

Automation upgrade

LTR-6 AC -> eAir

NOTE!

The new fans will deliver about -25% less airflow compared to the old fans.

Warning!

According to regulations, an ordinary electricity consumer is only allowed to perform some minor service tasks.

**According to Finnish regulations,
a list of the allowed tasks can be found at the Tukes home page (www.tukes.fi).**

Always make sure that the power supply is turned off before opening the service door.

Wait two minutes before beginning the maintenance work. The fans rotate for some time by themselves, and the heating element may be hot even if the power supply of the ventilation unit is switched off. Electrical housing may be opened only by a trained electrician.

Electrical installations must comply with local regulations.

**Continuously check and compare the electrical diagrams at the end
of this instruction as the upgrade progresses!**

Table of contents

Upgrade.....3

Electrical diagrams AC.....30

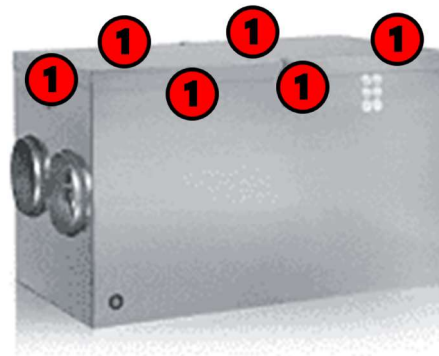
Electrical diagrams eAir34

Parts list eAir E.....38

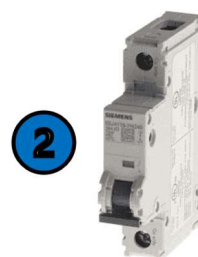
Parts list eAir W.....39

Notes40

Remove **the service door (1)** by releasing the locks.



Cut **the power to the unit (2)** (and other power supplies if available).



Remove **the cover from the electrical box (3)**.

NOTE! Ensure that no voltage is occurring in the electrical box before proceeding!





Remove **the filters (1)** by pulling.

Disconnect **the fan connectors (2)**.

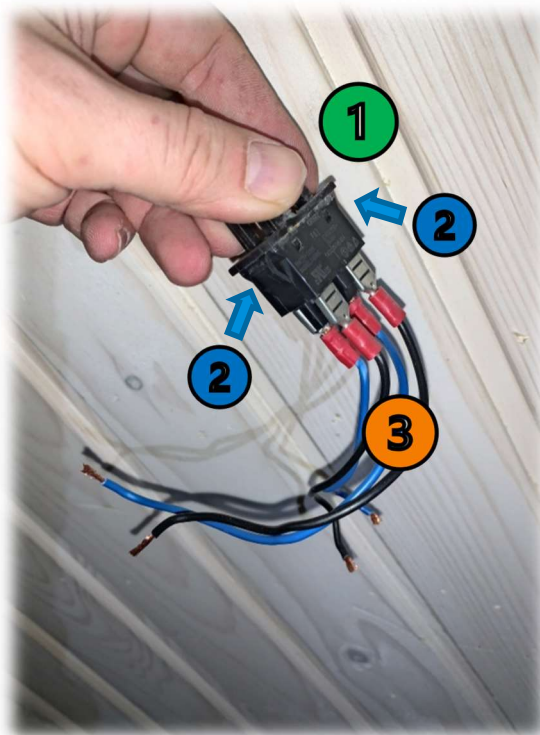
Disconnect **the HRW connector (3)**.

Remove **the HRW (4)** by pulling.

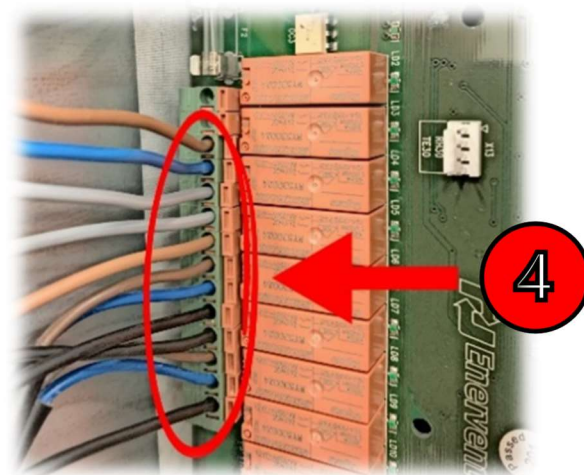


Remove **the fans (1)** by releasing **the screws (2)**.

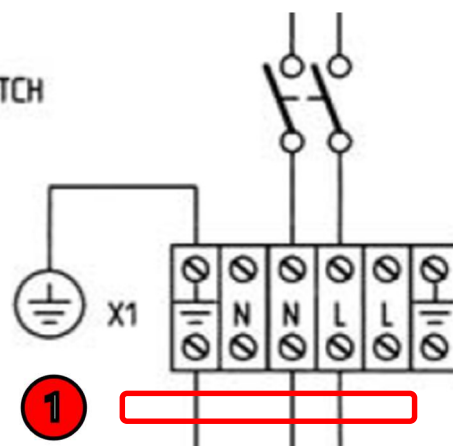
Remove **the main switch (1)** by pressing **the clips (2)**.
Disconnect **the wires (3)** from the main switch.



Remove **the wires (4)** from the main board
by pressing the orange button next to the wire.



Disconnect the main power supply wires from **the terminals (1)**.



Disconnect **the ground wire (2)** from the main board and remove it.

If a water coil after heater installed (ACW), the actuator is connected **here (3)**. Disconnect and remove the wires. The actuator can't be used anymore. Install the new actuator afterwards according to the electrical diagram (**page 37**).

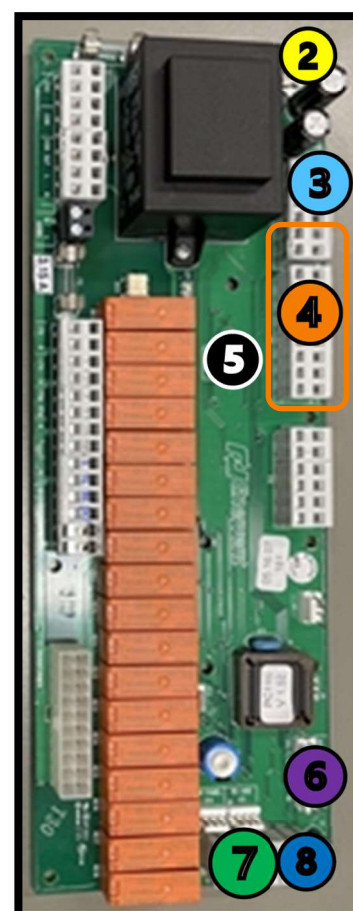
If there are wires connected **here (4)**, mark them according to the reading on the main board and disconnect.

Disconnect **the cable (5) and remove the extract air sensor (two screws) and reattach the two screws**.

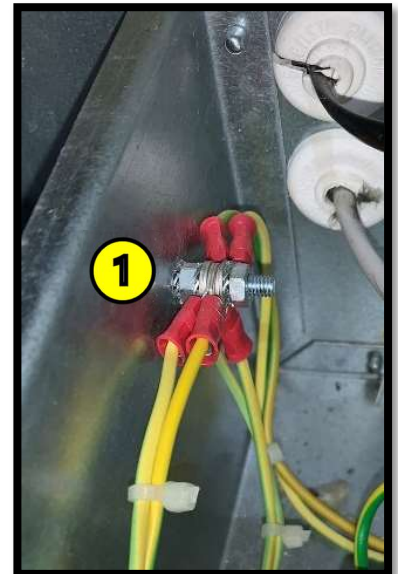
Disconnect **the sensors (6)**.

Disconnect **the wires (7)**. Don't remove this cable, it might be needed later.

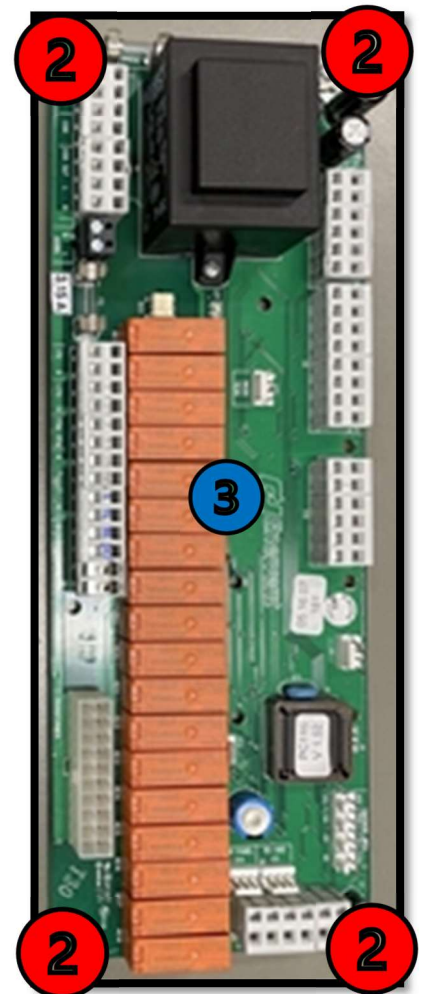
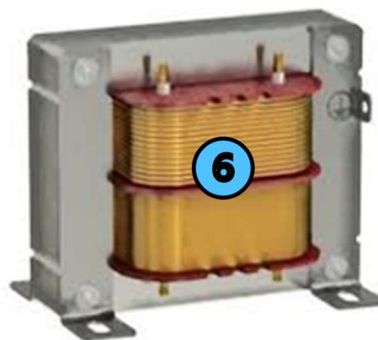
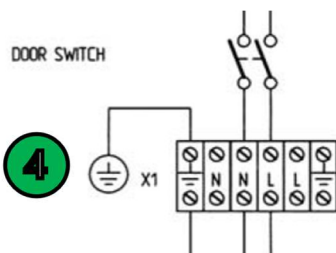
If a water coil after heater installed (ACW), the return water sensor is connected **here (8)**. Disconnect and remove the wires. The sensor can't be used anymore.



Disconnect **all ground wires (1)** from the ground point.



Remove **the screws (2)** and remove the automation base including **main board (3)**, **terminals (4)**, **PCB supports (5)** and **transformer (6)**.



Remove **the supply air sensor (1)**.

Remove **the supply air fan cable (2)**.



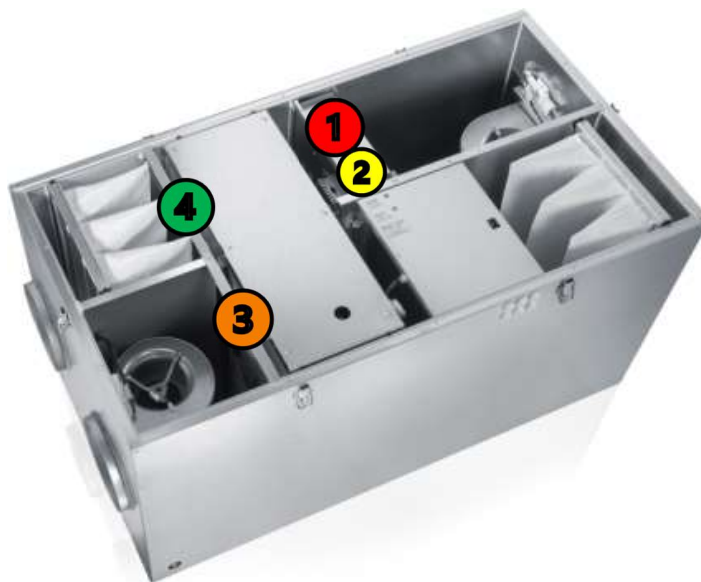
Remove **the HRW supply air sensor (3)**.



Remove **the electrical after heater and the cables (1)** by pulling.

Ignore if the unit has a water coil after heater installed.

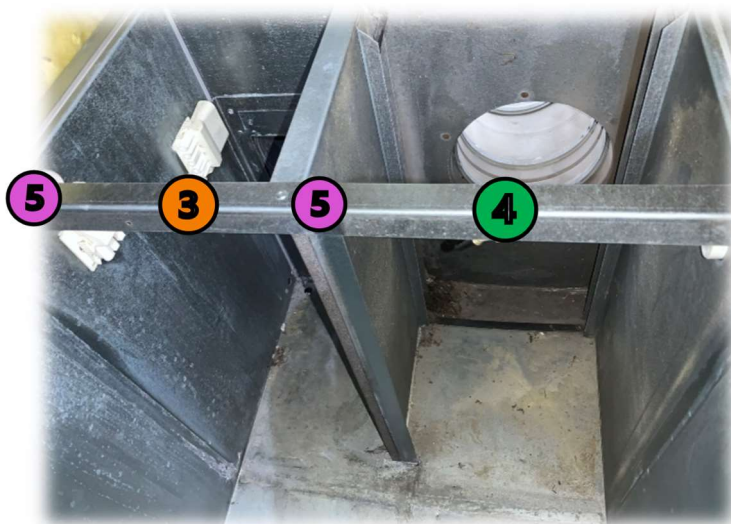
If the unit has a water coil after heater installed; cut and remove **the sensor cable (2)**.



Release **the waste air sensor (3)**.

Release **the outside air sensor (4)**.

Remove **the cable sealings (5)**.





Attach **the new sensors (2400mm, 1700mm)**
(1) (40029170, 40029167)
to **the old sensors (2)** with strong tape.

Mark the new sensors in both ends:

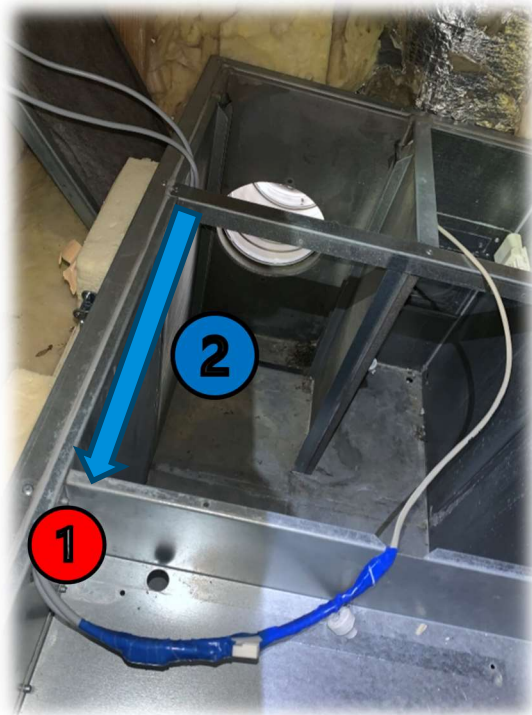
"TE01" (outside air) (40029170)

"TE32" (waste air) (40029167)



Remove **the cable sealings (1)**.

Install **the new sensor connectors**
(40029170, 40029167) **into the electrical box (2)**.



Install **new cable sealings (3)** (40030100).



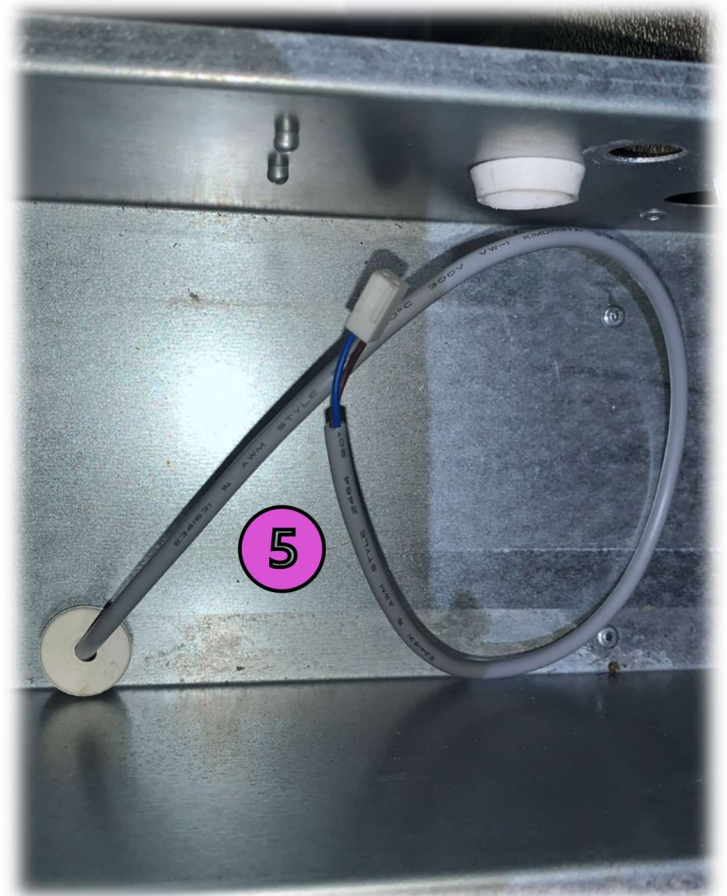
Install **new cable sealings (3)** (40030100).

Attach the sensors to **the frame (4)** with cable ties (40030997).



Install **the new HRW supply air sensor (850mm) (5)** (40029165).

Mark the sensor:
"TE05" (HRW supply air)



Install **the new supply air sensor (2400mm) (4)** (40029170).

Mark the sensor:
"TE10" (supply air)

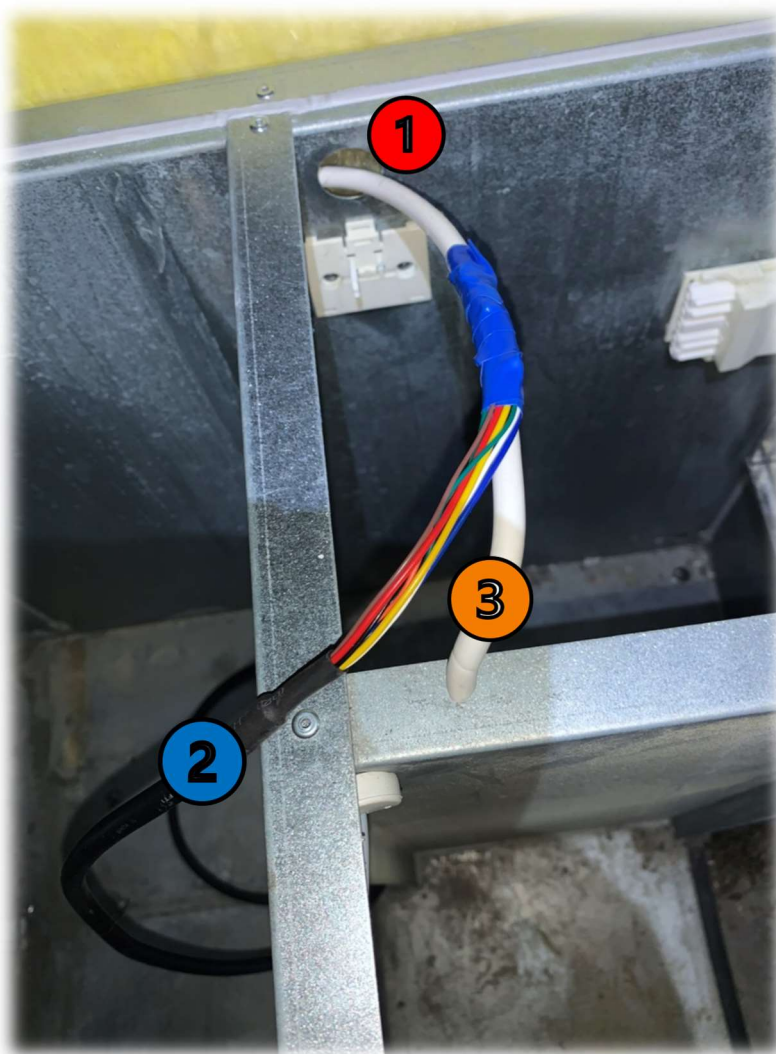


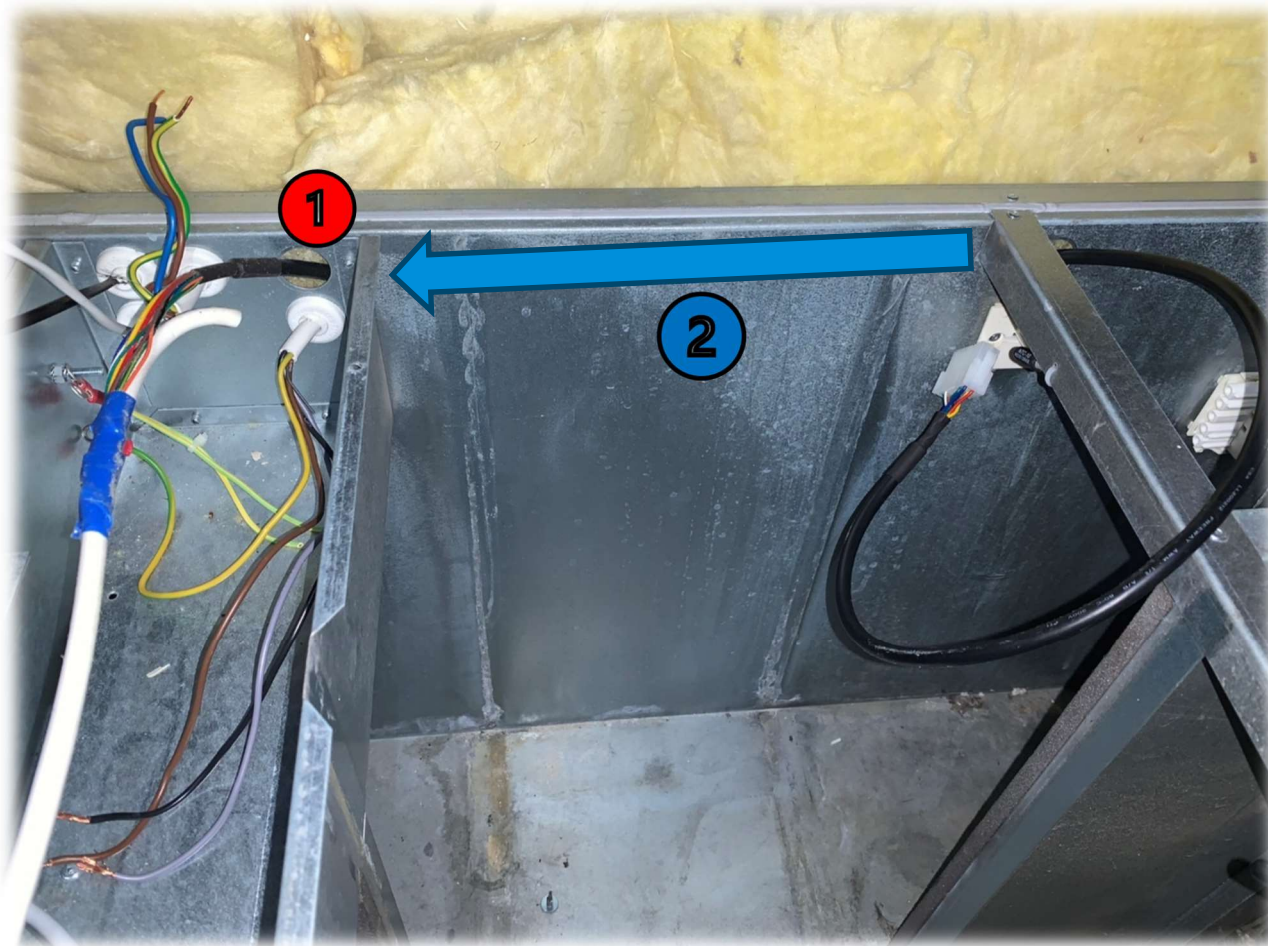
Remove **the cable sealing (1)**.

Cut **the old HRW cable (3)**.

Install **a new cable sealing (40029244)**
to the new HRW cable (2) (40033952).

Attach **the new HRW cable (2)**
(40033952) to **the old HRW cable (3)**
with strong tape.





Remove **the cable sealing (1)**.

Install **the new HRW cable** (40033952) **into the electrical box (2)**.

Install **a new cable sealing (1)** (40029244).



Remove **the cable sealing (1)**.

Cut **the old extract air fan cable (3)**.

Install **a new cable sealing (40029244) to the new extract air fan cables (2) (40028803, 40028802)**.

Attach **the new extract air fan cables (2) (40028803, 40028802)**
to **the old extract air fan cable (3)** with strong tape.



Remove **the cable sealing (1)**.

Install **the new extract air fan cables (2)** (40028803, 40028802) **into the electrical box (2)**.

Install **a new cable sealing (1)** (40029244).



New cables installed.

Install **the new supply air fan cables (1)** (40028803, 40028802).



Install **the new electrical after heater (2)** (10023275) and install the cables in the electrical box.
Ignore if the unit has a water coil after heater installed.



If the unit has a water coil after heater installed; install **the new return water sensor (3)** (40029228) on the return water pipe of the water coil and isolate it from surrounding air.

Drill a new 15mm hole in the corner of the electrical box and install **the new extract air sensor (4)** (40029224) with a cable sealing (40029244) in the extract air chamber.

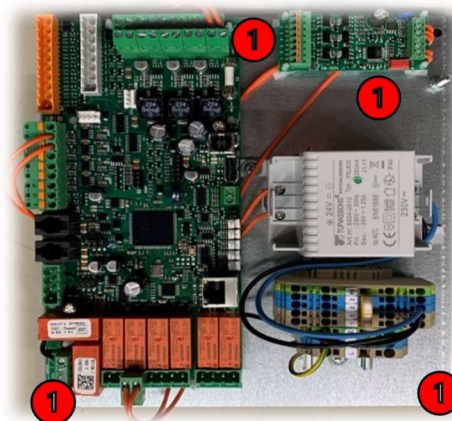


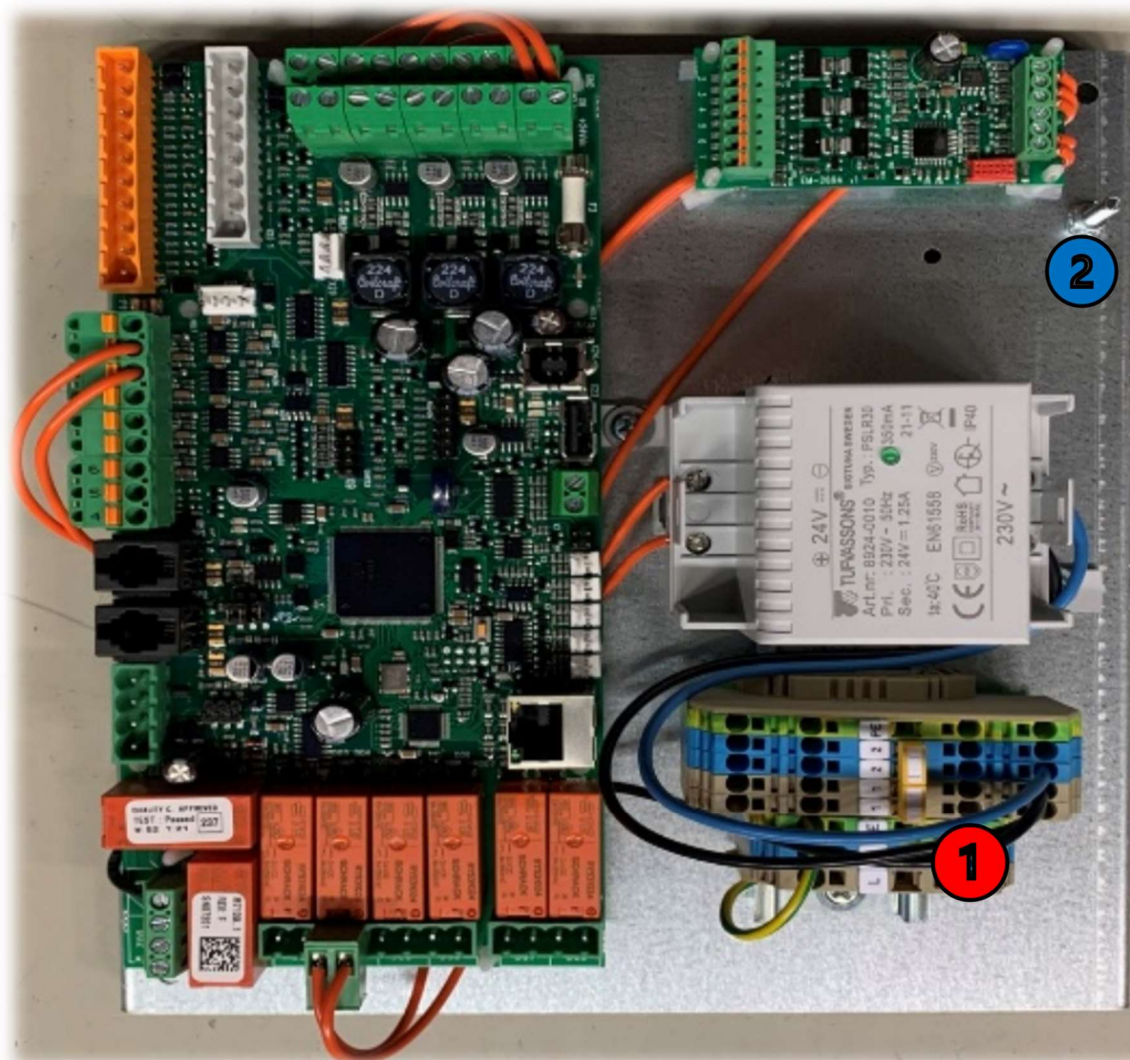


Install **the new automation** in the electrical box.

Make sure no installed cable / sensor get stuck behind the automation base and that they are available in front of the main board.

Attach **the automation base** (40029740) to the electrical box with **four self tapping screws (1)** (40031530).





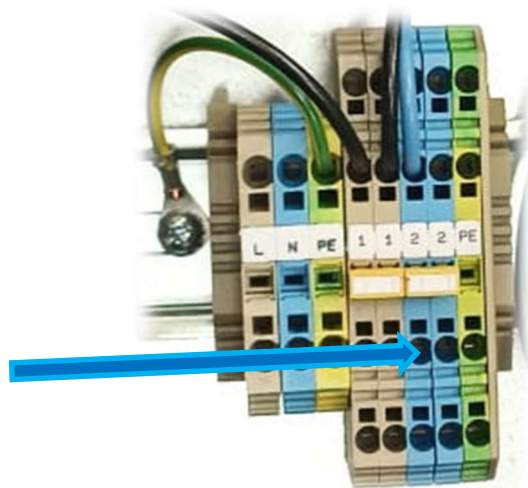
Connect **the main power cable to the terminals (1)**.

L: Brown
PE: Green/yellow
 N: Blue

Connect **all ground wires** to **the automation base ground point (2)**.
Supply air fan, extract air fan, (after heater), HRW.
 Tighten with **the nut (40031489)**.

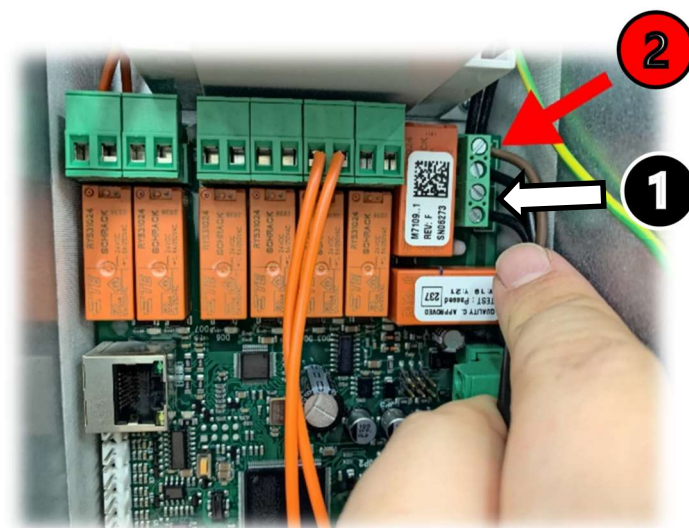
Connect **the blue wire** from the electrical after heater to **the blue "2" connection terminal (2)**.
Ignore if the unit has a water coil after heater installed.

2

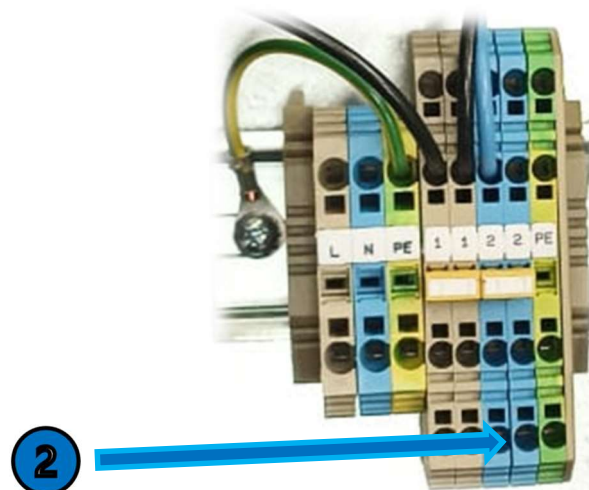


Connect **the brown wire** from the electrical after heater to **"DO2" (2)**.
If there is a water coil after heater installed, the circulation pump power wire (L) would be connected here.

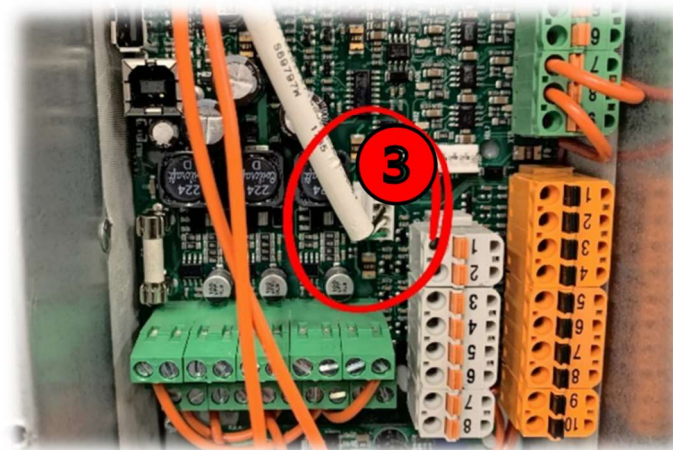
Connect **the wires marked "1"** in the fan power cables (40028803) to **"DO1" (1)**.



Connect **the wires marked "2"** in the fan power cables (40028803) to **the blue "2" connection terminal (2)**.

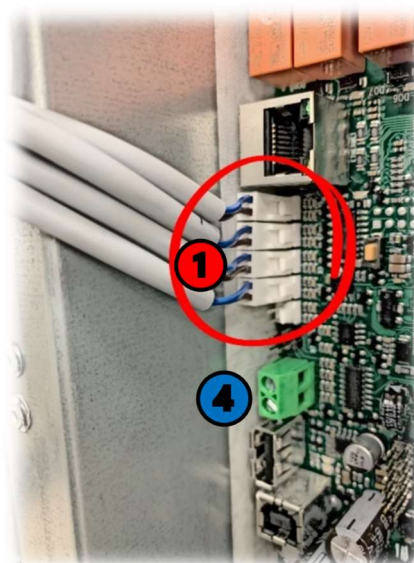


Connect **the extract air sensor (3)** (40029224) to the main board (X29).



Connect **the sensors (1)** to the main board according to the markings.

X1, TE01: Outside air (40029170)
 X2, TE05: HRW supply air (40029165)
 X3, TE10: Supply air (40029170)
 X4, TE32: Waste air (40029167)
 X12, TE45: Return water sensor (4),
 if the unit has a water coil after heater installed.

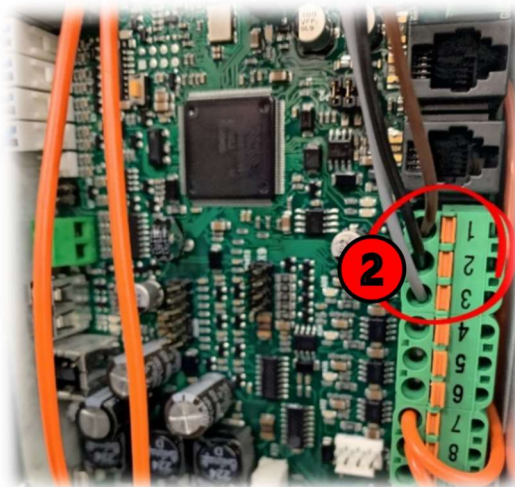


Connect **the wires from the supply air fan control cable (2)** (40028802) to the main board.

1: Brown

2: Black

3: Gray

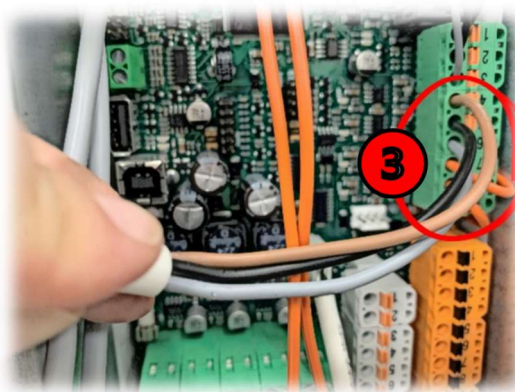


Connect **the wires from the extract air fan control cable (3)** (40028802) to the main board.

4: Brown

5: Black

6: Gray



Connect **the wires from the HRW cable** (40033952) **to the HRW control board (1)**.

1: Yellow

2: Red

3: Blue

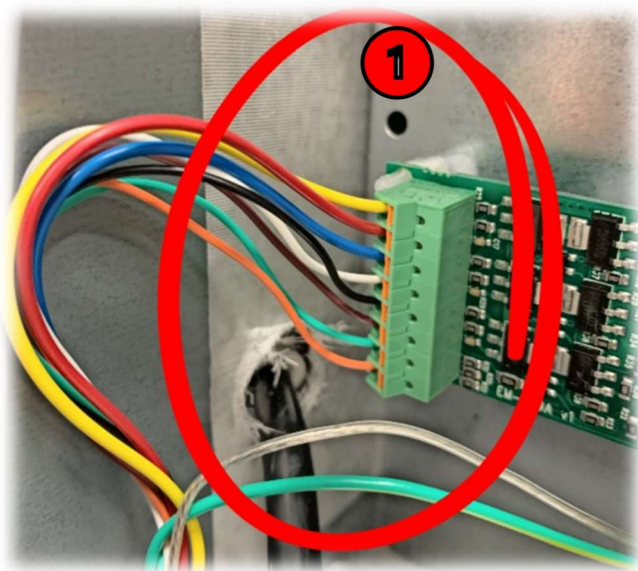
4: White

5: Black

6: Brown

7: Green

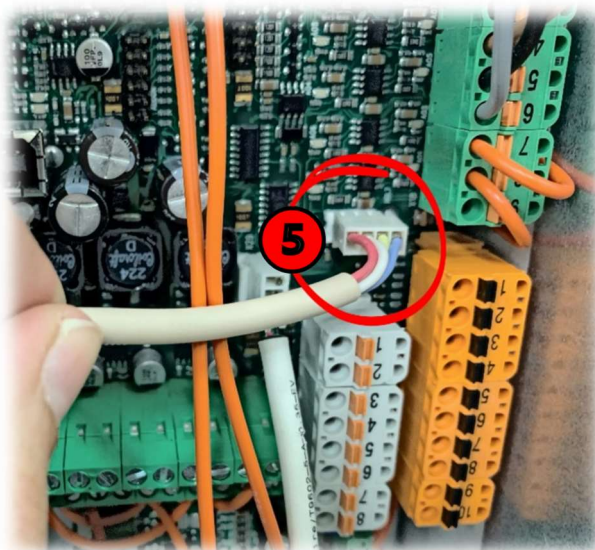
8: Orange



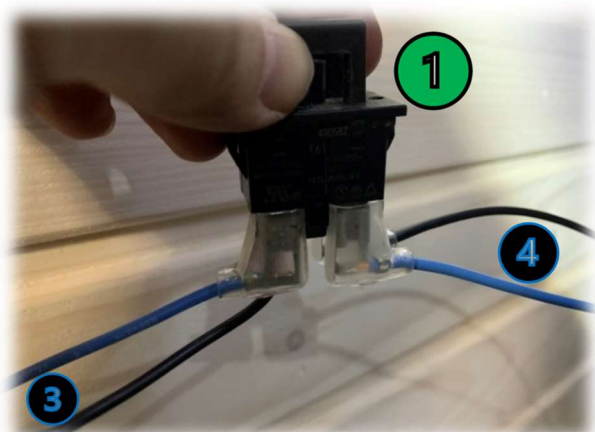
Connect **the electrical after heater control cable (5)** to the main board (X17).

Ignore if no electrical after heater installed.

Connect other components (for example actuator for water coil after heater or cooling coil) according to the electrical diagrams (pages 34-37).

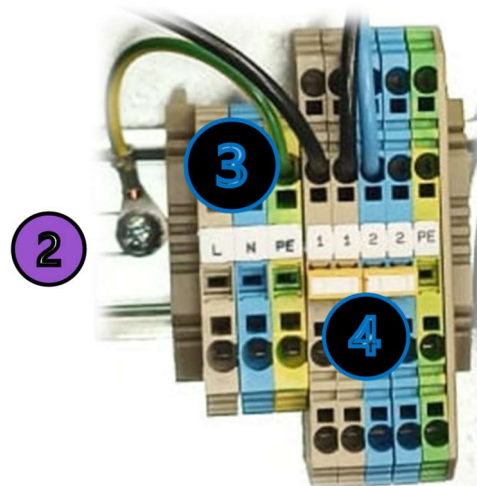


Connect the pairs of wires with flat connectors, (40028820, 40028819) to the **main switch (1)**, install the main switch and connect the wires to **the connection terminals (2)**.



L: Black (3)
N: Blue (3)

1: Black (4)
2: Blue (4)



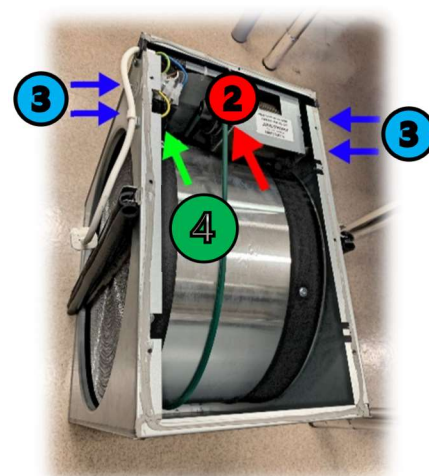


Install and connect **the new fans (1)** (10023154).

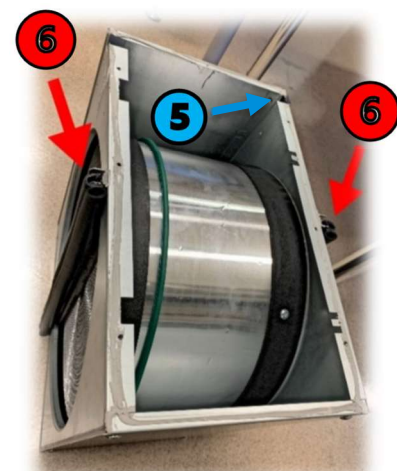
Remove **the screws (1)** from the HRW cover.



Remove **the belt (2)** from the wheel.
Remove **the screws (3)** from the motor package.
Remove **the ground wire (4)**.



Remove **the motor package**.
Cut **a gap for the new motor cable (5)**.
Check that **the brush clips (6)** are in place.

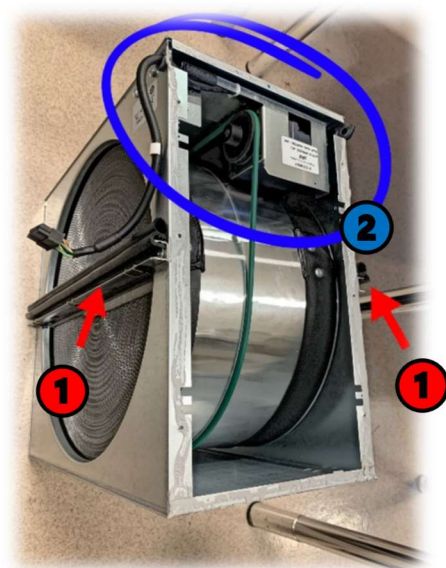


Install **the new motor package (2)** (40028738).

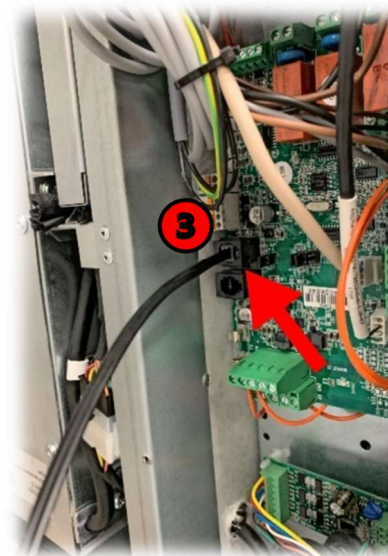
If the unit is manufactured before 1.3.2008, new holes for the new motor package needs to be drilled.

Check that **the brush clips (1)** are in place.

Install the HRW cover.



Connect **the new display cable (3)** to the main board. *The old display cable may also be used, but the joints has to be done carefully and in a proper way. Close the cover to the electrical box.*



Install **the new display (40031114)** in a desired place.



Install **the WiFi module (1)** (40034288).



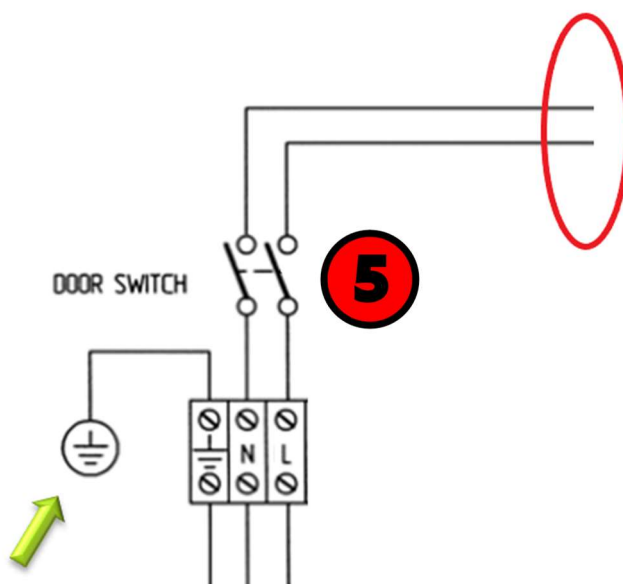
Install **the new type plate sticker (2)**.

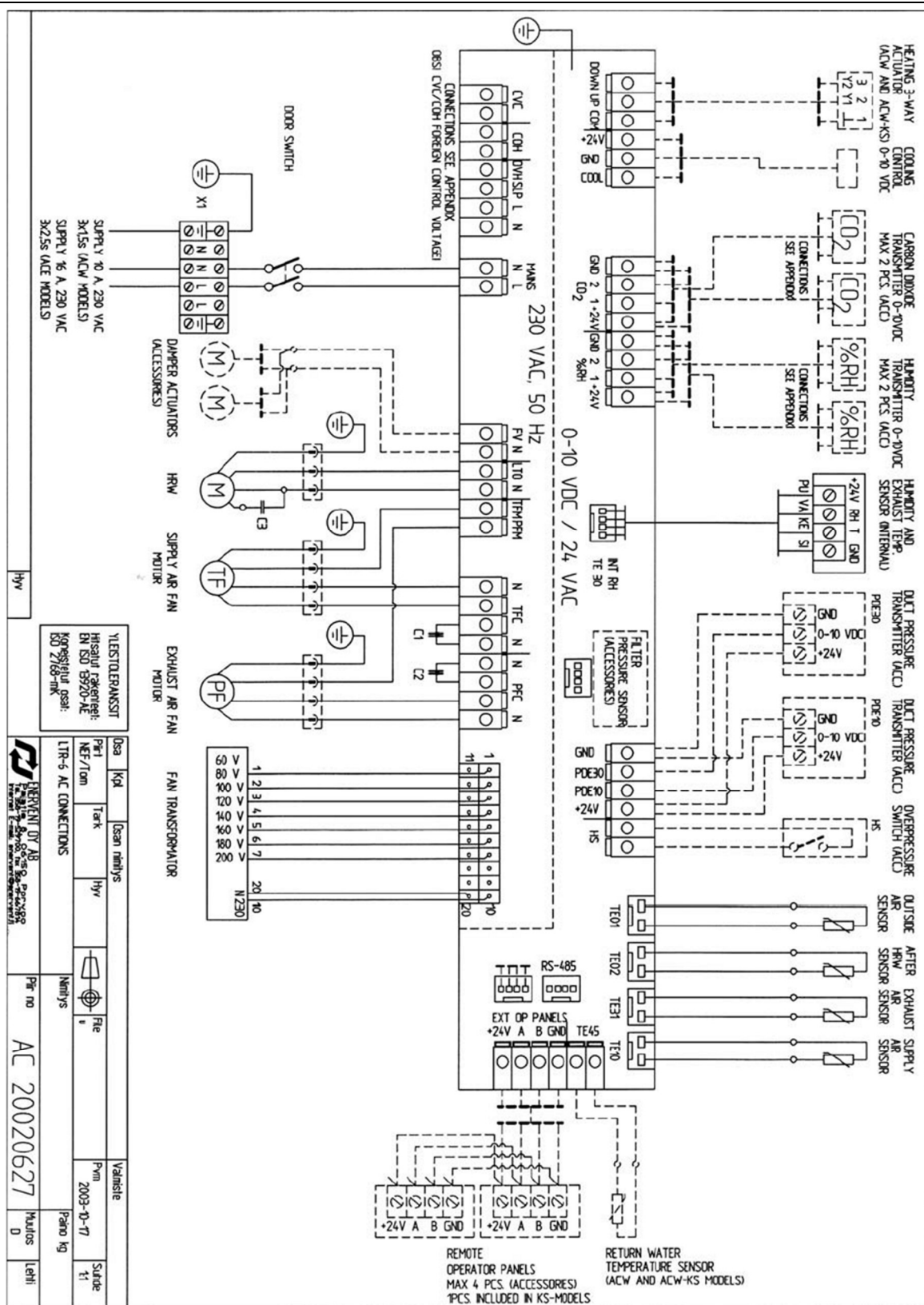
Install and connect **the HRW (3)**.

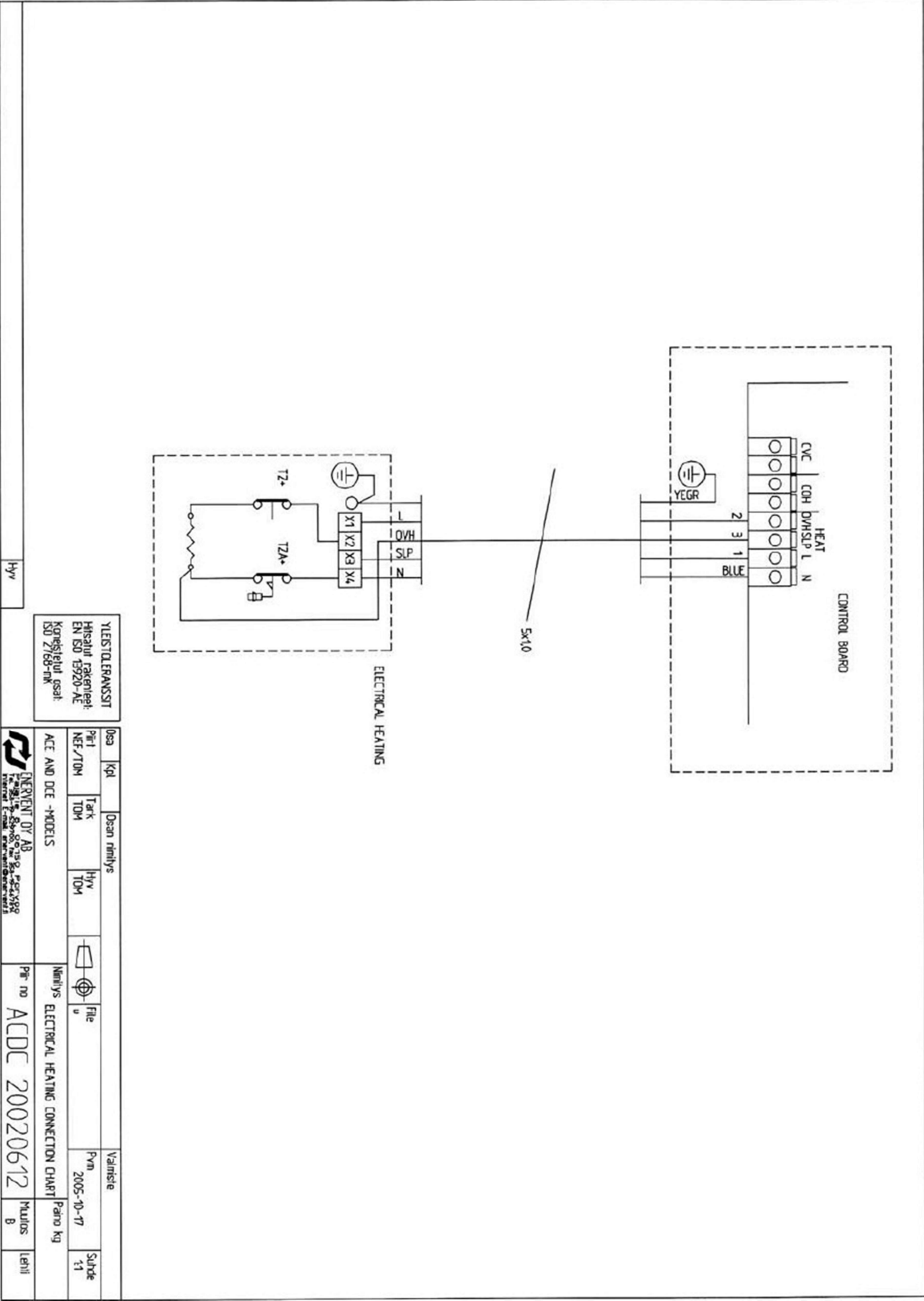
Install **the filters (4)**.

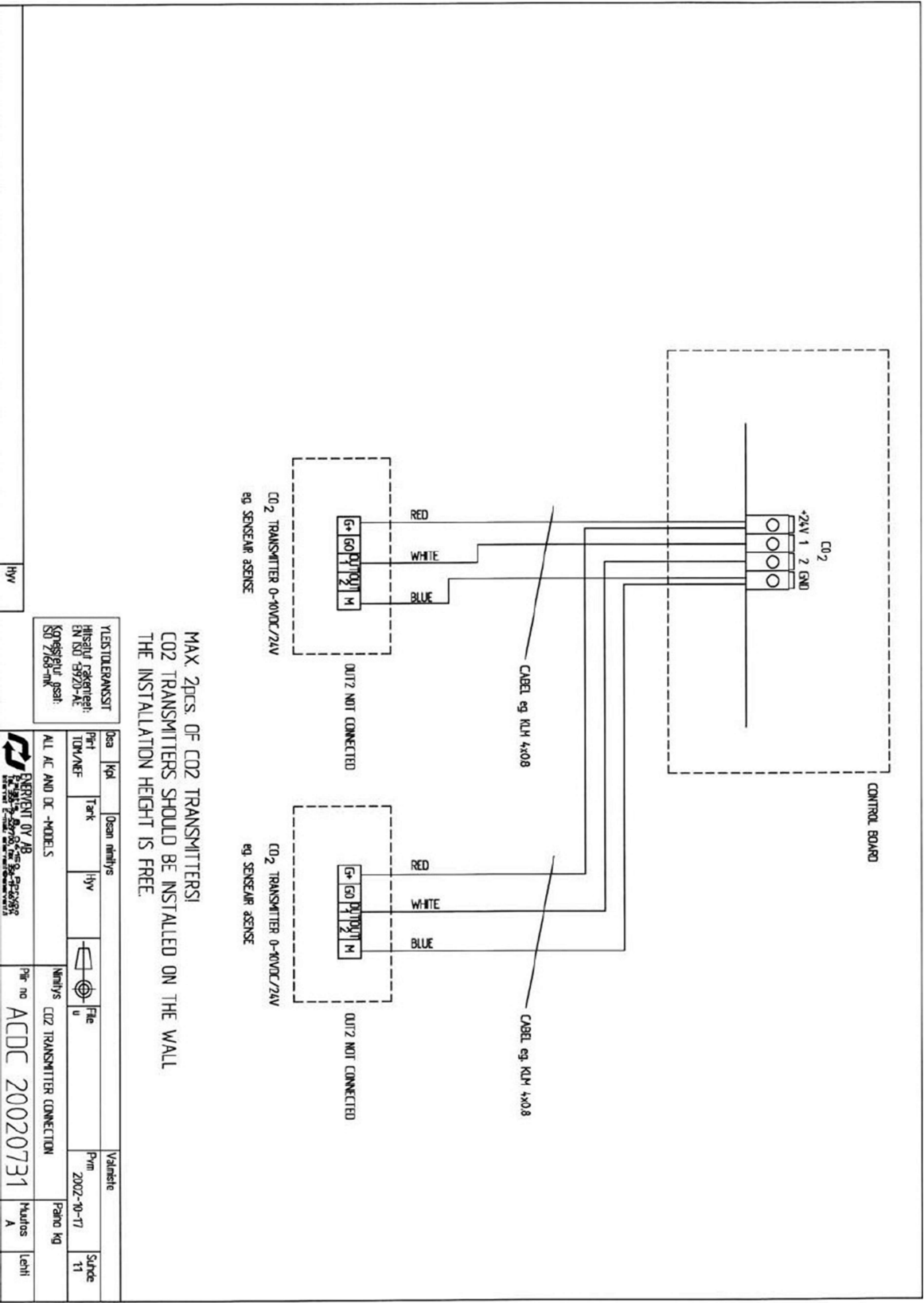


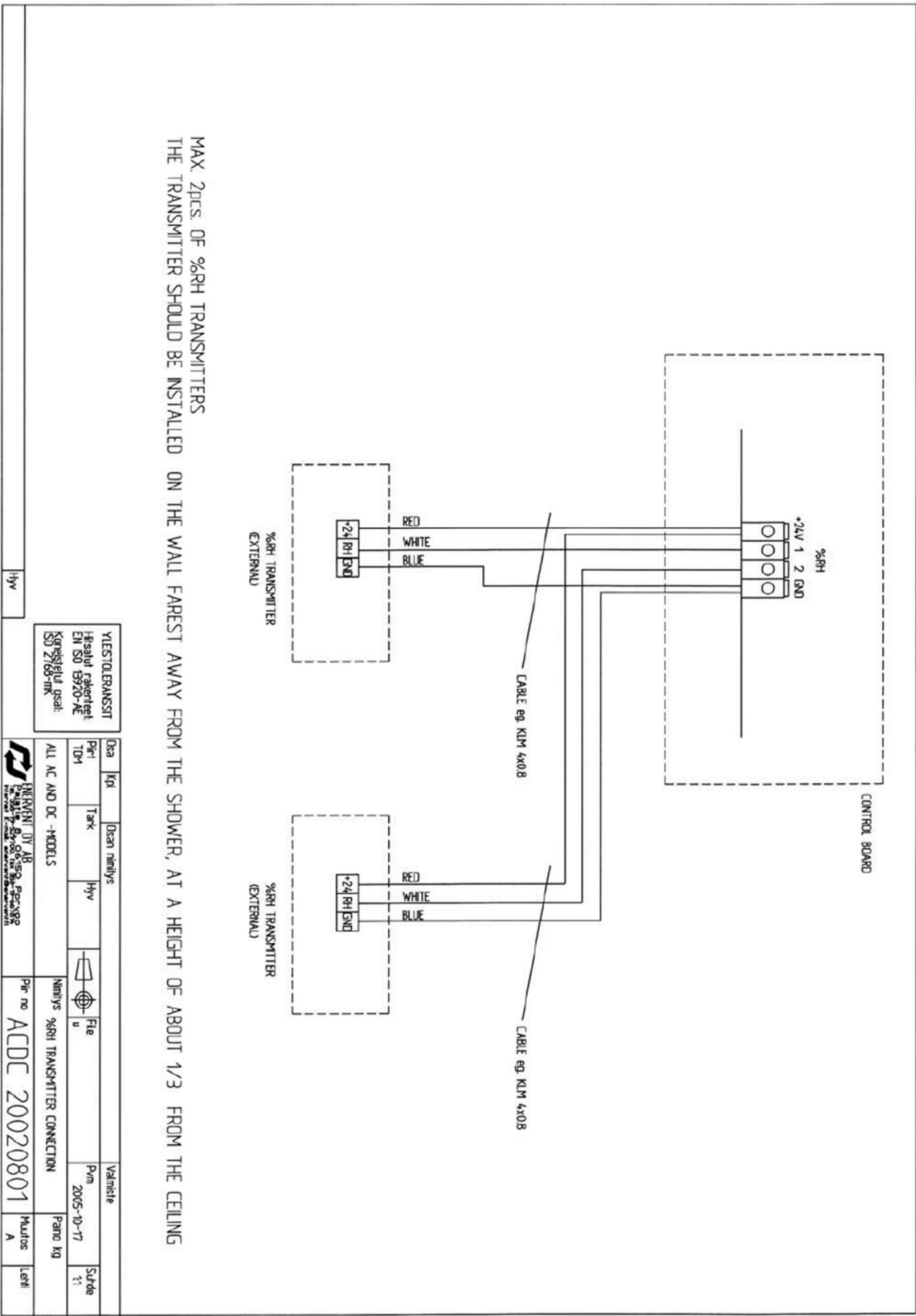
Press down **the main switch (5)** and perform insulation and ground continuity test according to regulations.

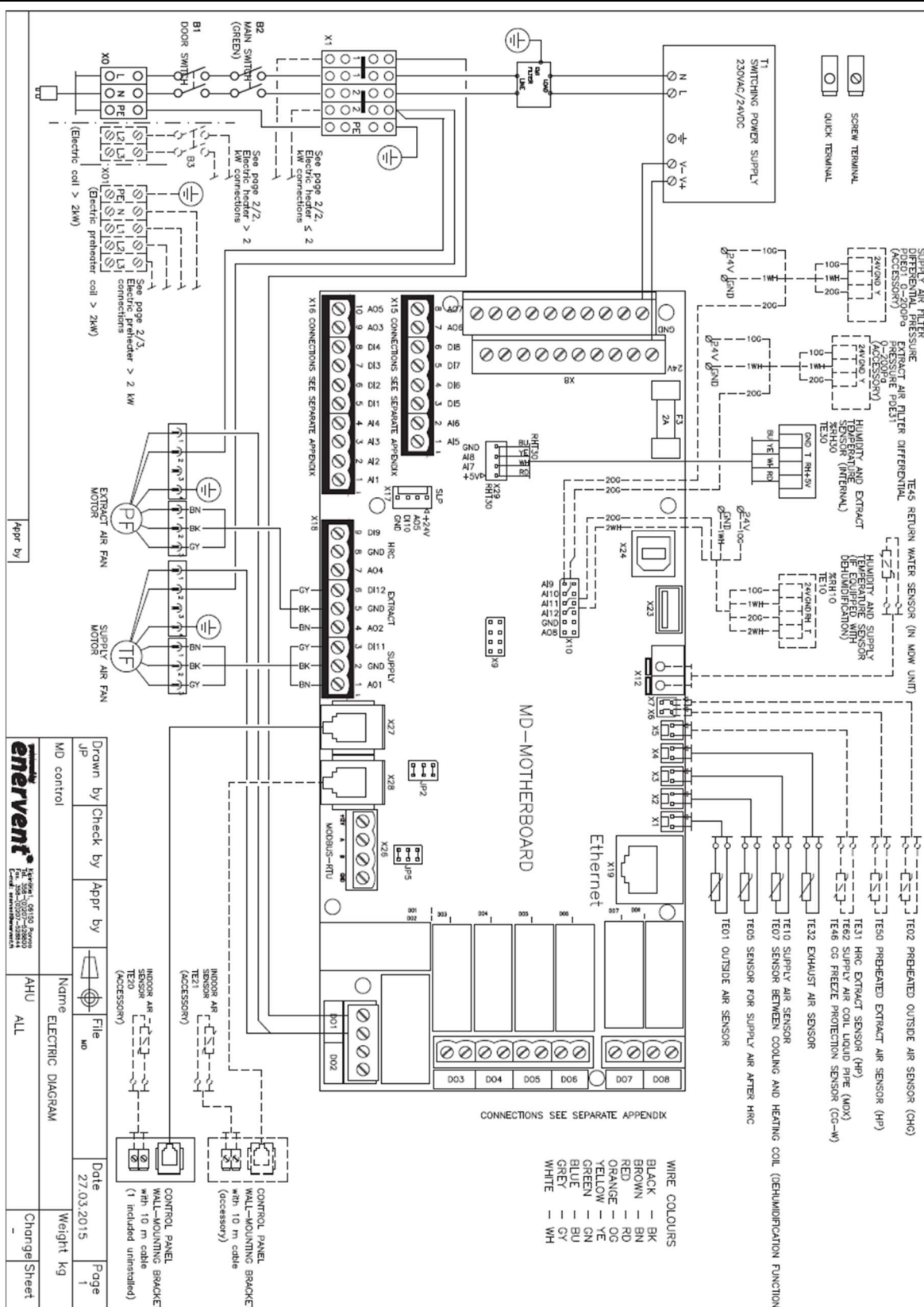


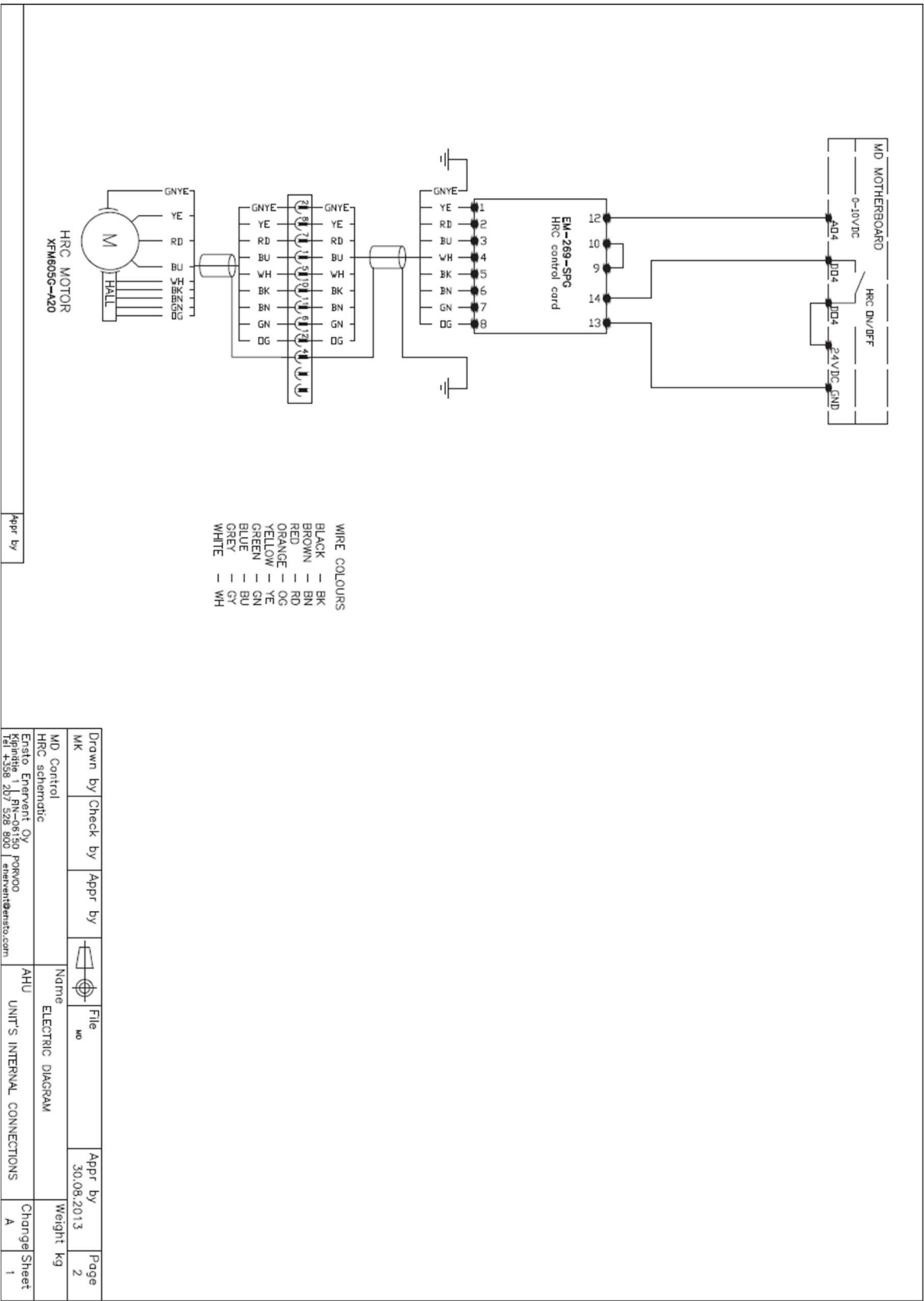




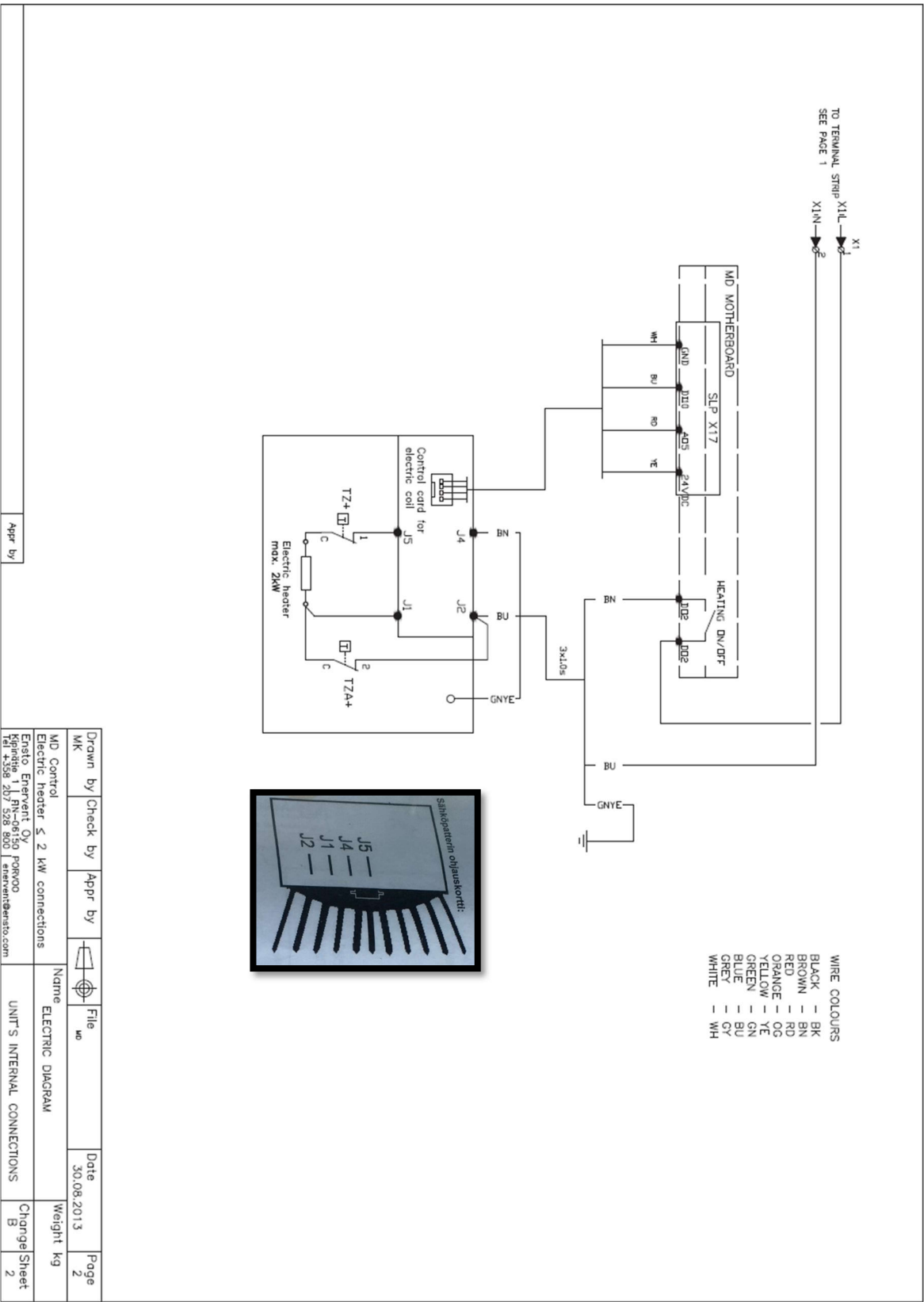


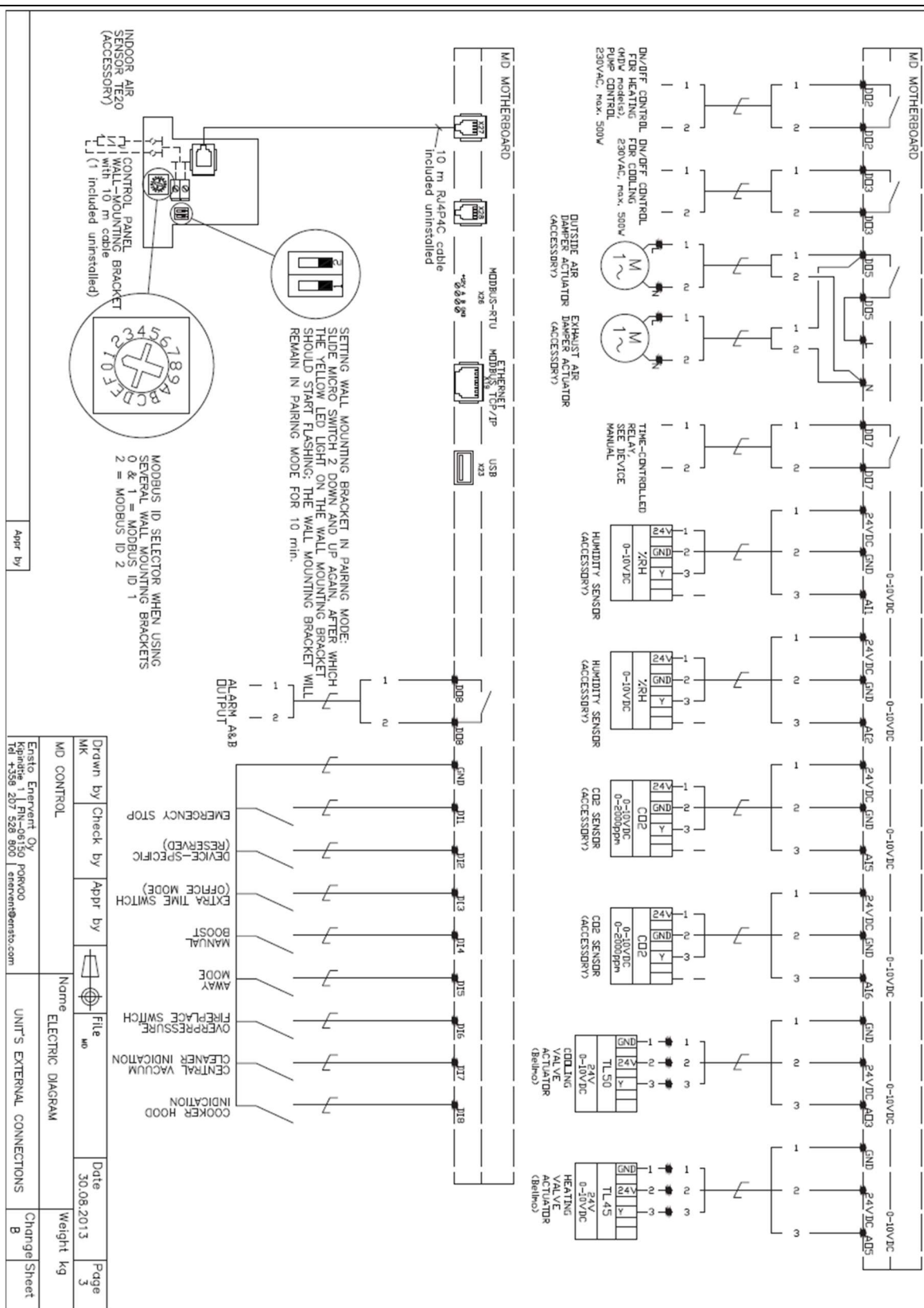






Drawn by	Check by	Appr by	File	Appr by	Page
MK			no	30.06.2013	2
MD Control			Name		Weight kg
HRC schematic					
Enervent Oy			AHU		Change Sheet
Enervent Oy Porvoo			UNIT'S INTERNAL CONNECTIONS		A
Tel: +358 20 525 800					1
enervent@enervent.com					





MANDATORY PARTS

10024020	CONTROL UPDATE KIT LTR6 ACE/ECE → EAIR E	1
10023154	FAN PACKAGE ECO 170W	2
10023275	ELECTRICAL HEATER 2kW	1

<u>Code</u>	<u>Description</u>	<u>Pcs.</u>
10024020	CONTROL UPDATE KIT LTR6 ACE/ECE → EAIR E	

Automation

40029189	Control board EM-240-M	1
40030936	PCB support KGLS-6S	5
40030937	PCB support LCBSM-6-01	4
40031695	Screw DIN 7981 ZN 3,9x9,5	4
40031631	Screw DIN 7985 ZN M4x20	1
40031537	Washer 6798-A ZN M4x8	3
40031489	Nut DIN 934/8 ZN M4	1
40028772	Wire 65mm orange 0,75mm ²	1
40028773	Wire 340mm orange 0,75mm ²	6
40028774	Wire 255mm 1mm ² black	3
40028779	Wire 255mm 1mm ² blue	1
40031093	eAir main board	1
40029985	eAir main board connectors	1
40029195	Power supply Tufvassons PSLR24	1
40028788	Ground wire 100mm	1
40029740	Automation base	1
40029344	Terminal package	1

Components

40030100	Cable sealing VET 5-7	10
40029244	Cable sealing PMR 615 AVL140	8
40028803	Fan power cable	2
40028802	Fan control cable	2
40029170	EDA temperature sensor 2400mm	2
40029167	EDA temperature sensor 1700mm	1
40029165	EDA temperature sensor 850mm	1
40029224	Humidity/temperature sensor Amphenol 600mm	1
40031530	Screw ZN 4,2x25	4
40028820	Wire 600mm black (main switch)	2
40028819	Wire 600mm blue (main switch)	2
40031537	Washer 6798-A ZN M4x8	1
40031489	Nut DIN 934/8 ZN M4	1
40030997	Cable tie 2,5x200mm	10
40028738	HRW motor package stepless DC	1
40033952	Rotor cable DC 105cm	1
40031114	eAir panel package	1
40034288	WiFi module package	1

Manuals etc. (depends on model)

eAir installation manual	1
eAir user manual	1
eAir electrical diagrams	1

MANDATORY PARTS

10024013	CONTROL UPDATE KIT LTR-6/7(XL) ACW → EAIR W	1
10023154	FAN PACKAGE ECO 170W	2

<u>Code</u>	<u>Description</u>	<u>Pcs.</u>
10024013	CONTROL UPDATE KIT LTR-6/7(XL) ACW → EAIR W	

Automation

40029189	Control board EM-240-M	1
40030936	PCB support KGLS-6S	5
40030937	PCB support LCBSM-6-01	4
40031695	Screw DIN 7981 ZN 3,9x9,5	4
40031631	Screw DIN 7985 ZN M 4x20	1
40031537	Washer 6798-A ZN M4x8	3
40031489	Nut DIN 934/8 ZN M4	1
40028772	Wire 65mm orange 0,75mm ²	1
40028773	Wire 340mm orange 0,75mm ²	6
40028774	Wire 255mm 1mm ² black	3
40028779	Wire 255mm 1mm ² blue	1
40031093	eAir main board	1
40029985	eAir main board connectors	1
40029195	Power supply Tufvassons PSLR24	1
40028788	Ground wire 100mm	1
40029740	Automation base	1
40029344	Terminal package	1

Components

40030100	Cable sealing VET 5-7	5
40029244	Cable sealing PMR 615 AVL140	8
40028803	Fan power cable	2
40028802	Fan control cable	2
40029170	EDA temperature sensor 2400mm	2
40029167	EDA temperature sensor 1700mm	1
40029165	EDA temperature sensor 850mm	1
40029228	Return water sensor, surface	1
40029224	Humidity/temperature sensor Amphenol 600mm	1
40031530	Screw ZN 4,2x25	4
40028820	Wire 600mm black (main switch)	2
40028819	Wire 600mm blue (main switch)	2
40031537	Washer 6798-A ZN M4x8	1
40031489	Nut DIN 934/8 ZN M4	1
40030997	Cable tie 2,5x200mm	10
40028738	HRW motor package stepless DC	1
40033952	Rotor cable DC 105cm	1
40031114	eAir panel package	1
40034288	WiFi module package	1
40034505	Valve actuator TR24-SR	1

Manuals etc. (depends on model)

eAir installation manual	1
eAir user manual	1
eAir electrical diagrams	1

Notes: