Service instructions for qualified personnel

Mechanical Ventilation Heat Recovery Unit

NOVUS (F) 300 / 450

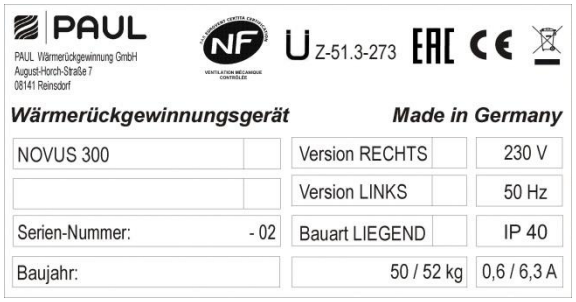
(for units from serial no. 15000-2)

Version: 2.0_10/2015

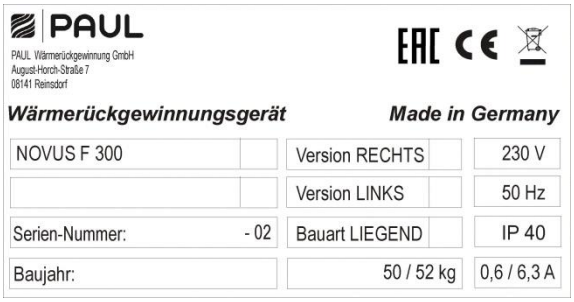
Table of Contents

1 Type plate

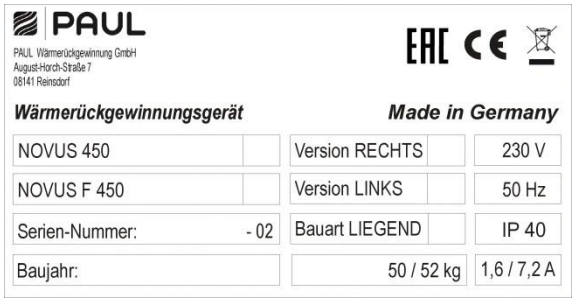
The type plate clearly identifies the product. The information on the type plate are required for the safe use of the product and regarding service queries. The type plate is located on the side of the air connections of the HRU. The type plate must be permanently attached to the product.



Type plate NOVUS 300



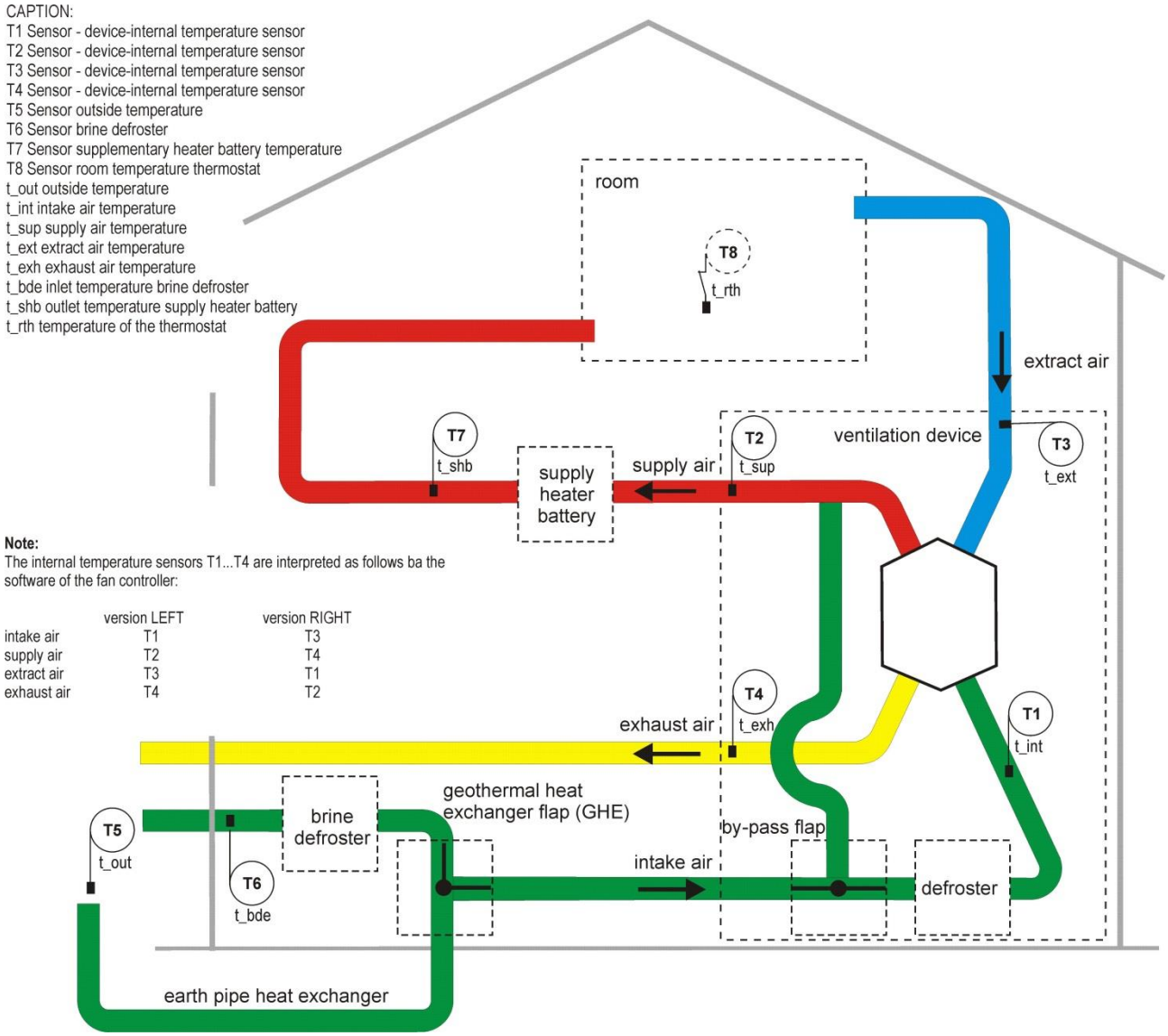
Type plate NOVUS F 300



Type plate NOVUS (F) 450

2 Principal configuration of the system

The basic configuration of the system is universally valid and does not represent the system outline of the project-related ventilation plant! It is designed for representation of the plant-specific system structure for sensors and ventilation equipment.



General system outline with NOVUS with integrated defroster, version LEFT

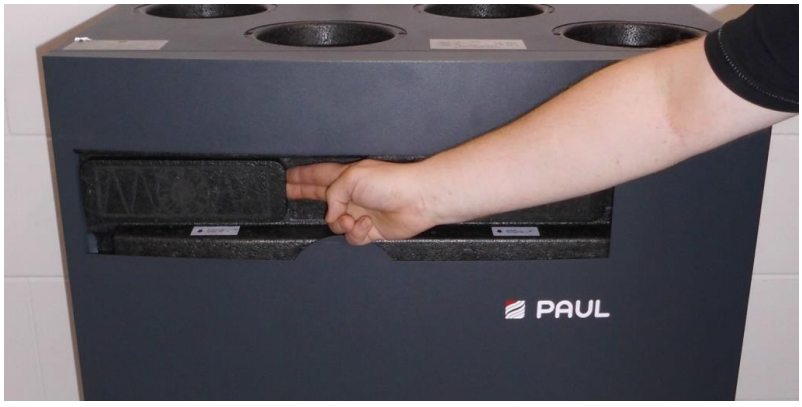
3 Replacement of the filters

3.1 Replacement of the filters of the device

1. Switch the device to standby mode or disconnect it from the power supply.

2. Pull the maintenance flap with the magnetic clamps from the front plate.

3. Pull the filter cover cap out of the filter slide-in compartment. In order to do so, put the finger in the respective recessed grip of the filter cover cap.



4. Pull the filters out of the filter slide-in compartments by means of the filter strap.

5. Package the filters in a sealed bag and put this in the residual waste.

6. Push the new filters in the filter slide-in compartments with regard to the flow direction.

The filters are marked with an arrow according to the required flow direction.

Pollen filters are to be inserted in the filter slide-in compartment of the intake air connection according the device version (see type plate) and marked with the symbol:

7. Insert the filter cover caps. Make sure that the recessed grips of both filter cover caps face each other in the filter slide-in compartment.

8. Close the inspection opening of the front hood with maintenance flap.

9. Re-establish the mains connection.

3.2 Resetting the filter run-time

Once the filter has been changed, the counter for the filter run-time must be reset. Resetting the filter run-time can be performed using the respectively connected control unit or the digital input signal (programmable with PC software as special solution).

1. Resetting the filter run-time by means of the LED control panel

Symbol	Designation	Explanation / actions
	LED 10 Signalling Filter run-time	When the LED 10 lights up, the filter run-time has expired and a filter check shall be performed.
	Key Reset Filter run-time	By pressing this key for at least 3 s, the filter run-time is reset. The LED 10 goes off. The timer starts the set filter run-time.

Tab. 1: Resetting the filter run-time by means of the LED control panel

2. Resetting the filter run-time by means of the TFT touch panel

Symbol	Designation	Explanation / actions
	Signalling Filter run-time expired	In case the filter run-time has expired, the message “Replace filter” is generated, signalling that the filter must be checked.
	Button Menu mode	By touching the button Menu mode, you reach the main menus
	Buttons Navigation	Select the main menu Settings by touching the Navigation buttons and confirm by pressing the Enter button.

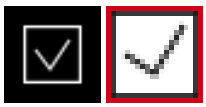
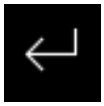
	Buttons Navigation	Select the submenu Filter by touching the Navigation buttons and confirm by pressing the Enter button.
	Button Checkmark	By touching the Checkmark button, resetting of the filter run-time is selected.
	Button Enter	Confirm by pressing the Enter button.
	Button Cancel / back	By touching the Cancel / back button, exit the menu levels until the start menu appears.

Table 2: Step sequence resetting the filter run-time by means of the TFT touch panel

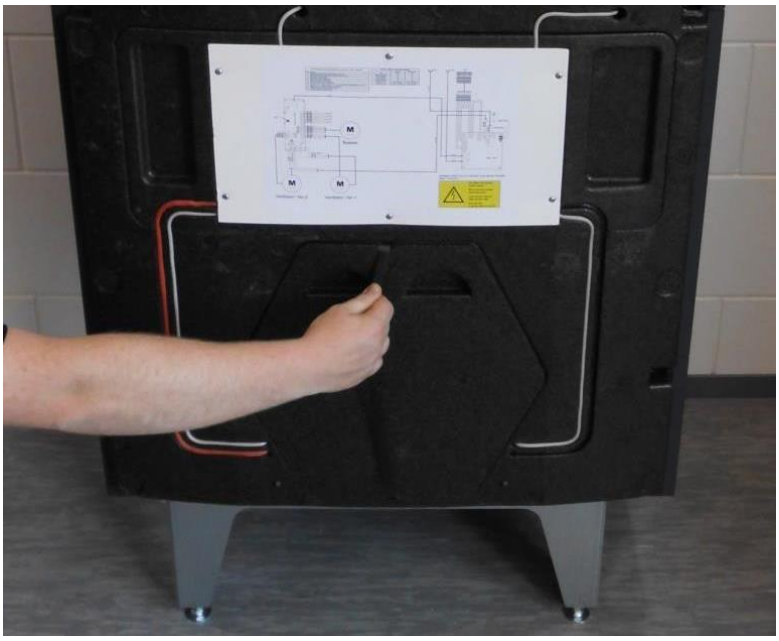
4 Replacement of the heat exchanger

1. Disconnect the device from the power supply.

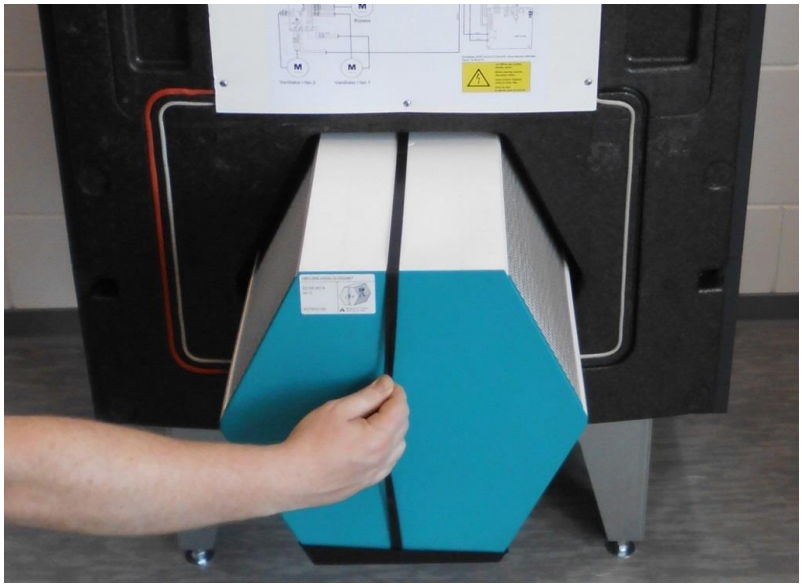
2. Pull the maintenance flap with the magnetic clamps from the front plate.

3. According to the sequence of steps, pull the front hood in the area of the two spring shackles (on the front bottom side of the device) off the device by approx. 5 cm first. Then, slide the front hood towards the supply air duct connections out of the slotted openings (on the front surface of the device).

4. Pull the EPP foam cover of the heat exchanger by means of the strap out of the foam housing. In doing so, grasp the strap on the fastening in the area of the recessed grips of the foam covering holder.

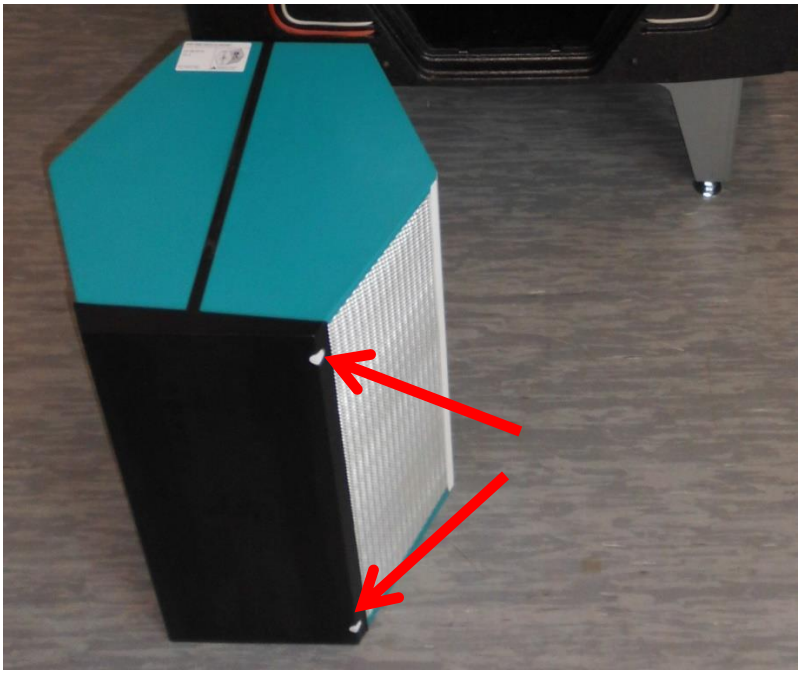


5. Now pull the heat exchanger by means of the strap from the EPP housing.



6. Spray silicone spray on the saeals of the heat exchanger.

7. On the bottom of the heat exchanger is a condensate pan with 2 cut-outs. When inserting the heat exchanger into the unit, please assure that the two cut-outs of the condensate pan point to the condensate outlet.



8. Afterwards, mount all parts in reverse order.

9. Re-establish the mains connection.

10. Adjust the settings to the respective heat exchanger (using the TFT display).

Menu = Setup = frost protection mode
eco (energy saving) ☐
secure ☐
Moisture heat exchanger ☐

Menu = Setup = password: “55555” = frost protection mode = temperatures:

Standard heat exchanger HRV:	eco:	-2°C
	save:	0°C
Enthalpy heat exchanger ERV:		-8°C

5 Replacement of the integrated defroster

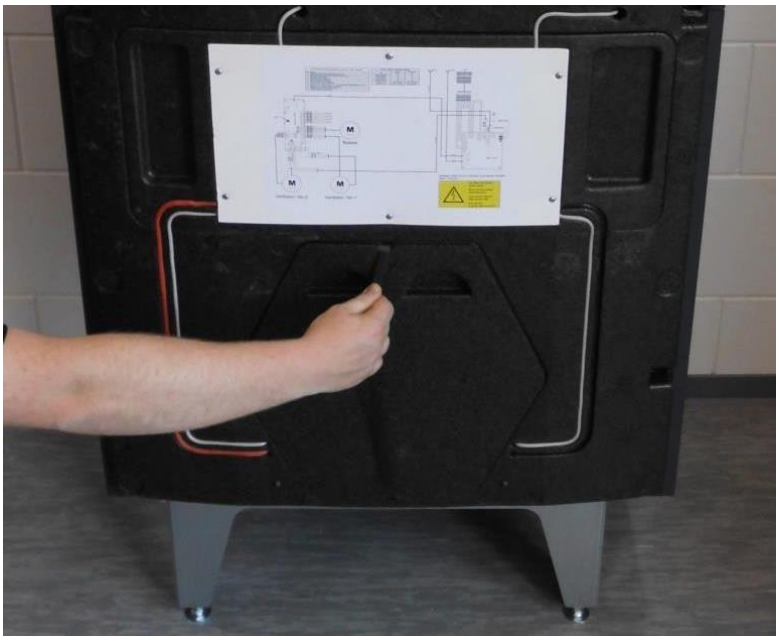
1. Disconnect the device from the power supply.

2. Apply for work on the electronics an ESD wrist strap.

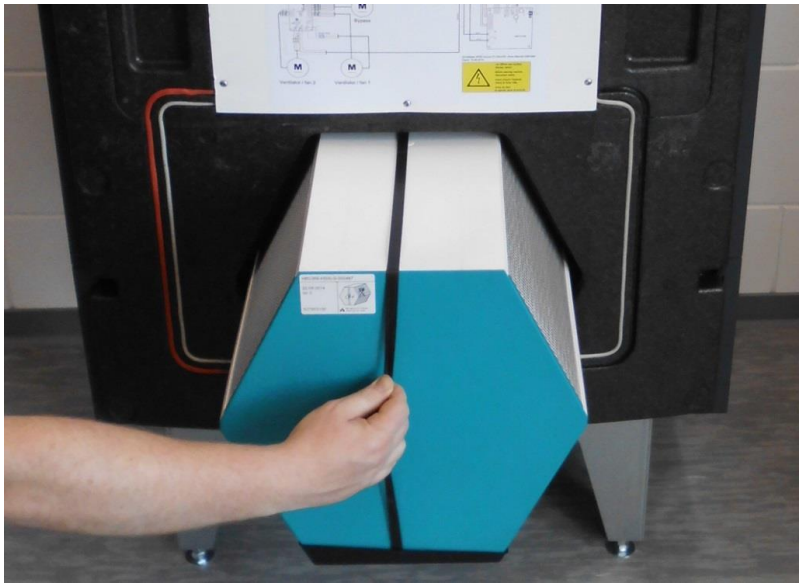
3. Pull the maintenance flap with the magnetic clamps from the front plate.

4. According to the sequence of steps, pull the front hood in the area of the two spring shackles (on the front bottom side of the device) off the device by approx. 5 cm first. Then, slide the front hood towards the supply air duct connections out of the slotted openings (on the front surface of the device).

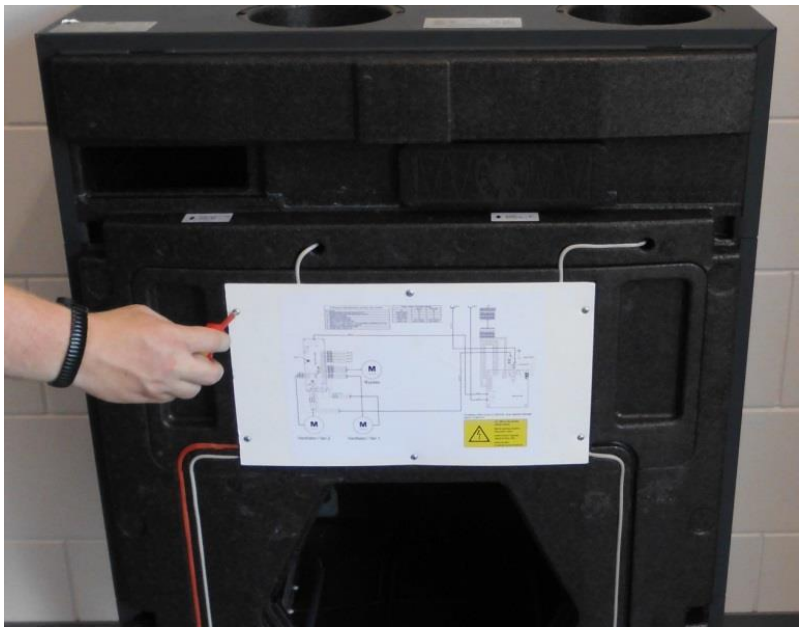
5. Pull the EPP foam cover of the heat exchanger by means of the strap out of the foam housing. In doing so, grasp the strap on the fastening in the area of the recessed grips of the foam covering holder.



6. Now pull the heat exchanger by means of the strap from the EPP housing.

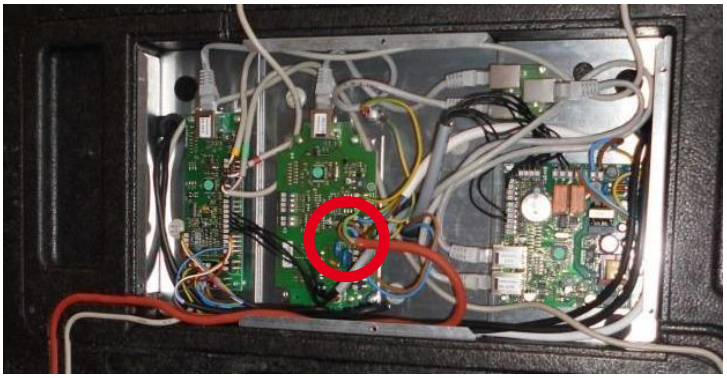


7. Remove the electronics cover, open the 6 screws.

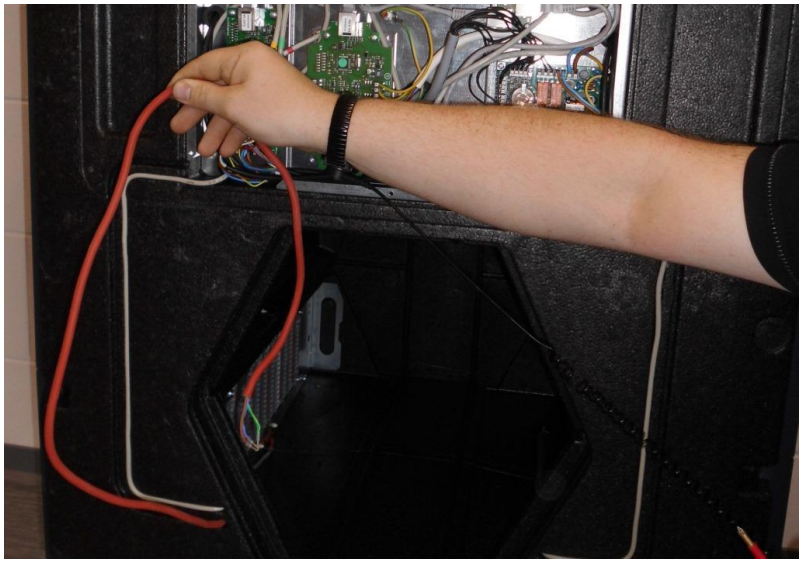


8. Slide the PVC pipe forwardly out of the EPP housing.

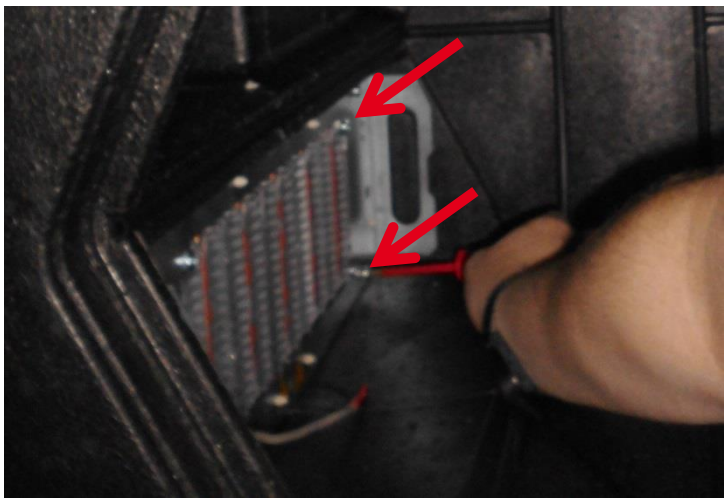
9. Disconnect the power cable of the PTC elementes from the BUS thermostat.



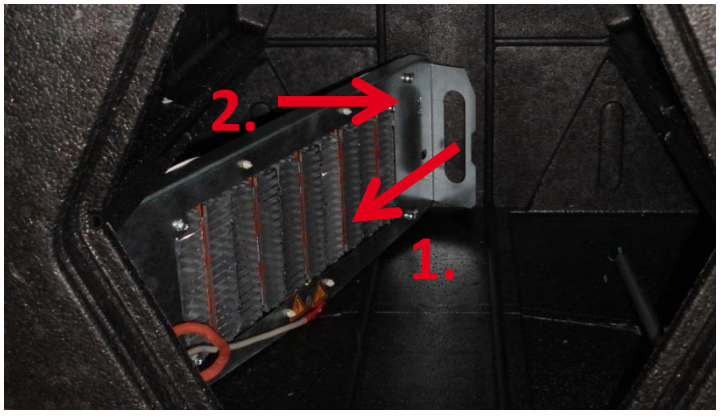
10. Remove the power cabel out of the cable guide (groove).



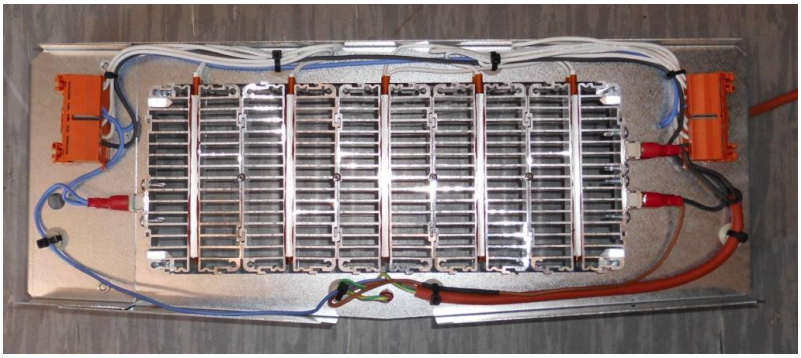
11. Loosen the two screws on the PTC element.



12. Push together the PTC element at the rear part and remove it out of the EPP hosing.



13. Insert the new PTC element.



14. Afterwards, mount all parts in reverse order.
    When inserting the heat exchanger into the unit, please assure that the two cut-outs of the condensate pan point to the condensate outlet (see point 4.).

15. Re-establish the mains connection.

6 Replacement of the master board, slave board and BUS thermostat

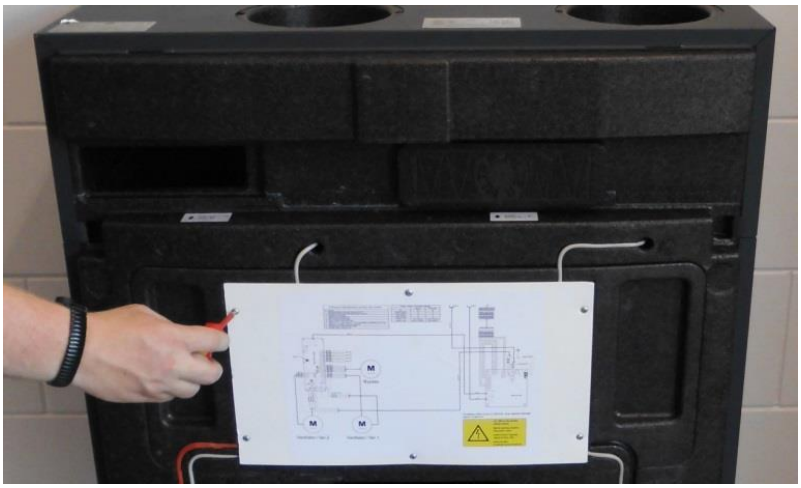
1. Read the program with a PC or write down the settings of the TFT.
2. Disconnect the device from the power supply.

3. Apply for work on the electronics an ESD wrist strap.

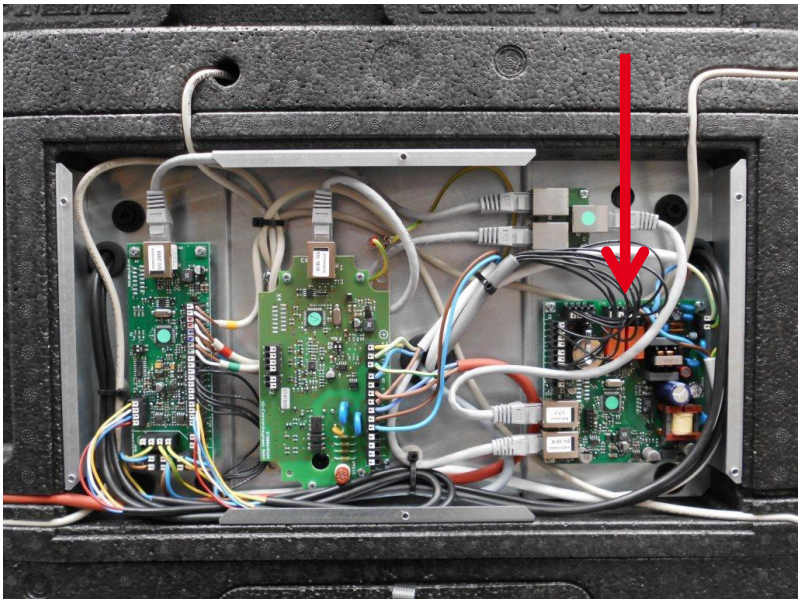
4. Pull the maintenance flap with the magnetic clamps from the front plate.

5. According to the sequence of steps, pull the front hood in the area of the two spring shackles (on the front bottom side of the device) off the device by approx. 5 cm first. Then, slide the front hood towards the supply air duct connections out of the slotted openings (on the front surface of the device).

6. Remove the electronics cover, open the 6 screws.

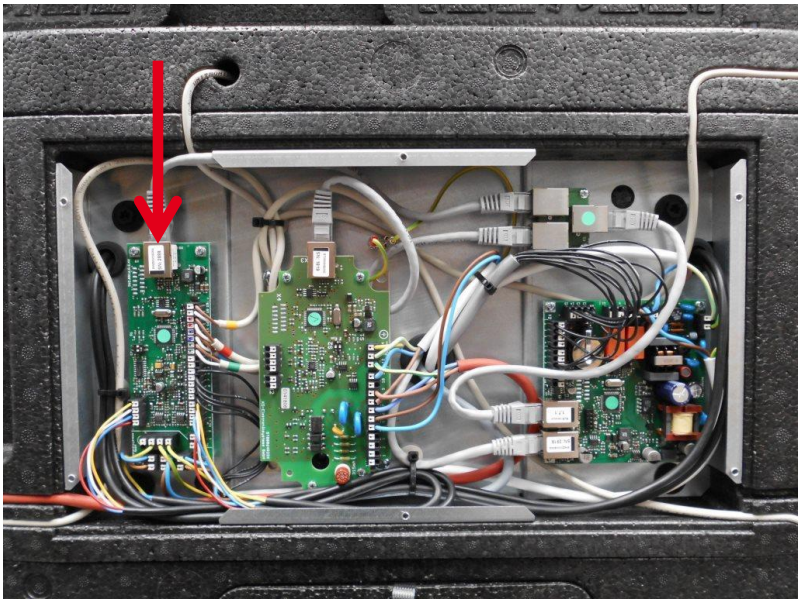


7. Remove the cables from the master board and remove it from the device.



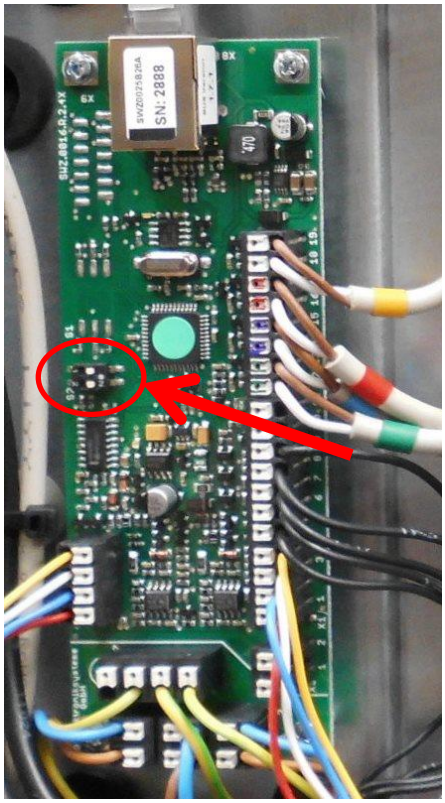
8. Install the new master board in the device. Be sure to install the cables according the circuit diagram (see appendix).

9. Remove the cables from the fan slave board and remove it from the device.



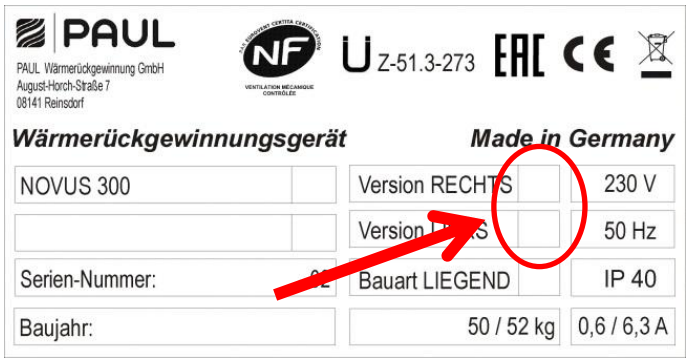
10. Install the new fan slave board in the device. Be sure to install the cables according the circuit diagram (see appendix).

11. Set the correct device version using the DIP switches on the new fan slave board.

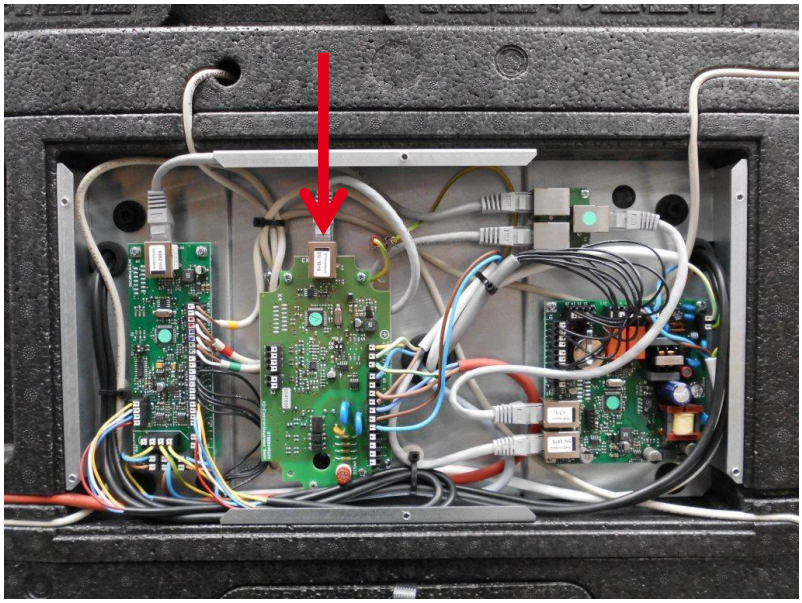


DIP 1 = left device version „off“/ right device version „on“
DIP 2 = „on“

The device version can be found on the type plate of the unit.



12. Remove the cables from the BUS thermostat and remove it from the device.



13. Install the new BUS thermostat in the device. Be sure to install the cables according the circuit diagram (see appendix).

14. Be sure that the DIP switches are set correctly.

DIP 1 = „off“
DIP 2 = „off“

15. Mount all parts in reverse order.

16. Re-establish the mains connection.

17. Program the device.

Important note!

 Make sure that you install the correct board in the respective device.

NOVUS 300

Art.-Nr. 524002280 Master board NOVUS 300 RD (black bar on type plate)
Art.-Nr. 521014120 Fan slave board RD (black bar on type plate)

NOVUS 450

Art.-Nr. 524002290 Master board NOVUS 450 RD (black bar on type plate)
Art.-Nr. 521014120 Fan slave board RD (black bar on type plate)

7 Replacement of the fan

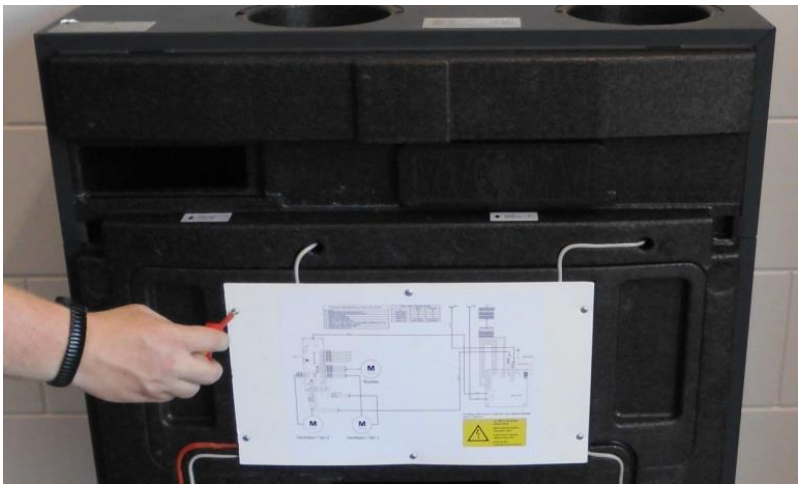
1. Disconnect the device from the power supply.

2. Apply for work on the electronics an ESD wrist strap.

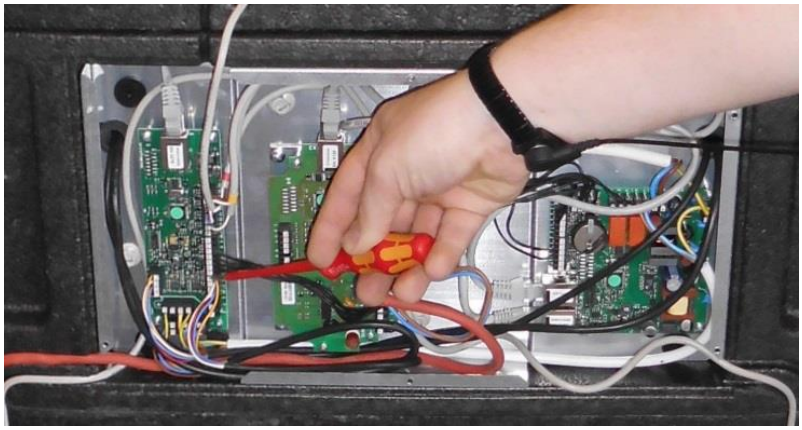
3. Pull the maintenance flap with the magnetic clamps from the front plate.

4. According to the sequence of steps, pull the front hood in the area of the two spring shackles (on the front bottom side of the device) off the device by approx. 5 cm first. Then, slide the front hood towards the supply air duct connections out of the slotted openings (on the front surface of the device).

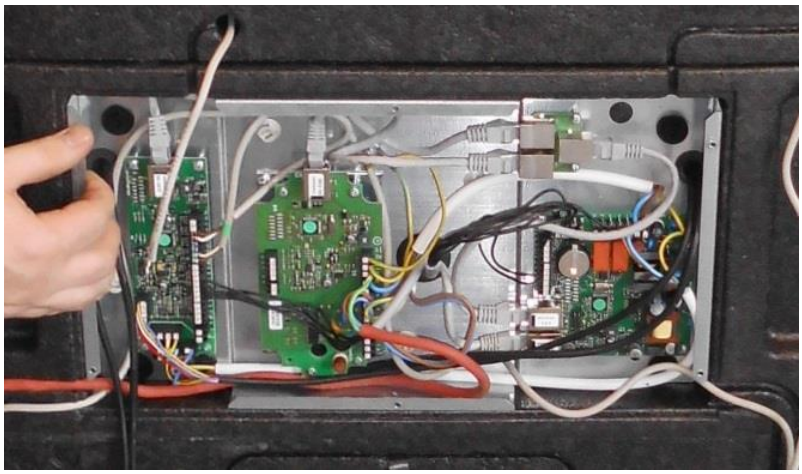
5. Remove the electronics cover, open the 6 screws.

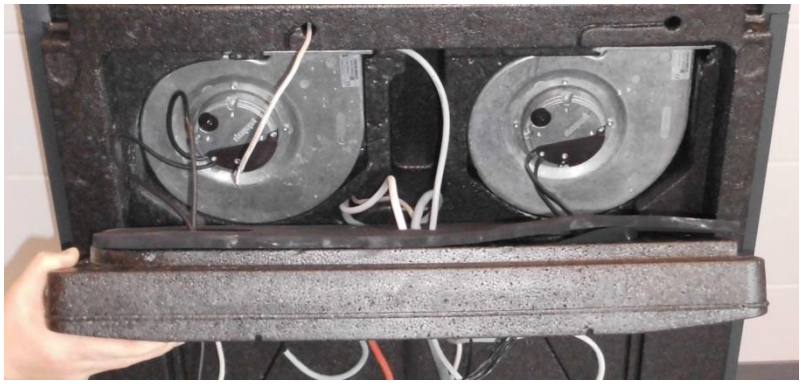


6. Remove the cable of the fan from the slave board.

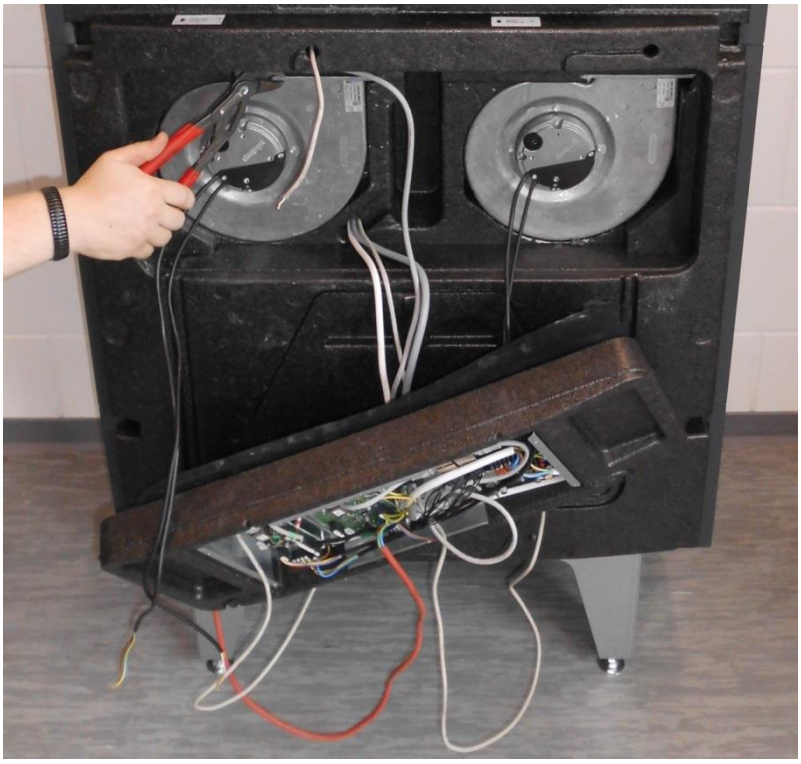


7. Pull the EPP control carrier out of the device.



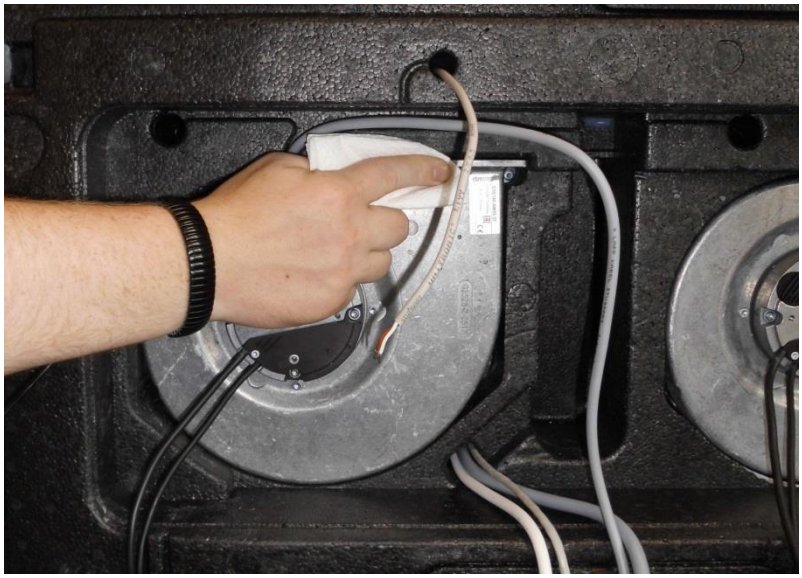


8. Pull the fan with a pliers out of the device.



9. Apply the sealant (NeoFermit) on the fan housing of the new fan.

10. Insert the fan into the housing of the ventilation device and remove the excess sealant.



11. Mount all parts in reverse order.
12. Re-establish the mains connection.

8 Replacement of the bypass motor

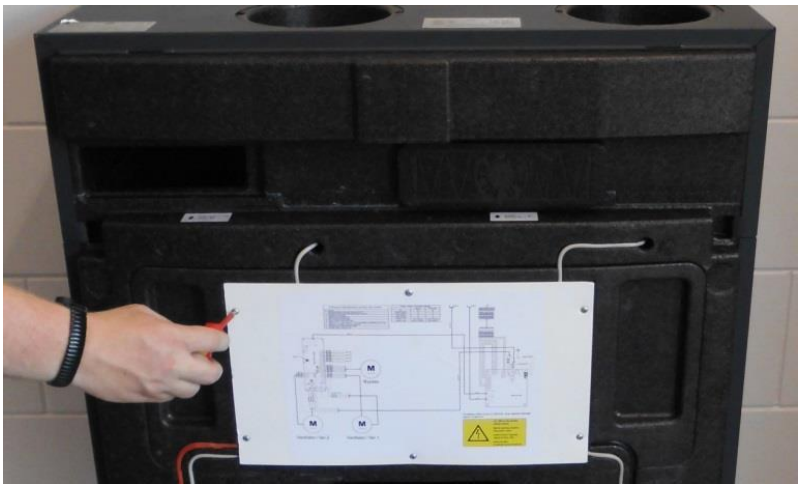
1. Disconnect the device from the power supply.

2. Apply for work on the electronics an ESD wrist strap.

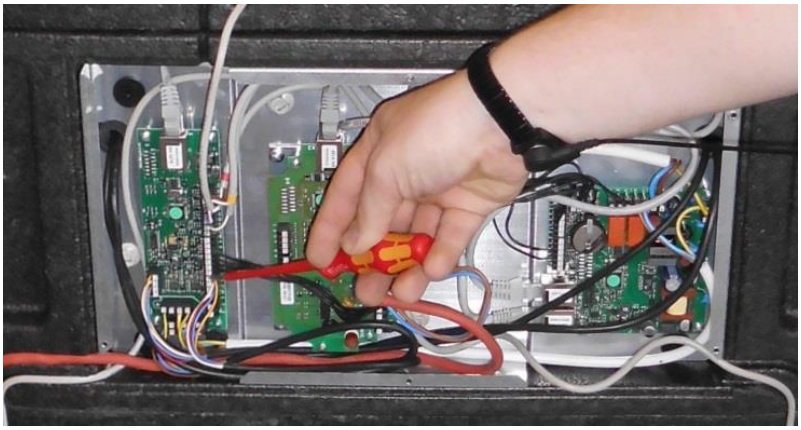
3. Pull the maintenance flap with the magnetic clamps from the front plate.

4. According to the sequence of steps, pull the front hood in the area of the two spring shackles (on the front bottom side of the device) off the device by approx. 5 cm first. Then, slide the front hood towards the supply air duct connections out of the slotted openings (on the front surface of the device).

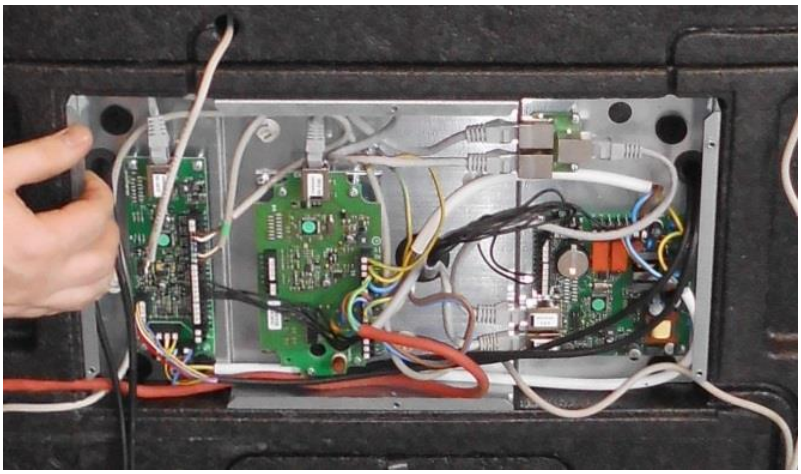
5. Remove the electronics cover, open the 6 screws.

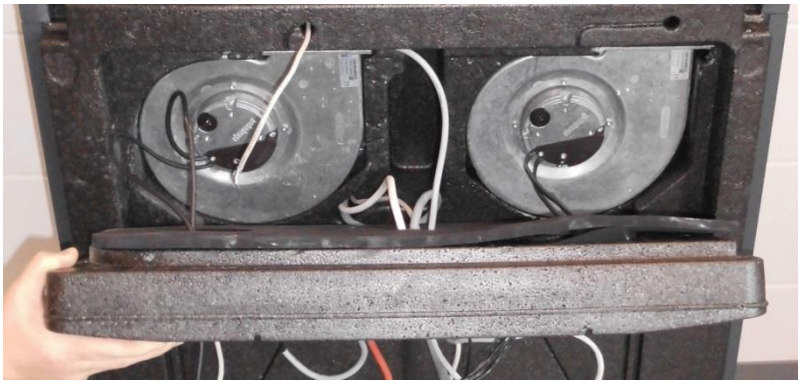


6. Remove the cables of the left fan from the slave board.

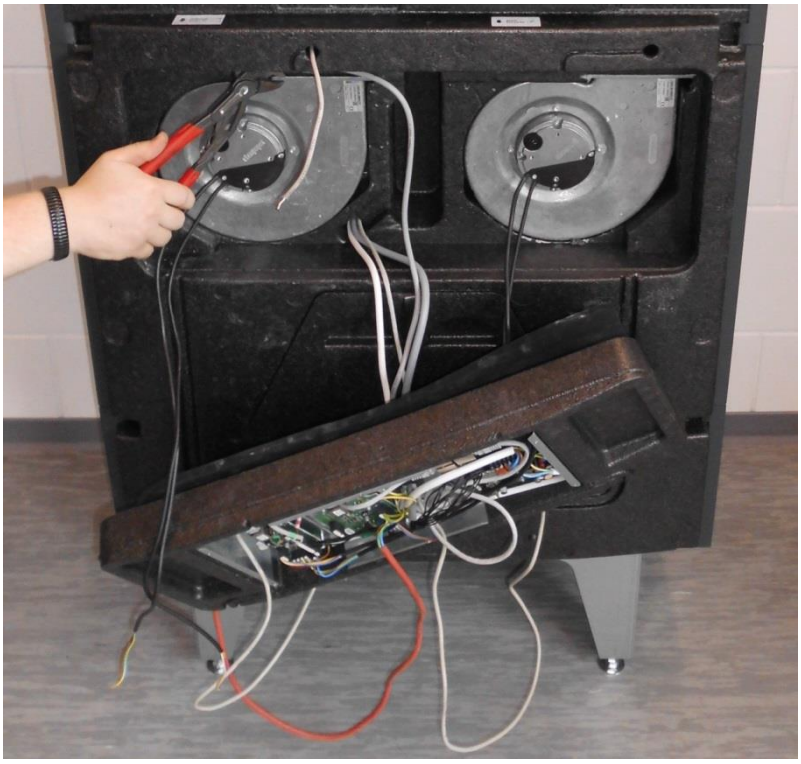


7. Pull the EPP control carrier out of the device.



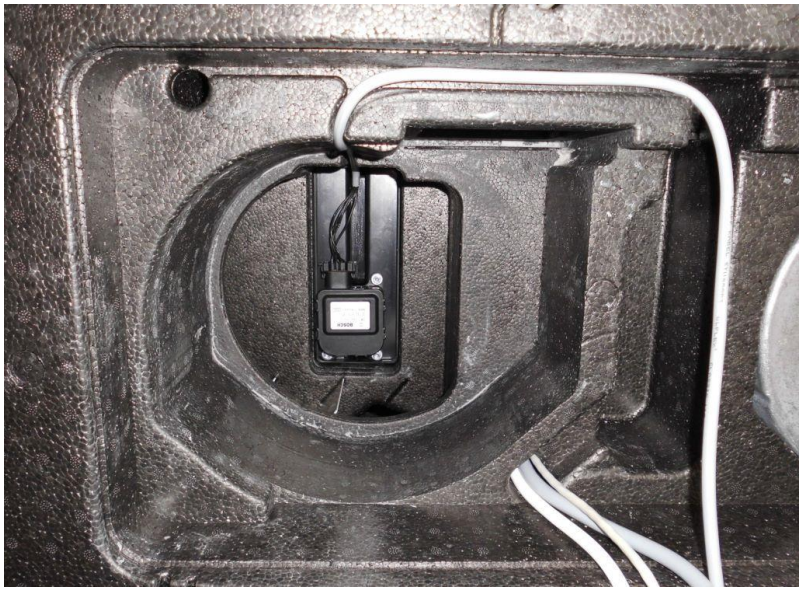


8. Pull the fan with a pliers out of the device.



9. Pry using a screw driver the EPP bypass cover out of the device.

10. Pull the bypass motor out of the device.

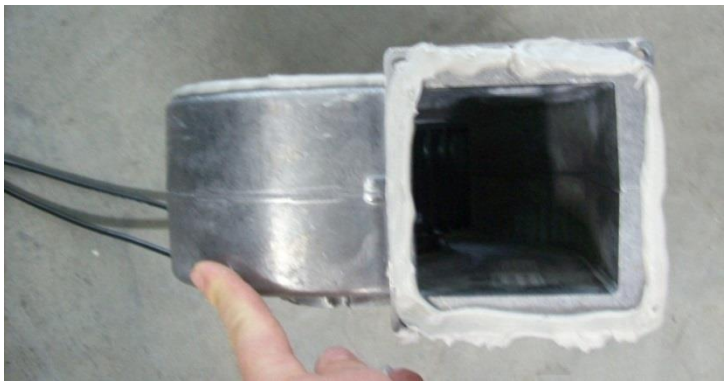


11. Remove the plug of the bypass motor.

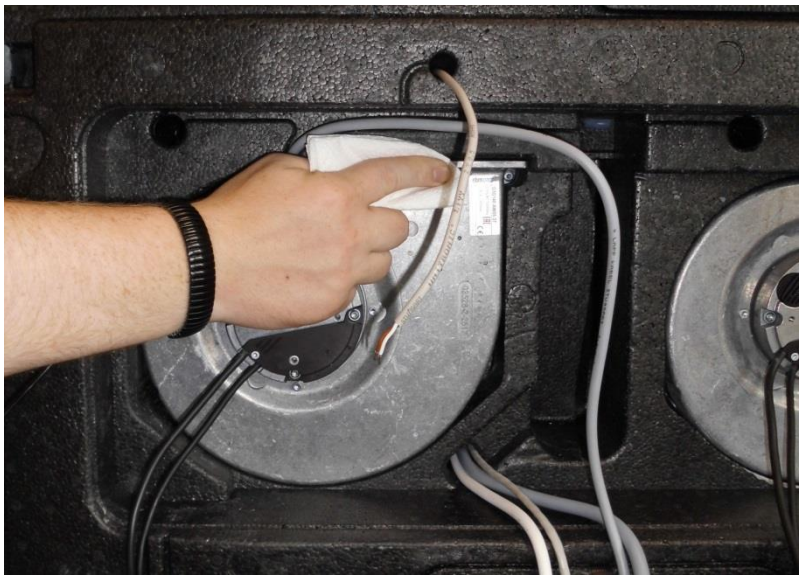
12. Open the screws to replace the bypass motor.

13. Place the bypass flap and the EPP bypass cover in the ventilation device.

14. Apply the sealant (NeoFermit) on the fan housing of the new fan.



15. Insert the fan into the housing of the ventilation device and remove the excess sealant.

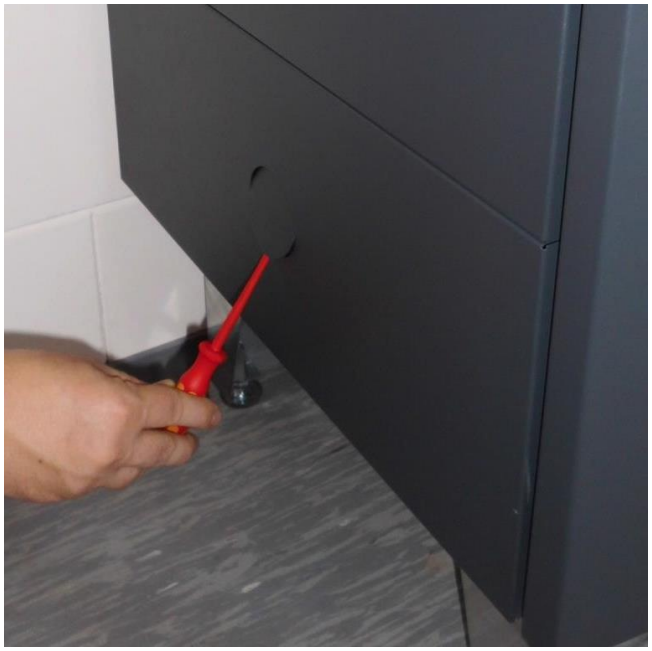


16. Mount all parts in reverse order.
17. Re-establish the mains connection.

9 Installation of a condensate drain

1. Disconnect the device from the power supply.

2. Remove the pre-cut hole with a screwdriver.



3. Drill with a 40 mm drill bit a hole in the EPP housing.

4. Apply the sealant to the inlet.

5. Insert the outlet into the device and fix it with the corresponding screw.

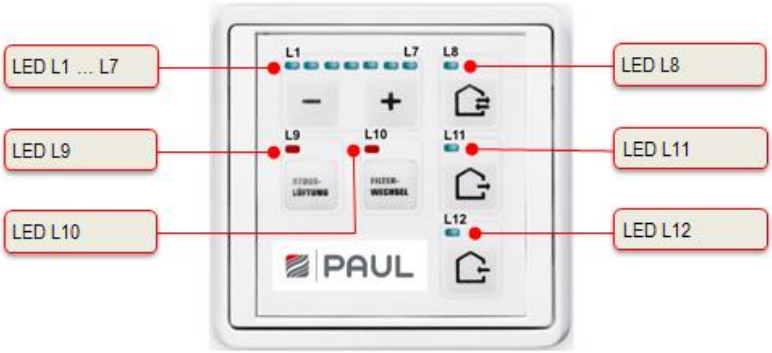
6. Remove the excess sealant.

7. Re-establish the mains connection.

10 Messages, errors and error handling

The device control is equipped with an internal system for error detection. The visualisation of the messages and the error forecast is made according to the display possibilities of the connected control panel.
In response to an error condition, the fans are switched off and a by-pass available is closed.

10.1 Error signalling by means of the LED control panel



The visualisation of errors with the LED-control panel:

LED signalling	Function / meaning
L1 + L7 are lit	No external release: fan off
L8 blinks	Error sensor: Fans are switched off, by-pass closes
L8 + L11 + L12 blinks	General error, the error number is displayed in a binary form by means of the LEDs L1 to L7 (see Tab. 4)
L11 blinks	Error fan 1 Hall: Fans are switched off, by-pass closes
L12 blinks	Error fan 2 Hall: Fans are switched off, by-pass closes

Tab. 3: Error signalling by means of the LED control panel

In addition to the signalling of the error conditions, an LED coding, which does binary present the meaning of the error, is generated by means of the LEDs L1…L7. Information on checking / measures for a possible elimination of the error condition are given in Tab. 5.

The following LED combinations for the display of the error coding marked with “x” apply:

LED combinations							Error message	Possible cause
L1	L2	L3	L4	L5	L6	L7		
x		x					Supply air temperature too low	Supply air temperature < setpoint
x			x				Error by-pass	No end position, by-pass not working
x	x		x	x		x	BUS version incompatible	Software versions of the components not compatible
		x	x	x		x	Too many devices connected	Too many components connected to the BUS
x		x	x	x		x	Fan slave not connected	Lack of BUS-communication
	x	x	x	x		x	Communication error of the fan slave	Lack of BUS-communication
x	x	x	x	x		x	Communication error of the defroster	Lack of BUS-communication
					x	x	Communication error of the heater battery	Lack of BUS-communication
x					x	x	Comm. error flap of the geothermal heat exchanger	Lack of BUS-communication
	x				x	x	Comm. error general	Lack of BUS-communication
x	x				x	x	Heating does not switch off	Error BUS-thermostat
	x		x	x			General control unit error	Lack of BUS-communication with control unit

Tab. 4: Overview binary error coding with the LED control panel

10.2 Visualisation of errors with the TFT touch panel

The visualisation of errors with the TFT touch panel is done in the plain text display of the error message. In the main menu Information / Last message, the last three errors that occurred are registered in compliance with the event with date and time. In addition to this display, a yellow warning triangle flashes in the upper right edge of the screen.

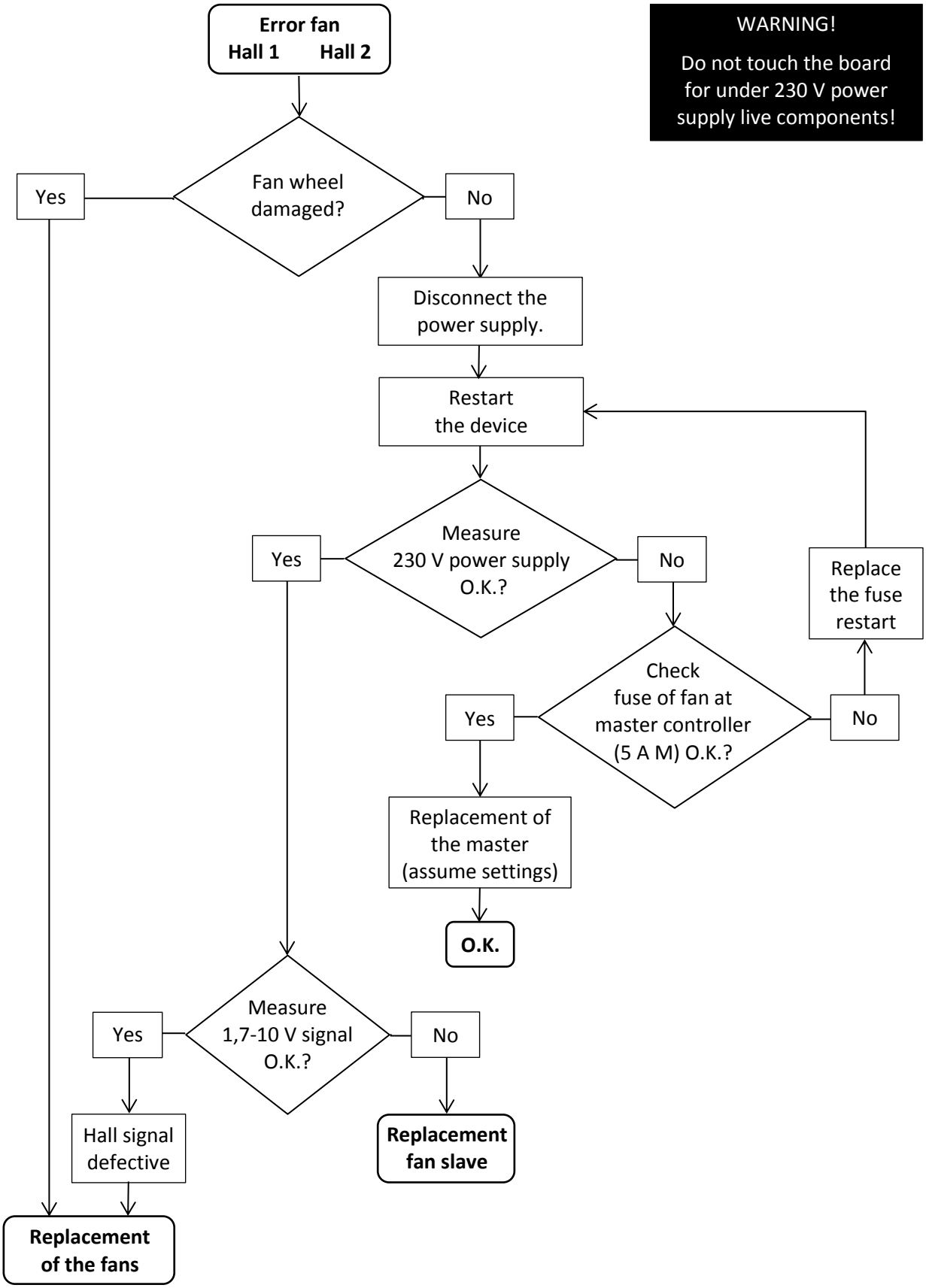
The following plain text displays of the error message are visualised:

Message on display	Possible cause	Control / Action
Error sensor 1	Sensor break or short circuit temperature sensor Version LEFT T1 Version RIGHT T3	Check or replace sensor
Error sensor 2	Sensor break or short circuit temperature sensor Version LEFT T2 Version RIGHT T4	Check or replace sensor
Error sensor 3	Sensor break or short circuit temperature sensor Version LEFT T3 Version RIGHT T1	Check or replace sensor
Error sensor 4	Sensor break or short circuit temperature sensor Version LEFT T4 Version RIGHT T2	Check or replace sensor
Supply air temperature too low	Minimum supply air temperature < setpoint;	Supply air temperature > setpoint + 1 K
Intake air temperature too low	Current intake air temperature < setpoint; longer than 30 minutes	Intake air temp > setpoint; control after 1 h
Error fan 1 Hall	Version LEFT; supply fan speed does not report Version RIGHT, exhaust fan speed does not report	manual adjustment of fan speed
Error fan 2 Hall	Version LEFT; exhaust fan speed does not report Version RIGHT, supply fan speed does not report	manual adjustment of fan speed
Error by-pass	No end position, by-pass not working	Test by-pass
BUS version incompatible	Software versions of the components not compatible	Replace software versions
Too many devices connected	Too many components connected to the BUS	Remove surplus components
Fan slave not connected	Lack of BUS-communication	Fan slave connected
Communication error fan slave	Lack of BUS-communication	Check BUS-communication
Communication error defroster	Lack of BUS-communication	Check BUS-communication
Communication error heater battery	Lack of BUS-communication	Check BUS-communication
Communication error flap of the geothermal heat exchanger	Lack of BUS-communication	Check BUS-communication
Communication error general	Lack of BUS-communication	Disconnection from power supply, then restart
Heating does not switch off	Error BUS-thermostat	Replace BUS-thermostat
General control unit error	Lack of BUS-communication with control unit	Check BUS-communication

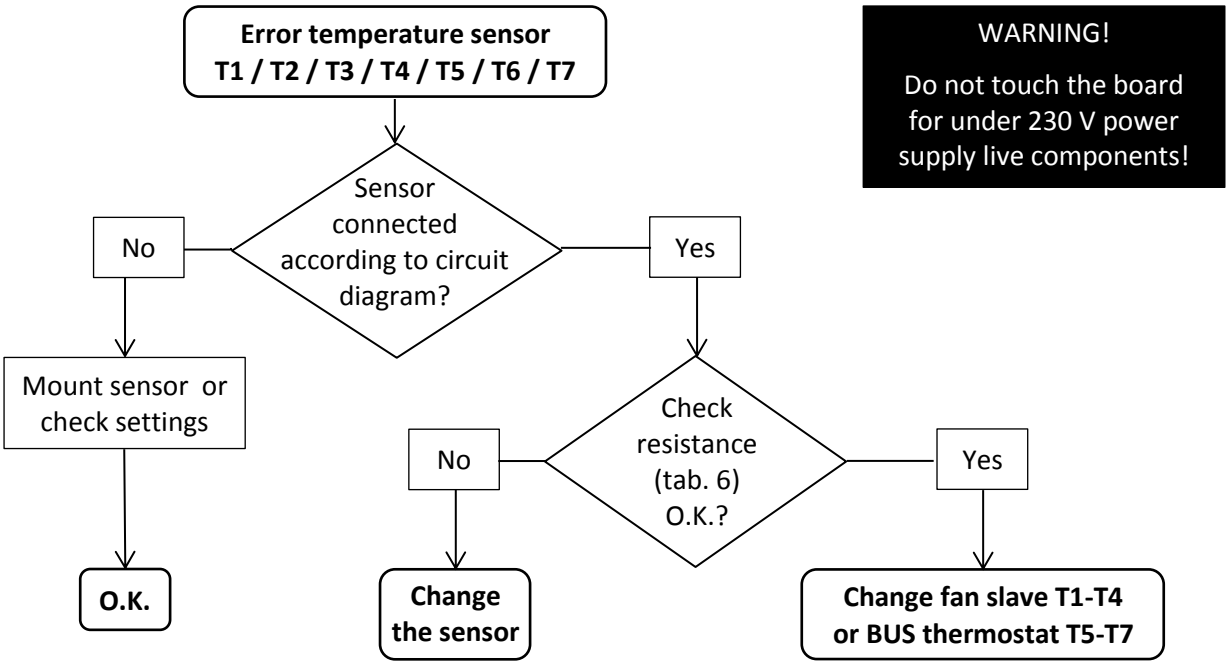
Tab. 5: Overview of messages, error visualisation and error treatment by means of the TFT touch panel

11 Error handling

11.1 Error fan



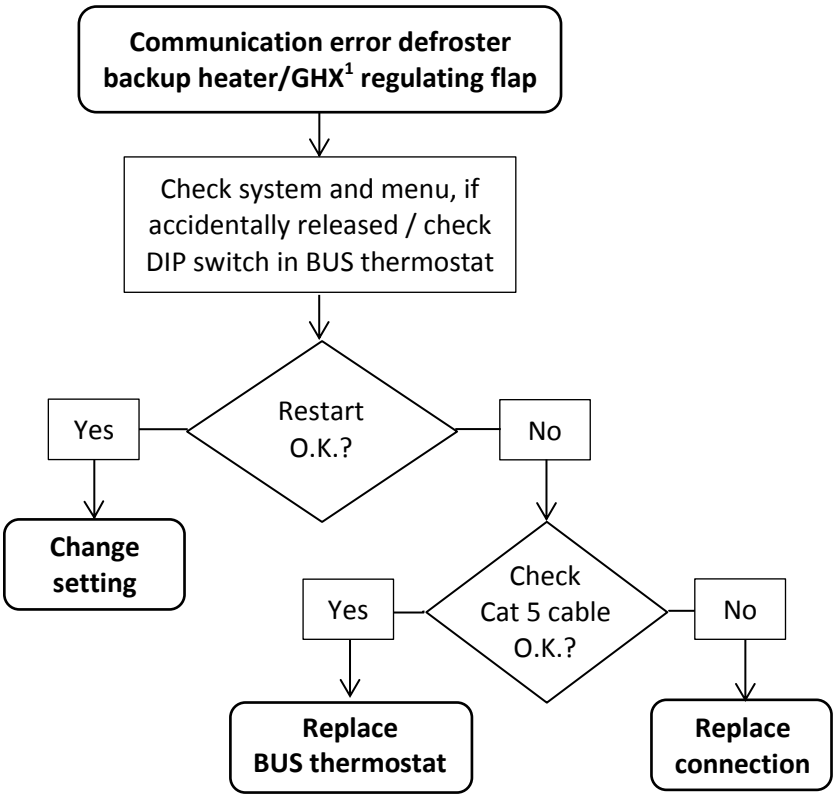
11.2 Error temperature sensor



Operating temp. T_{oper} (°C)	Resistance R_{25} (kΩ)
-25	129,30
-20	96,36
-15	72,50
-10	55,05
-5	42,16
0	32,56
5	25,34
10	19,87
15	15,70
20	12,49
25	10,00
30	8,059
35	6,535

Tab. 6: Resistance value

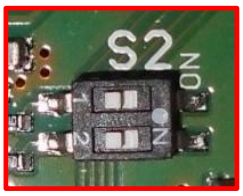
11.3 Communication error defroster, back heater, geothermal heat exchanger



WARNING!

Do not touch the board for under 230 V power supply live components!

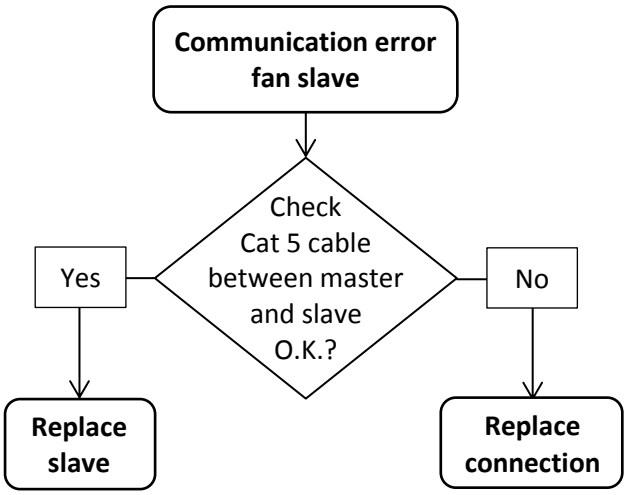
BUS thermostat



DIP switch

[1] GHX – Ground heat exchanger

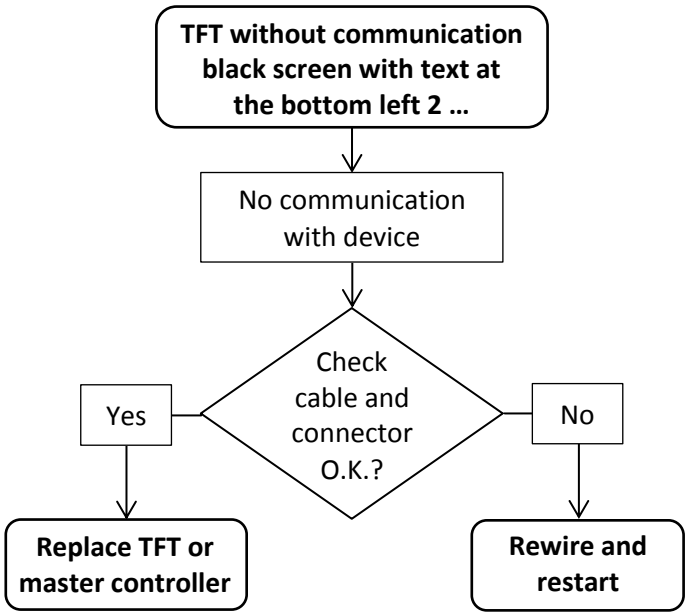
11.4 Communication error fan slave



WARNING!

Do not touch the board for under 230 V power supply live components!

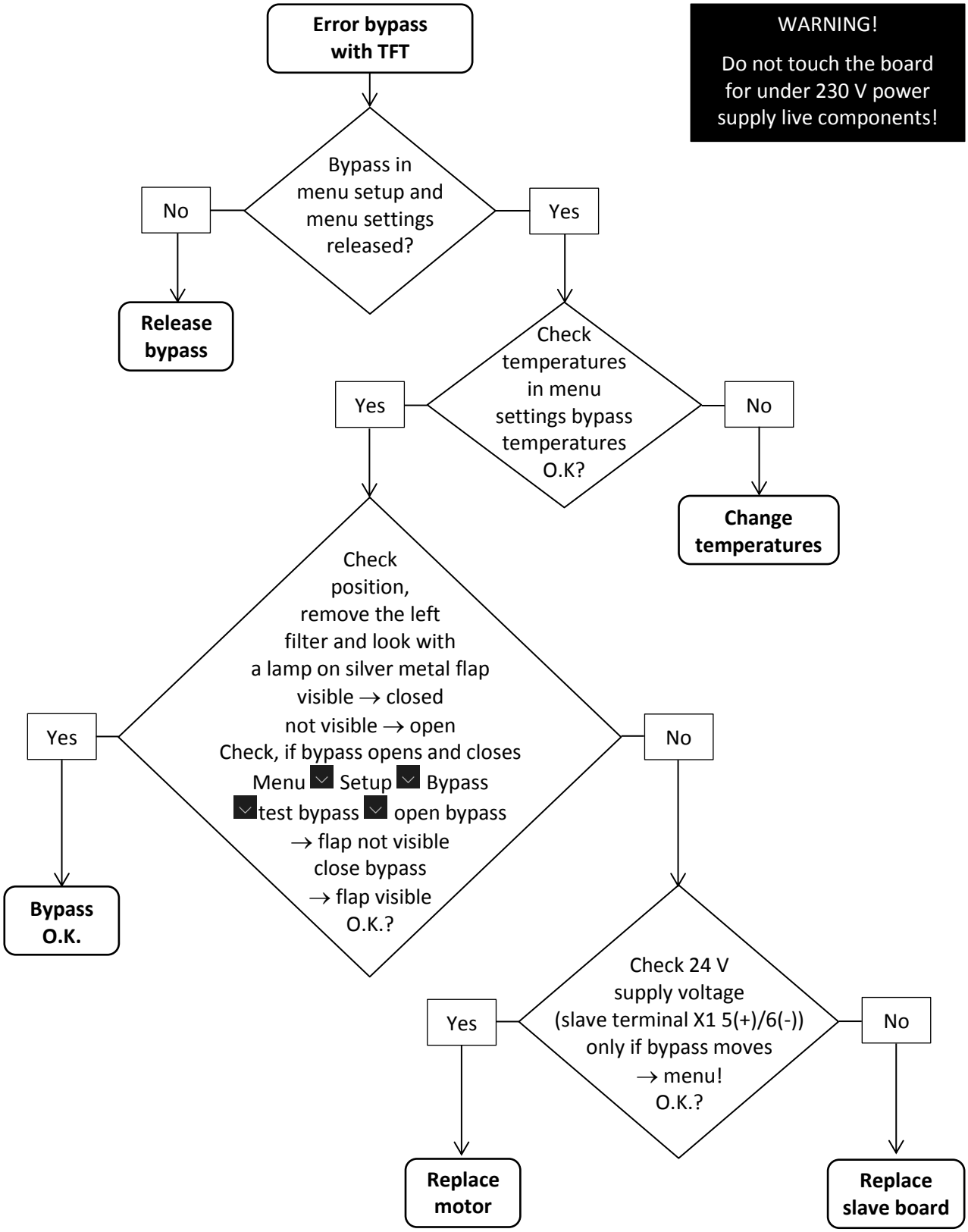
11.5 TFT without communication



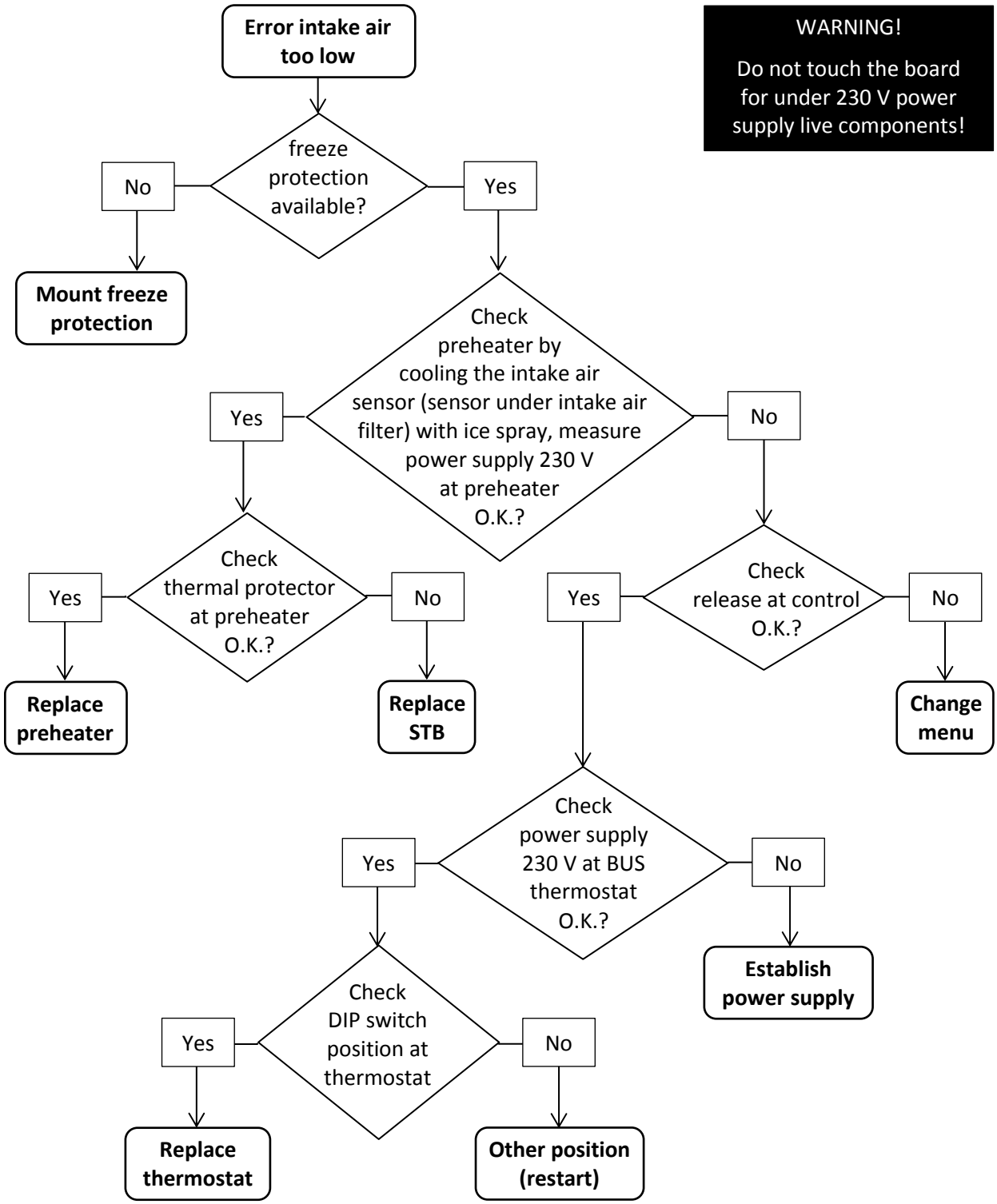
WARNING!

Do not touch the board for under 230 V power supply live components!

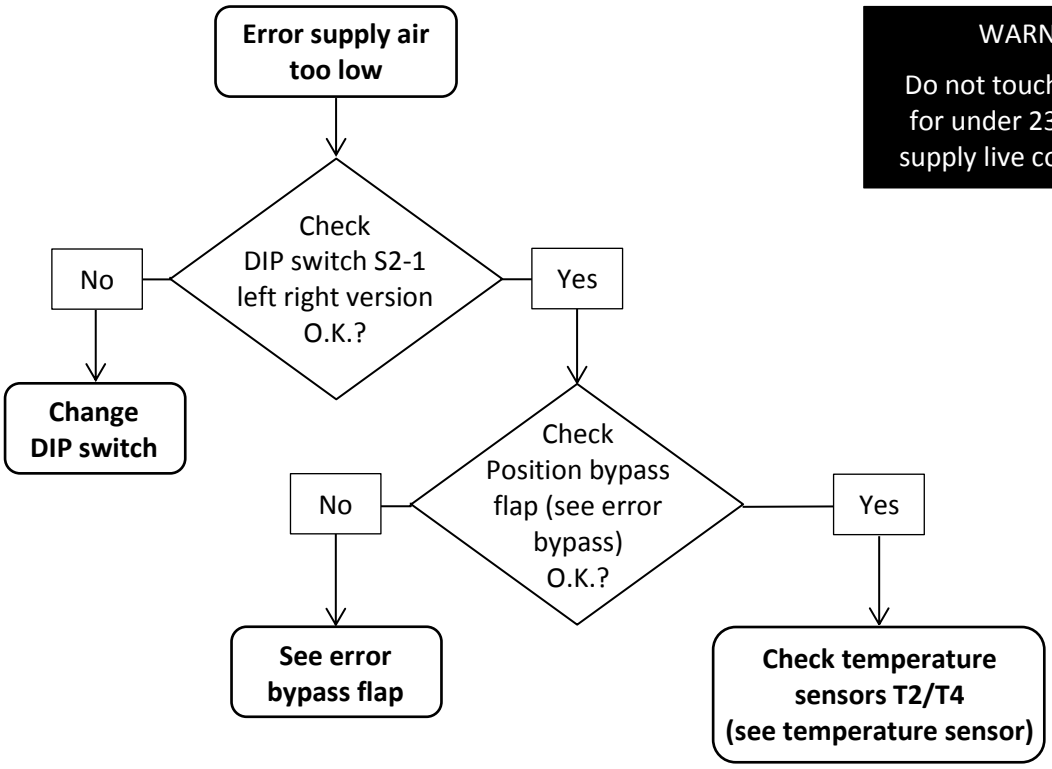
11.6 Error bypass with TFT



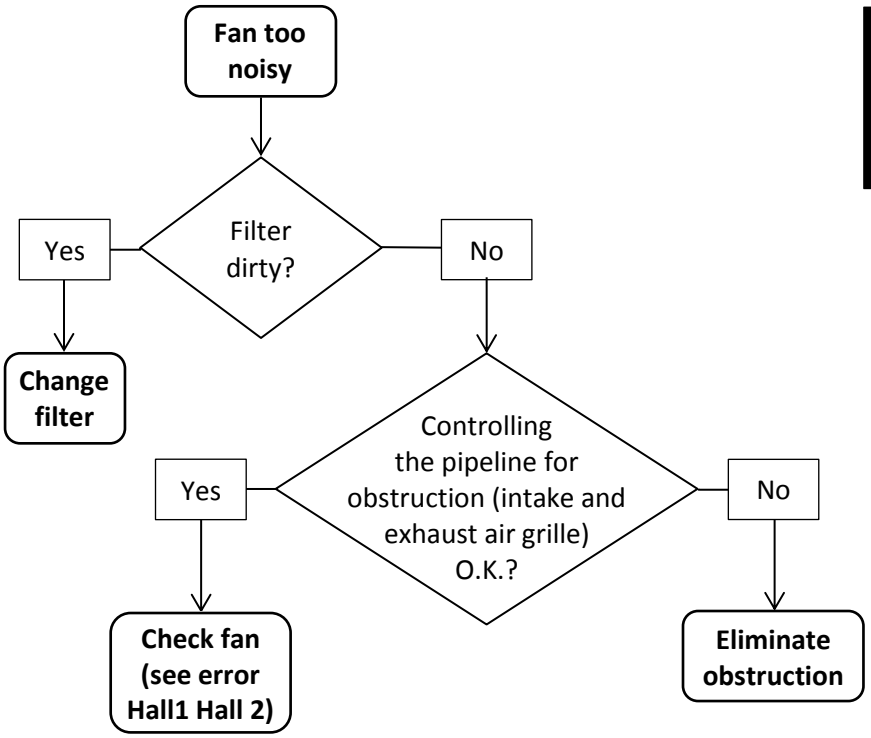
11.7 Error intake air too low



11.8 Error supply air too low



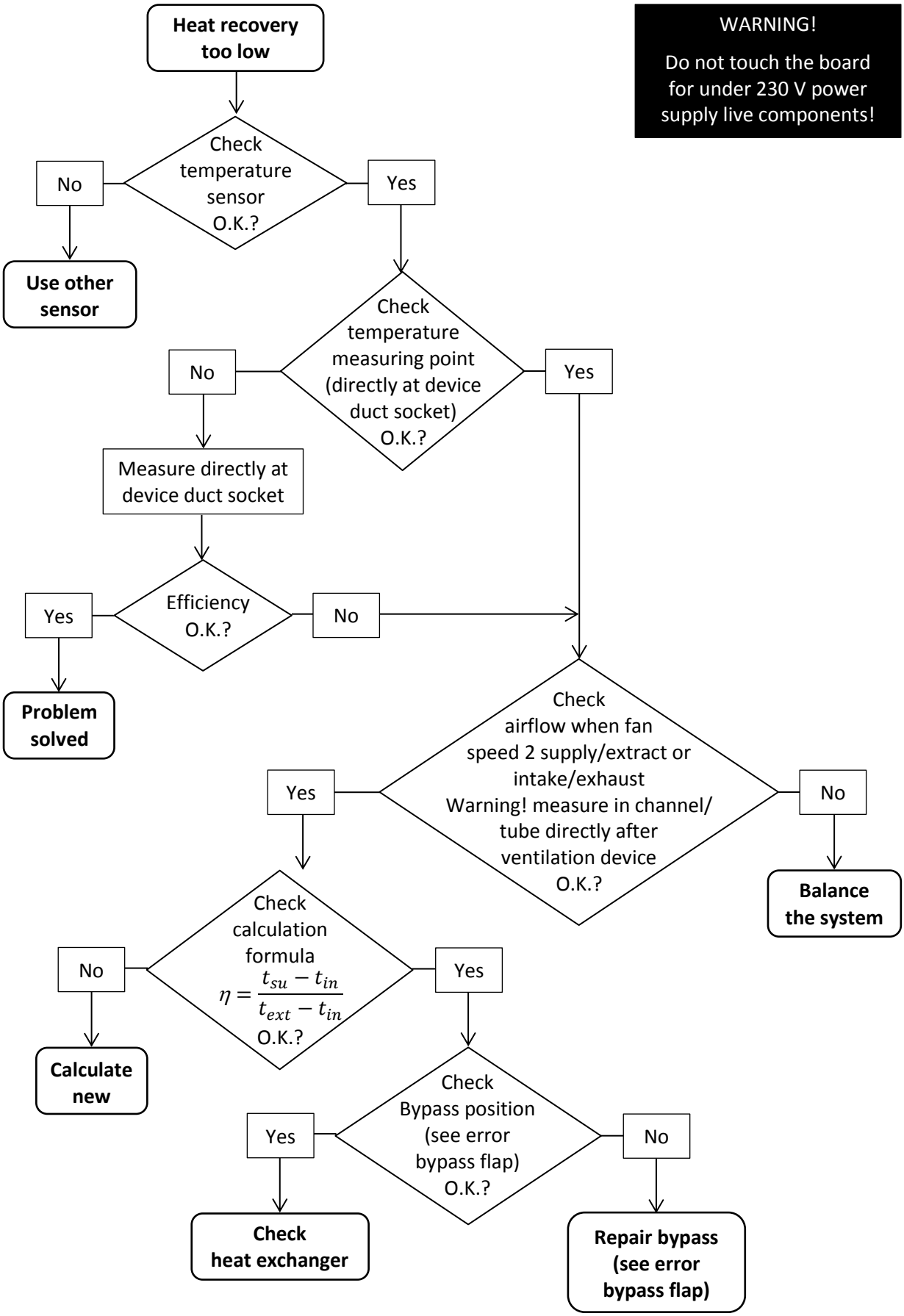
11.9 Fan too noisy



WARNING!

Do not touch the board for under 230 V power supply live components!

11.10 Heat recovery too low



11.11 Failure or problems without a message

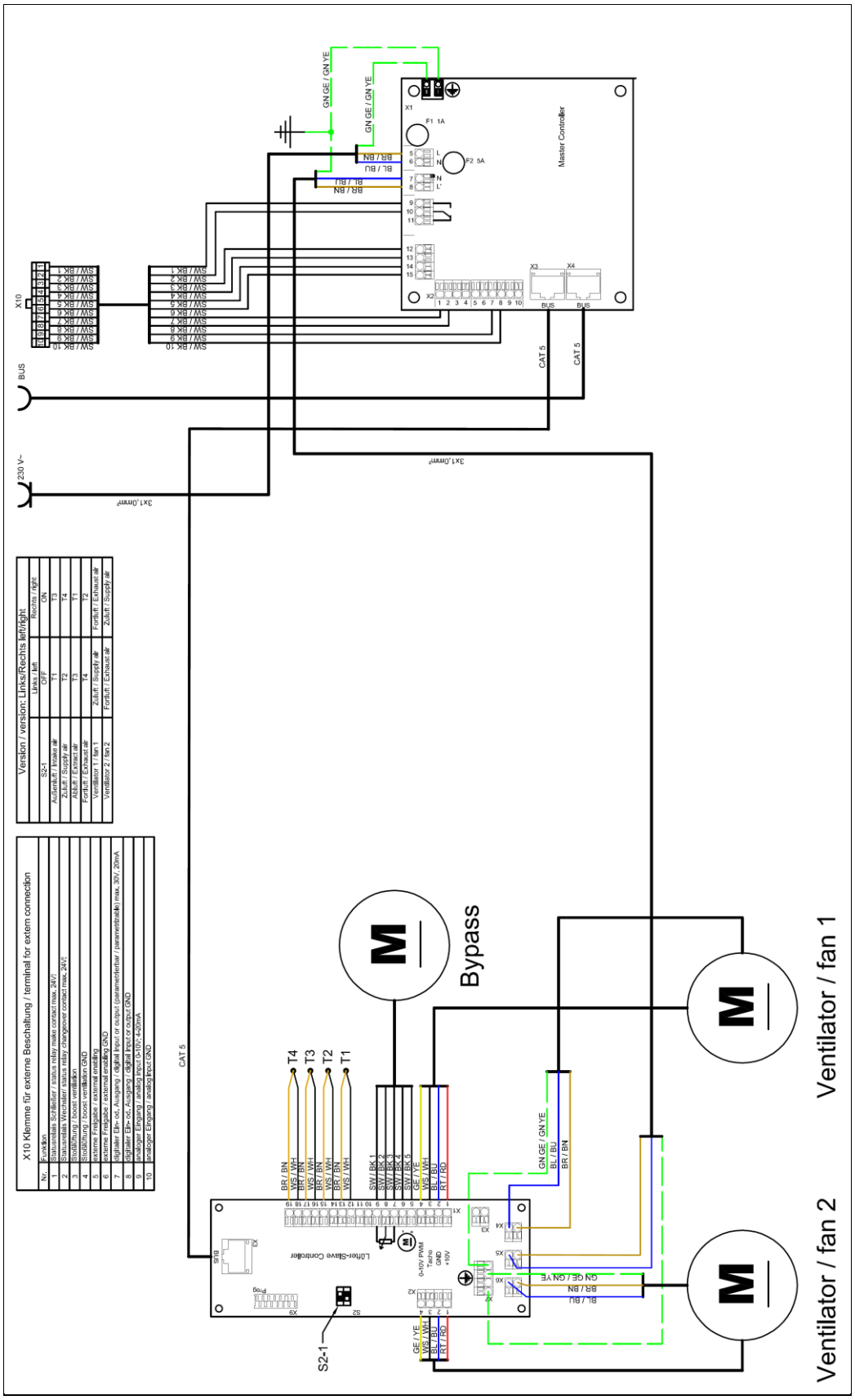
Below is an overview of failure or problems are shown without a message.

Problem / failure	Reason	Control / Action
Everything out	Power supply	Check the fuse at the control board. Is the fuse O.K., than the board is faulty.
	No power supply	Power supply has failed.
High supply air temperatures in summer	Bypass will be closed	Check setting of temperature.
Unusual noises	Bearing of the fan is faulty	Replace the fan.
	Slurping noise – Siphon is empty – Siphon does not close	Fill the siphon. Mount the siphon new.
	Whistling noise – somewhere is an air gap	Caulk the air gap.
Condensate leaking	condensate drain is blocked	Clean the condensate drain.
	Condensate from intake air and exhaust air flows back into the device	Mount a siphon before the device in the pipeline.
	Condensate pan under the heat exchanger damaged or missing	Replace the condensate pan.

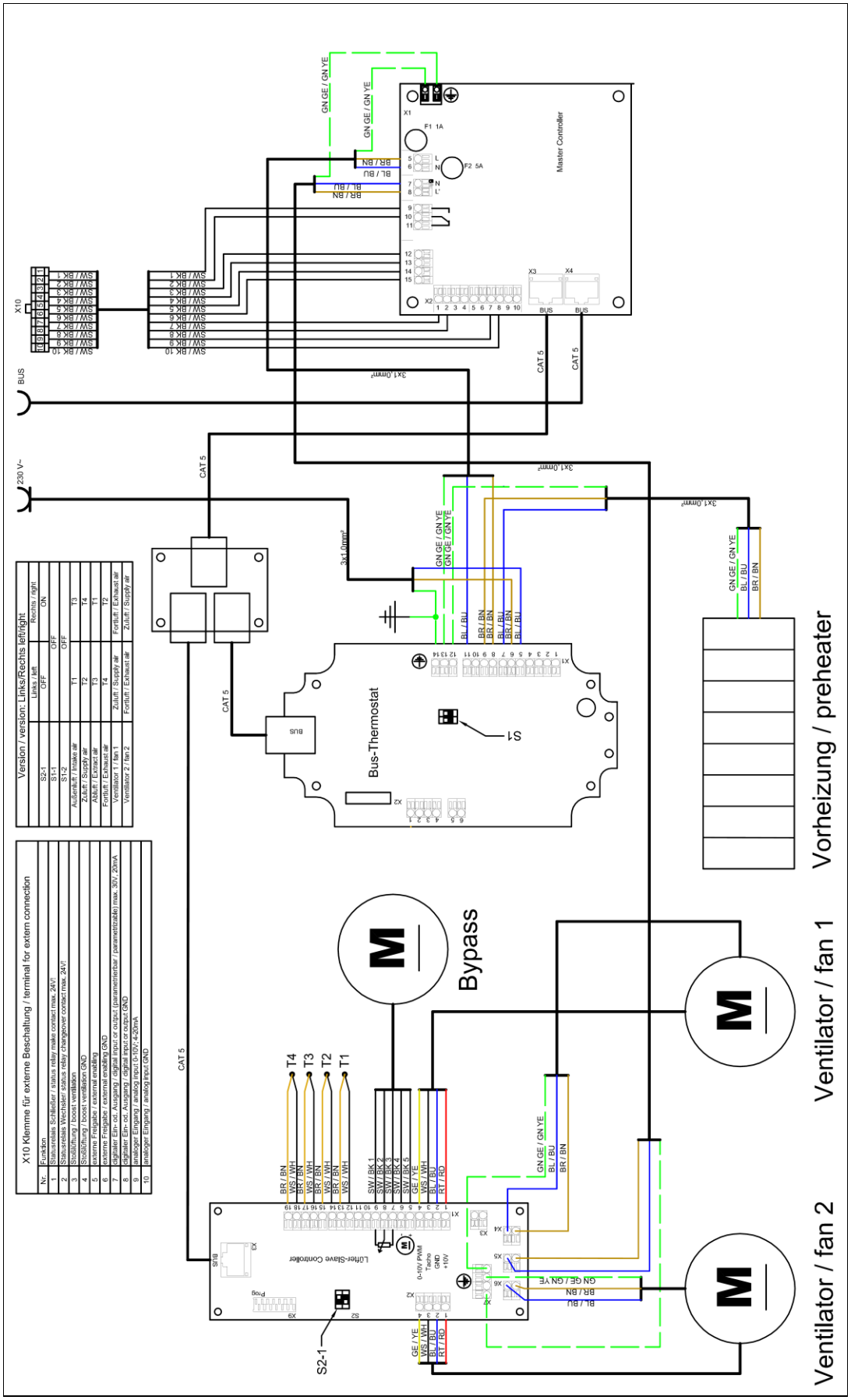
Table 6: Overview of failure or problems are shown without a message

Appendix

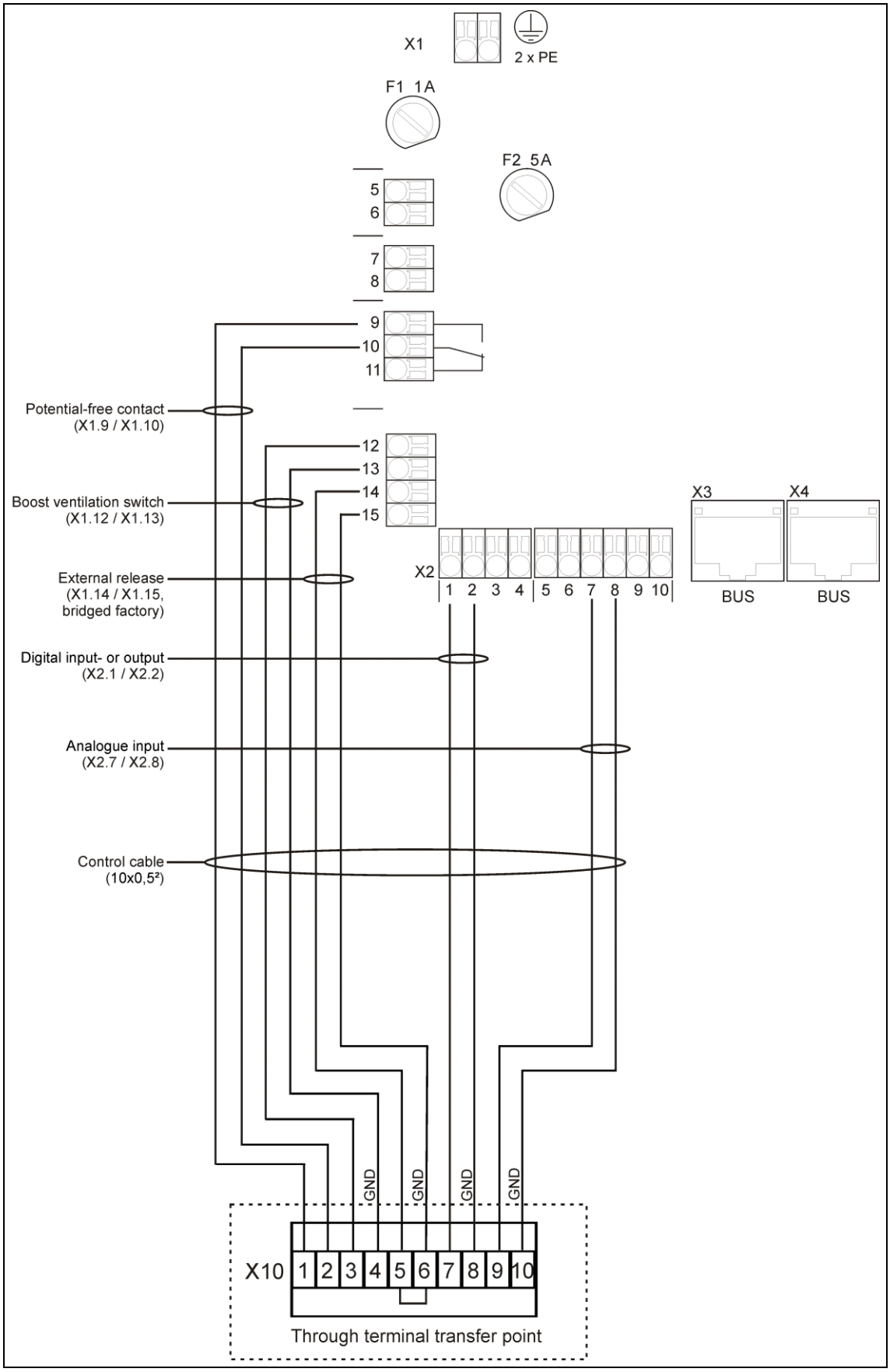
Appendix 1 Circuit diagram NOVUS



Appendix 2 Circuit diagram NOVUS with integrated defroster



Appendix 3 Terminal scheme of through terminal X10



Notes

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