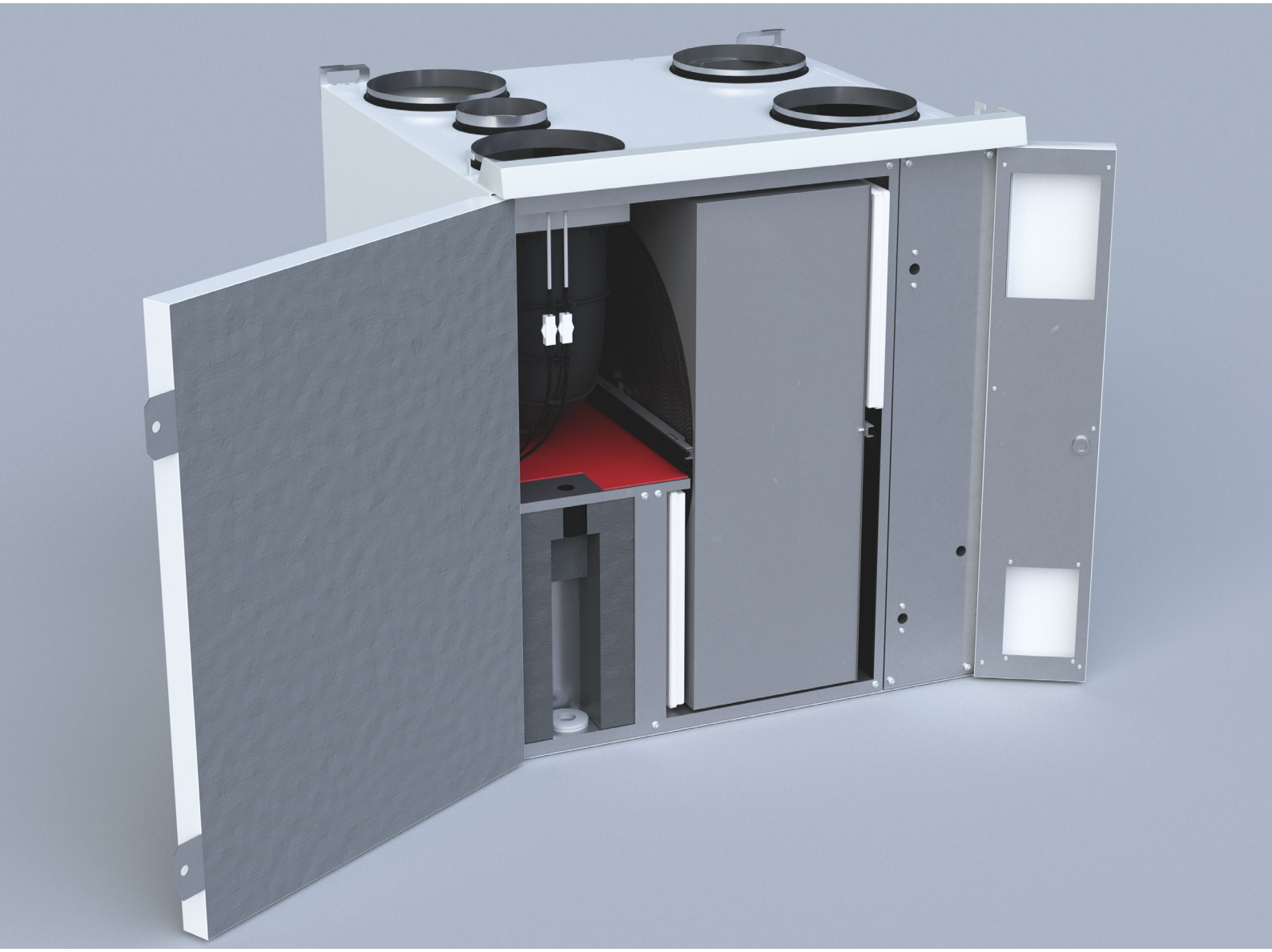
Svea eAir

Installation instructions for the ventilation unit



CONTENTS

READ FIRST

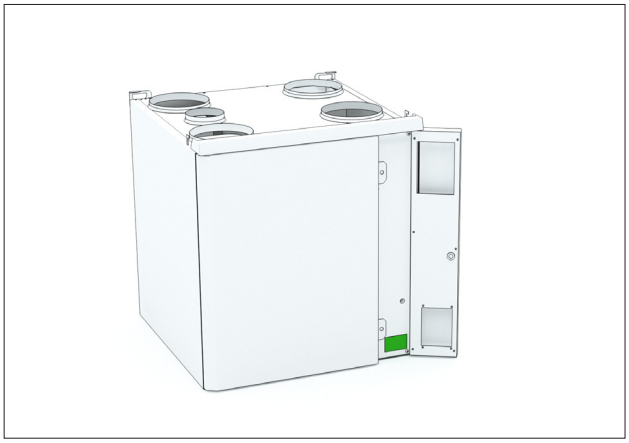
This instruction manual is intended for all the persons involved in the installation of the Enervent ventilation units. Only qualified professionals may install the equipment described in this manual in accordance with the instructions in this manual and the local laws and regulations. If the instructions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

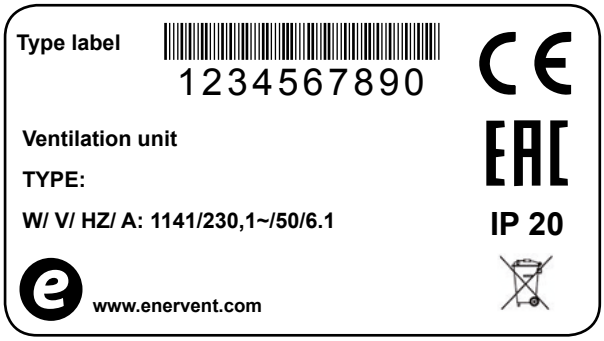
The equipment described in this manual may not be used by persons (including children) with reduced physical, sensory or mental capacity or without sufficient experience or knowledge, unless a person responsible for their safety is supervising and advising them in the use of the equipment.

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 label.

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 local regulations for 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.

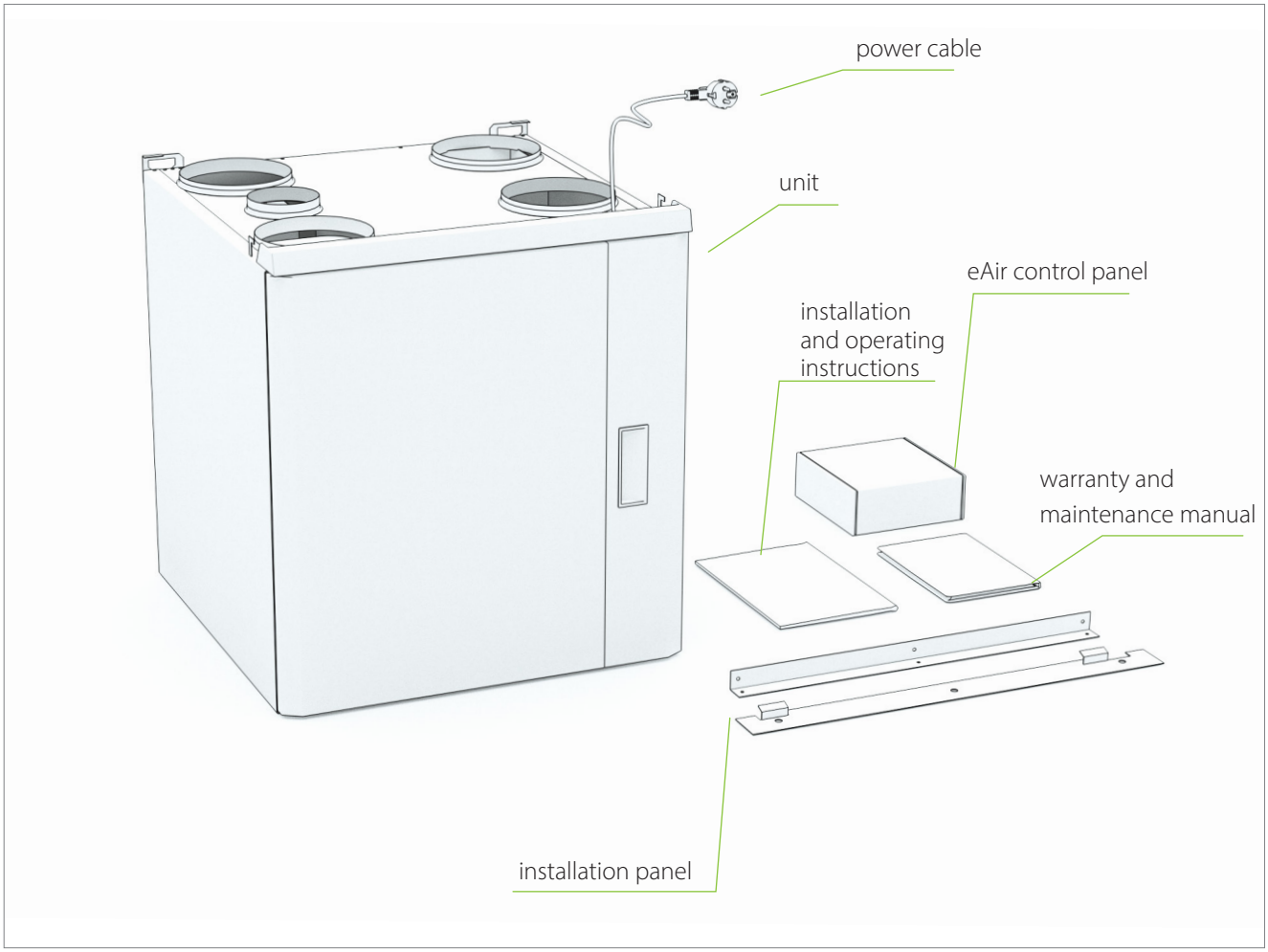
CAUTION

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

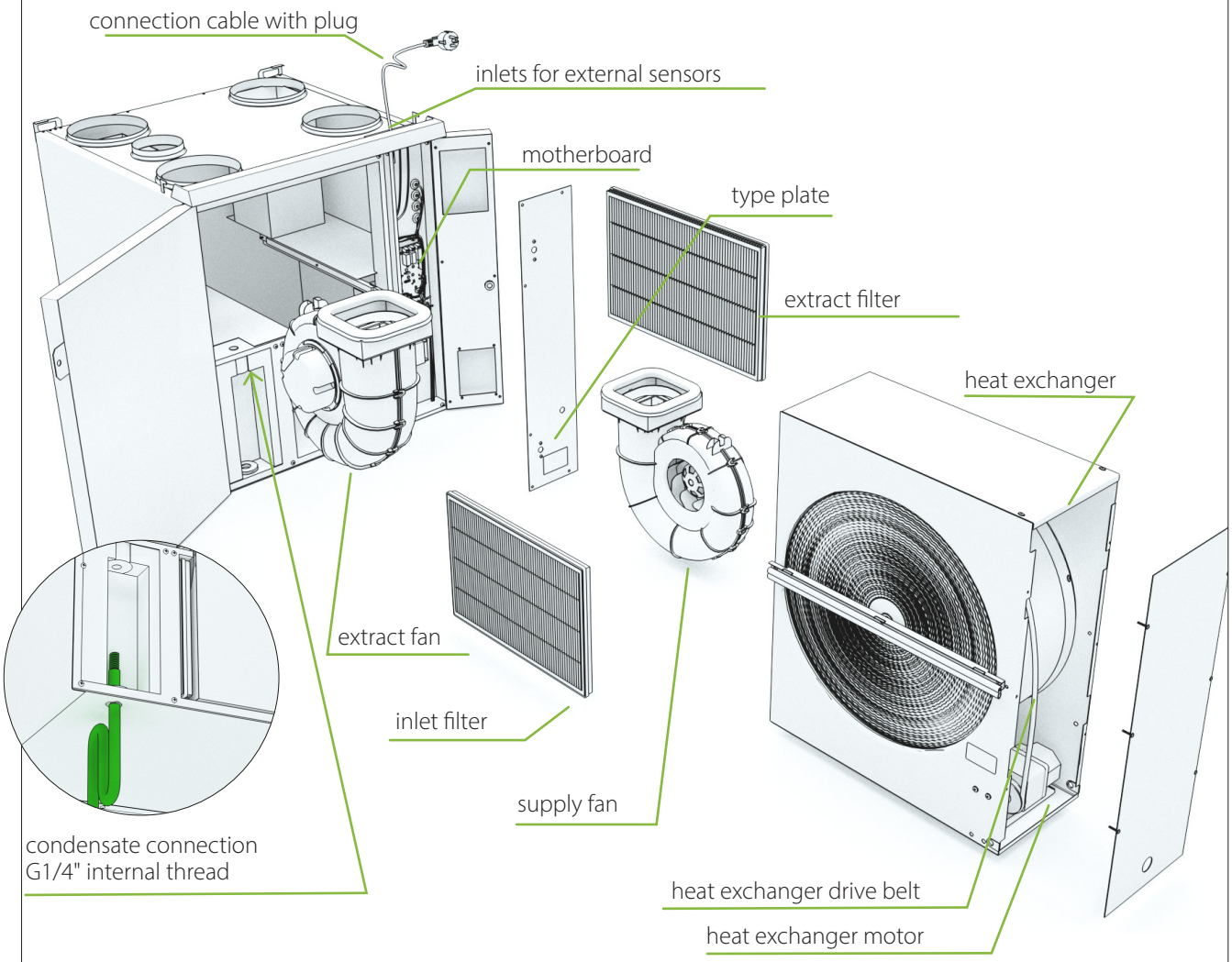


Available accessories

Product number	Product name
K240130301	Range hood Standard Plus white
K240130201	Range hood Premium white
K580030015	eAir controller. The package contains a controller, wall mount 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
K900010010	Water trap Enervent Salla

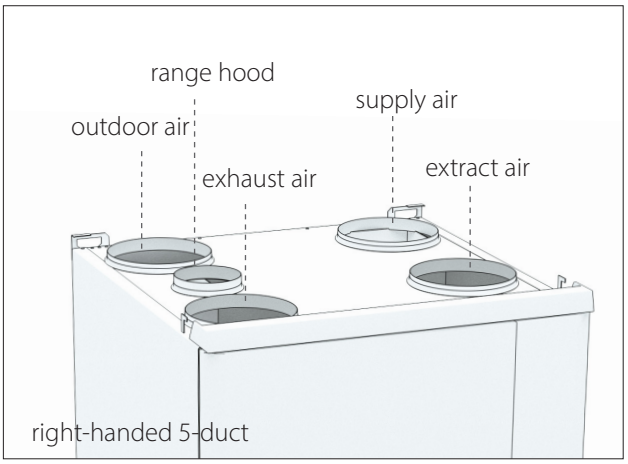
TECHNICAL SPECIFICATIONS OF THE UNIT

Right-handed CHC



Width	600 mm
Depth	600 mm
Height	630 mm
Weight	65 kg
Duct connection (duct size)	ø 160 mm
Range hood connection (duct size) CHC	ø 100 mm
Fans	supply 170 W, 1,35 A, extract 170 W, 1,35 A
Heat exchanger motor with thermal protection	5 W, 0,04 A
Power of electric post-heating coil in E-models	800 W / 230 V, 1~/50 Hz/ 3,48 A
Input power, E-model (post-heating coil)	1154 W / 230 V, 1~/50 Hz/ 6,2 A
Circuit breaker	B10 A
Mains supply	230 V~, 50 Hz, 10 A

Duct connections



Checking the handedness from the type plate

Choosing the installation location

- Ensure that the ventilation system has been designed and realised in accordance with the building regulations.
- We recommend the unit to be installed in a technical facility room.
- 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.
- Install the unit on a soundproof wall, if possible.
- 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 and at least 80 mm of free space is left below 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**.

Building a ventilation ductwork

Planning a ventilation ductwork is a task for professionals. When building a ductwork, it is crucial to follow the plan exactly. Following the plan ensures operationality and customer satisfaction. The performance capacity of the ventilation unit and its evaluated heating or cooling power can be calculated with the Enervent Energy Optimizer program on the Enervent website. We recommend reading the planning guide on the Enervent website for professionals.

- Type-approved, factory-made materials are used for building a ductwork.
- The intended valves must be suitable for mechanical ventilation.
- The outer louvre must not be covered with an anti-insect netting, as it will impede with maintenance.
- Snow and rainwater must be prevented from entering the outside and exhauts air ducts.
- The ductwork must have enough inspection hatches through which the ducts can be cleaned.
- The locations of inspection hatches have to be marked on the roof framework, for example, so that they are easier to find.
- Each fire zone must have its own, separate ventilation system. Different fire zones are garage and living quarters, for example. These different fire zones cannot share a ventilation system.
- The kitchen must have a range hood with its own fan above the stove. The range hood must have its own exhaust duct that goes straight out of the house. A range hood without a motor can be connected to a ventilation unit only if the unit has a connection for a range hood.
- Cabinet dryers with integrated fan can be indirectly connected to the extract valve with the dryer's own connecting system. A portion of extract air is taken from the surrounding room and a portion from the cabinet dryer. Extract air must flow through the valve at a rate of 12 liters per second.
- Silencers are needed for supply and extract ducts, at the very least.
- Silencers are dimensioned on a case-by-case basis.
- Installing automatically closing dampers in outdoor and exhaust air ducts is recommended. In case of a blackout, the dampers will close and prevent cold air from entering the duct, which in turn prevents any water coils from freezing. If cold air enters the ventilation ductwork, condensation water can form when cold air mixes with warm air.
- If the unit has a constant duct pressure control, differential pressure transmitters must be installed.

NOTE

Ventilation ducts must be closed until the ventilation system is commissioned, so that warm air does not flow into the ducts. Condensation water is formed when warm air mixes with cold outdoor air or the cold surface of the duct. Shutdown prevents dirt and particles from contaminating the system.

Insulation of ventilation ducts

The ventilation ducts must be appropriately insulated. Insulation is especially important, if the unit has a cooling function.

Ventilation ducts must be insulated so that no water can condense on the outer or inner surface of the duct under any circumstances. Air must not cool or warm too much in the ductwork due to external factors. Ventilation designer will proportion the insulation on a case-by-case basis, depending on the duct placements and temperatures.

Ventilation duct insulation in heating	
Supply air duct from ventilation unit to inlet valve	Insulation must be planned and implemented so that changes in the temperature of airflow are 1°C at most.
Extract air duct from extract valve to ventilation unit	Insulation must be planned and implemented so that changes in the temperature of airflow are 1°C at most.

Insulation of ventilation ducts in cooling use	
Supply air duct from ventilation unit to inlet valve	Insulation must be planned and implemented so that changes in the temperature of airflow are 1°C at most. A cellular rubber insulation with a thickness of at least 19 mm is needed for the surface of the duct, together with a sufficient additional insulation.
Extract air duct from extract valve to ventilation unit	Insulation must be planned and implemented so that changes in the temperature of airflow are 1°C at most.

Examples of ventilation duct insulation

Soundproofing is not included in these insulation instructions and examples.

NOTE

Half-warm space* can mean a lowered ceiling, midsole, or casing.

Outside air intake duct (fresh air intake duct)

Cold space:

- 100 mm plate, mat or pipe insulation (+ additional possible blown wool).

Warm/semi-warm* space and suspended ceilings, intermediate floor and enclosures:

- Option 1: 80 mm insulation with vapour-tight surface
- Option 2: 19 mm cellular rubber insulation on the surface of the duct and 50 mm insulation with a vapour-tight surface.

Insulation must prevent the condensation of water vapour on the outer surface of the duct. In summer it must prevent the air from heating up too much.

Supply air duct

Cold/semi-warm* space and lowered ceilings, intermediate floor and enclosures:

- In basic ventilation, the insulation must be planned and implemented so that changes in the temperature of airflow are less than 1°C. It is possible to use 100 mm plate, mat or pipe insulation, for example (as well as possible blown wool).

Warm space:

- Basic ventilation does not require insulation.

For heating and cooling uses, see tables "Insulating ventilation ducts for heating" and "Insulating ventilation ducts for cooling".

Extract air duct

Warm space:

- Basic ventilation does not require insulation.

Cold/semi-warm* space:

- In basic ventilation, the insulation must be planned and implemented so that changes in the temperature of airflow are less than 1°C. It is possible to use 100 mm plate, mat or pipe insulation, for example (as well as possible blown wool).

If used for heating or cooling, see tables "Insulating ventilation ducts for heating" and "Insulating ventilation ducts for cooling".

Exhaust air duct

Cold space:

- 100 mm plate, mat or pipe insulation

Warm/semi-warm* space:

- Option 1: 80 mm insulation with vapour-tight surface
- Option 2: 19 mm cellular rubber insulation on the surface of the duct and 50 mm insulation with a vapour-tight surface.

Insulation must prevent the condensation of water vapour on the inner and outer surface.

NOTE

The duct coils to be installed in the ventilation system must be insulated in the same way as the ventilation ducts are. The ceiling mounting plate is an optional extra sold separately.

* semi-warm space = +5... +15°C

Electrical connection requirements and preparations

NOTE

The electrical installation of ventilation units has to be made by an authorized electrician.

See the electrical schematics at the end of this manual.

Preparing electrical work

Make sure before beginning the installation that:

- An appropriate main power connection is available for use for the ventilation unit.
- Over 30mA residual current protection is in use. Because of the residual current protection, no other electric devices can be plugged in the socket.
- The user has an internet connection, if they want to use the web interface of the eAir panel.
- The eAir panel wall mount is installed on a flush mounting box. Keep the eAir panel wall mount always installed when you use the eAir panel. If you accidentally touch the circuit board behind the wall mount with your hand or with an object that can conduct electricity, the circuit board may be damaged.
- The unit is connected to the control panel with a cable. Cable must run in a protective pipe with a minimum diameter of 20 mm. The unit delivery includes a 10 m cable. The cable connections are type RJ4P4C.

External sensors:

- Some ventilation unit models may require certain external sensors to be installed.
- The sensor element of the temperature, humidity and CO2 sensors must be installed inside the duct. Most temperature sensors are delivered with a 5-meter long connection cable. Humidity and CO2 sensors must be wired locally.
- The location of the sensor is selected based on the desired measurement. For more information, see the control schematics at www.enervent.com. The location has to be on a straight part of the duct, and the placement must be at least twice the diameter of the duct from the duct coils, turns, or joints.
- A hole must be drilled into the duct, for the sensor and the grommet.
- The sensors connected to the cable are pushed through a rubber grommet so that the sensor element is a few centimeters inside the duct. The rubber grommet must be airtight and tight enough so that the sensor cable cannot slide through on its own. It is recommended that the sensor is secured with a cable tie.
- Sensors with stiff pipe-like sensor elements are placed in the duct with an attachable, adjustable flange. The sensor element is pushed through the flange and locked in place with a suitable screw.
- Electrical connections are done based on the schematics at the end of this manual.

Preparing the eAir control panel wall mount

eAir control panel wall mount must be installed on a flush mounting box. One ventilation unit can be controlled by no more than two panels. eAir panels can be installed on different wall mounts or to the same wall mount. If the panels are installed in the same wall mount, the other eAir panel will need a separate micro USB charger (not part of the Enervent unit delivery).

Commissioning two eAir control panels installed in their own wall mounts.

If the ventilation unit is controlled with two control panels mounted on different wall mounts, the panels must have different addresses. The address is selected from the rotary switch on the circuit board behind the wall mount. One wall mount has address 1 and the other must have address 2. We recommend marking the address both on the wall mount and on the control panel so that the inhabitants will know which panel belongs to which wall mount.

Commissioning two eAir control panels installed in the same wall mount

If the ventilation unit is controlled with two control panels installed in the same wall mount, the extra panel must be connected to the wall mount. Connecting is done by sliding the DIP slide switch 2 down and then up again. Check for more information from the electrical schematic on page 53. Connection mode is active, when the yellow LED light of the circuit board begins to flash. The connecting mode stays active for 10 minutes. Put the eAir control panel in the wall mount for a moment, so that

the panel can start. Panel shows that it is trying to connect to the network. Press Re-connect the radio > Reset. The control panel connects itself to the wall mount.

Connecting the indoor temperature sensor to the wall mount (extra)

An indoor temperature sensor must be connected to the ventilation unit, if the ventilation unit is to be used for controlling indoor temperature. The indoor temperature sensor is connected to the circuit board behind the wall mount. If two wall mounts with an indoor temperature sensor are installed, sensor TE20 is connected to wall mount 1 and sensor TE21 to wall mount 2.

NOTE

Setup wizard needs to be run in only one of the panels. Switch the power on in the other panel once you have configured the settings. The panel retrieves the information from the motherboard.

The functions and extras listed in the following table may require external wiring or connecting to work.

	Location on eAir controller card	Voltage/current	Cable example	External wiring of the ventilation unit
AI NTC				
Room temperature sensor TE20/ TE21	Connector in the circuit board of the eAir control panel wall mount	3.3 VDC	KLM 2X0.8	Yes
TE01 outside air temperature	X1	3.3 VDC	Quick connector cable 5 m, delivered with the unit	Yes, if pre-heater/ pre-cooler (CHG)
TE10 supply air temperature	X3	3.3 VDC	Quick connector cable 5 m, delivered with the unit	Yes, if duct heating/ cooling coil
TE62 liquid line of a supply air coil (-X)	X5	3.3 VDC	Quick connector cable 5 m, delivered with the unit	Yes, if DX duct coil TE62 (-X)
TE45 temperature of return water in heating coil	X12	3.3 VDC	Quick connector cable 5 m, delivered with the unit	Yes, if water heating coil in the duct
Digital outputs (DO)		Potential-free contact		
On/Off control of heating	DO2	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	MMJ 3x1.5	Yes, if water heating
On/Off control of cooling / On/Off control of heating (heatpump models)	DO3	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	MMJ 3x1.5	Yes, except if HP and CO
On/Off control of dampers Svea On/Off control evaporationheater	DO5	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	MMJ 3x1.5	Yes if dampers
On/Off control of pre-heating / On/Off control of pre-cooling / On/Off control of water heating coil circulating pump (Aqua KIW)	DO6	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	MMJ 3x1.5	Yes, except if Twin Tropic or built-in pre-heating coil
Timer-controlled relay / accumulator charge pump on/off control PU80 (Aqua) / exhaust air cooling on/off control (TCG)	DO7	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	MMJ 3x1.5	Yes
A/AB alarm output, closing	DO8	Max. 250 VAC / 50 VDC 8 A / 2 A inductive load	KLM 2x0.8	Yes
Analog inputs (AI)				
%RH1	AI1 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
%RH2 / temperature of water heater TE80 (Aqua)	AI2 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
Free / PDE10 supply air duct pressure	AI3 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
Free / PDE30 exhaust air duct pressure	AI4 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
CO2/1	AI5 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
CO2/2	AI6 (user-defined)	0–10 VDC	KLM 4x0.8	Yes
RH10 supply air relative humidity sensor (Dehum/Twin Tropic/ TCG)	AI11 (program-defined)	0–10 VDC	KLM 4x0.8	Yes, if duct coil
TE10 supply air temperature (Dehum/Twin Tropic/TCG)	AI12 (program-defined)	0–10 VDC	KLM 4x0.8	Yes, if duct coil

	Location on eAir controller card	Voltage/current	Cable example	External wiring of the ventilation unit
Free	AI13 (program-defined)	0–10 VDC	KLM 4x0.8	
Free	AI14 (program-defined)	0–10 VDC	KLM 4x0.8	
Free	AI15 (program-defined)	0–10 VDC	KLM 4x0.8	
Free	AI16 (program-defined)	0–10 VDC	KLM 4x0.8	
Analog outputs (AO)				
Cooling control voltage / additional post-heating control voltage (heatpump models)	AO3	0-10 VDC 10 mA	KLM 2x0.8	Yes, except if in-built coil
Heating control voltage / compressor power control voltage (heatpump models)	AO5	0-10 VDC 10 mA	KLM 2x0.8	Yes, if -X or water heating
Pre-heating control voltage / pre-cooling control voltage (CHG) / HRW n:o 2 control voltage (Twin Tropic)	AO6	0-10 VDC 10 mA	KLM 2x0.8	Yes, CHG
Exhaust air pre-heating control voltage (HP) / exhaust air dehumidifying control voltage (TCG) / HRW de-frosting control voltage (WGHR)	AO7	0-10 VDC 10 mA	KLM 2x0.8	Yes, if duct heating
Hot water production control voltage	AO8	0-10 VDC 10 mA	KLM 2x0.8	Yes
Digital inputs DI		Connected to a potential-free normally open contact		
Emergency stop	DI1 (fixed)	24 VDC	KLM 2x0.8	Yes
PDS10 supply air fan pressure switch / de-frosting indication (heatpump models)	DI2 (user-defined)	24 VDC	KLM 2x0.8	Yes, -X
Overtime (only in Office use)	DI3 (user-defined)	24 VDC	KLM 2x0.8	Yes
Manual boost	DI4 (user-defined)	24 VDC	KLM 2x0.8	Yes
Away mode	DI5 (user-defined)	24 VDC	KLM 2x0.8	Yes
Overpressure	DI6 (user-defined)	24 VDC	KLM 2x0.8	Yes
Central vacuum system indication	DI7 (user-defined)	24 VDC	KLM 2x0.8	Yes
Cooker hood indication	DI8 (user-defined)	24 VDC	KLM 2x0.8	Yes
Electrical post-heating alarm / compressor failure (heatpump models)	DI10 (fixed)	24 VDC	KLM 2x0.8	Yes, if -X
Other connections				
Control panel connections	X27, X28		10 m cable supplied with the unit	Yes
Modbus-RTU	X26		Instrument cable 2x2x0,5	Yes
Ethernet	X19		Cat5	Yes
O3 ozone sensor (ION)	ICEA2000A unit connector 11	0–10 VDC	KLM 4x0.8	Yes

NOTE

Before installing the ventilation unit, make sure there are no foreign objects inside the ventilation unit or in the ducts

- See the model-specific pictures of your unit at the end of this manual.
- Verify the correct duct connections, to avoid wrongly connected ducts.
- Don't start the ventilation unit before the building is in use.
- If the ventilation unit is turned on too early, the ventilations system can be contaminated with building dust.
- The duct output of the ventilation unit are duct-sized. Use a duct part when connecting the ventilation unit to a duct.
- Remember to insulate the duct all the way to the ventilation unit outer shell.

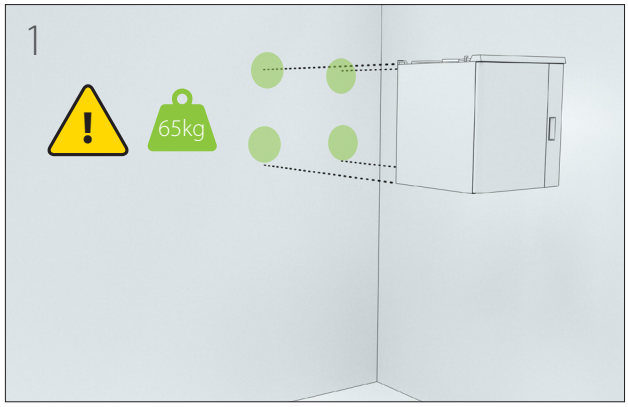
Necessary additional installation materials

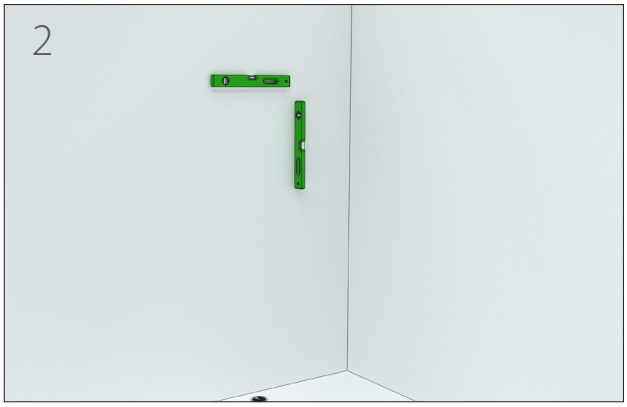
Material	Intended use
Screws	Mounting the rear attachment list and ventilation unit on a wall (for suitable models). Choose the screws based on the wall material.
Sheet metal screws	Attaching the rear attachment bracket to the ventilation unit
Wall mounting box	eAir wall mounting rack
Cables	As defined in section ***Preparing electrical work***
Duct tape	Sealing
Acoustic panels (soft cellular plastic)	Preventing structure-borne sounds
Insulation material (cell plastic and/or wool, depending on the location of installation)	Insulation and soundproofing
Rivets	Connecting ventilation ducts to the unit
Spirit level	Making sure the unit is set straight
Water pipe	Connecting duct coils and condensation water drainage
Water trap/ siphon	Removal of condensation water
Duct connection reducing fitting	Fitting the ducts into the ventilation system NOTE: Always use reducing fittings when necessary.
Dampers	Keeping cold air outside
Silencers	Dampening possible noise
Suitable grommets for the sensors installed in the duct	Installing sensors in ducts.
Shut-off valves	To facilitate unit maintenance
Water circulation balancing valves	Adjusting the water flow to correct level

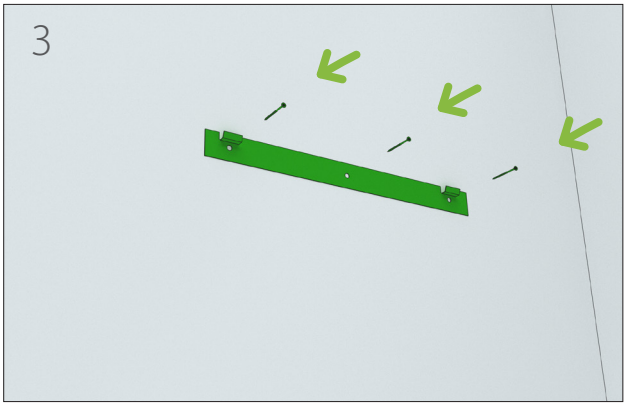
FOR INFORMATION

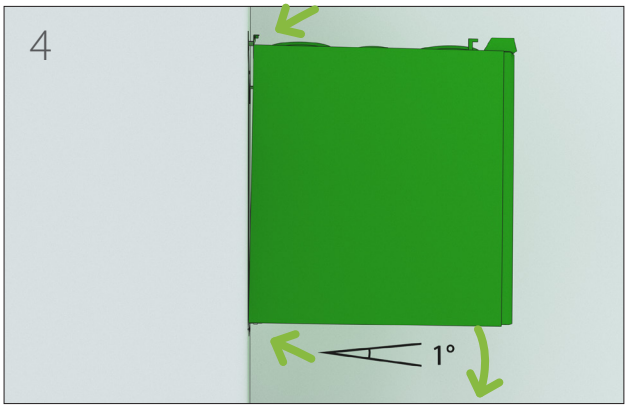
Before installing the ventilation unit, check that the unit and the ductwork do not have any foreign objects inside them.

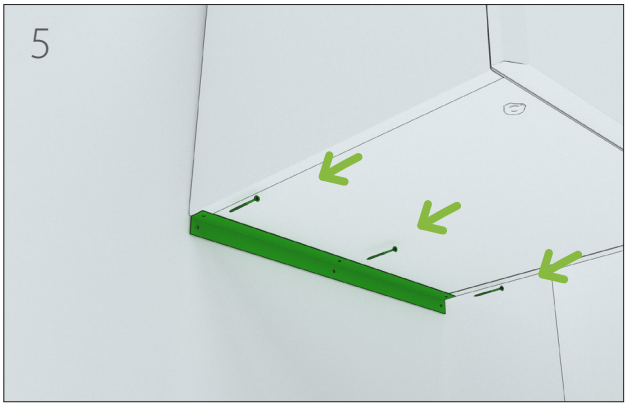
Wall mounting

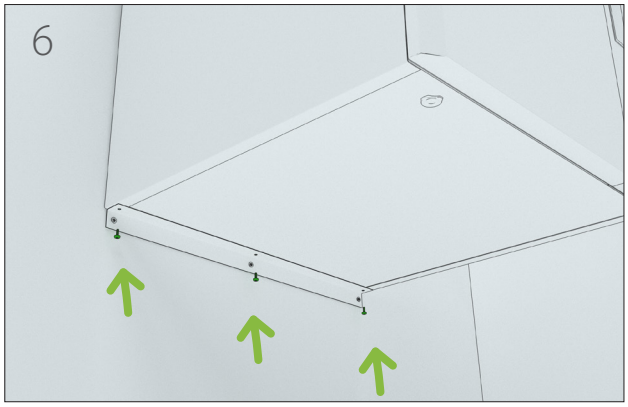


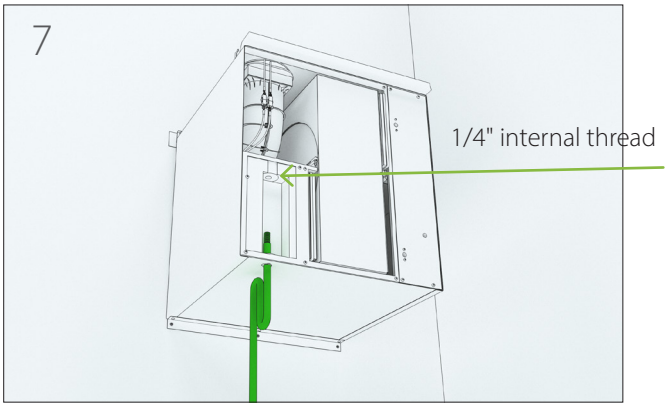












Draining condensate water

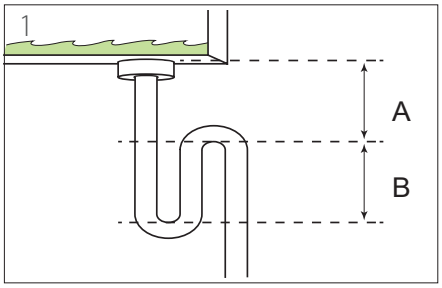
All Enervent ventilation units should be drained. If the ventilation unit is equipped with active cooling, then draining is mandatory.
When air cools down, condensate water can form on cold surfaces. For example in winter time when warm and humid inside air meets the cold heat recovery wheel, or when warm outside air meets the cooling coil in the ventilation unit (if applicable).

CAUTION

The condensate water drain must not be directly connected to a sewer pipe, but to a floor drain or equivalent.

- The condensate water should be led in a falling, at least Ø15 mm pipe or hose, 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.
- Also duct coils used for cooling must be drained and use a water trap.
- Each drain connection must have a separate water trap.
- Two or more water traps can be connected to the same drain pipe, provided they are connected together downstream from the water traps.
- If using an S-type water trap, the height of the backwater in the water trap should be minimum 50 mm (pic. 1, dimension B). The height difference between the drain point and the water trap should be minimum 50 mm (pic. 1, dimension A).
- Make sure there is always water in the water trap.
- Enervent recommends the usage of mebrane type water traps that do not depend on water for sealing. Enervent product code K900010010 (small). Enervent product code K900010002 (large).
- Installation of K900010010 water lock. The water trap should only be installed vertically. Remove the 1/4" plug covering the drain connection in the ventilation unit (pic. 2). Screw in the water trap firmly (pic. 3). Lock the water trap in place with the provided self tapping screw and sleeve (pic. 4). Install the screw right under the water trap. Install a suitable hose to the hose fitting of the water trap.
- Installation of K900010002 water trap. Install the water trap to a 32 mm pipe and tighten the pipe connections. Observe the arrow on the water trap indicating correct direction of flow. The water trap can be installed either vertically or horisontally (pic. 5).
- The functionality of the drain, including the duct coil drains, should be checked by pouring water into the drain at every filter change.

1



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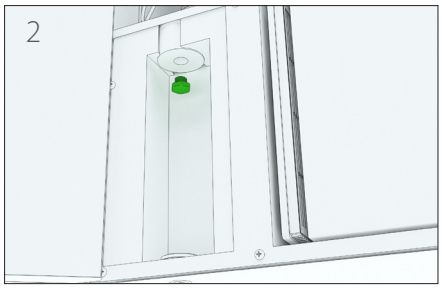

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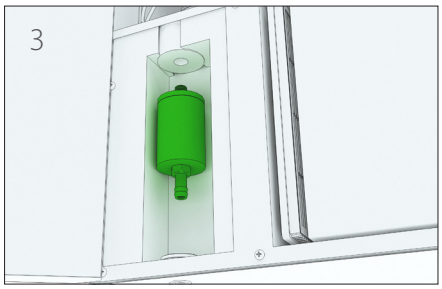

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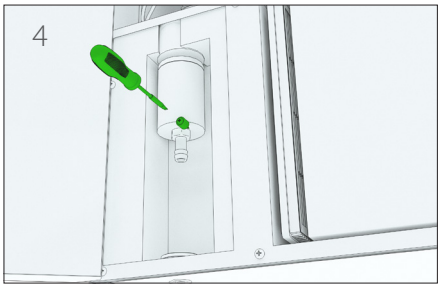

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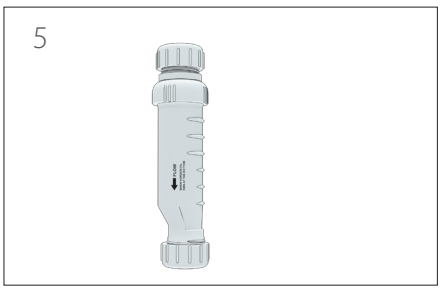
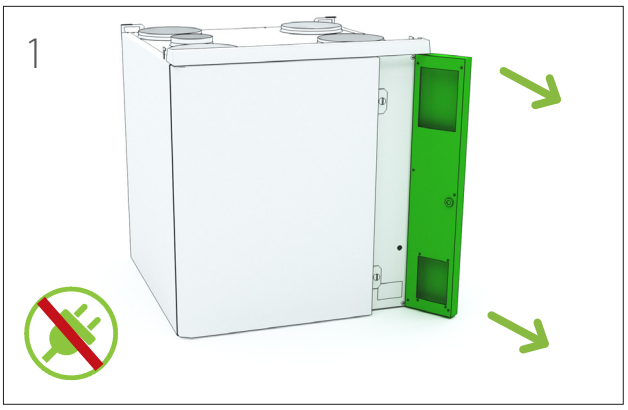
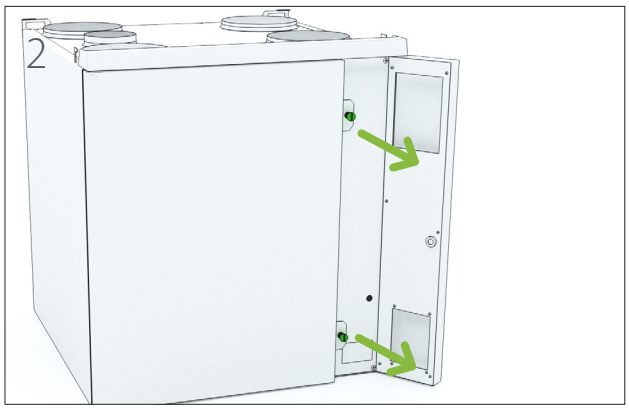
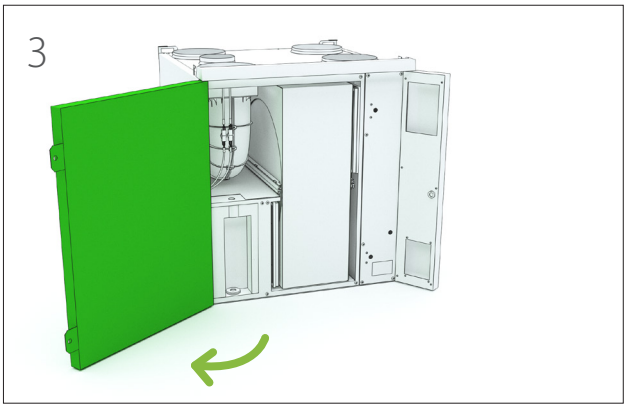


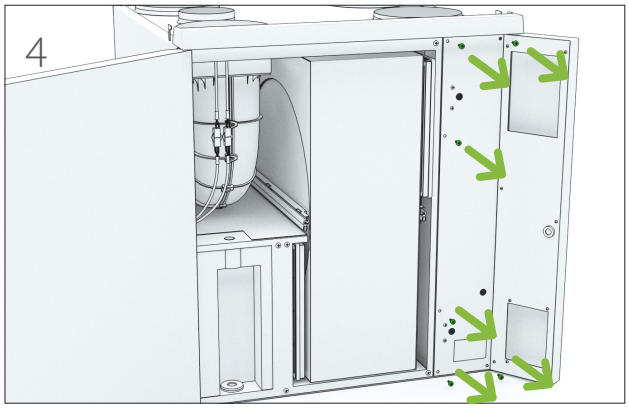
Installing eAir control panel

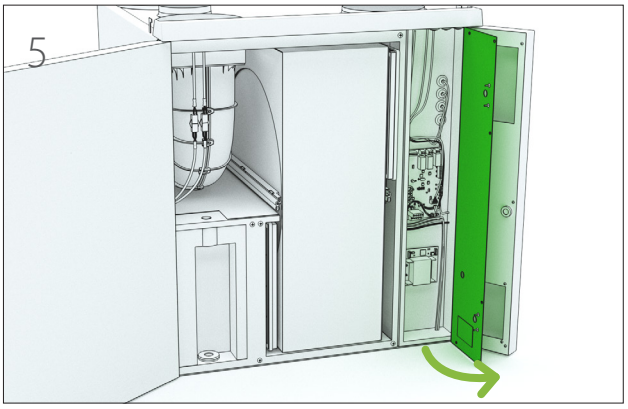
The eAir control panel (See section "Control system and eAir control panel") is installed on a mounting box, or installed with a surface installation box (optional extra). Maximum two external control panels can be connected to a ventilation unit.

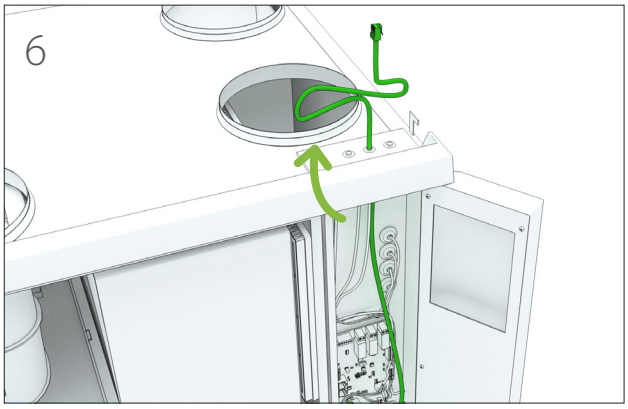


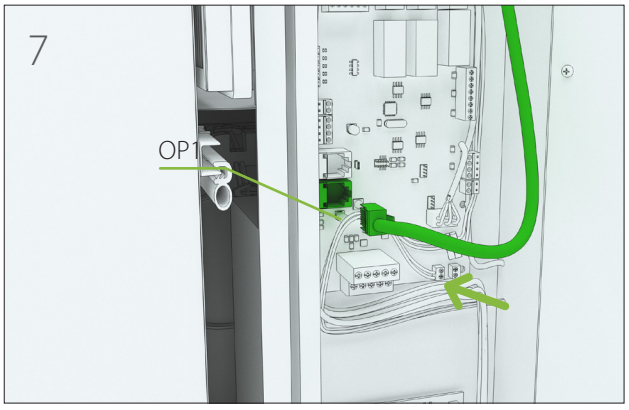


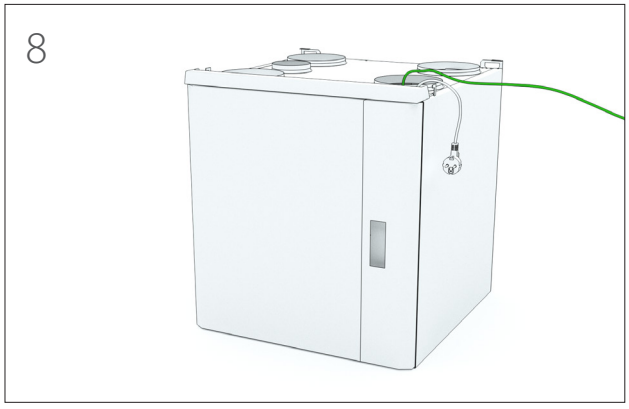












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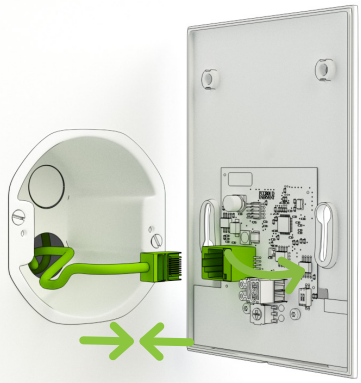

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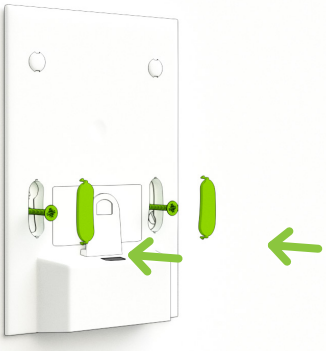
12

Optional extra

13



14

15

1-2 min

Installation to a Modbus network

The ventilation unit can be controlled by a Modbus network. There are two alternative Modbus connection methods available. By using the X26 Modbus RTU connector on the Air motherboard, or by using the Modbus TCP/IP (md-sw version 1.30 onwards) X19 connector. The connection method is selected in the settings wizard in the eAir control panel, on the Modbus tab (eAir control panel software version 2.07 onwards).

Modbus RTU default values

- Modbus address 1 (1–100)
- Communication form RS 485
- Speed 19,200 (9,600 or 115,200) bps
- Parity None (Even).

Modbus RTU X26 connection termination

RS485 X26 connector has optional termination and biasing. These are selected in the short-circuit block JP5, which is right behind the X26 connection.

The below table shows the JP5 jumper. The bottom row is closest to the X26 RS485 connector.

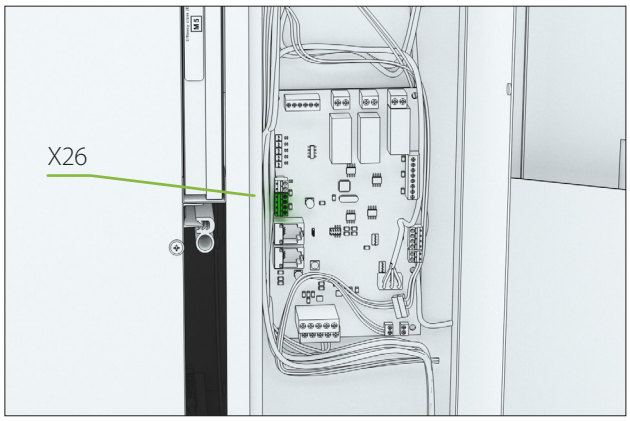
[o o]	Biasing: Jumper installed = RS485 B line earthed via the GND 600 Ω resistor.
[o o]	Termination: Jumper installed = bus terminated
[o o]	Biasing: Jumper installed = RS485 A line connected via the +5V 600 Ω pull-up resistor

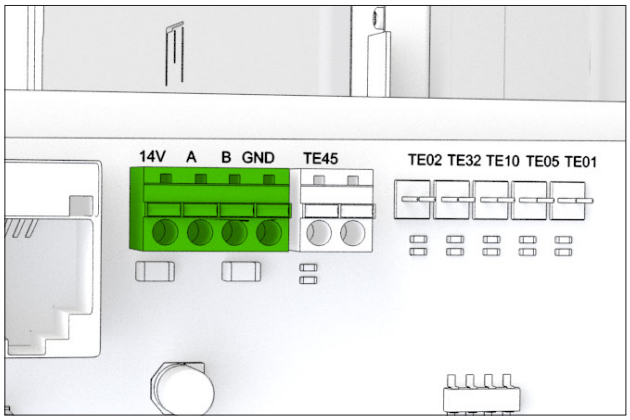
Modbus TCP/IP usage

- Modbus address is not used in Modbus TCP/IP. Access to unit is by the unit IP address.
- Maximum two TCP/IP connections can be active at the same time.

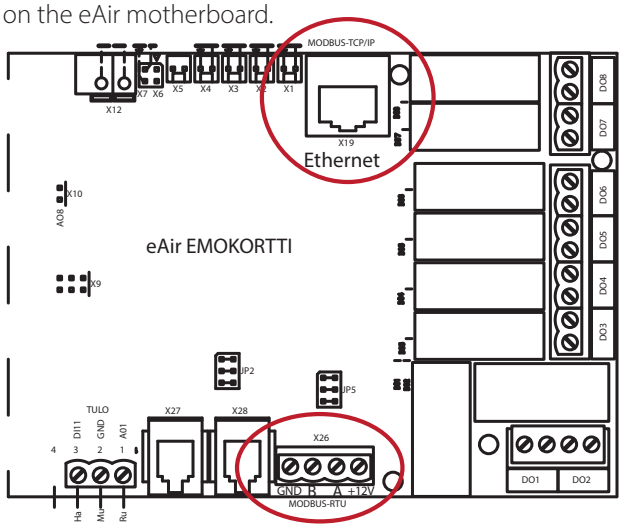
NOTE

The Modbus TCP/IP connection method does not allow any kind of authentication or encryption. The unit must not be connected to a network that has open access to public internet. At the minimum, there must be a firewall that prevents external incoming network traffic.





In the picture below you can see the placements of the Modbus RTU and Ethernet / Modbus TCP/IP connections on the eAir motherboard.



Modbus registers can be found on the Enervent website at www.enervent.fi.

WARNING

Network control must not be connected to the ventilation unit before the network master controller is configured and compatible with unit control parameters.

General instructions

NOTE

Do not shut down the ventilation unit. Always select the correct operating mode depending on the ventilation need.

- Ventilation must be sufficient.
- If ventilation is not sufficient, the indoor air humidity will rise, which can cause condensation on cold surfaces.
- The indoor air humidity levels must be checked at regular intervals.
- During winter an indoor relative humidity level of no more than 40-45% is recommended (room temperature 20-22°C). The relative humidity level can be checked from the ventilation unit measurements. If the relative humidity level rises over 45%, ventilation should be boosted. c v
- The cleanliness of filters must be checked regularly.
- Often in winter, the extract air filter collects more dirt than the supply air filter. This means that the extract air flow is reduced, which can lead to a rise in indoor air relative humidity, and reduced heat recovery efficiency.
- More information about cleaning and changing the filters can be found in the User manual Maintenance section.
- Check monthly that the heat exchanger is functioning correctly, i.e. rotating.
- More information on checking and cleaning the heat exchanger can be found in the User manual Maintenance section.
- If the ventilation unit is shut down for longer than a couple of hours during winter, the fresh air intake vent and exhaust air blowout vent must be covered airtight. This prevents humidity from condensing on the electric motors of the fans, for example.
- In the autumn, before the beginning of the heating season and in the spring, before the beginning of the cooling season (if the unit has a cooling function), the condensation water drain must be checked by pouring water in the condensation water drain and making sure that the water drains away.

Using the eAir control panel

Ventilation is used primarily with modes. The modes in use can be seen in the control panel main screen. The user can choose the best mode for each situation: At Home, Away, Boost, Overpressure, Silent, or Max. cooling / Max. heating. The Silent and Max. cooling / Max. heating modes must be activated separately from the Settings > Modes menu before they are shown in the Modes menu. The Modes menu can be accessed by tapping the round button in the middle of the control panel main screen.

Eco mode can be activated in all modes except in Max. cooling / Max. heating mode. Eco mode stops post-heating and active cooling, and maximizes the use of heat recovery. Heat recovery is 100% until outdoor temperature reaches the outdoor temperature limit of heating, or until supply air temperature reaches the supply air temperature maximum limit. If the supply air temperature drops below the minimum temperature limit, post-heating activates and keeps the supply air temperature at minimum level.

The circle around the operating mode button changes its color depending on what the ventilation unit is doing. The circle is green when heat recovery is active; orange and red when heating is active, and blue when cooling is active.

The other functions of the ventilation unit can be found in the Main menu. The menu can be accessed by tapping the arrow at the bottom of the control panel main screen. The main menu consists of the following submenus: Time programs, Measurements, Alarm, Settings, System information, Setup wizard, and eAir web settings. For more information on menus, see the User manual.

If an alarm is active, it is shown in yellow in the control panel main screen. The most common alarm is a service reminder to remind the user to change the filters. The reason for any alarm should always be checked. Check the Alarms menu for the possible reason for the alarm and the instruction on how to acknowledge it.

Functional description

Operating environments

The operating environments for the ventilation unit are Home, Office, VAK1, VAK2, and VAK3.

The functions available differ based on the operating environment.

- The unit operates constantly in the Home operating environment. This is the default setting
- In the Office operating environment, the unit operates based on a timer program or an external control. The Office mode can be activated from the control panel.
- VAK1, 2, and 3 operating environments are meant for large properties, where the unit is operating as a part of a SCADA control system. The unit operates only on external commands. VAK operation environment can be preset at the factory in advance, if necessary.

TCG units

TCG ventilation units are ventilation units intended for special use. Their cooling and dehumidifying capabilities are more efficient. The cooling and dehumidifying capabilities of the TCG units are accomplished by circulating cool liquid, either plain water or water solution containing antifreeze. The unit is used in the same way as CG (Cooling Geo) ventilation units. The same liquid can be used, but the effectiveness of the TCG unit's cooling and dehumidifying is better than in ventilation units with regular cooling. In TCG-units the rotating heat exchanger is used for both cooling and dehumidifying. eAir automation controls cooling and dehumidifying fully automatically based on the temperature and humidity limits set by the user.

Twin Tropic units

Twin Tropic ventilation units are ventilation units designed for special use. Their twin rotating heat exchangers guarantee very efficient dehumidifying and cooling. The first rotating heat exchanger pre-cools and dehumidifies the incoming air before cooling and further dehumidifying the incoming air in the cooling coil. After this the supply air is heated to the desired temperature with another rotating heat exchanger, which gets its heating energy from the warm extract air, which in turn pre-cools and pre-dehumidifies the outdoor air in the first rotating heat exchanger. This procedure significantly reduces the energy need foor cooling in hot and humid conditions.

Fans

When electricity is connected to the ventilation unit, the damper control relay activates and heat recovery starts at maximum efficiency. Extract air fan will turn on in a moment, after which the supply air fan will turn on after a small delay. After this the ventilation unit will function based on the configured settings.

Fans operate at speeds set by the active mode. Fan speeds (or duct pressures) are configured for each mode during commissioning. Supply and extract fans both have their separate speed settings.

The modes affecting the fan speeds are:

- At home (Office)
- RH%, CO2, or temperature boost
- Away
- Summer night cooling
- Manual boost
- Overpressure, cooking hood and central vacuum cleaner modes
- Alarm modes A and AB
- Silent mode
- Max. heating/cooling

The speed of supply and exhaust fans are set for each mode, except for alarm modes, in which the fans are always stopped or operating at minimum fan speed.

Constant duct pressure control

Constant duct pressure control is an alternative for fixed fan speeds. When using constant duct pressure control, instead of a fixed fan speed, each mode is given a fixed pressure difference that the automation will try to maintain.

The ventilation unit motherboard need to have two 0–10 V / 24 V differential pressure transmitters (accessory) connected. They measure the differential pressure of the supply and extract duct in comparison to the surrounding air. Differential pressures are maintained at target values by changing fan speeds. Constant air volume is controlled if differential pressure is measured over an iris damper.

Carbon dioxide, humidity, and temperature boost of fans

The fan power of the ventilation unit is controlled based on load conditions and on the measurements collected by the temperature, humidity and/or carbon dioxide sensors.

The concentration of carbon dioxide and/or humidity is kept below the limit value set in the control panel. Humidity control manages the fans based on the internal and possible external humidity transmitters in the ventilation unit. The standard ventilation unit delivery contains one built-in humidity sensor. Three carbon dioxide transmitters and three humidity transmitters can be connected to a ventilation unit. Transmitters are optional extras.

Carbon dioxide, humidity and temperature boosting can activate in Home mode. Humidity boosting can activate in Away mode as well.

If humidity boosting is not sufficient to remove humidity from the rooms, the boosted humidity removal can be activated from the settings menu (Settings > Boost > Humidity Boost > Boosted humidity removal). When humidity boosting is active, the boosted humidity removal operates automatically if the outdoor temperature is less than 0°C and the function has been activated in the Settings menu. This function slows down the rotation of the heat exchanger, which allows more efficient humidity removal.

Supply air dehumidification is available for certain ventilation units. The absolute humidity of supply air remains on a level set in Settings > System configuration > Drying settings.

Temperature boosting activates when the selected temperature measurement differs from the temperature set point.

Overtime (Office usage mode)

In the Office mode the ventilation unit shuts down unless a timer program instructs it to operate, or the overtime setting is active.

Overtime length is configured in the control panel. It can be activated from the control panel or from a separate button (optional extra). Overtime control can be interrupted from the control panel. Overtime can also be activated via Modbus.

Overpressure (fireplace function)

Overpressure can be activated from the control panel or from a separate button (optional extra), which will make lighting a fireplace easier. Overpressure time and the supply air and extract air fan speeds can be set from the control panel. Overpressure can be interrupted from the control panel. Over pressure lowers the speed of the extract air fan and raises the supply air fan speed for 10 minutes.

NOTE

Overpressure function should be used only temporarily for making lighting the fireplace easier. The fireplace combustion air must be provided by other means than via the ventilation unit.

Manual boost

Manual boost is activated from the control panel or external switch (optional extra). Manual boost raises the speed of both fans for a pre-set time (default setting is 30 minutes). Manual boost can be interrupted from the control panel.

Cooking hood and central vacuum cleaner modes

Switching to cooking hood or central vacuum cleaner mode is possible only by external control (potential-free contact). The intent is to maintain the pressure level of the apartment, despite using the cooking hood and/or the central vacuum cleaner.

Summer night cooling

On summer nights, the room temperatures can be lowered with cooler outside air. Heat recovery and heating are turned off during summer night cooling. Fan speeds are controlled by the selected control mode. Summer night cooling starts and stops automatically when it has been activated from the panel.

Weekly and annual programs

Time programs can be used to activate a user mode at a certain time on certain weekdays, or for some calendar days.

For example, when the apartment is empty, the fan speed can be reduced by creating a time program that sets the unit in Away mode.

Weekly and annual programs are set in the Time programs menu. The weekly program has 20 different time program entrys, to which you can enter both the start and the end times of the time program and the mode according to which the unit functions for that time. If the weekly program is wanted to run overnight, both the starting and ending weekdays must be selected in the program.

The annual program has five time program entrys, to which you can enter both the start and the end dates of the time program with hour and date information and the mode according to which the machine functions for that time.

Time program does not check for possible conflicts in programs. The user must ensure that there are no conflicting programs.

Temperature control

Heat recovery

Heat recovery is limited during summertime if the outdoor temperature is over +8°C. During this time the rotating heat exchanger is not operating if there is no need for heating.

Maximum heat recovery is on when outdoor temperature is lower than +8°C. This may lead to contradictions, especially in the spring, when the sun is heating the indoor air even though the temperature outside is still under +8°C. The temperature limit value can be changed from the control panel.

Cooling recovery

During the summertime power limitation, the heat exchanger activates at full power when the outdoor air is over 1°C warmer than extract air. The heat exchanger stops, when the outdoor temperature drops below the extract air temperature. This helps in keeping inside air cool in the summer.

Heat recovery defrost

eAir control periodizes the rotation of the rotating heat exchanger when there is a risc for freezing. Normal rotation of the rotating heat exchanger is resumed when defrosting is finished. Defrosting can be activated from the control panel.

Efficiency of heat recovery

The efficiency of the heat recovery of supply and extract air is displayed in the Measurements menu of the control panel.

Supply, extract, and room temperature controls

The supply air temperature in the ventilation unit is controlled by the supply air controller. The ventilation unit can be used either as supply air controlled, which is when the controller keeps the supply air temperature at the set-point, or as extract or room temperature controlled, which is when the controller keeps the extract or room temperature at the set point by controlling the set point of the supply air controller.

The supply air controller makes sure that the supply air temperature stays at the set-point. If the outdoor temperature is less than the heat recovery temperature limit (default value +8°C), or if the ECO mode is active, the supply air temperature can rise over the set temperature. This temperature rise is from forced heat recovery only.

Extract or room temperature constant control is used when the apartment needs to be heated or cooled by the ventilation unit. Constant extract air temperature control is factory setting in ventilation unit models that have cooling.

If the outdoor temperature is less than the heat recovery temperature limit (default value +8°C), or if the ECO mode is active, the extract or indoor air temperature can rise over the set temperature. This temperature rise is from forced heat recovery only.

Room temperature control requires that the unit has either a temperature sensor (optional extra) connected to the eAir control panel or a room temperature transmitter (optional extra) connected to the eAir motherboard. Indoor air temperature control measurements must be activated separately from settings.

Heating is active when the control requests heating, i.e. when the set point temperature value is higher than the measured extract air (or indoor air) temperature. Cooling is active when the control requests cooling, i.e. when the set temperature value is lower than the measured extract air (or indoor air) temperature. Heating and cooling can be active at the same time, if the ventilation unit is equipped with supply air absolute humidity control (optional extra).

W models have a water heating coil return water check function that activates heating if the temperature of the return water drops too much. If the return water temperature is still dropping, the ventilation unit will shut down and set a freeze protection alarm.

If Max. heating / Max. cooling is selected from the control panel quick menu, efficient heating or cooling activates momentarily. The function forces the supply air control to its limit value and raises the fans to the Manual boost level.

The function will run until the temperature value set in the control panel main screen is reached.

Alarms

In alarm modes the ventilation unit either stops completely (A alarms, such as fire alarm) or remains in malfunction mode, in which the fans operate at minimum power (the so-called AB alarms, such as if supply air is too cold).

It is possible to configure the unit so that the fans stop also in AB-alarm.

Filter guard (optional extra)

The ventilation unit can be fitted with a filter guard function as an optional extra. Filter guard activates a service reminder alarm if the filter is blocked. The filter guard function requires that a ventilation unit has differential pressure sensors installed. These measure the difference in pressure caused by the filters. If the ventilation unit is ordered from the factory with a filter guard function, the automation will automatically activate the filter guard function when the setup wizard is completed. The fans will work at full power for some time, during which the system measures the pressure difference caused by clean filters, and sets the right value to indicate blocked filters. The filter guard is active following this. The service reminder alarm is sent, if the alarm level set by the automation is exceeded. The filter guard tests the filters every Wednesday at 12:00. Both fans will operate at full power for a few minutes.

The filter guard alarm must be manually acknowledged in the Settings > Alarm > Acknowledge maintenance notification menu. If the type or manufacturer of the filter is changed, the alarm limits of the filter guard must be updated. This is done in the menu: Settings > Alarm > Update alarm limits for filter guard.

Requirements

Functioning requirements of the ventilation unit:

- Supply and extract air temperature less than +55°C.
- Return water temperature at least +8°C.
- Supply air temperature after heat recovery over +5°C.
- Supply air temperature over +10°C.
- All foreign objects have been removed from the ventilation system.
- Both fans are operating.

Adjusting air flow

When the unit has been startedup, the air flows must be configured to designed values.

- Air flows are adjusted when commissioning the ventilation unit.
- The settings are set separately for both fans in each operating mode (= fan speed).
- Verify after air flow adjustment that there is underpressure at the extract air fan suction chamber relative to the supply air after heat recovery chamber.

Check the following when setting up:

- All filters are clean.
- All supply and extract air valves, the exhaust air cowling, and the outdoor air louvre are in place.

FOR INFORMATION

Do not cover the outdoor louvre with mosquito netting.

In order to get optimal fan speed settings, the air flows must be measured in each duct-opening. A suitable instrument is a thermal anemometer or a differential pressure instrument. With these measurements, the air flow can be adjusted to follow the planned values.

A correctly configured ventilation unit is silent and has good heat economy. Additionally, it maintains a slight underpressure in the house. Underpressure prevents humidity from getting inside the walls and ceiling.

Commissioning check list

Action	Reviewed	Notes
The unit is installed according to the installation instructions provided by the manufacturer.		
A condensation water drain pipe is attached to a water trap and its functionality has been tested.		
Silencers have been installed in the supply air and extract air ducts.		
The air valves are connected to the ductwork.		
An outdoor louvre has been installed for fresh air intake. **NOTE** Do not cover the louvre with mosquito netting. It makes cleaning difficult.		
The unit is connected to an appropriate electrical supply.		
Ventilation ducts are insulated according to the ventilation plan.		
Any external sensors and electrical connections are installed.		
All airflows are set according to the ventilation planning. Verify that the extract air fan suction chamber has underpressure relative to the supply air after heat recovery chamber.		

Control system and eAir control panel

The ventilation unit is controlled by a built-in eAir control system and an eAir control panel. The control is configured at the factory, but the commissioning must be done at the installation site.

Commissioning the eAir control panel

The eAir control panel is used for configuring the ventilation system controls and for managing ventilation.

WARNING

Do not damage the control panel screen with a sharp or scratching object.

Installing the battery

The battery is not installed inside the control panel when delivered. It must be put in place before charging the panel.

1. Open the battery case cover from the backside of the control panel.
2. Remove any possible protective tape from the battery terminals.
3. Slide the battery in place.

WARNING

Insert the battery the right way around so that it does not damage the connectors!

Charging the control panel

1. Set the panel in the wall mount.
   Battery begins to charge. Charge the battery for 24 hours before starting the setup wizard.

FOR INFORMATION

The control panel can be charged with a micro-USB charger (not included in the delivery).

The setup wizard starts automatically when the ventilation system is powered up for the first time.

Important information on the control system

FOR INFORMATION

Note: The code for the setup wizard and the system settings is **6143**.

The setup wizard is intended to make the commission of the control panel easier. The function goes through all the settings needed when commissioning the ventilation system.

All settings are configured with the setup wizard. The settings can be reviewed in the Settings menu, but the settings affecting fan speeds cannot be changed from there.

If you need additional help in configuring the settings, tap the target text for more instructions.

Factory settings are basic values that are suitable in most cases. Naturally this does not apply to the fan speed settings for the different modes, because air flows must be configured and set on a house-by-house basis. Any other values do not usually need to be changed, unless instructed so in the ventilation planning.

All the settings configured with the wizard are active immediately.

The changes are automatically saved in the unit's long-term memory once the wizard is finished for the first time. In the following operation times the changes are saved by answering "Yes" when the function asks whether or not the save the changes.

Running the setup wizard in one panel is enough even if you have two panels connected to the ventilation unit. Switch the power on in the other panel once you have configured the settings. The panel prompts which language you want to use, and retrieves the rest of the information from the ventilation unit´s motherboard.

Returning to setup wizard

If the complete setup wizard is not completed the first time, it will automatically restart every time the machine is switched on, and the settings can be finalized.

If you have finished the function and want to change the settings, open the wizard by tapping the arrow at the bottom of the start screen, and then selecting *Setup wizard*. Enter the code **6143**.

Commissioning the system with the setup wizard

The check list covers the complete setup wizard.

Make sure that the installation of the ventilation system is complete before starting the setup wizard. If any external sensor is not connected or if the indoor temperature is less than +15°C, the setup wizard cannot be completed. Alarms cannot be acknowledged in the setup wizard. If there is an alarm during the setup wizard, it can be acknowledged only after the setup wizard is completed.

If you pause the setting configuration, the control panel will automatically restart the wizard next time when you switch on the ventilation system. Then you can finalize the settings.

If the eAir panel is showing a text about connecting to a network and it is not connecting to the wall mount, check the cable between the wall mount and the ventilation unit. **Do no** tap the ***Re-connect radio*** button. It removes the pairing between the wall mount and the eAir panel, after which the eAir panel cannot be used umtil a new pairing is formed as instructed on page 12.

Make sure before starting the settings function that all the necessary information is available. Request necessary Modbus parameters from the supplier of the control system linked with Modbus, and network settings from the administrator of the local area network (only if DHCP is not in use).

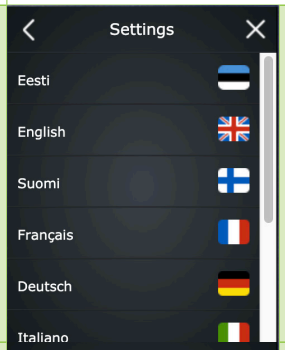
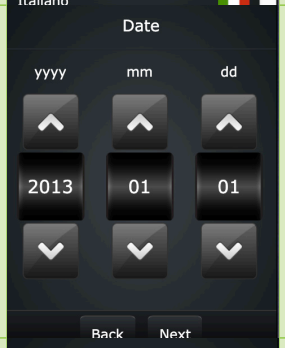
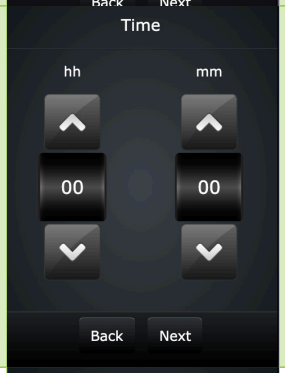
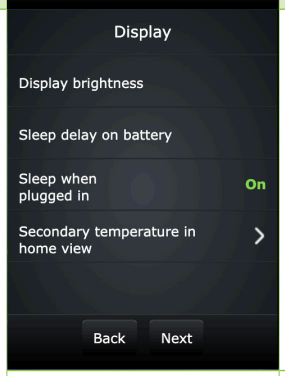
FOR INFORMATION

The fan speed settings for different modes must be configured and set on a house-by-house basis.

1. Switch the ventilation unit on.
2. The eAir operatin panel starts automatically and the Enervent logo appears on the screen.
3. Wait for the language choice to appear.
4. This may take some time. Wait patiently.
5. Choose the correct language and tap ***Next***.
6. Setup wizard opens.
7. Begin defining settings by tapping ***Next***.

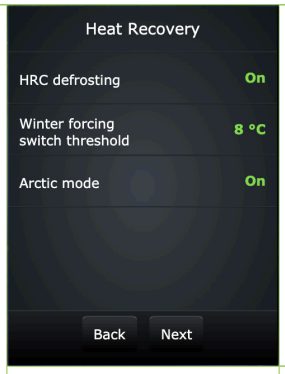
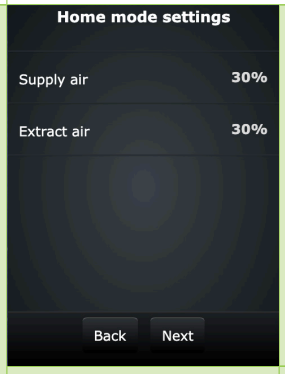
The following pages contain description on all the settings in the setup wizard.

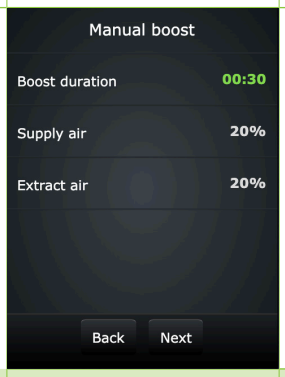
Setup wizard

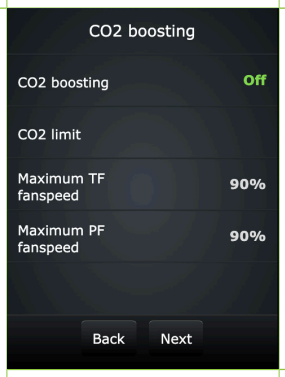
	NOTE! Factory settings are suitable for most installations. The fan speed settings for different operating modes are installation specific and must be specified and set separately for each installation. Do not change other factory settings, unless otherwise specified in the ventilation system plan.			
DISPLAY	MENU	SUB MENU	FACTORY SETTING	DESCRIPTION/REMARKS
	Setup wizard			
1				Choose language.
2				The date is displayed in a year-month-day format.
3				The clock displays 24 h time.
4		Screen brightness	97 %	Scale 0 - 100 %.
		Sleep mode delay	90 sek	This setting defines the time after which the screen will turn itself off to save the battery when it is not used.
		Sleep mode delay for wall mounting bracket	OFF	This setting defines whether the power saving sleep delay is on or off when the control panel is stored in the wall mount.
		Temperature shown on front of panel	Outside air temperature	The alternatives are outside air temperature, supply air temperature and extract air temperature.

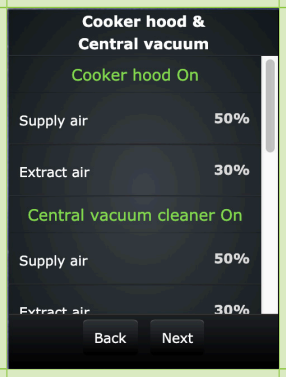
5		Use	Home	The options are Home or Office. In Office mode, the unit can be switched on only by using a time program.
		Temperature control	Supply air Extract air is the default setting for units with cooling functionality.	***Supply air*** maintains the supply air temperature at the value specified on the main view. This is the default setting for units with no cooling functionality. ***Room temperature average*** or ***Extract air c***ompare the temperature setting in the main view with the room temperature or extract air temperature and heat or cool the supply air accordingly. To be able to use ***room temperature control***, at least one room temperature sensor must be connected***. These settings are recommended only for units with cooling functionality.***
		Cooling	OFF	Options are ON/OFF.
		Outside temperature limit for cooling	17°C	When the outside temperature is below the set value, no active cooling is allowed.
		Heating	ON	Options are ON/OFF.
		Outside temperature limit for heating	25°C	When the outside temperature is above the set value, no heating is allowed.
		Min. supply air temperature	13°C	This is the minimum temperature for the supply air when the temperature control value is ***Extract air*** or ***Room temperature average***.
		Maximum supply air temperature	40°C	This is the maximum temperature for the supply air when the temperature control value is ***Extract air*** or ***Room temperature average***.
		Heating/cooling limitation	OFF	This setting is used if the user wants to prevent continuous switching between heating or cooling when the temperature setpoint is very close to the desired temperature.
		Heating	18°C	When the extract air (or the room temperature average, in room temperature mode) temperature drops, the heating is not activated until this temperature is reached.
		Cooling	24°C	When the extract air (or the room temperature average, in room temperature mode) increases, the cooling is not activated until this temperature is reached.
		TE20-21 sensor	OFF	Options are ON/OFF. If both sensors are selected here, the temperature control uses the mean temperature of the room sensors. If you have installed only one wall mounting bracket with room temperature sensor, it is TE20.
		Room temperature sensor 1-3	OFF	Options are ON/OFF. These sensors are room temperature transmitters that are connected to the ventilation unit. The sensors can be included or left out of the mean room temperature measuring by setting them on or off.

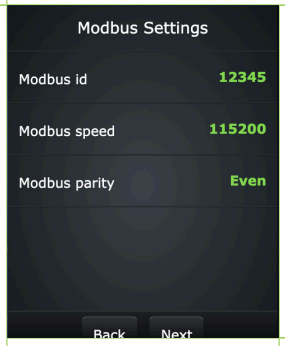
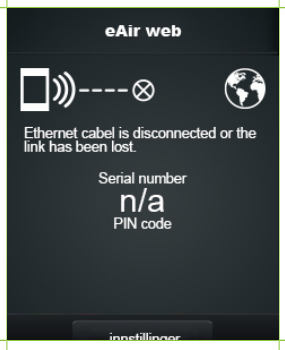
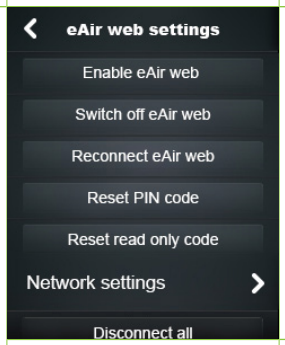
6		Analog input 1	%RH sensor1	Define the functionality and set the voltage for the analog inputs 1-6 on the eAir motherboard. AI settings needs to be configured if there are external sensors connected to the ventilation unit, besides the two RH% and CO_2 sensors that are preconfigured. Select identification for the input Set the sensor lowest output voltage Set the sensor highest output voltage Set the corresponding measurement value for the lowest output voltage Set the corresponding measurement value for the highest output voltage
		Analog input 2	%RH sensor 2	
		Analog input 3	None	
		Analog input 4	None	
		Analog input 5	CO2 sensor 1	
		Analog input 6	CO2 sensor 2	
7		Constant duct pressure control	OFF	Options are ON/OFF.
		Air flow setup mode	Constant pressure	Selecting ***Constant pressure*** requires all fan power settings to be entered as duct pressures, and the automation will automatically maintain the duct pressure by varying the fan speeds. Select this setting if you know the required duct pressures for the different operating modes. Selecting ***Constant speed*** will allow the airflow measurements to be made without the duct pressure control. The measured duct pressures are shown under the fan speed settings for reference, and are automatically stored when continuing to the next setting. After completing all fan speed settings the constant duct pressure control is automatically activated, and fan speed control will be automatic according to duct pressures. Use this setting if you don't know the needed duct pressures for the different operating modes.
		P-band	25	P-band value determines how much the fan speed will be altered.
		I-time	5 s	I-time value determines how quick the change to the fan speed will be.
		DZ	2 Pa	DZ (dead zone) is the deviation in the set duct pressure where the controller has no effect on the fan speed.
		Alarm delay for supply air duct pressure	200 s	If pressure deviation is greater than the set alarm limit, an alarm will be triggered after the delay set here.
		Alarm delay for extract air duct pressure	200 s	If pressure deviation is greater than the set alarm limit, an alarm will be triggered after the delay set here.
		Alarm limit	10 Pa	An alarm is triggered if pressure deviation is greater than the alarm limit set here.

8		Defrost	OFF	Options are ON/OFF. The function is active during winter season, if enabled. When defrosting is active, the rotating heat recovery wheel will rotate at a slower speed.
		Limit temperature for winter boost	8°C	When the outside temperature is below this value, the heat recovery is always on 100%.
		Arctic mode	OFF	Options are ON/OFF. Arctic mode is a defrosting mode that takes the outside air temperature and the absolute humidity of the extract air into account when determining the need for defrosting.
	Operating modes			
9		Supply air	30 %	This value defines the supply air fan speed in Home operating mode.
		Extract air	30%	This value defines the extract air fan speed in Home operating mode.
10		Summer night cooling	OFF	Options are ON/OFF. Summer night cooling boosts the fan speed to increase cooling when the outside air is cooler than the room air.
		Start temperature	25°C	Summer night cooling starts when the temperature of extract air exceeds this temperature value.
		Stop temperature	21°C	Summer night cooling stops when the temperature of extract air drops below this temperature value.
		Lowest outside temperature	10°C	The temperature of outside air must be higher than this value for the summer night cooling to start.
		Min. temperature difference	1°C	Outside air must be cooler than extract air by this value.
		Supply air	70 %	The speed of the supply air fan when summer night cooling is active.
		Extract air	70 %	The speed of the extract air fan when summer night cooling is active.
		Start time	22.00	Summer night cooling is only allowed after this specified time.
		Stop time	7.00	Summer night cooling is stopped after this specified time.

		Weekdays	Every day	Set the weekday or days for summer night cooling.
		Active cooling blocked	ON	Options are ON/OFF. If this setting is on, no active cooling is allowed.
11		Supply air	20 %	This value defines the supply air fan speed in Away operating mode.
		Extract air	20 %	This value defines the extract air fan speed in Away operating mode.
		Temperature setback	2°C	This value defines the temperature drop in the temperature set-point when Away operating mode is on.
		Heating	ON	Options are ON/OFF. This setting defines whether or not after heating is allowed in Away operating mode.
		Cooling	ON	Options are ON/OFF. This setting defines whether or not active cooling is allowed in Away operating mode.
12		Boost duration	30 min	This setting defines the time the fan speed is boosted.
		Supply air	90 %	This is the speed at which the supply air fan will be running when manual boosting is activated.
		Extract air	90 %	This is the speed at which the extract air fan will be running when manual boosting is activated.
13		Overpressure duration	10 min	This setting defines the time the overpressure is active.
		Supply air	50 %	This is the speed at which the supply air fan will be running when manual overpressure is activated.
		Extract air	30 %	This is the speed at which the extract air fan will be running when manual overpressure is activated.

	Boost functions			
14		% RH boost	OFF	Options are ON/OFF. This setting allows or prohibits boosting according to the air humidity.
		Summer / winter limit temperature	4°C	When the 24 hour mean temperature of outside air is higher than this limit, boosted ventilation based on the 48 hour mean humidity of extract air is taken into use. If the 24 hour mean temperature is below the value set here, a fixed limit for boosted ventilation is used.
		% RH boost limit value	45 %	In winter mode (24 h mean temperature of outside air is less than +4°C) boosted ventilation activates when relative humidity of the extract air is higher than this value.
		Threshold value 48 hr % RH	15 %	In summer mode (24 h mean temperature of outside air is higher than +4°C) boosted ventilation activates when relative humidity of extract air is higher than the 48 h mean humidity by the value set here.
		Max. supply air fan speed	90 %	The maximum allowed speed of the supply air fan during humidity boosting.
		Max. extract air fan speed	90 %	The maximum allowed speed of the extract air fan during humidity boosting.
		Rotor dehumidification	OFF	Options are ON/OFF. If allowed rotor dehumidification is active when humidity boosting is active and the outside air temperature is below 0 °C.
15		CO2 boost	OFF	Options are ON/OFF. This setting allows boosting of the fans according to the CO2 level. CO2 settings require an external carbon dioxide transmitter (optional extra).
		CO2 boost limit value	1000 ppm	Boosting starts when the amount of CO2 exceeds the value set here.
		Max. supply air fan speed	90%	The maximum allowed speed of the supply air fan during CO2 boosting.
		Max. extract air fan speed	90%	The maximum allowed speed of the extract air fan during CO2 boosting.

16		Temperature boost	OFF	Options are ON/OFF.
		Select temperature	Extract air temperature	The options are ***Extract air temperature*** or ***Room temperature average***. To be able to select room temperature average, you need a separate room temperature sensor (optional extra).
		Max. supply air fan speed	90%	The maximum allowed speed of the supply air fan during temperature boosting.
		Max. extract air fan speed	90%	The maximum allowed speed of the extract air fan during temperature boosting.
17		Cooker hood on, supply air	50 %	Set the supply air fan speed for when the cooker hood is on.
		Cooker hood on, extract air	30 %	Set the extract air fan speed for when the cooker hood is on.
		Central vacuum cleaner on, supply air	50 %	Set the supply air fan speed for when the central vacuum cleaner is on.
		Central vacuum cleaner on, extract air	30 %	Set the extract air fan speed for when the central vacuum cleaner is on.
		Cooker hood and central vacuum cleaner on, supply air	70 %	Set the supply air fan speed for when the cooker hood and the central vacuum cleaner is on.
		Cooker hood and central vacuum cleaner on, extract air	30 %	Set the extract air fan speed for when the cooker hood and the central vacuum cleaner is on.
		Cooker hood, central vacuum cleaner and manual overpressure on, supply air	100 %	Set the supply air fan speed for when the cooker hood, the central vacuum cleaner and the manual over pressure is on.
		Cooker hood, central vacuum cleaner and manual overpressure on, extract air	30 %	Set the extract air fan speed for when the cooker hood, the central vacuum cleaner and the manual over pressure is on.

	Modbus and eAir web settings			
18		Modbus ID	1	Each device that is connected to the Modbus needs a unique identification.
		Modbus speed	19200	The options are 19200, 115200 or 9600.
		Modbus parity	None	The options are None or Even.
		Modbus TCP/IP	OFF	Options are ON/OFF. Make the necessary network settings in the eAir Web Settings menu
19		Serial number		
		PIN code		
20		Enable eAir web		Enables the eAir web service.
		Switch off eAir web		Disables the eAir web web service.
		Re-connect eAir web		Resets the eAir web web service.
		Reset PIN code		Generates a new PIN code to the eAir web web service.
21		DHCP	ON	Options are ON/OFF.
		IP address		
		Gateway IP address		
		Subnet mask		
		DNS IP address		

Settings that are not defined in the setup wizard

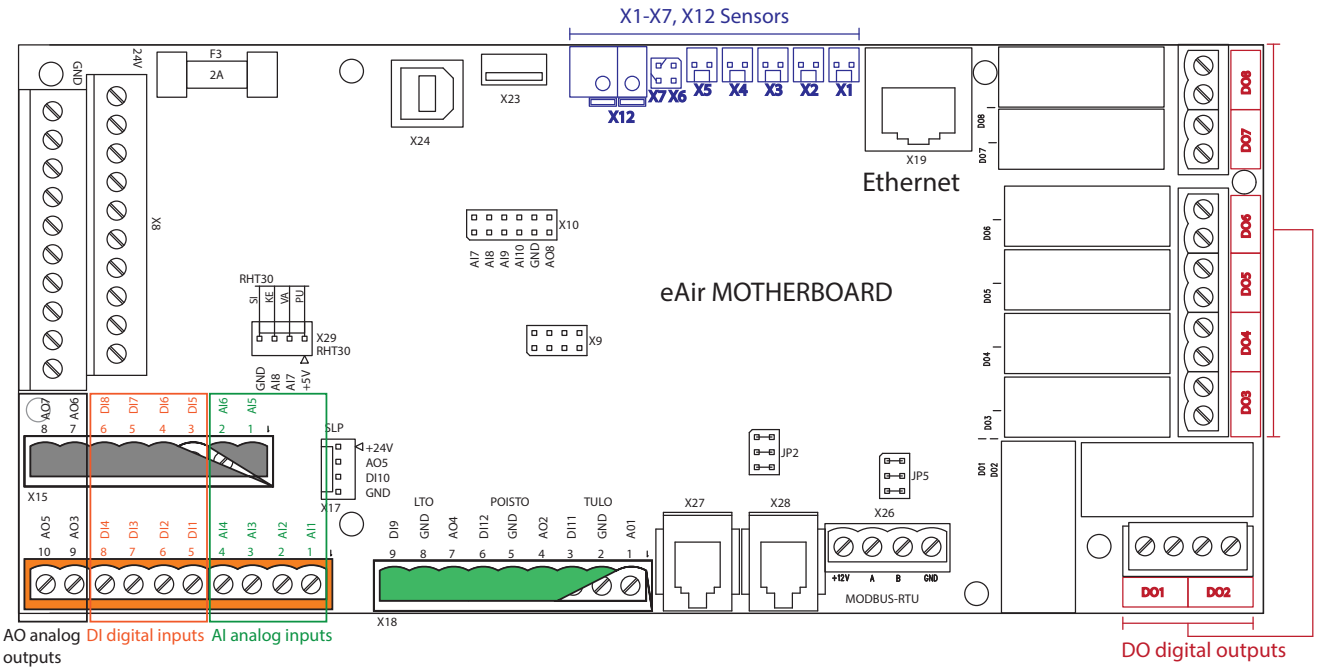
The ventilation units are pre-prepared at the factory in order to shorten the installation time. However, all possible optional extras cannot be taken into account. The settings for the devices connected to the motherboard must be configured on the control panel.

The following table contains the eAir motherboard connections and their placements on the motherboard.

eAir motherboard connections	
NTC sensors	
The eAir motherboard has connections for eight (8) NTC-10 sensors.	
Intake	**Intended use**
X1	Outdoor air temperature TE01
X2	Supply air after heat recovery unit temperature TE05
X3	Supply air temperature TE10 Supply air temperature after dehumidification coil TE07 (only units with dehumidification function)
X4	Extract air temperature TE32
X5	Exhaust air temperature before heat recovery TE31 (HP only) Evaporator fluid pipe temperature TE62 (-X only) CG radiator freeze protection TE46 (CG-W only)
X6	Pre-heated extract air temperature TE50 (HP only)
X7	Pre-heated outdoor air temperature TE02 (CHG)
X12	Return water temperature TE45
Analog inputs AI 0-10V	
Analog inputs AI1–AI6 are between 0–10V. These input functions are user-defined.	
Intake	**Intended use**
AI1 (X16)	Humidity transmitter 1
AI2 (X16)	Humidity transmitter 2 Water heater temperature TE80 (Aqua only)
AI3 (X16)	(Free) Supply air duct pressure PDE10
AI4 (X16)	(Free) Exhaust air duct pressure PDE30
AI5 (X15)	Carbon dioxide transmitter 1
AI6 (X15)	Carbon dioxide transmitter 2
Analog inputs AI1–AI6 have the following functions available:	
	Humidity transmitter 1, 2, and 3
	Carbon dioxide transmitter 1, 2, and 3
	Room temperature transmitter 1, 2, and 3
	Outdoor temperature transmitter
	Pressure difference transmitter PDE10 and PDE30. These sensors are used in the constant duct pressure control.
	Changing the temperature setting
Analog inputs AI7–AI8 are between 0–5V. These intake functions are locked by the software.	
AI7 (X29)	Extract air humidity RH30

eAir motherboard connections	
AI8 (X29)	Extract air temperature TE30
Analog inputs AI9–AI16 are between 0–10V. These input functions are locked by the software.	
AI9 (X10)	Supply air filter pressure difference PDE01 (extra)
AI10 (X10)	Exhaust air filter pressure difference PDE31 (extra)
AI11 (X10)	Supply air humidity RH10 (only models with dehumidification function)
AI12 (X10)	Supply air temperature TE10 (only models with dehumidification function)
AI13 (X10)	Free
AI14 (X10)	Free
AI15 (X10)	Free
AI16 (X10)	Free
Analog outputs AO 0-10V	
Output	**Intended use**
AO1 (X18)	Supply air fan control voltage
AO2 (X18)	Exhaust air fan control voltage
AO3 (X16)	Cooling control voltage / additional post-heating control voltage (heat pump models)
AO4 (X18)	Rotating heat exchanger control voltage
AO5 (X16)	Heating control voltage / compressor power control voltage (heat pump models)
AO6 (X15)	Pre-heating control voltage / pre-cooling control voltage (CHG) / HRW n:o 2 control voltage (Twin Tropic)
AO7 (X15)	Extract air pre-heating control voltage (HP) / extract air dehumidification control voltage (TCG) / HRW de-frosting control voltage (WGHR)
AO8 (X10)	Hot water production control voltage
Digital outputs (DO), relays, closing contacts.	
Intake	**Intended use**
DO1	On/Off control of fans
DO2	On/Off control of heating
DO3	On/Off control of cooling / On/Off control of heating (heat pump models)
DO4	On/Off control of HRW
DO5	On/Off control of dampers / Salla/Svea On/Off control of evaporationheater
DO6	On/Off control of pre-heating / On/Off control of pre-cooling / On/Off control of heating circulating pump (Aqua KIW)
DO7	Time-controlled relay / circulation pump on/off control PU80 (Aqua) / extract air cooling on/off control (TCG)
DO8	A/AB alarm output, closing
Digital inputs (DI) (buttons and indications) Connection only to the GND terminal! Voltage must not be connected to digital inputs.	
The digital inputs are user-defined	
Intake	**Intended use**
DI1 (X16)	Emergency stop (fixed)
DI2 (X16) user-defined	PDS10 supply air fan pressure switch / de-frosting indication (heat pump models)
DI3 (X16) user-defined	Overtime (only in Office use)
DI4 (X16) user-defined	Manual boost

eAir motherboard connections	
DI5 (X15) user-defined	Away mode.
DI6 (X15) user-defined	Overpressure, connected to push button switch. Overpressure mode is active for 10 minutes, from activation (factory setting). If the input is connected to a switch, the overpressure mode is re-activated only after the circuit is broken.
DI7 (X15) user-defined	Central vacuum system indication
DI8 (X15) user-defined	Cooker hood indication
DI9 (X18) fixed	HRW rotation speed input
DI10 (X17) fixed	Electrical post-heating alarm / compressor failure (heat pump models)
DI11 (X17) fixed	Supply air fan rotation speed input
DI12 (X17) fixed	Exhaust air fan rotation speed input
Other connections	
X27, X28	Control panel connections only to eAir wall mount
X26	ModBus RTU
X19	Ethernet
X23 USB master	Program update only, from USB
X24 USB device	Inactive
X8	+24 VDC
X8	GND
O3 ozone sensor (ION)	ICEA2000A unit connector 11



eAir motherboard connections and their locations

When you want to set unit settings, tap the upwards arrow in the main screen > choose ***Settings*** > scroll the screen to ***System configuration*** > enter password 6143 > ***OK*** > ***I/O settings*** > choose ***AI settings*** (analog input settings) or ***DI settings*** (digital input settings) > choose the input you want to configure. Then tap the green text on the row you want to configure, and select the function for the selected input.

Documenting the commissioning

- Fill in warranty information.
- Write down all possible changes made to the factory settings, to be able to recall the settings if needed.
- Fill the air flow measurement document. A copy of the document is at the end of this manual.

FOR INFORMATION

Warranty is not in effect for units that do not have the air flow measurements documented.

It is very important that all changes in parameters are written down. This way the information has backup in case the automation is damaged (e.g. by lightning strike).

In case of an alarm

Alarm	Reason	Instruction	Solution
HRW supply air cold (TE-05 min)	Heat exchanger belt is broken	A green belt drives the heat exchanger. Check if the belt can be seen from the HRW round opening. If it cannot be seen, the belt is broken.	Change the belt.
	The heat exchanger belt is oily and slips	A green belt drives the heat exchanger. Check from the HRW round opening if the pulley is rotating even though the HRW rotor is not.	Change the belt.
	Extract air fan has stopped	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact Service. Change the fan.
	Extract air filter is blocked	Open the service hatch when the unit is off. Pull out the filter and check the condition of the filter.	Change the filters.
	Extract air valves adjusted incorrectly	Find out if the air flow and valves are correctly adjusted.	Contact the installer.
	Ducts have inadequate insulation	Check the thickness of the insulation in supply and extract air ducts, and add insulation if necessary.	Contact the installer.
	The pre-heater overheating protection has tripped.	Find out the cause for the failure and reset the protection against overheating (R® button in the radiator).	Contact service.
	The motor/gearbox in the heat exchanger is faulty	Open the service hatch while the unit is operating and listen, if the sound comes from the HRW.	Contact service.
	The HRW controller circuit board is faulty	The HRW motor is controlled by a separate circuit board that is located in the electric box of the unit.	Contact service.
	HRW pulley has separated from the shaft	Check from the HRW round opening if the shaft is rotating empty and the pulley is in its place.	Contact service. Tighten the screw on the pulley.
	TE-05 temperature sensor is faulty	Check from the measurements menu on the control panel if the supply air temperature after heat recovery measurement is off the charts.	Contact service.
Supply air cold (TE-10 min)	Heat exchanger belt is broken	A green belt drives the heat exchanger. Check if the belt can be seen from the HRW round opening. If it cannot be seen, the belt is broken.	Change the belt
	The heat exchanger belt is oily and slips	A green belt drives the heat exchanger. Check from the HRW round opening if the pulley is rotating even though the HRW rotor is not.	Change the belt
	Extract air fan has stopped	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact Service. Change the fan
	Extract air filter is blocked	Open the access door when the unit is off. Pull out the filter and check the condition of the filter.	Change the filters
	Extract air valves adjusted incorrectly	Find out if the air flow and valves are correctly adjusted.	Contact the installer.
	The pre-heater overheating protection has tripped.	Find out the cause for the failure and reset the protection against overheating (R® button in the radiator).	Contact service.
	TE-10 temperature sensor is faulty	Check from the measurements menu on the control panel if the supply air temperature measurement is off the charts.	Contact service.
	The motor/gearbox in the HRW motor is faulty	Open the service hatch while the unit is operating and listen, if the sound comes from the HRW.	Contact service.

Alarm	Reason	Instruction	Solution
Supply air cold (TE-10 min)	The HRW controller circuit board is faulty	The HRW motor is controlled by a separate circuit board that is located in the electric box of the unit.	Contact service.
	After heating is disabled	Check if after heating is allowed and eco-mode is off, and there is no heating block timer program active	Change settings if needed
	HRW pulley has separated from the shaft	Check from HRW round opening if the shaft is rotating empty and the pulley is in its place.	Contact service. Tighten the screw on the pulley.
	Ducts have inadequate insulation	Check the thickness of the insulation in supply and extract ducts, and add insulation if necessary.	Contact the installer.
Supply air hot (TE-10 max) Fire risk	Electrical after-heating faulty		Contact service.
	Water heating radiator has a faulty control valve actuator		Contact service.
	TE-10 temperature sensor faulty	Check from the measurements menu on the control panel if the supply temperature measurement is off the charts.	Contact service.
Hot room air (TE-20 max)	Fire risk		Contact service.
	TE-20 temperature sensor faulty	Check from the measurements menu on the control panel if the room temperature measurement is off the charts.	Contact service.
Extract air cold (TE-30 min)	Ducts have inadequate insulation	Check the thickness of the insulation in supply and extract air ducts, and add insulation if necessary.	Contact the installer.
	The pre-heater overheating protection has tripped.	Find out the cause for the failure and reset the protection against overheating (R® button in the radiator).	Contact service.
	The ventilation unit door is open		Close the door.
	Low room temperature		Raise the room temperature.
	TE-30 temperature sensor is faulty	Check from the measurements menu on the control panel if the extract air temperature measurement is off the charts.	Contact service.
Extract air hot (TE-30 max)	Fire risk		Contact service.
	TE-30 temperature sensor faulty	Check from the measurements menu on the control panel if the extract air temperature measurement is off the charts.	Contact service.
Electrical radiator overheated (SLP fault)	Electrical post-heating faulty		Contact service..
	Supply air fan has stopped	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact service. Change the fan.
	Supply air filter is blocked	Open the service hatch when the unit is off. Pull out the filter and check the dirtiness of the filter.	Change the filters
	Outdoor louvre blocked	Check if the louvre on the outside of the house is blocked.	Contact service. Clean the outdoor louvre.
	The heating controller circuit board is broken		Contact service. Change the heating controller circuit board.
Water radiator freezing risk (TE-45 min)	Heat exchanger belt has broken	A green belt drives the heat exchanger. Check if the belt can be seen from the HRW round opening. If it cannot be seen, the belt is broken.	Change the belt

Alarm	Reason	Instruction	Solution
Water radiator freezing risk (TE-45 min)	The heat exchanger belt is oily and slips	A green belt drives the heat exchanger. Check from the HRW round opening if the pulley is rotating even though the HRW rotor is not.	Change the belt
	Extract air fan has stopped	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Change fan
	Extract air filter is blocked	Open the service hatch when the unit is off. Pull out the filter and check the condition of the filter.	Change the filters
	The air valves adjusted incorrectly	Find out if the air flow and valves are correctly adjusted.	Contact the installer.
	Ducts have inadequate insulation	Check the thickness of the insulation in supply and extract air ducts, and add insulation if necessary.	Contact the installer.
	The pre-heater overheating protection has tripped.	Find out the cause for the failure and reset the protection against overheating (R® button in the radiator).	Contact service.
	The water heating radiator has a faulty control valve actuator		Contact service.
	The circulation pump has shut down	Check if the heating/cooling circulation pump is working.	Restart the pump. If the issue persists, contact service.
	The HRW controller circuit board is faulty	The HRW motor is controlled by a separate circuit board that is located in the electric box of the unit.	Contact service.
	HRW pulley has separated from the shaft	Check from HRW round opening if the shaft is rotating empty and the pulley is in its place.	Contact service. Tighten the screw on the pulley.
Cooling error	External cooling unit malfunction	Check that the safety switch of the external unit is switched on.	Restart the external unit. If the issue persists, contact service.
External emergency shutdown	Ventilation stopped with the emergency shutdown button.	If the building has an external shutdown switch, check if it has been pressed.	Contact service. Find the root cause before resetting
External fire risk	Ventilation shut down from the external fire alarm system.	If the building has a fire alarm system, check if it has been activated.	Contact service. Find the root cause before resetting.
Maintenance notice	Normal notice every 4 or 6 months (depending on the model)	Change the filters and clean the unit from inside. Check that the unit functions properly.	Reset the maintenance alarm from the eAir panel Settings menu -> Alarm -> Acknowledge service reminder.
Filter alarm: Supply (accessory)	Supply air filter is blocked.	Open the service hatch when the unit is off. Pull out the filter and check the condition of the filter.	Change the supply filter.
Filter alarm: Exhaust (accessory)	Extract air filter is blocked.	Open the service hatch when the unit is off. Pull out the filter and check the condition of the filter.	Change the extract filter.
Supply air fan rotation guard	Supply air fan has stopped.	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact service. Change the fan
Extract air fan rotation guard	Extract air fan has stopped.	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact service. Change the fan
PDS 10 alarm	Supply air fan has stopped.	Open the service hatch. Press the safety switch with a screwdriver and check, if the fan starts.	Contact service.
	Supply air filter blocked.	Open the service hatch when the unit is off. Pull out the filter and check the condition of the filter.	Change the filters
	Outdoor louvre blocked.	Check if the louvre on the outside of the house is blocked.	Contact service. Clean the outdoor louvre.
Compressor alarm	The internal alarm of the heat pump unit is active.		Restart the heat pump. If the issue persists, contact service.

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, radio equipment directive RED 2014/53/EU, ROHS II directive 2011/65/EU, battery directive 2013/56/EU and waste electrical and electronic equipment directive WEEE 2012/19/EU.

Manufacturer:	Enervent Zehnder Oy
Manufacturer´s contact:	Kipinätie 1, 06150 Porvoo, FINLAND, tel. +358 207 528 800, fax +358 207 528 844 enervent@enervent.com, www.enervent.com
Description of the product:	Ventilation unit with heat recovery
Trade name of the product:	Svea eAir E Right

The products are in conformity with the following standards:

LVD EN 60335-1:2012/A13:2017/A1:2019/A14:2019/A2:2019
EN 62233:2008/AC:2008

EMC EN 61000-3-2:2014, EN 61000-3-3:2013
EN 61000-6-1:2007, EN 61000-6-3:2007/A1:2011/AC:2012

RED EN 300 328 v2.2.2

MD EN ISO 12100:2010

ROHS EN IEC 63000:2018

ROHS EN 50581:2012

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

Product is CE-marked year 2022.

Porvoo 4th of January 2022

Enervent Zehnder Oy

Tom Palmgren
Technology manager

Enervent Svea

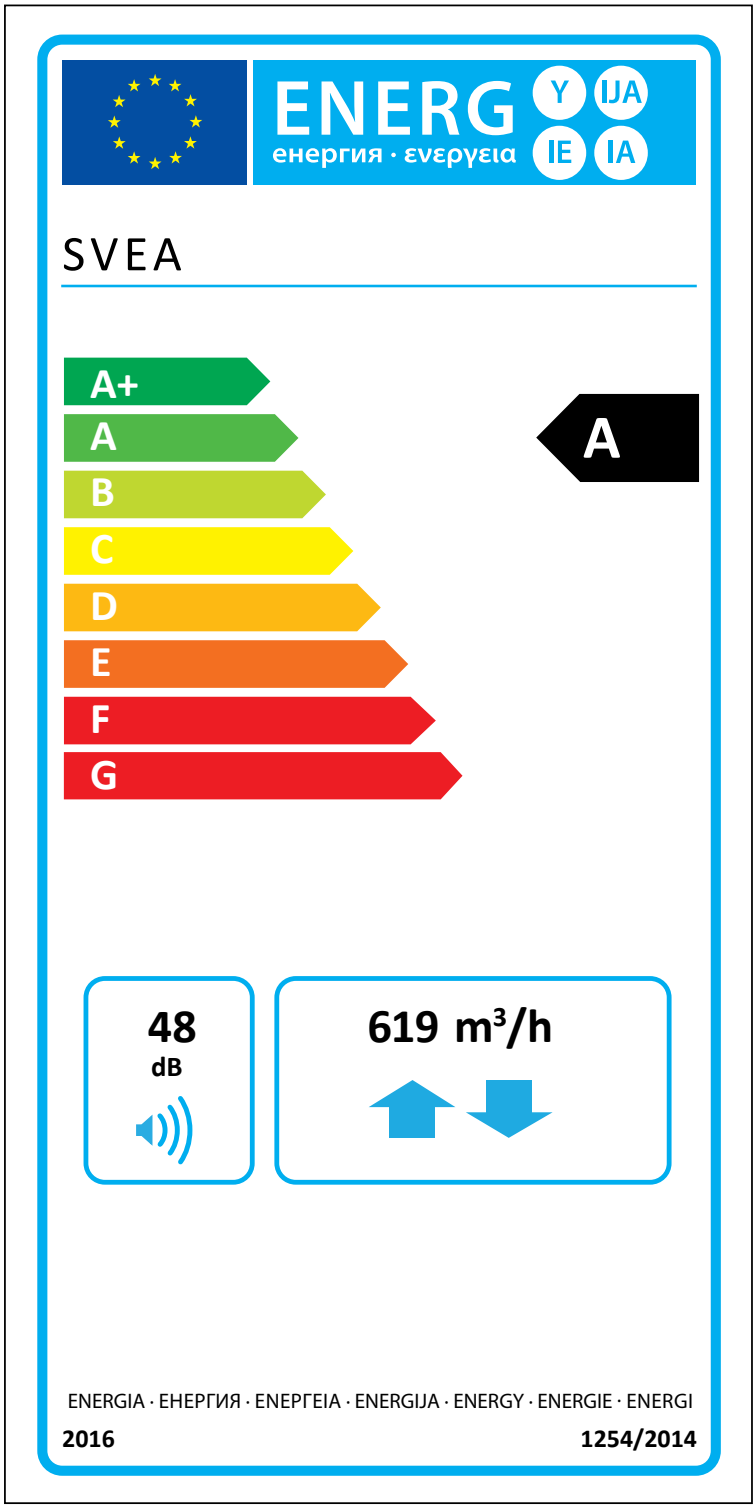
A

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

Supplier's name or trade mark	Enervent
Supplier's model identifier	Svea
Specific energy consumption (sec) in kWh/(m^2.A)	
• Cold climate	-76,8
• Average climate	-37,3
• Warm climate	-14,6
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	84,8
Maximum flow rate in m^3/h	619
Electric power input of the fan drive, including any motor control equipment, at maximum flow rate (W)	298
Sound power level (L_{WA}), rounded to the nearest integer	48
Reference flow rate in m^3/s	0,12
Reference pressure difference in Pa	50
SPI in W/(m^3/h)	0,31
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% / <0,8%
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)	162
The annual heating saved (AHS) (in kWh primary energy/a) for each type of climate	
• Cold climate	8084
• Average climate	4132
• Warm climate	1869

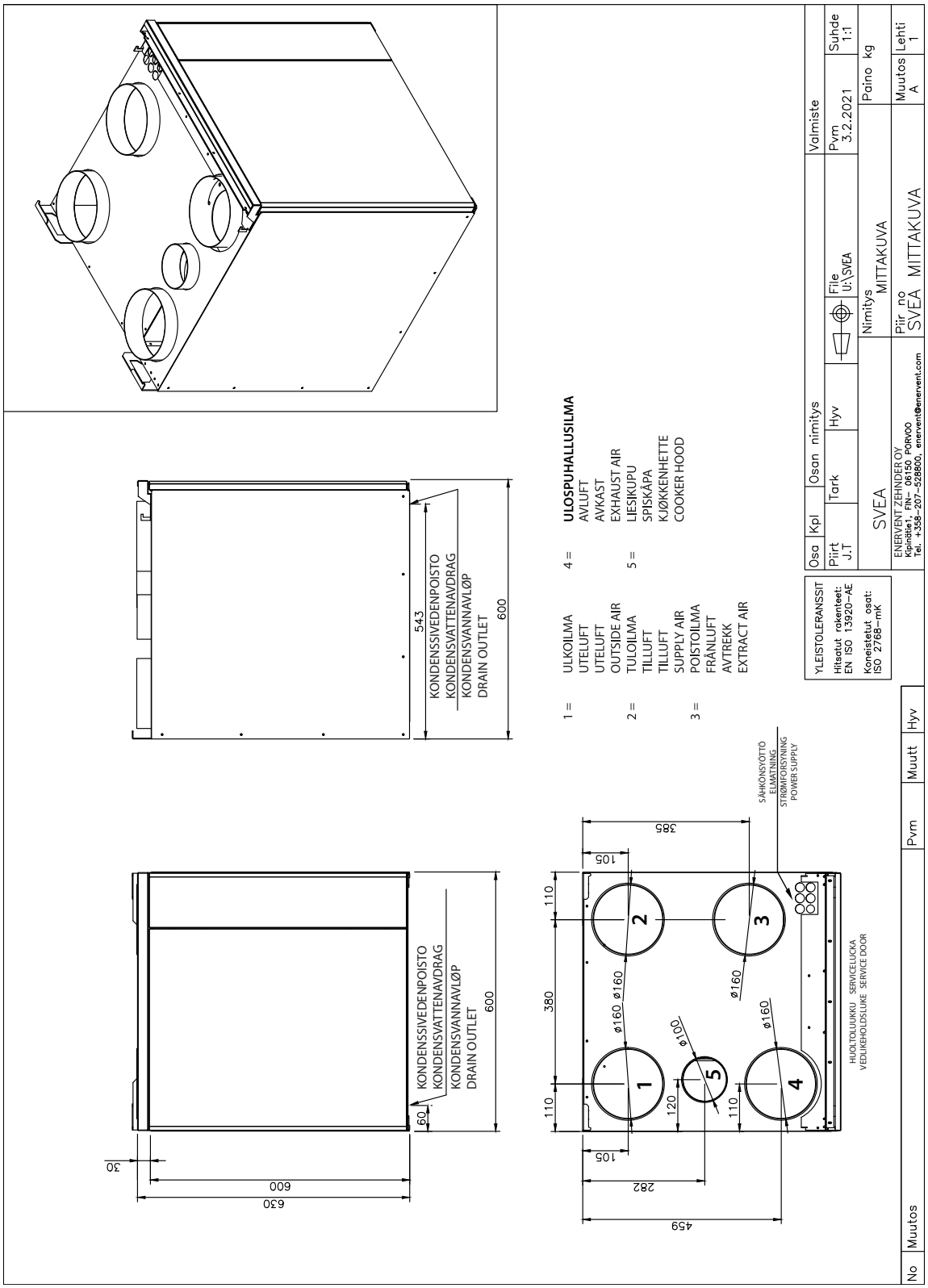
The information on the energy label for this product has been defined with local demand control. Local demand control means that the ventilation unit continuously regulates the fan speed(s) and flow rates based on more than one sensor. Please remember to connect all local sensors (some sold as extra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

enervent


ENERG
Y
IJA
IE
IA
енергия · ενεργεια
SVEA
A+
A
B
C
D
E
F
G
A
48
dB
619 m³/h
ENERGIA · ЕНЕРГИЯ · ΕΝΕΡΓΕΙΑ · ENERGIJA · ENERGY · ENERGIE · ENERGI
2016
1254/2014

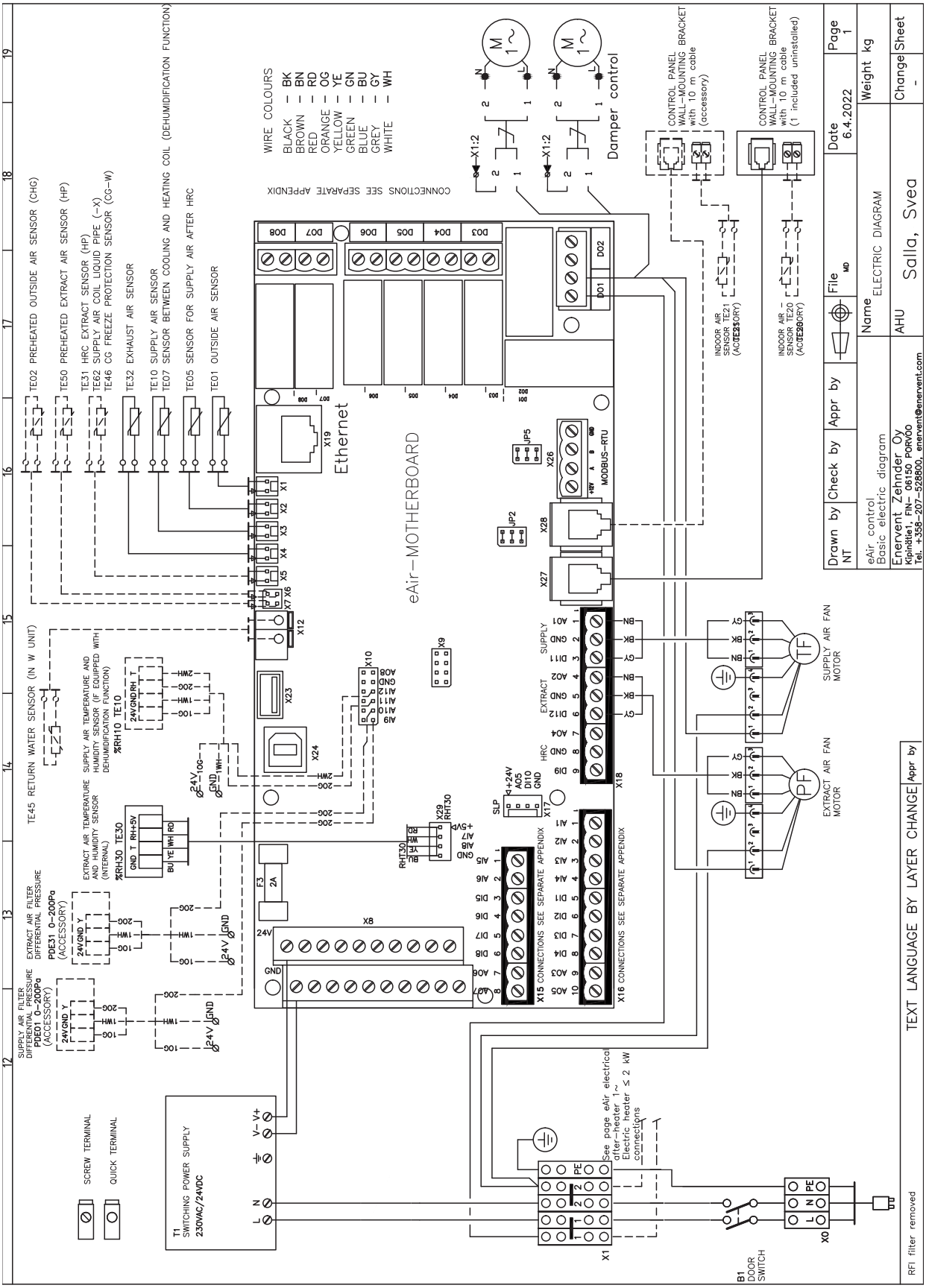
Dimensional drawings

Technical dimensional drawing, 5-duct right-handed

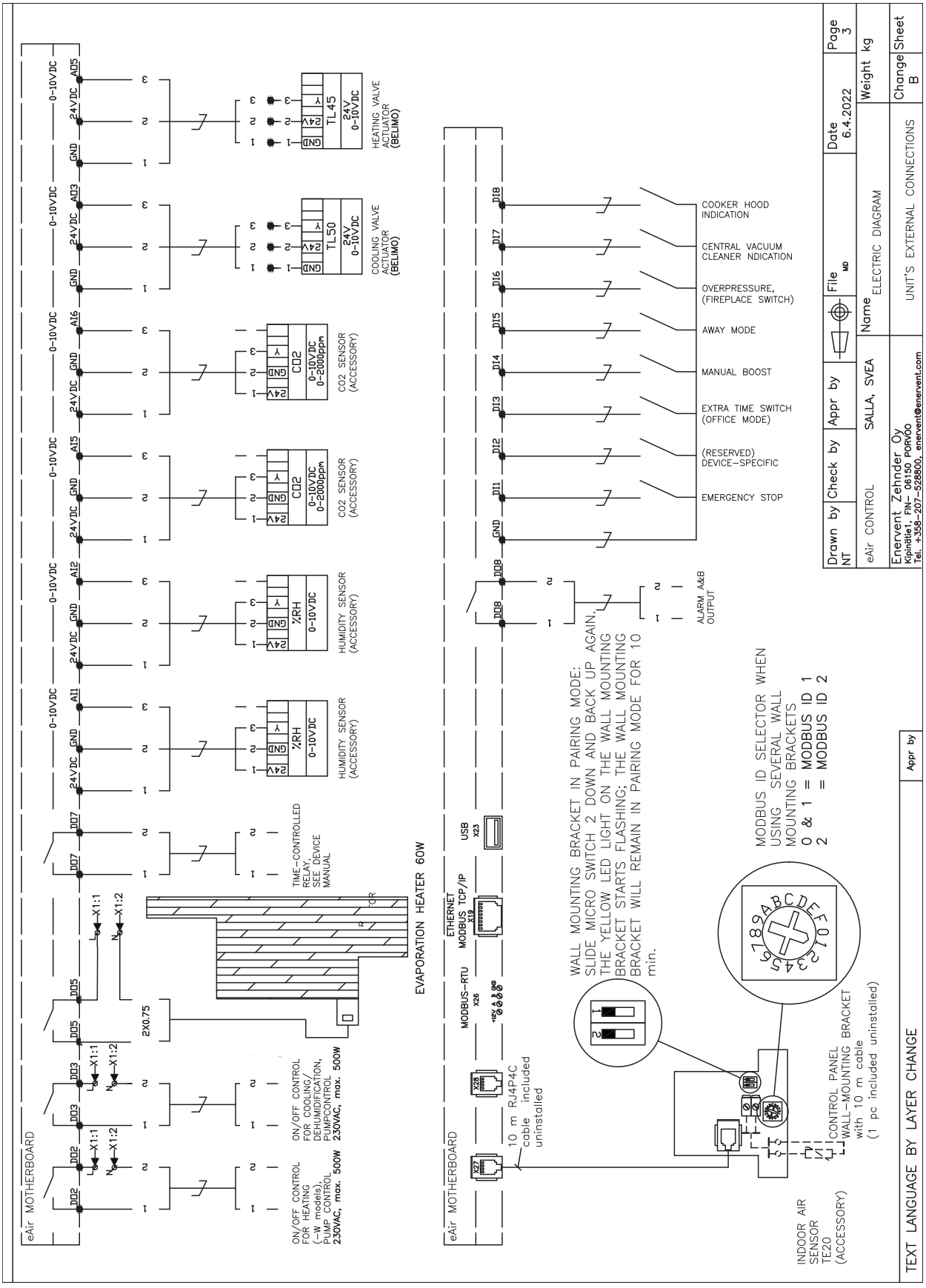


Electrical diagrams

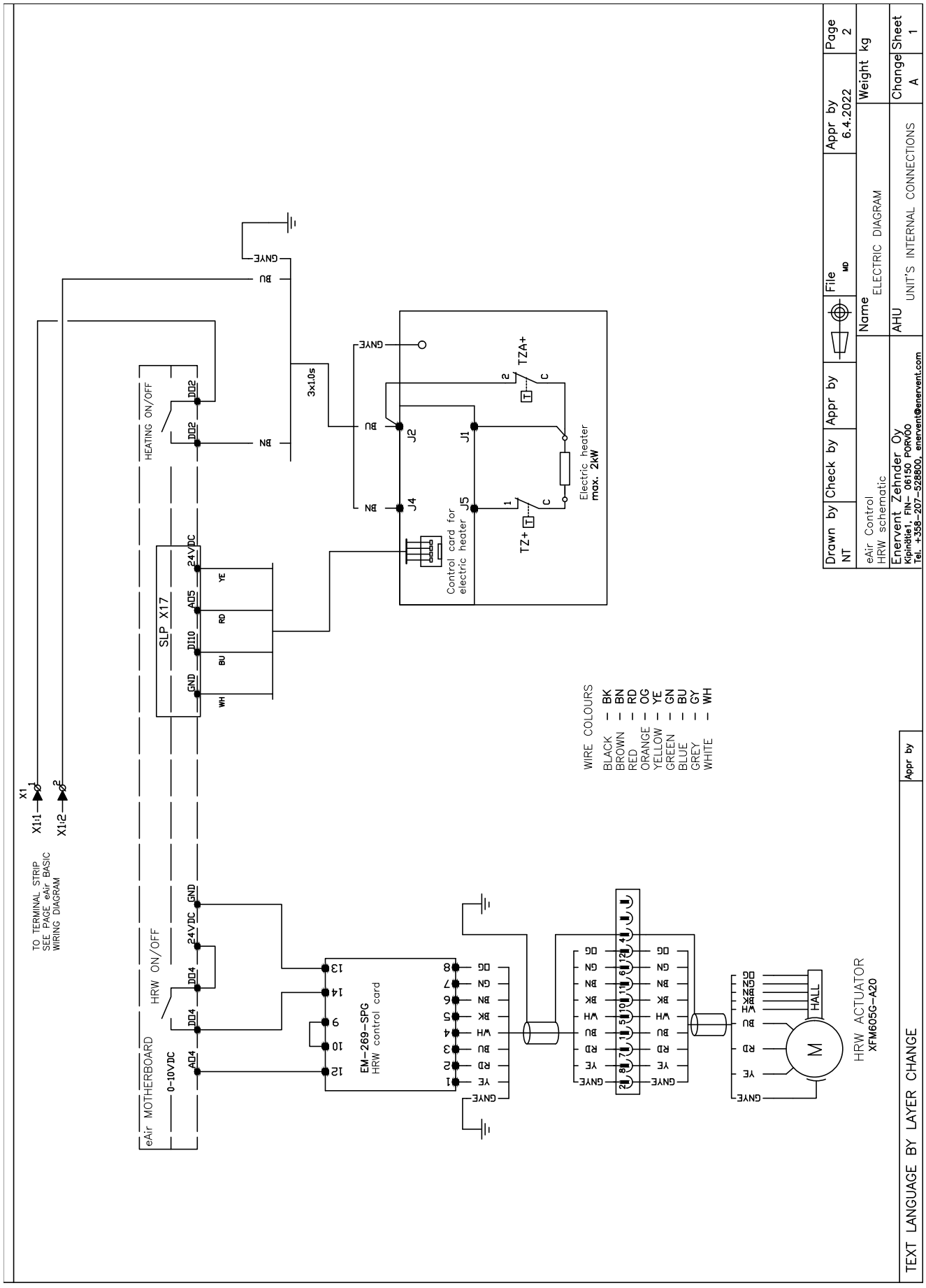
Connections

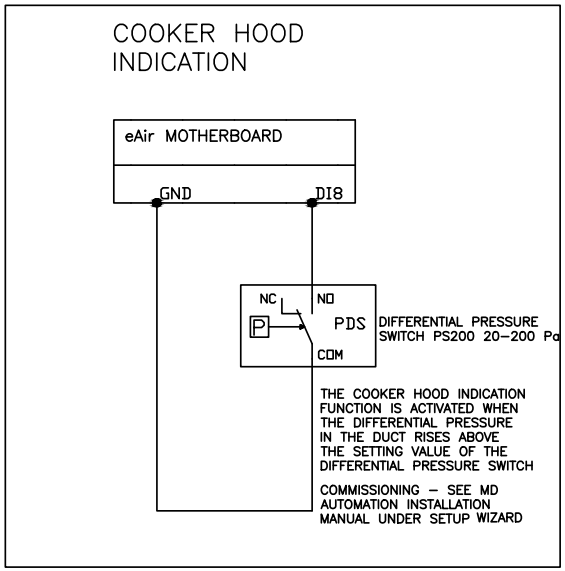


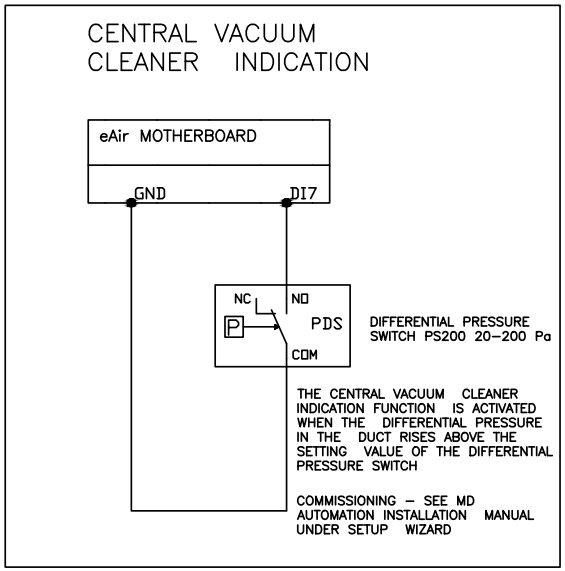
External connections

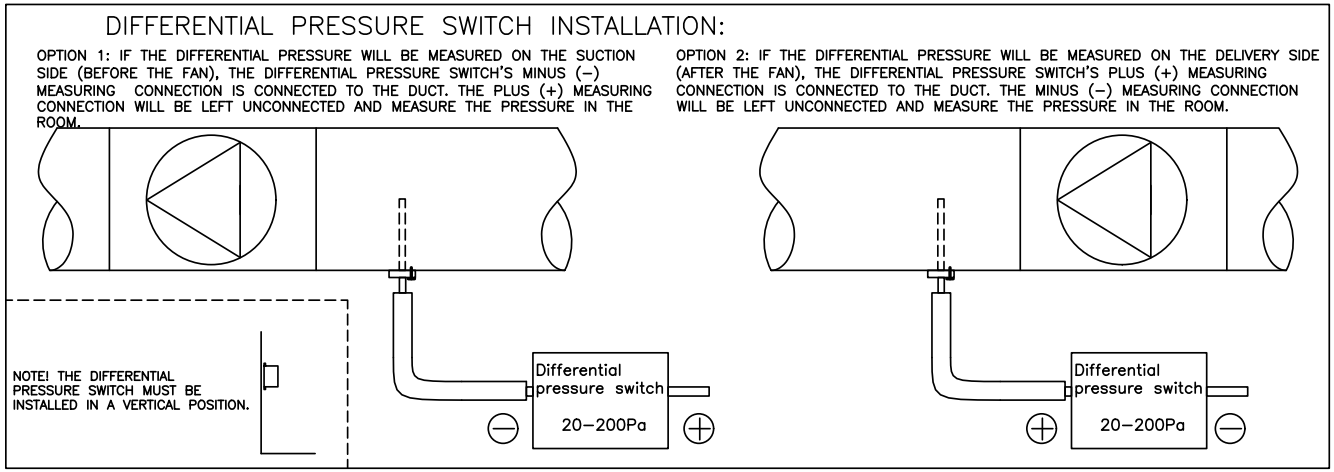


Internal connections





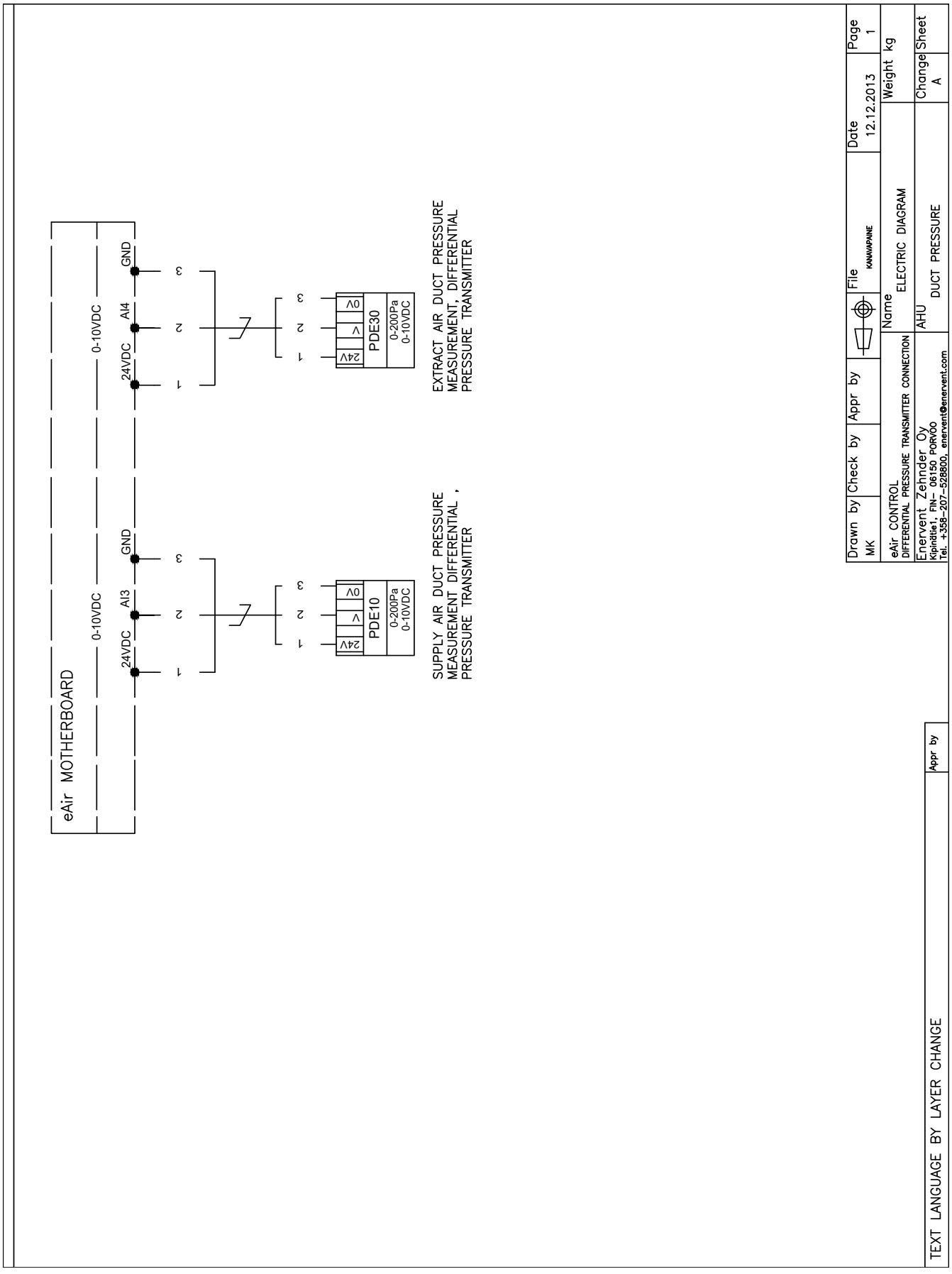


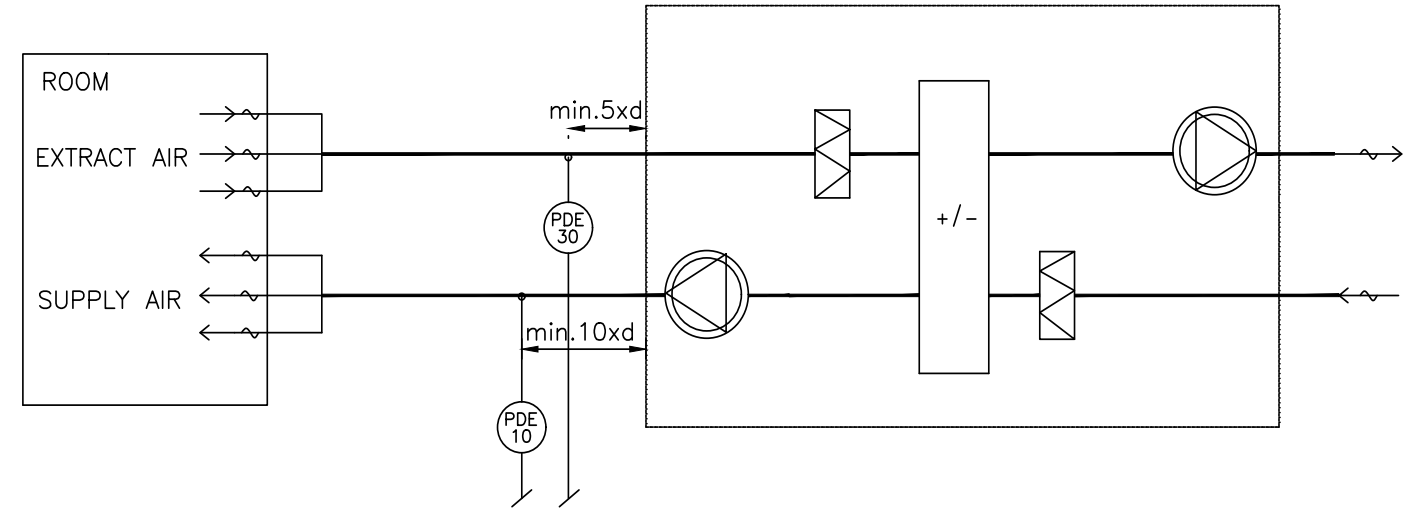


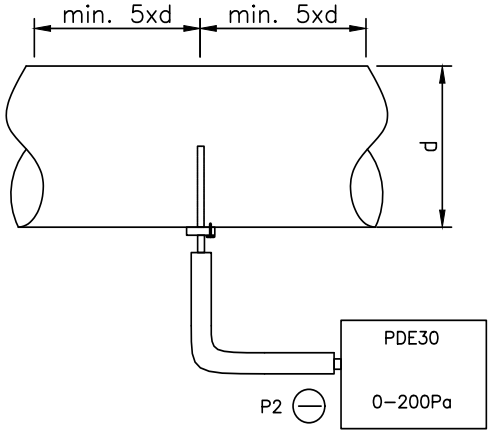
Drawn by MK	Check by	Appr by		File	Date 25.11.2013	Page 1
eAir CONTROL Cooker hood and central vacuum cleaner indication				Name ELECTRIC DIAGRAM		Weight kg
Enervent Zehnder Oy Kipinätie1, FIN– 06150 PORVOO Tel. +358–207–528800, enervent@enervent.com				AHU UNIT'S EXTERNAL CONNECTIONS	Change A	Sheet

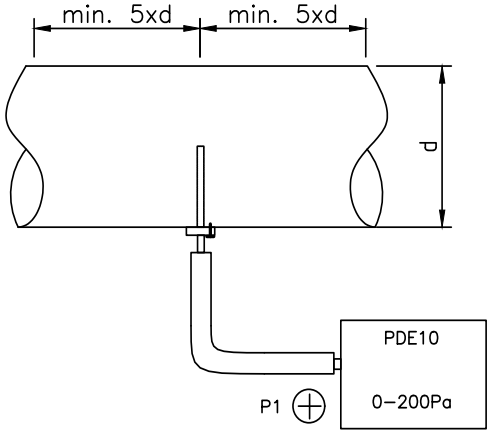
TEXT LANGUAGE BY LAYER CHANGE	Appr by

Constant duct pressure control





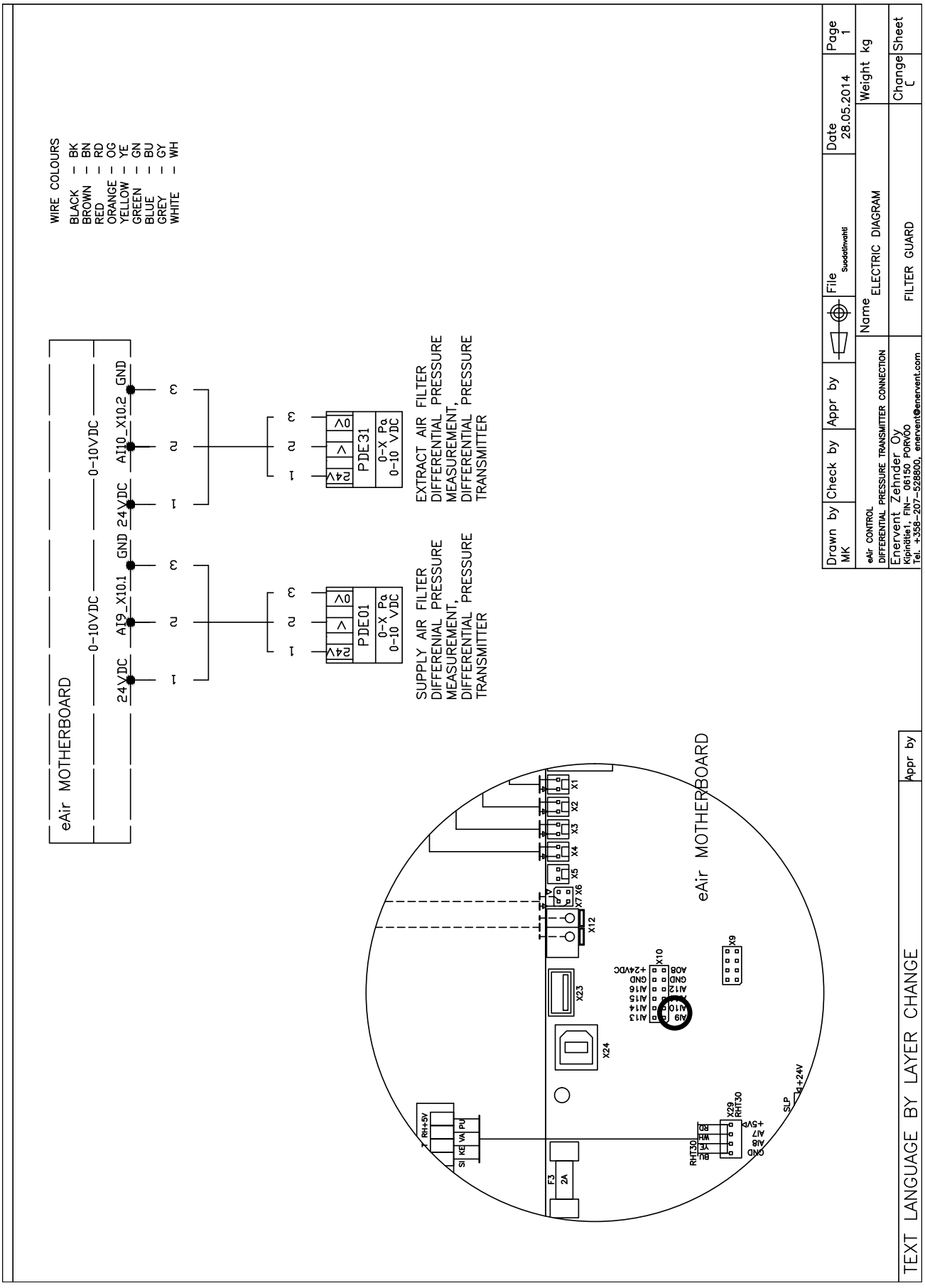




Drawn by MK	Check by	Appr by		File	Date 12.12.2013	Page	
			Name DUCT PRESSURE MEASUREMENT			Weight kg	
Enervent Zehnder Oy Kipinätie1, FIN– 06150 PORVOO Tel. +358–207–528800, enervent@enervent.com			AHU			Change A	Sheet 1

	TEXT LANGUAGE BY LAYER CHANGE			Appr by

Filter guard



Sensors

Nimi / Namn / Navn /Name	Selitys / Definition / Definisjon / Definition
TE01	Ulkoilma / Uteluft / Temperatur uteluft / Outside air
TE02	Ulkoilma esilämmittimen jälkeen / Uteluft efter förvärmare / Forvarmet utelufttemperatur, ekstern forvarmer / Outside air after preheater
TE05	LTO jälkeinen tuloilma / Tilluft efter VVX / Temperatur etter varmegjenvinning / Supply air after HRW
TE07 (Dehum)	Tuloilma kuivatuksen jälkeen / Tilluft efter avfuktning / Tilluft etter avfuktning / Supply air after dehumidification
TE10	Tuloilma / Tilluft / Tilluft / Supply air
TE20	Huonelämpötila / Rumstemperatur / Romstemperatur / Room temperature
TE30	Poistoilma / Frånluft / Avtrekk / Extract air
TE31 (HP)	Poistoilmapatterin jälkeinen / Efter frånluftbatteri / Etter fraluftsbatteri / Exhaust air after coil
TE32	Ulospuhallusilma / Avluft / Avkast / Waste air
TE45 (-W)	Paluuvesi / Returvatten / TEMPERATURFØLER FOR RETURVANN eWind-MODELLER / Return water
TE46 (CG-W)	CG jäätymisvaara / CG frysskydd / CG frostbeskyttelse / CG freeze protection
TE50 (HP)	Esilämmitetty poistoilma / Förmärmd avluft / Forvarmet avtrekksluft / Preheated exctract air
TE51 (HP Oceanic)	Poistoilma LTO:n jälkeen / Avluft efter VVX / Avkast etter varmegjenvinning / Exctract air after HRW
TE62 (-X)	Kylmäaine lämpötila / Kylmedel temperatur / Kjølemiddel temperatur / Refrigerant temperature
TE80 (Aqua)	Varaajan lämpötila / Värmeackumulator temperatur / Varmeakkumulatortemperatur / Heat accumulator temperature
RH10 (Dehum)	Tuloilma %RH / Tilluft %RH / Tilluft %RH / Supply air %RH
%RH30	Poisto %RH / Frånluft %RH / Avtrekk %RH / Extract air %RH
%RH07 (Dehum)	Tulo %RH kuivatuksen jälkeen / Tilluft %RH efter avfuktning / Tilluft %RH etter avfuktning / Supply %RH after dehumidification
PDE10	Tulo paine-ero / Tilluft tryck differens / Tilluft trykkdifferanse / Supply air pressure difference
PDS10 (-E >3kW)	Tulo painevahti / Tilluft tryckvakt / Tilluft trykkbryter / Supply air pressure switch
PDE30	Poisto paine-ero / Frånluft tryck differens / Avtrekk trykkdifferanse / Extract air pressure difference

ILMAMÄÄRIEN JA ÄÄNITASON MITTAUSPÖYTÄKIRJA
PROTOKOLL ÖVER MÄTNING AV LUFTMÄNGDER OCH LJUDNIVÅ

Yritys / Företag:

Pvm / Datum:
Rakennus / Byggnad:
Ilmanvaihtolaite / Ventilationsaggregat:
Sarjanumero / Serienummer:

Mittaaja / Mätningen utförde:

Suodattimet / Filter: F5/F5 F7/F5 F7/F7 l/s m^3/h

Huonetila/mittauspaikka/ krs Rum/mätpunkt/ våning	Tuloilma / Tilluft					Poistoilma / Frånluft						
	Puhalluselin Slutdon	Suunniteltu ilmamäärä Planerad luftmängd	Mitattu ilmamäärä Uppmätt luftmängd	p Pa	Asetus Inställning	Puhalluselin Slutdon	Suunniteltu ilmamäärä Planerad luftmängd	Mitattu ilmamäärä Uppmätt luftmängd	p Pa	Asetus Inställning	Lpa dB(A)	Huom! OBS!

Suunnitellut ilmamäärät yhteensä / Totala planerade luftmängder tuloilma / tilluft: poistoilma / frånluft:
Toteutuneet ilmamäärät yhteensä / Totala förverkligade luftmängder tuloilma / tilluft: poistoilma / frånluft:

Ilmamäärä / Luftmängd Puhallinnopeus+erotus/Fläkthastighet+skillnad	Kotona / Hemma	Poissa / Borta	Tehostus / Boosting		

Käytetyt mittalaitteet / Använda mätinstrument:

Sääolosuhteet / Väderleksförhållanden:

Rakennuksen alipaine / Byggnadens undertryck: Pa

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 Rom / målepunkt / etasje	Supply air / Tilluft					Extract air / Avtrekk						
	Terminal device Terminal enhet	Planned air amount Planert luft-mengde	Measured air amount Målt luft-mengde	p Pa	Setting Innstilling	Terminal device Terminal enhet	Planned air amount Planert luft-mengde	Measured air amount Målt luft-mengde	p Pa	Setting Innstilling	Lpa dB(A)	Note! Merk!
Total planned air amounts / Totalt planlagte luftmengde supply air / tilluft: extract air / avtrekk:												
Total realized air amounts / Totalt realisert luftmengde supply air / tilluft: extract air / avtrekk:												

Air amount / Luftmengde Fanspeed+difference/ Viftehastighet+forskjell	Home / Hjemme	Away / Borte	Forsterkning		

Measuring instrument / Måleinstrument:

Weather conditions / Værforhold:

Underpressure in the building / Undertrykk i bygningen: Pa

D051082001 / version 05.06.2023

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