



INSTRUCTION MANUAL

(Translation of the original instructions)



EN

HYDROBOX



FOR SAFE AND CORRECT USE, FOLLOW
THESE INSTRUCTIONS.
KEEP THEM FOR FUTURE REFERENCE.

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1 INTRODUCTION

The purpose of this installation manual is to provide instructions to competent personnel for the safe and efficient installation and start-up of the Hydrobox system. The manual is intended for competent plumbers and/or refrigeration technicians who have the appropriate qualifications for the installation of closed Hydrobox units for hot water production specific to the country in which they operate.

For safe and correct use, read this manual and the manual of the external unit before installing the Hydrobox.
Make sure to carry out periodic maintenance.
Make sure to follow local regulations.

1.1 GENERAL WARNINGS

WARNING

MECHANICAL COMPONENTS

THE HYDROBOX MUST NOT BE INSTALLED, DISASSEMBLED, MOVED, MODIFIED OR REPAIRED BY THE USER, WHO MUST INSTEAD CONTACT AN AUTHORISED INSTALLER OR TECHNICIAN. IMPROPER INSTALLATION OR MODIFICATION OF THE UNIT AFTER INSTALLATION MAY RESULT IN WATER LEAKAGE OR ELECTRIC SHOCK.

THE HYDROBOX MUST BE PLACED ON A SOLID SURFACE THAT CAN SUPPORT ITS WEIGHT WHEN THE DEVICE IS CHARGED TO AVOID EXCESSIVE NOISE OR VIBRATION.

WARNING

ELECTRICAL COMPONENTS

ALL ELECTRICAL WORK MUST BE CARRIED OUT BY A QUALIFIED TECHNICIAN IN ACCORDANCE WITH LOCAL REGULATIONS AND THE INSTRUCTIONS GIVEN IN THIS MANUAL.

THE UNIT IS POWERED BY CONNECTING IT TO THE EXTERNAL UNIT.

WIRING MUST BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT NATIONAL REGULATIONS. CONNECTIONS MUST BE MADE SAFELY AND NO VOLTAGE MUST BE PRESENT AT THE TERMINALS.

GROUND THE UNIT PROPERLY.

WARNING

KEEP CHILDREN AND PETS AWAY FROM THE HYDROBOX.

DO NOT CLIMB ON THE UNITS.

DO NOT TOUCH THE SWITCHES WITH WET HANDS.

DO NOT PLACE CONTAINERS FILLED WITH LIQUID ON THE HYDROBOX. LEAKS OR SPILLS ON THE HYDROBOX COULD RESULT IN DAMAGE TO THE UNIT AND/OR FIRE.

DO NOT PLACE HEAVY OBJECTS ON THE HYDROBOX.

USE CLEAN WATER COMPLYING WITH LOCAL QUALITY STANDARDS FOR THE PRIMARY CIRCUIT.

THE HYDROBOX MUST BE PLACED INDOORS TO MINIMISE HEAT LOSS.

THE HYDROBOX MUST BE PROTECTED AGAINST FROST.

THE LENGTH OF THE PRIMARY CIRCUIT'S HYDRAULIC PIPING BETWEEN THE INTERNAL UNIT AND THE EXTERNAL UNIT MUST BE KEPT AS SHORT AS POSSIBLE TO REDUCE HEAT LOSS.

REMOVE AS MUCH AIR AS POSSIBLE FROM THE HYDRAULIC CIRCUIT.

IF IT IS NECESSARY TO INTERRUPT THE POWER SUPPLY TO THE HYDROBOX OR TO SWITCH OFF THE SYSTEM FOR AN EXTENDED PERIOD, THE WATER MUST BE DRAINED.

1.2 TECHNICAL DATA

		Without touch panel	With touch panel
Overall unit (cm)		600 x 475 x 250	580 x 480 x 360
Safety devices Hydraulic circuit (primary)	Pressure relief valve	0.3 MPa (3 bar)	
Safety devices Electrical resistance	Manual reset thermostat	92°C	
Electrical characteristics	Power supply	~/N, 230 V, 50 Hz	
Electrical resistance (optional*)	Power supply	3~, 230 V, 50 Hz	
	Capacity	3 x 3 kW	
	Current	13 A	
Limits of use	Water temperature	20 – 60°C	
	Ambient temperature	10 – 30°C	
	Maximum pressure	0.3 MPa (3 bar)	
Sound power level		32 db(A)	
(*) If the electrical resistance is installed, the circulation pump is a Grundfos UPMXL 25-125 180			

TAB. 1 (Technical specifications)

1.3 NAME OF FULL VERSION MAIN COMPONENTS

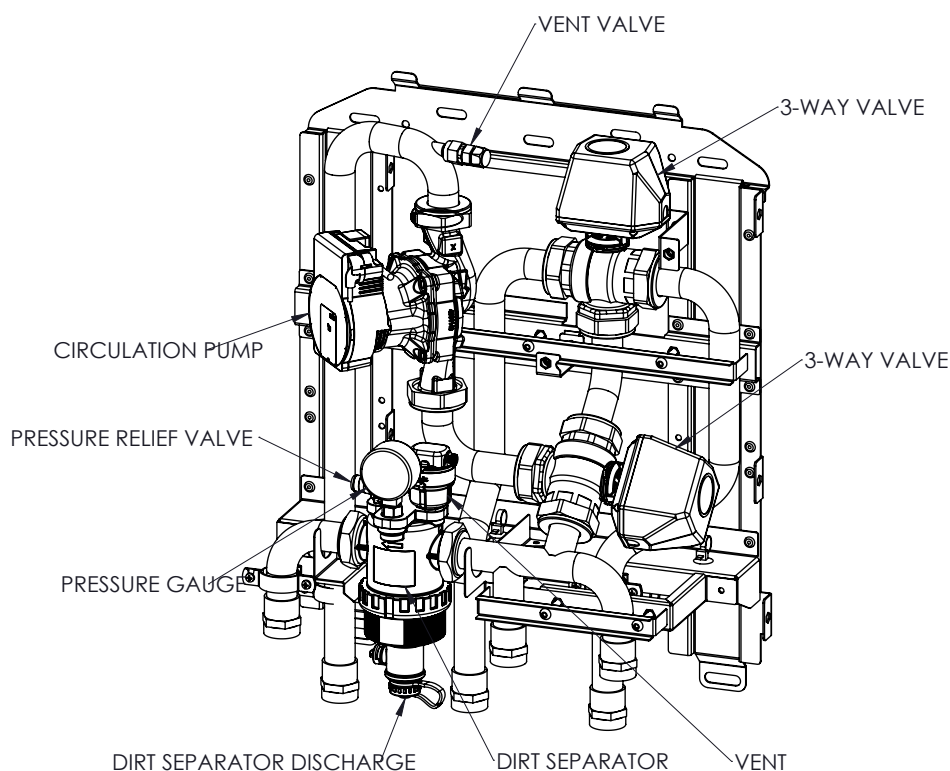


FIG. 1 (Name of main components)

1.4 NAME OF HYDROBOX BASIC VERSION MAIN COMPONENTS

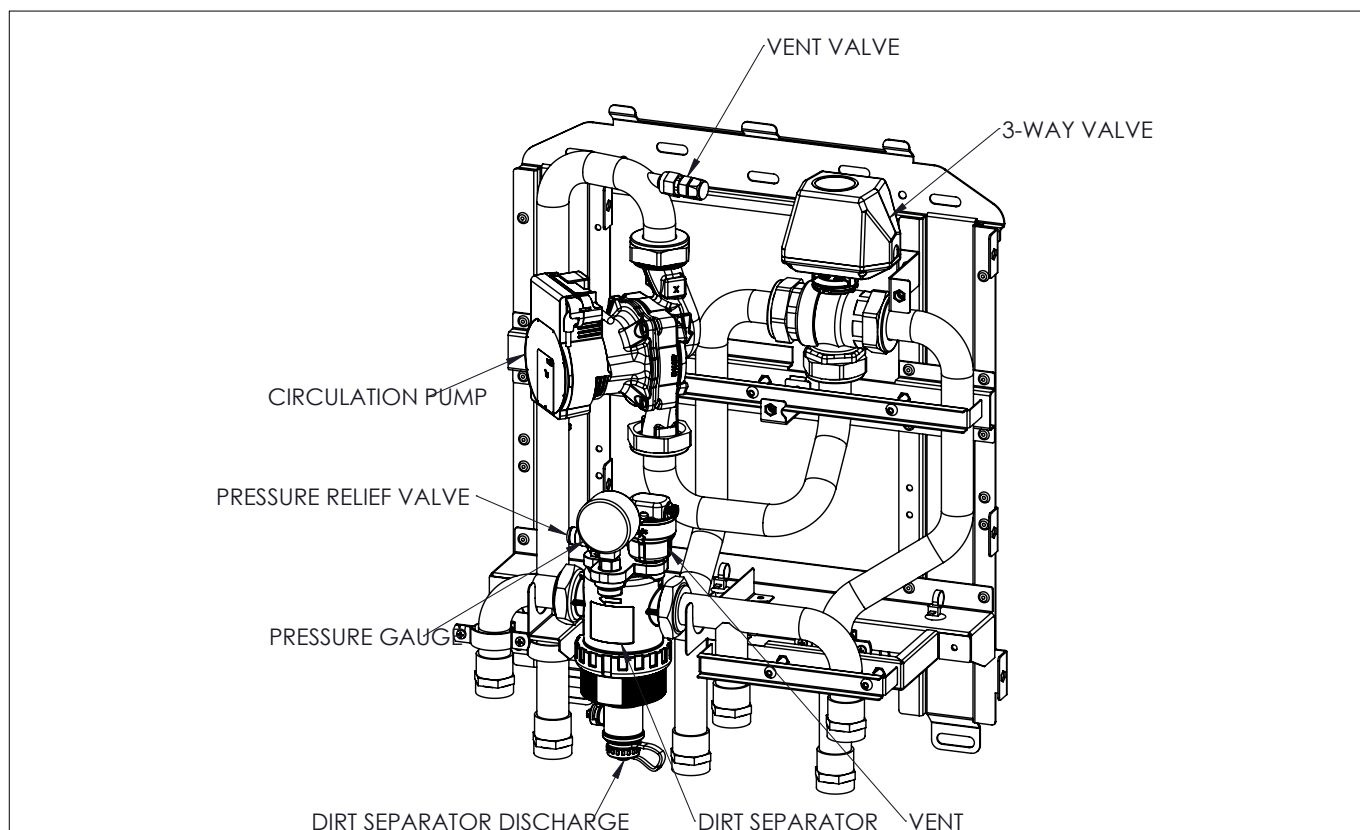


FIG. 2 (Name of main components)

1.5 NAME OF HYDROBOX DIRECT VERSION MAIN COMPONENTS

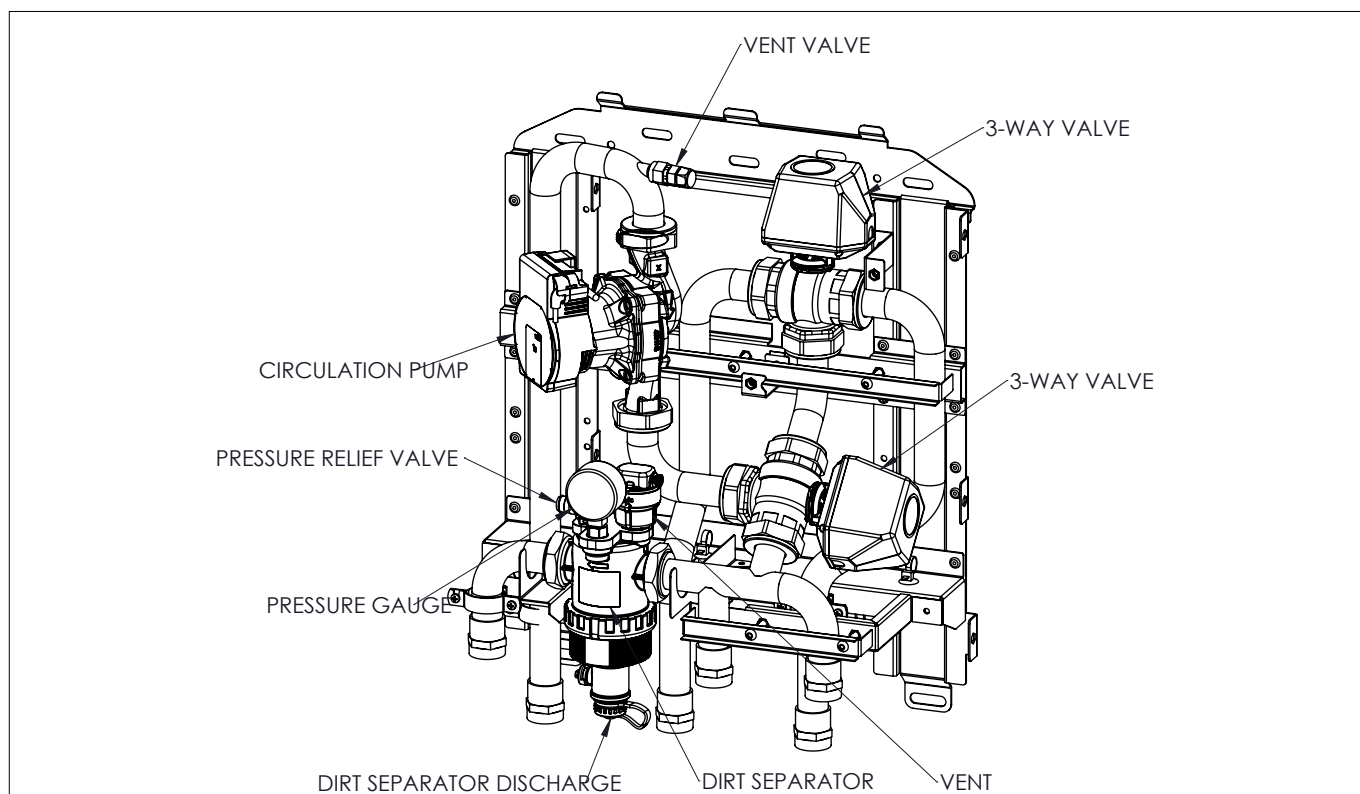


FIG. 3 (Name of main components)

1.6 NAME OF ELECTRICAL AND OPTIONAL COMPONENTS

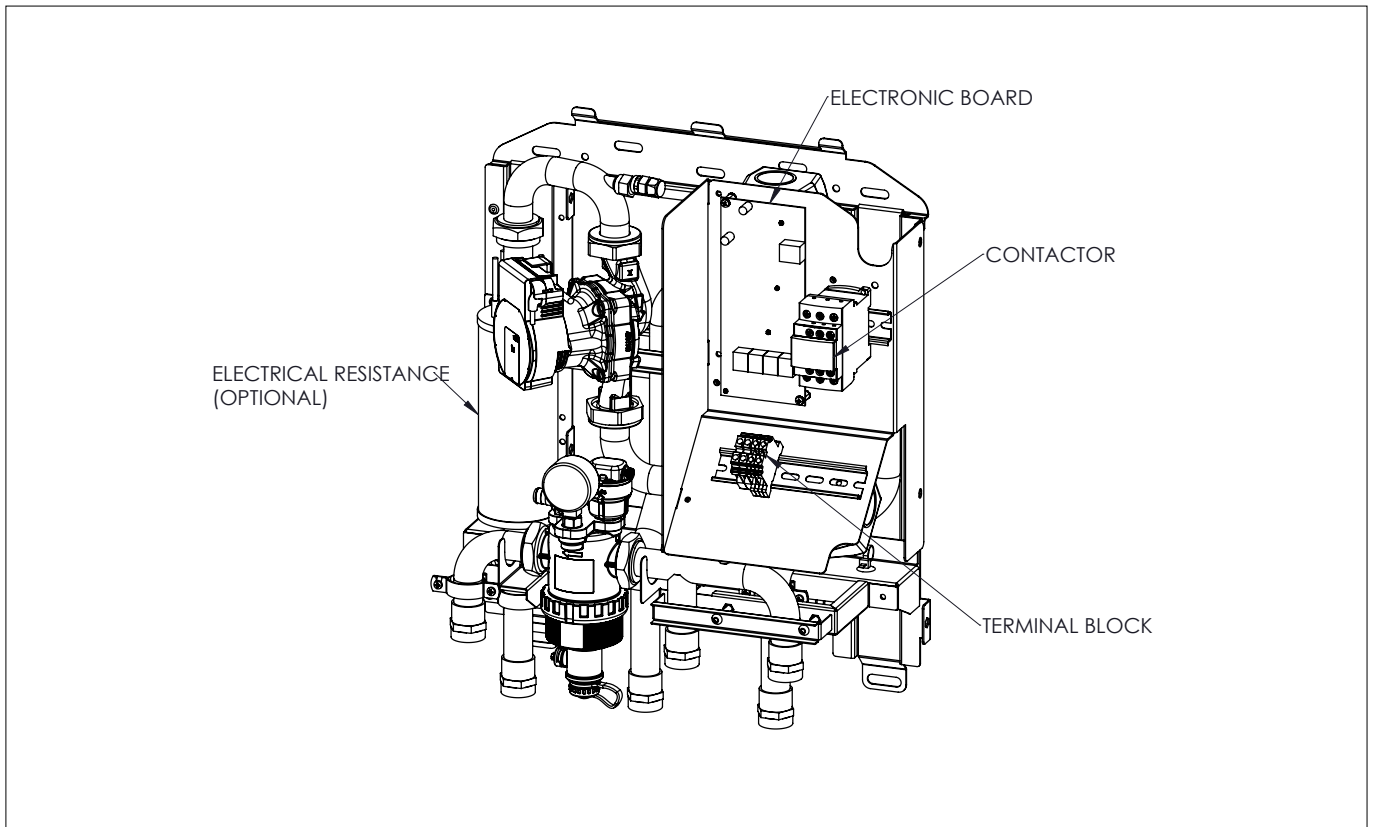


FIG. 4 (Name of main components)



⚠ WARNING

RESISTANCE AND CONTACTOR ARE OPTIONAL. THE ELECTRONIC BOARD AND TERMINAL BLOCKS ARE INCLUDED IN ALL THREE VERSIONS.

1.7 DIMENSIONS OF HYDROBOX VERSION WITHOUT TOUCH PANEL

1.7.1 DIMENSIONS OF HYDROBOX WITHOUT TOUCH PANEL

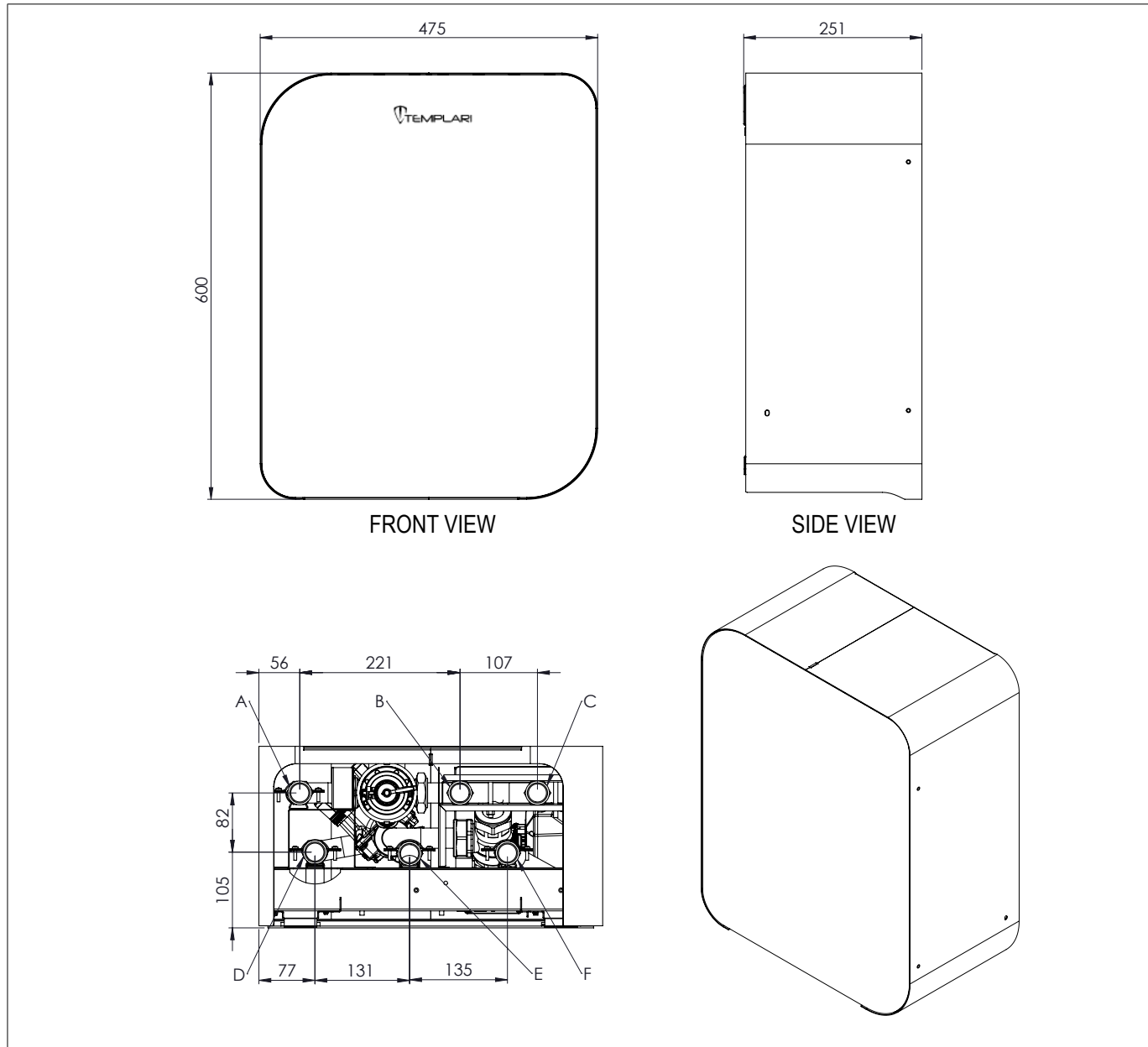


FIG. 5 (Dimensions of version without touch panel and bottom view)

Ref.	PIPE DESCRIPTION	FITTING DIMENSION
A	External unit return	Fitting Ø1"
B	System return	Fitting Ø1"
C	DHW return	Fitting Ø1"
D	External unit inlet	Fitting Ø1"
E	System technical water	Fitting Ø1"
F	Domestic hot water (DHW)	Fitting Ø1"

TAB. 2 (Connection dimensions for Hydrobox version without touch panel)

1.7.2 DIMENSIONS OF HYDROBOX WITH TOUCH PANEL

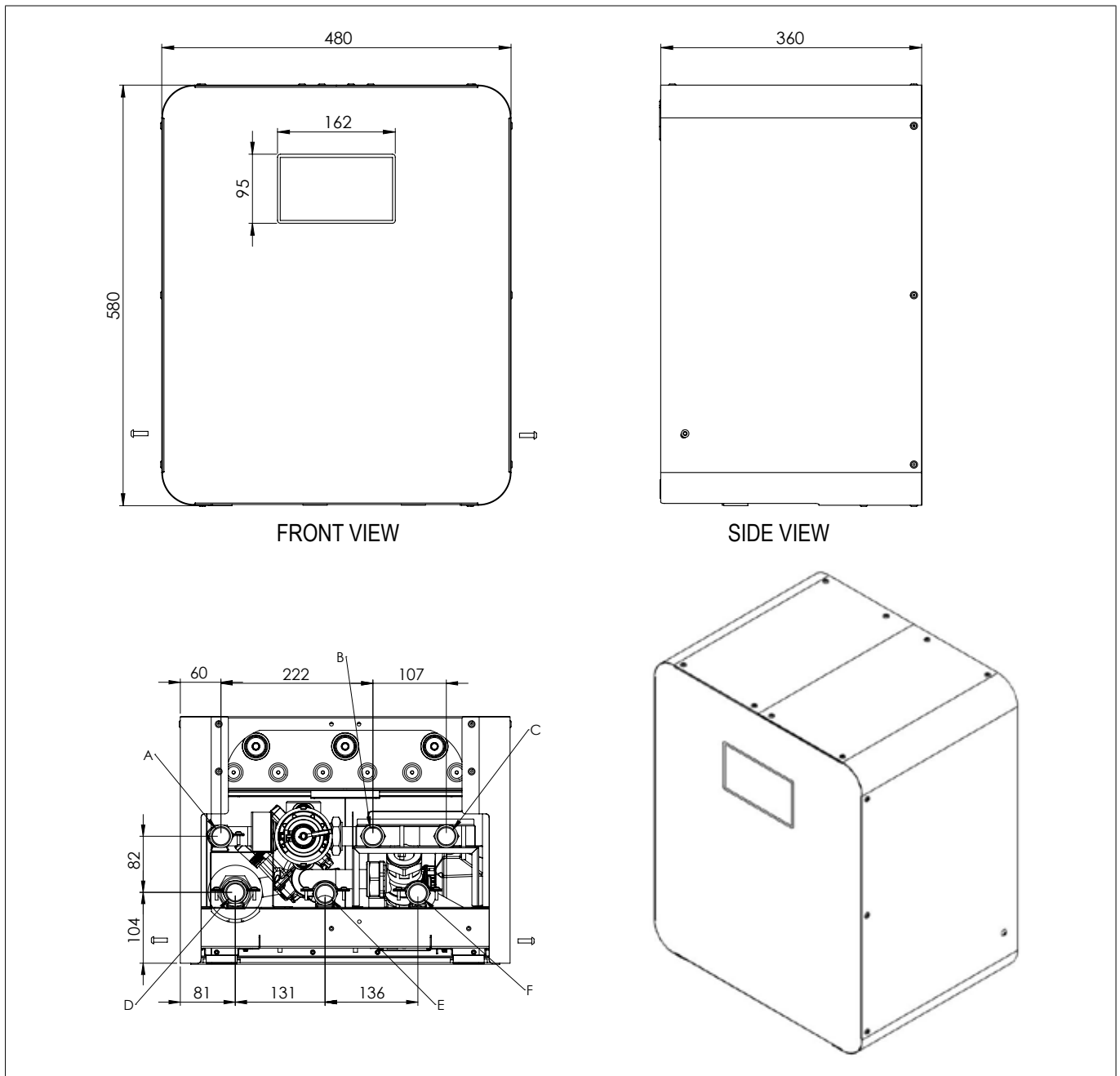


FIG. 6 (Dimensions of version with touch panel and bottom view)

Ref.	PIPE DESCRIPTION	FITTING DIMENSION
A	External unit return	Fitting Ø1"
B	System return	Fitting Ø1"
C	DHW return	Fitting Ø1"
D	External unit inlet	Fitting Ø1"
E	System technical water	Fitting Ø1"
F	Domestic hot water (DHW)	Fitting Ø1"

TAB. 3 (Connection dimensions for Hydrobox version with touch panel)

2 HYDRAULIC CIRCUIT DIAGRAMS

2.1 FULL VERSION HYDRAULIC CIRCUIT DIAGRAM

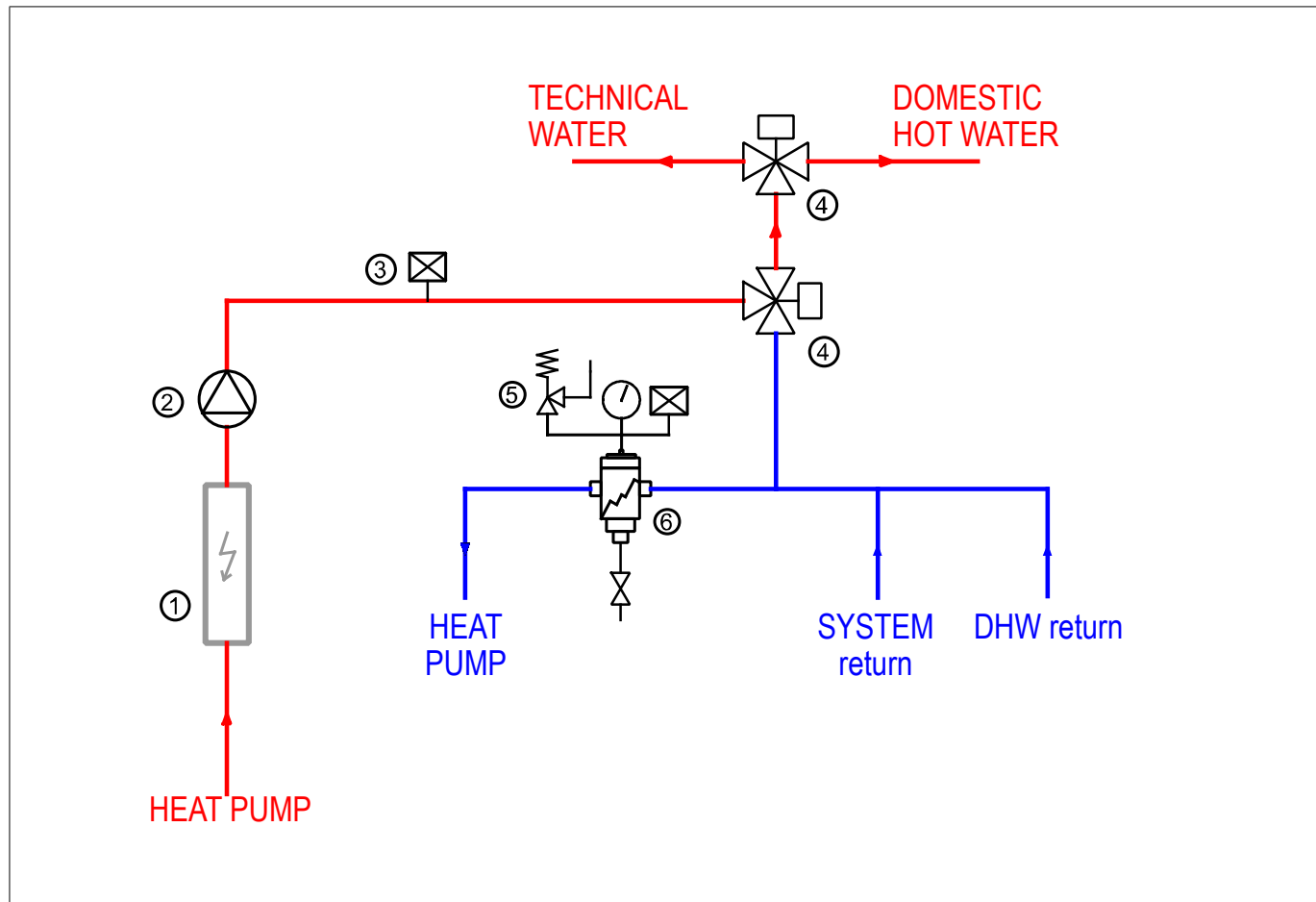


FIG. 7 (Full version hydraulic circuit diagram)

Ref.	
1	Electrical resistance (optional)
2	Circulation pump
3	Vent valve
4	3-way valve
5	Pressure relief valve
6	Magnetic dirt separator

2.2 BASIC VERSION HYDRAULIC CIRCUIT DIAGRAM

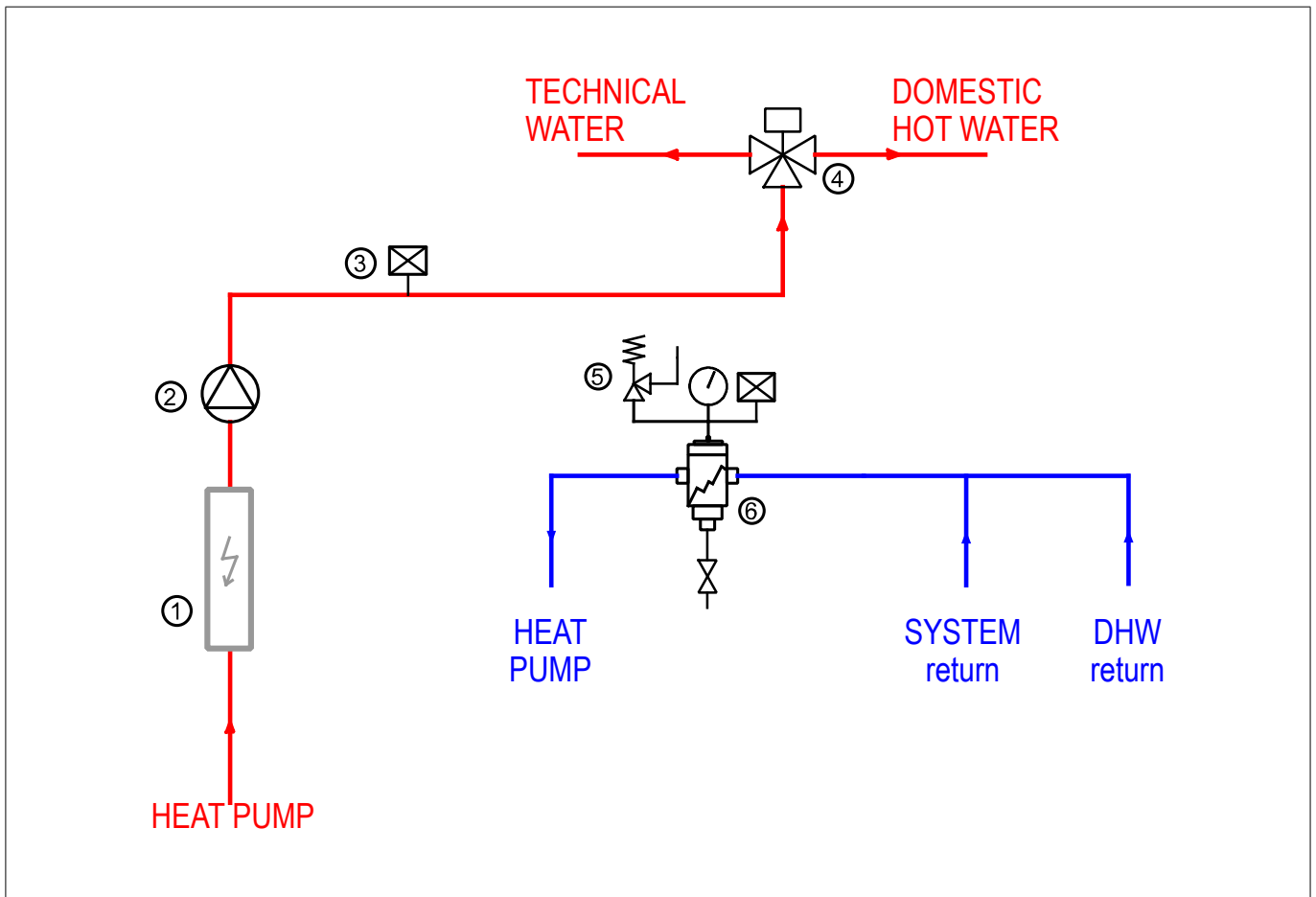


FIG. 8 (Basic version hydraulic circuit diagram)

Ref.	
1	Electrical resistance (optional)
2	Circulation pump
3	Vent valve
4	3-way valve
5	Pressure relief valve
6	Magnetic dirt separator

2.3 DIRECT VERSION HYDRAULIC CIRCUIT DIAGRAM

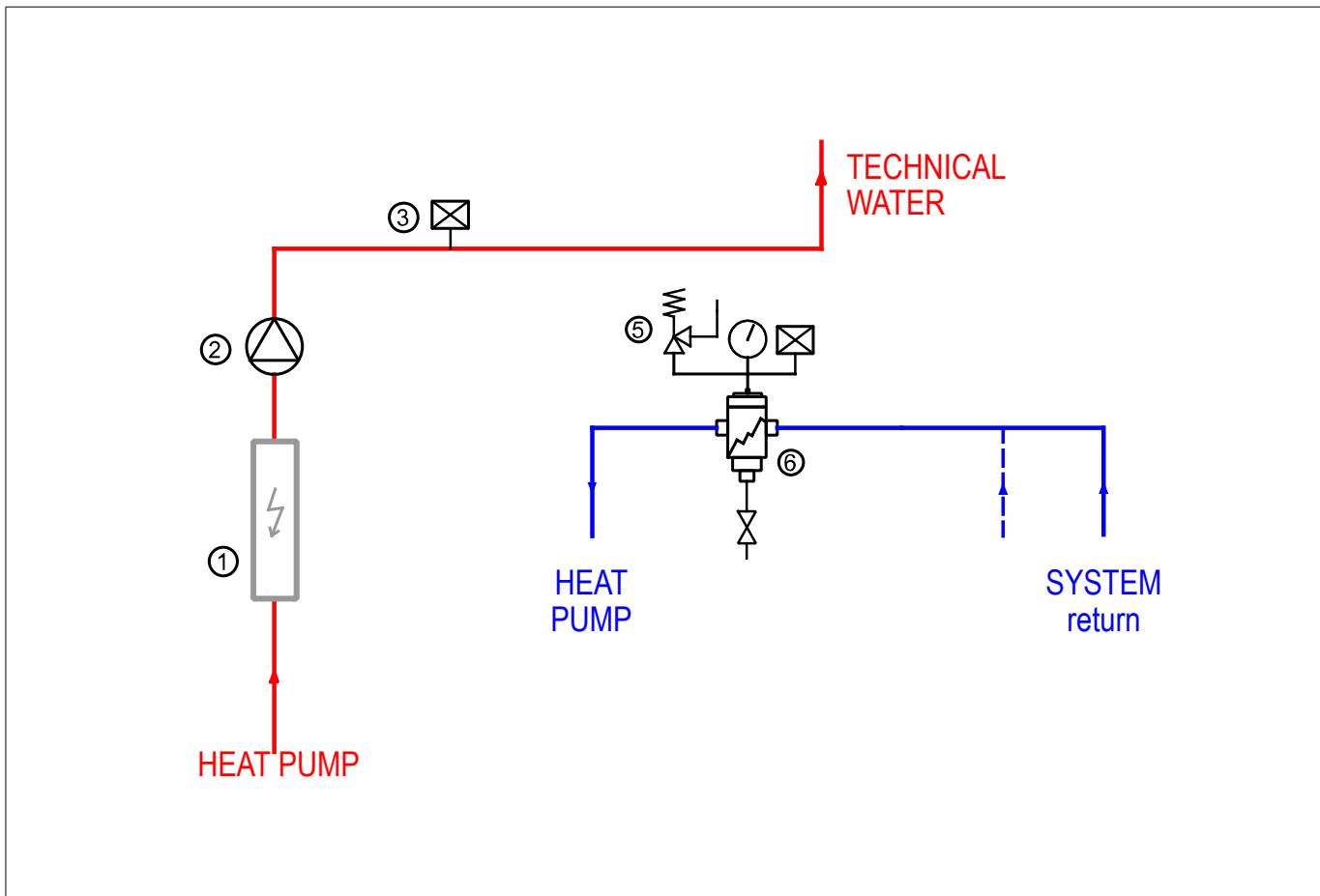


FIG. 9 (Direct version hydraulic circuit diagram)

Ref.	
1	Electrical resistance (optional)
2	Circulation pump
3	Vent valve
4	-
5	Pressure relief valve
6	Magnetic dirt separator

3 INSTALLATION

Preparation before installation and service

- prepare the relevant tools;
- prepare suitable protective equipment
- wait for the components to cool down before carrying out any maintenance work;
- after stopping operation of the system, switch off the power switch and unplug the power plug;
- wait 10 minutes before starting any work involving electrical components (wait for any residual voltage to discharge).

Safety precautions during service

- Do not work on electrical components with wet hands.
- Do not spill water or liquids on electrical components.
- If the circuit needs to be repaired or inspected without disconnecting the power supply, take great care not to touch any live components.

Transport and handling

Take care when transporting the Hydrobox to avoid bumping the unit body. Do not turn the Hydrobox unit upside down. Remove the protective packaging only when the Hydrobox is in its final location. This helps to protect the structure and the control panel.



⚠ WARNING

DO NOT MOVE OR LIFT THE HYDROBOX BY ITS PIPES

Suitable location

Before installation, the Hydrobox must be stored in a place protected from frost and weather. Units must NOT be stacked on top of each other.

- The Hydrobox must be installed indoors in a place protected from frost and weather.
- Install the Hydrobox in a place where it is not exposed to excessive water/humidity.
- The Hydrobox must be positioned on a flat wall that can support its weight when the device is charged.
- Take care to observe the minimum distances required for service access around and in front of the unit.
- Secure the Hydrobox so that it will not fall in the event of accidental impacts or earth tremors.
- Prevent local system pipes from exerting excessive stress on the Hydrobox pipes by fixing the latter to the wall.

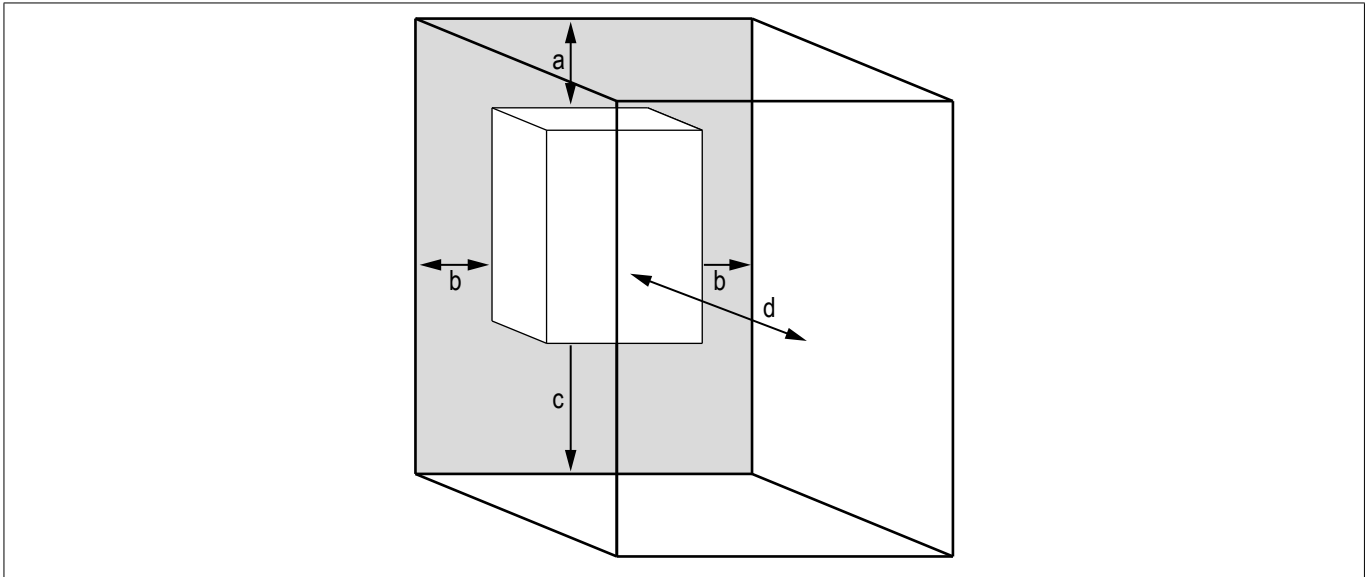


FIG. 10 (Minimum service access distances)

Parameter	Dimension (mm)
a	200
b	150
c	500
d	500

TAB. 4 (Minimum service access distances)

⚠ WARNING

SUFFICIENT SPACE MUST BE PROVIDED FOR THE INSTALLATION OF SUPPLY PIPES IN ACCORDANCE WITH NATIONAL AND LOCAL BUILDING REGULATIONS.

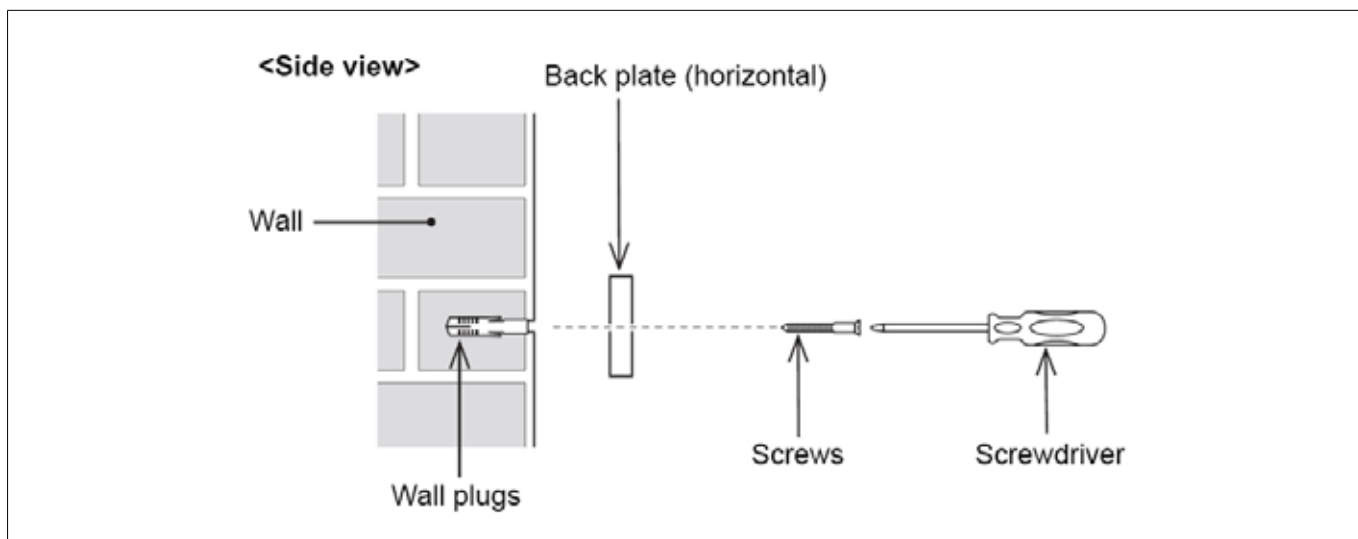
IF THE HYDROBOX NEEDS TO BE MOVED TO A NEW LOCATION, FULLY DISCHARGE IT BEFORE MOVING IT TO AVOID DAMAGING THE UNIT.

NOTE: DO NOT MOVE OR LIFT THE HYDROBOX BY ITS PIPES.



4 ASSEMBLY PROCEDURE FOR BOTH VERSIONS

1. Install the included accessory back plate

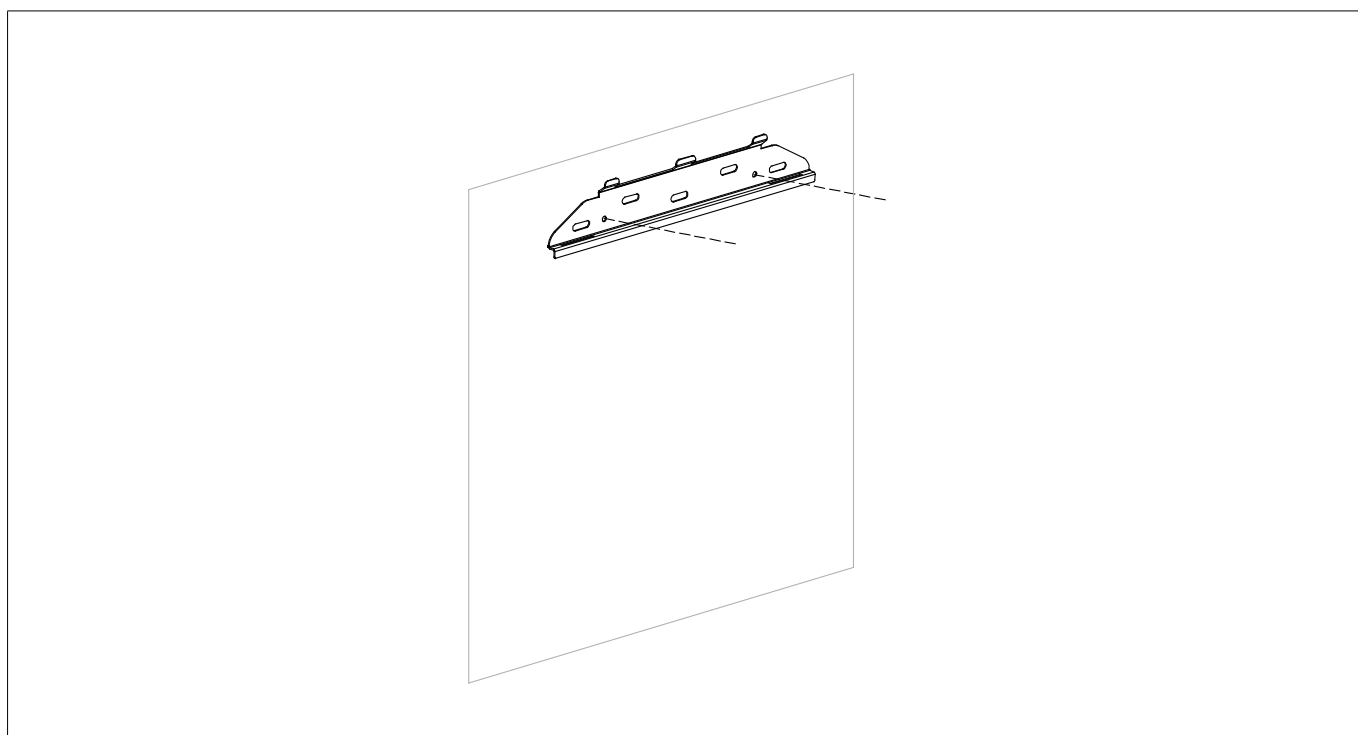


Correctly install the back plate with the notched profile located at the TOP.

The back plate has round or oval screw mounting holes.

To prevent the unit from detaching from the wall, choose the appropriate number of holes or hole positions and fix the back plate horizontally at a suitable point on the wall.

Ensure that the plate is correctly positioned horizontally.

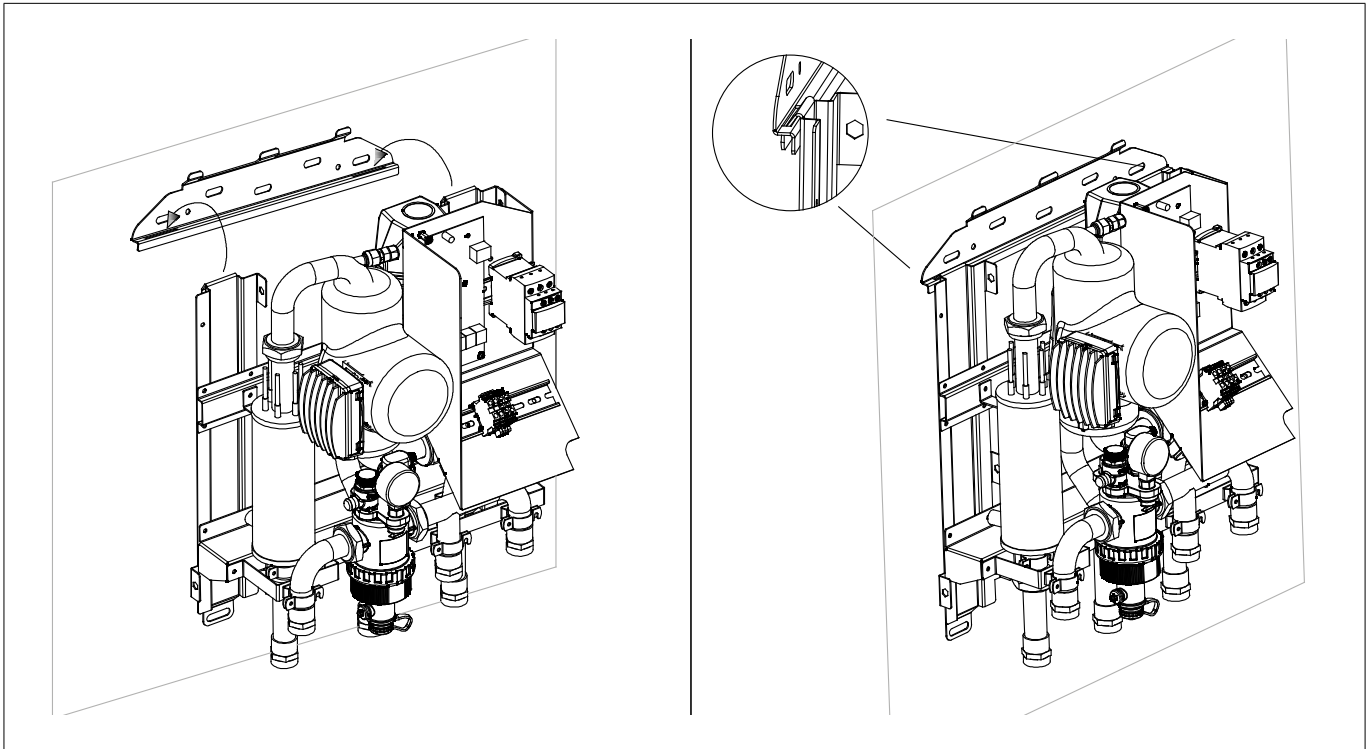


⚠ WARNING

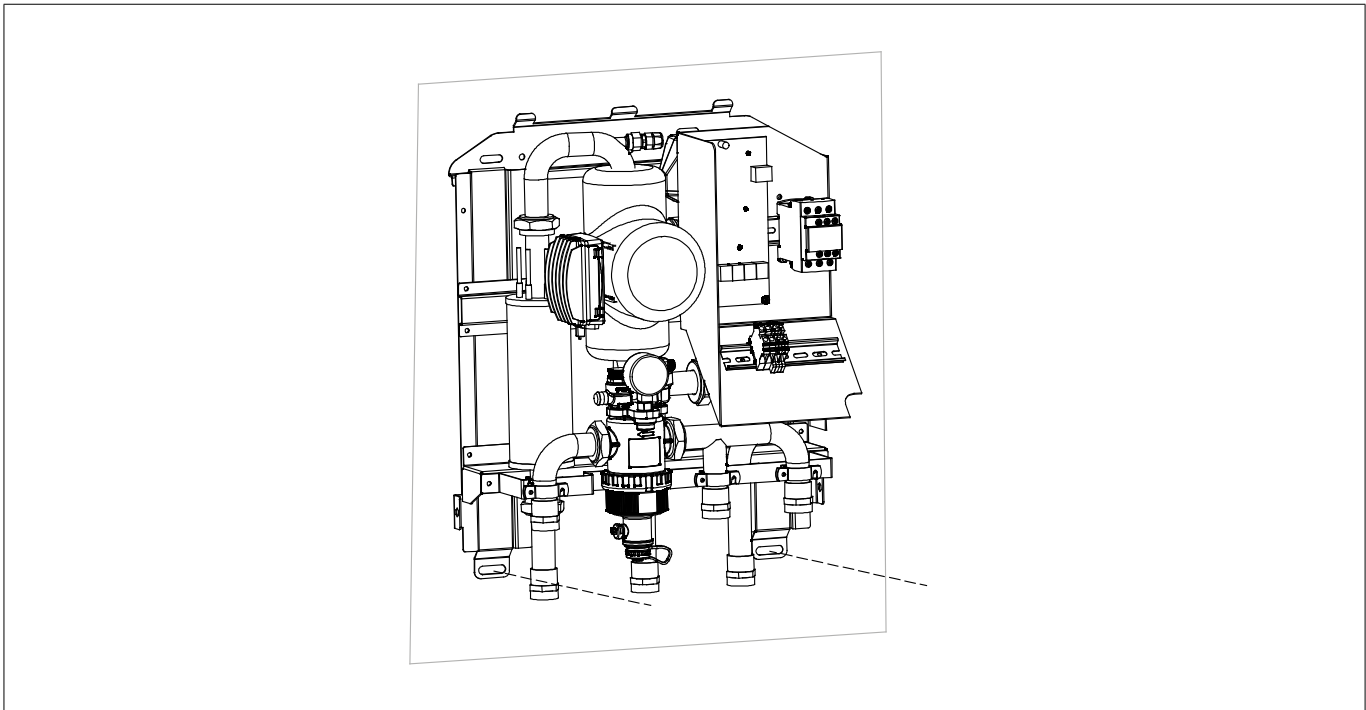
USE SCREWS AND WALL PLUGS COMPATIBLE WITH THE TYPE OF WALL [NOT SUPPLIED].

4.1 MOUNTING PROCEDURE FOR VERSION WITHOUT TOUCH PANEL

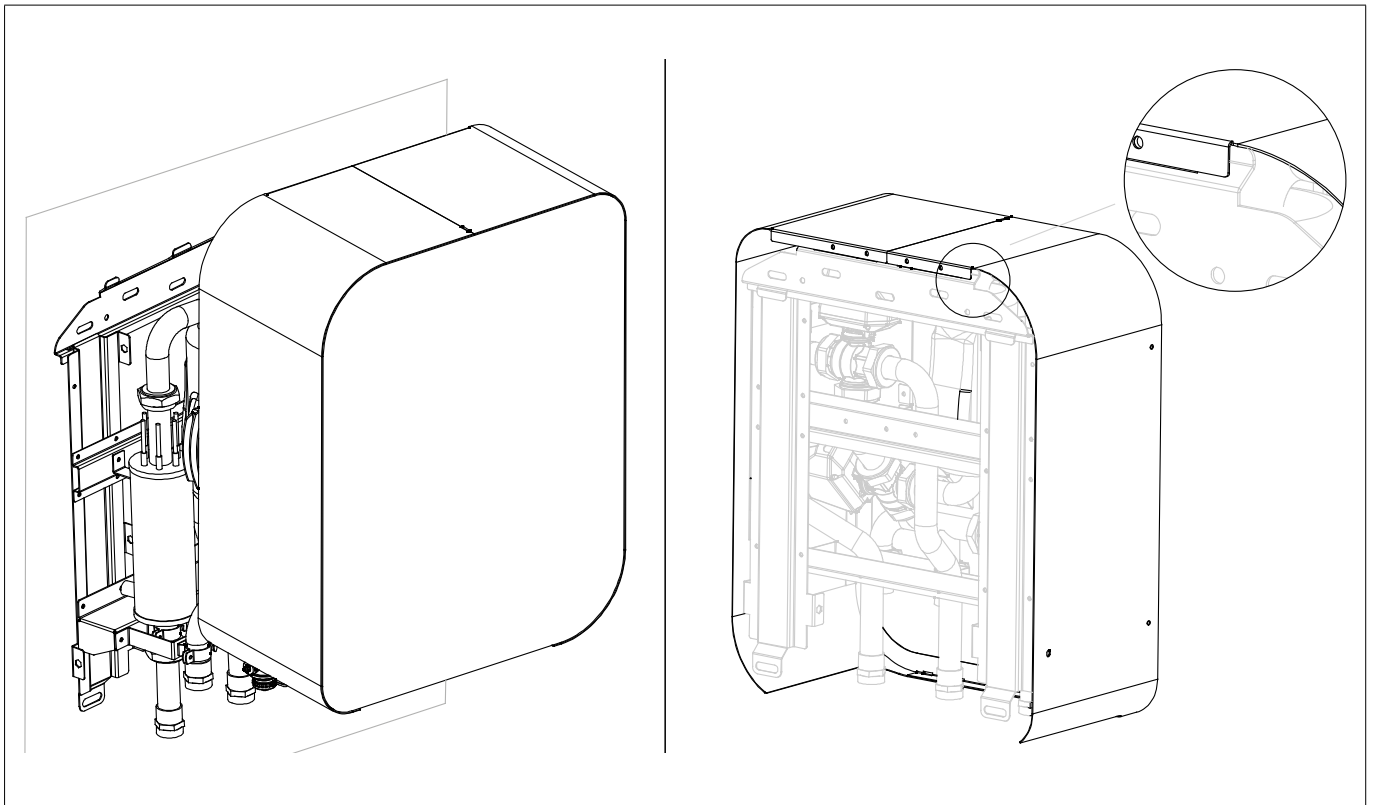
2. Fit the bracket into the slot on the back plate on the back of the Hydrobox



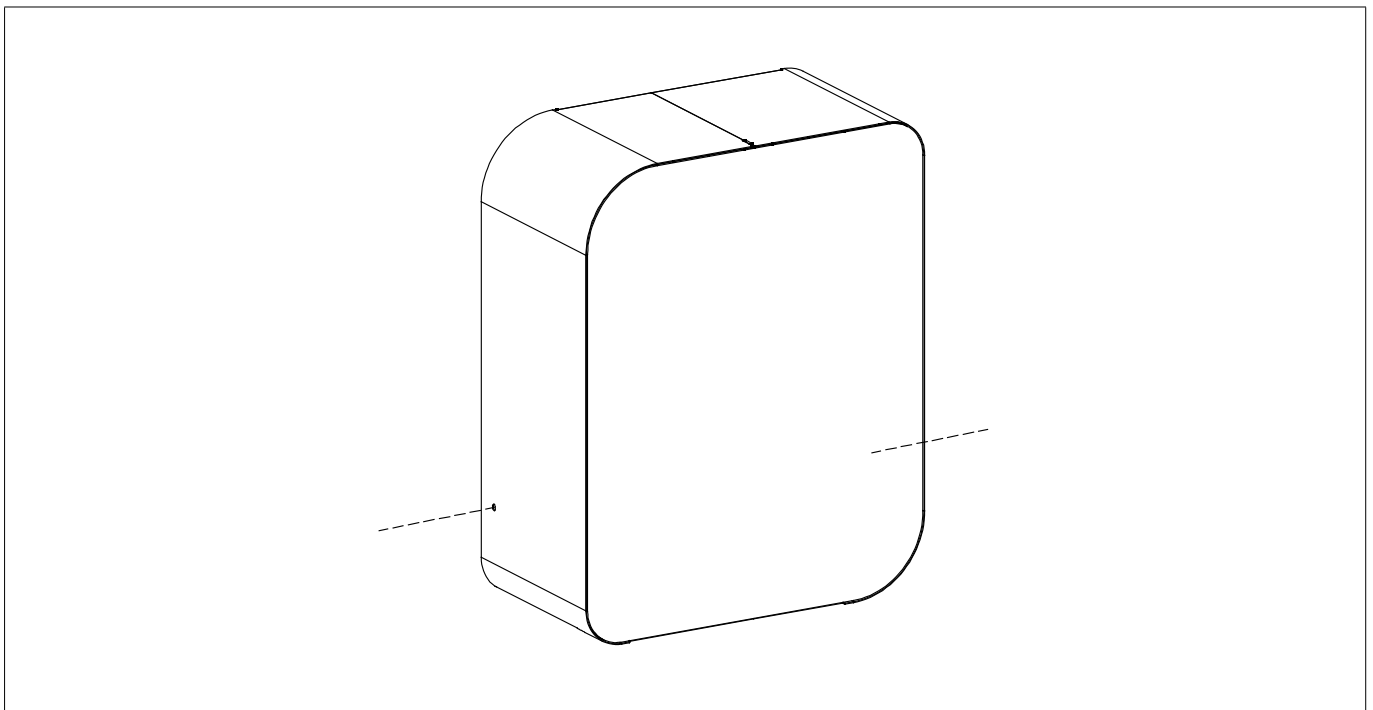
3. Fasten the unit to the wall with screws and wall plugs at the bottom



4. Clip the cover onto the back plate

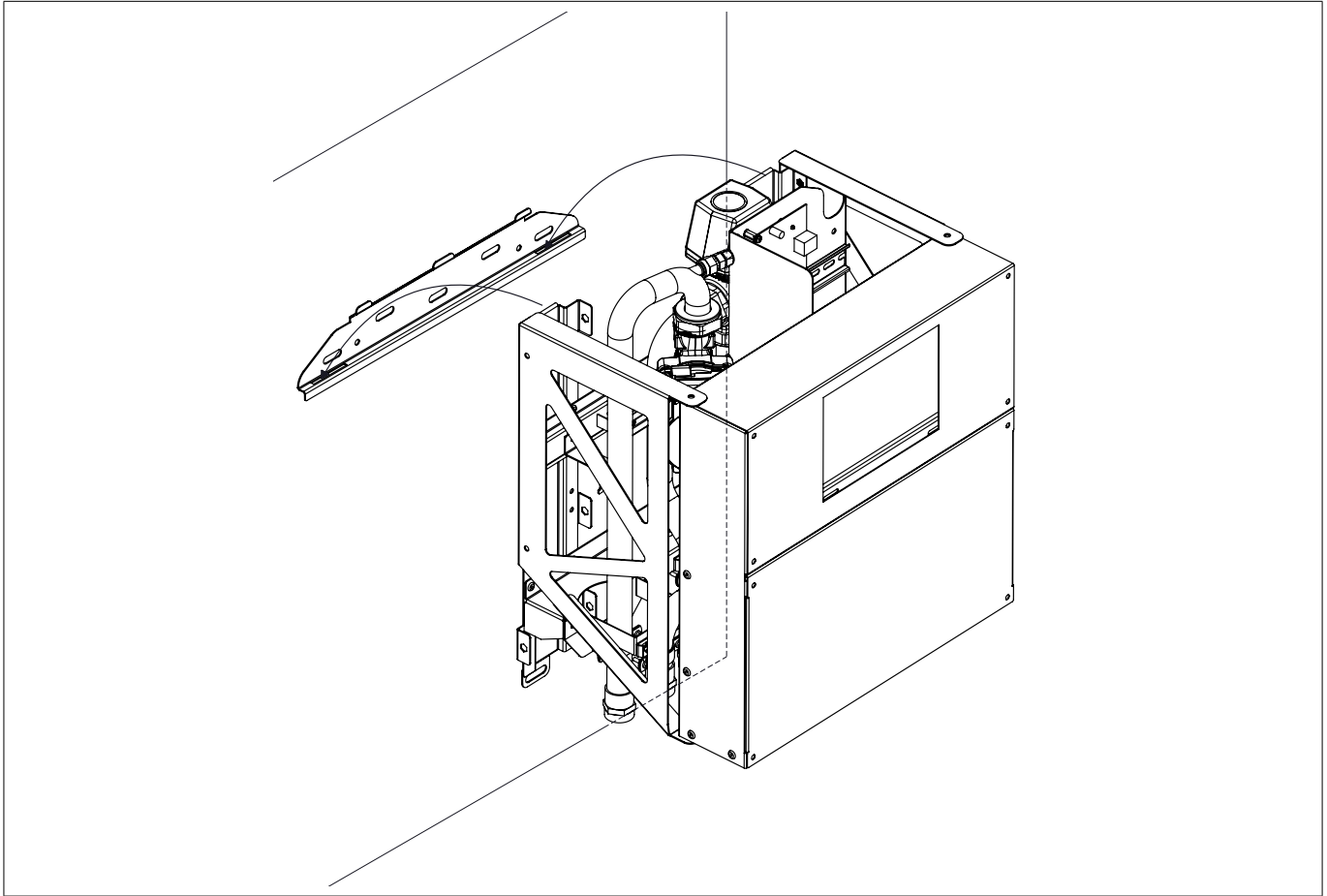


5. Fasten the cover with the supplied screws

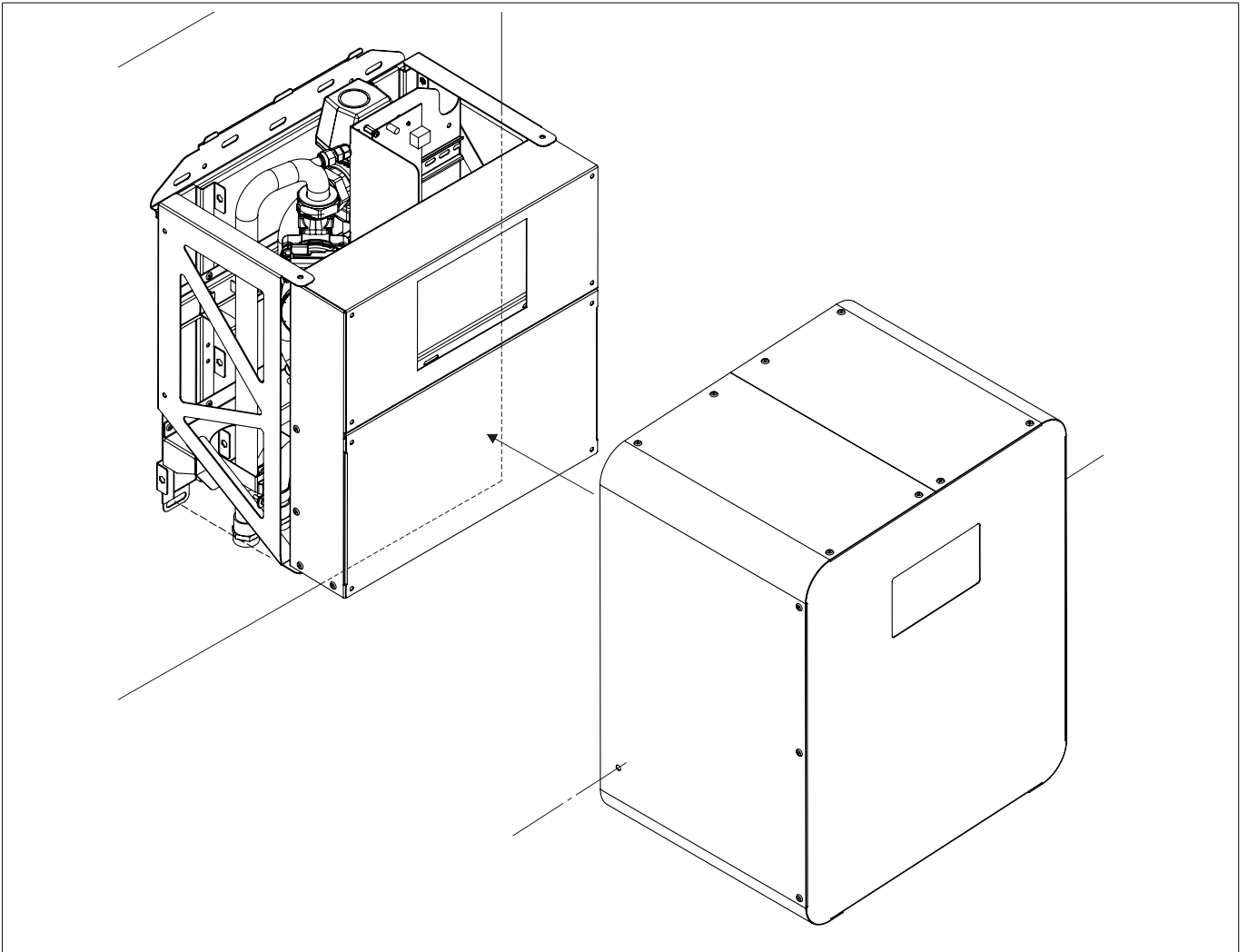


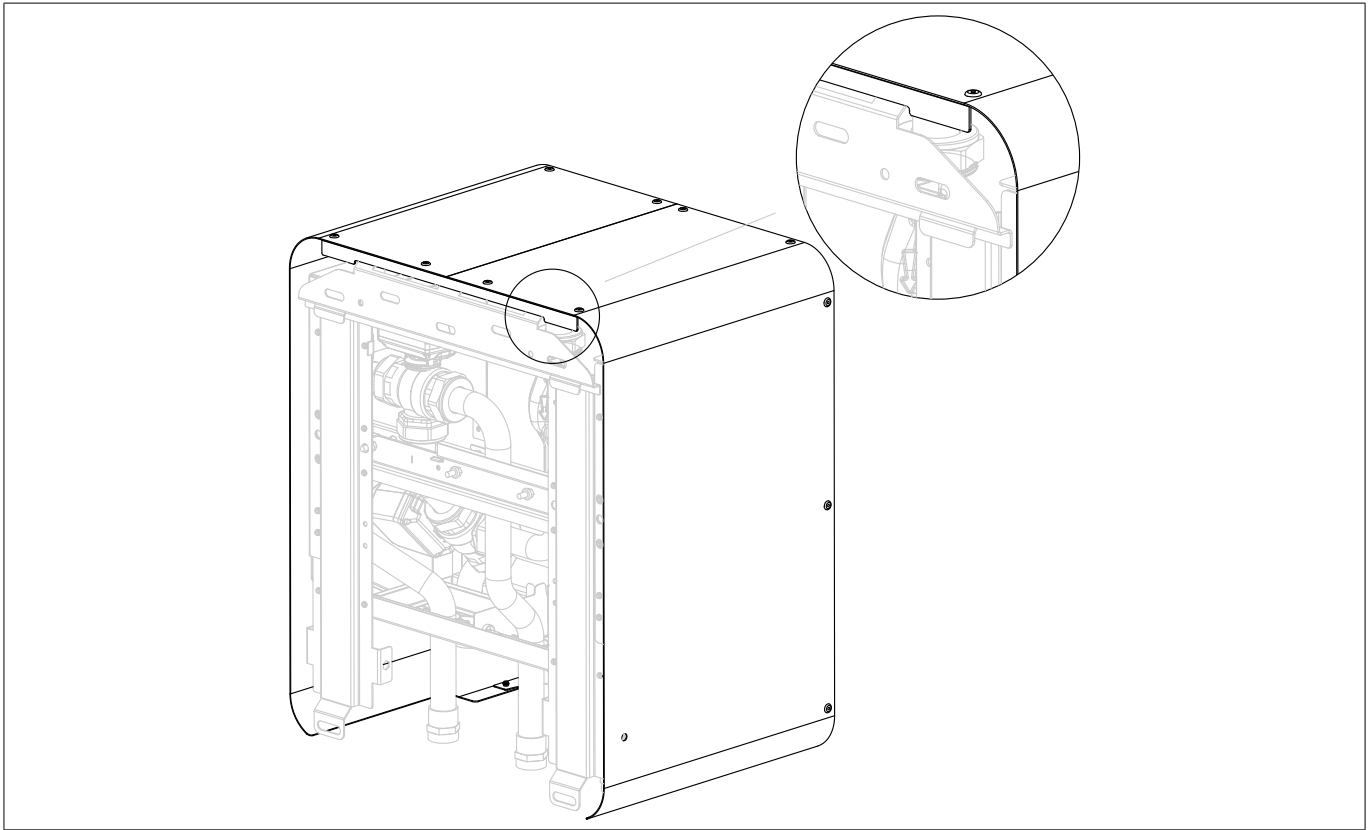
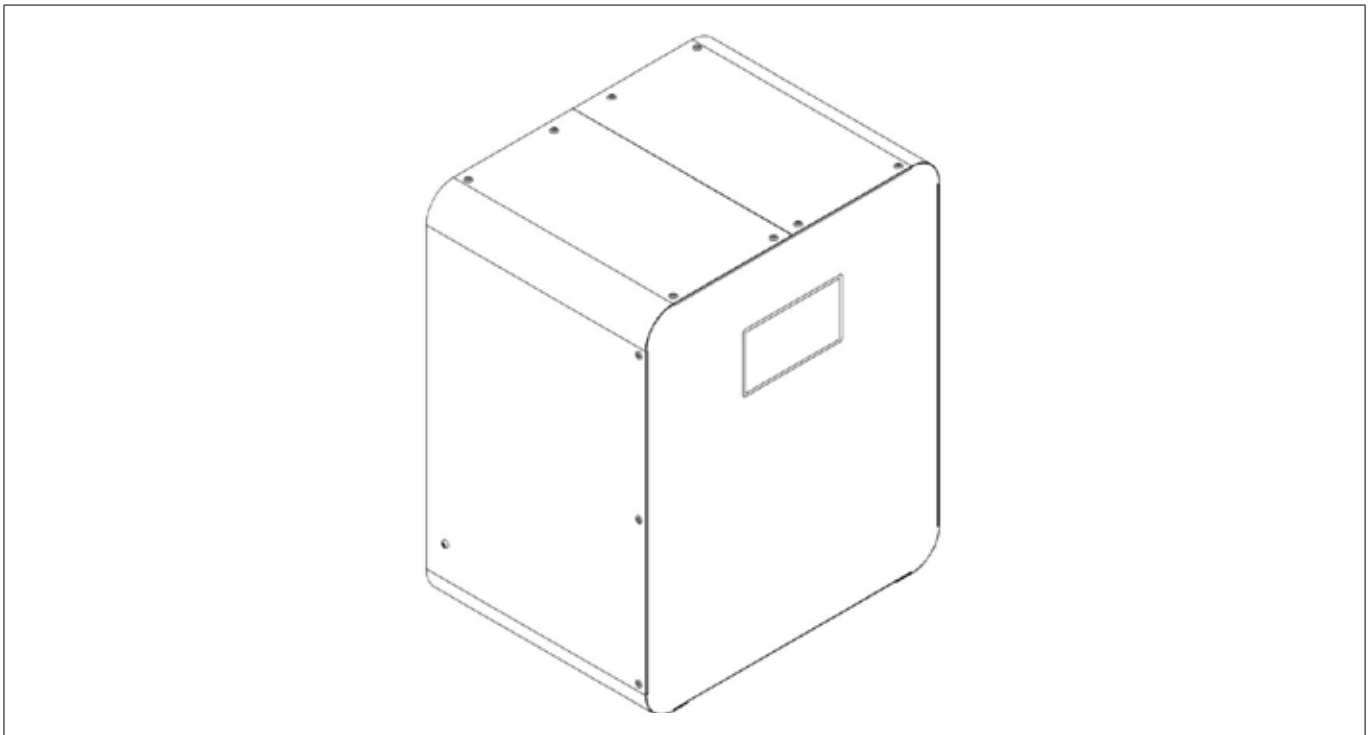
4.2 MOUNTING PROCEDURE FOR VERSION WITH TOUCH PANEL

2. Fit the bracket into the slot on the back plate on the back of the Hydrobox



3. Fasten the unit to the wall with screws and wall plugs at the bottom



4. Clip the cover onto the back plate**5. Fasten the cover with the supplied screws**

5 HYDRAULIC SYSTEM

During installation, check the operation of the following Hydrobox safety components to exclude any faults:

- Pressure relief valve;
- Expansion vessel pre-charge (gas charge pressure).

Pipes can reach high temperatures, so they must be insulated to prevent burns.

When connecting the pipes, ensure that there are no foreign objects such as debris or similar in the pipes.

The Hydrobox includes a pressure relief valve (see Figure). The installer **MUST**, under his own responsibility, connect a discharge pipe from this valve in accordance with local and national regulations.

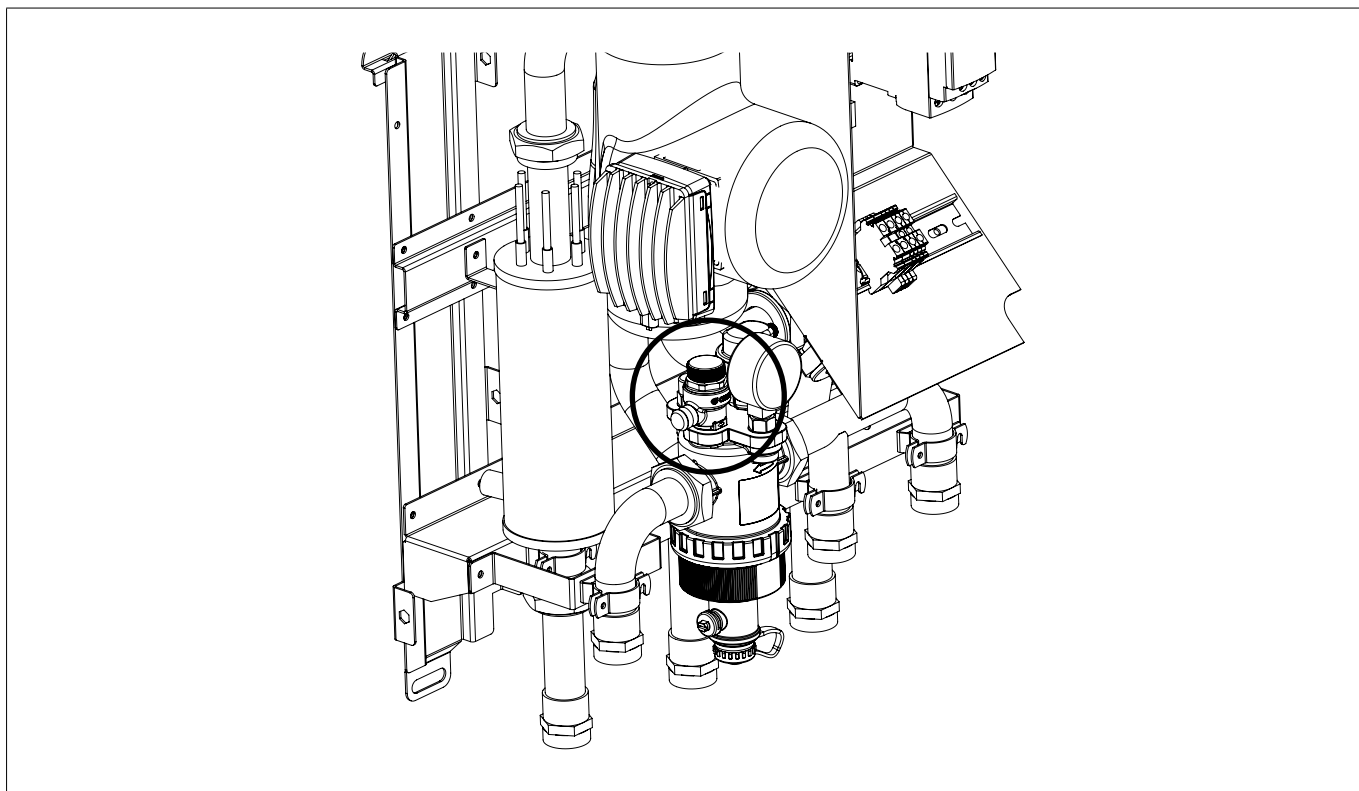


FIG. 11 (Figure caption)

Failure to comply with this measure will result in the pressure relief valve opening directly into the Hydrobox, causing serious damage to the product.

All pipes used must be able to withstand hot water supply. Pressure relief valves must NOT be used for any other purpose, and their outlets must terminate safely and appropriately in accordance with local regulatory requirements.

- To allow the Hydrobox to be drained, fit a shut-off valve on both the inlet and outlet pipes.
- Be sure to purge the filter after installation and the first few operating cycles. Then service the filter annually.
- All pressure relief valves must be connected to suitable discharge pipes in accordance with national regulations.
- All exposed water pipes must be insulated to prevent heat loss and condensation.
- Wherever possible, the hot and cold water pipes should not run close together in order to avoid unwanted heat transfer.

6 CONNECTING THE EXPANSION VESSEL

On the top of the magnetic dirt separator, there is an additional connector for connecting the expansion vessel. The Hydrobox is supplied with the outlet closed by a plastic cap, secured with a clip. To connect, remove the clip, remove the cap, insert the additional connector and secure it with the clip. The additional threaded connector is supplied with the Hydrobox, secured to the dirt separator with a clamp.

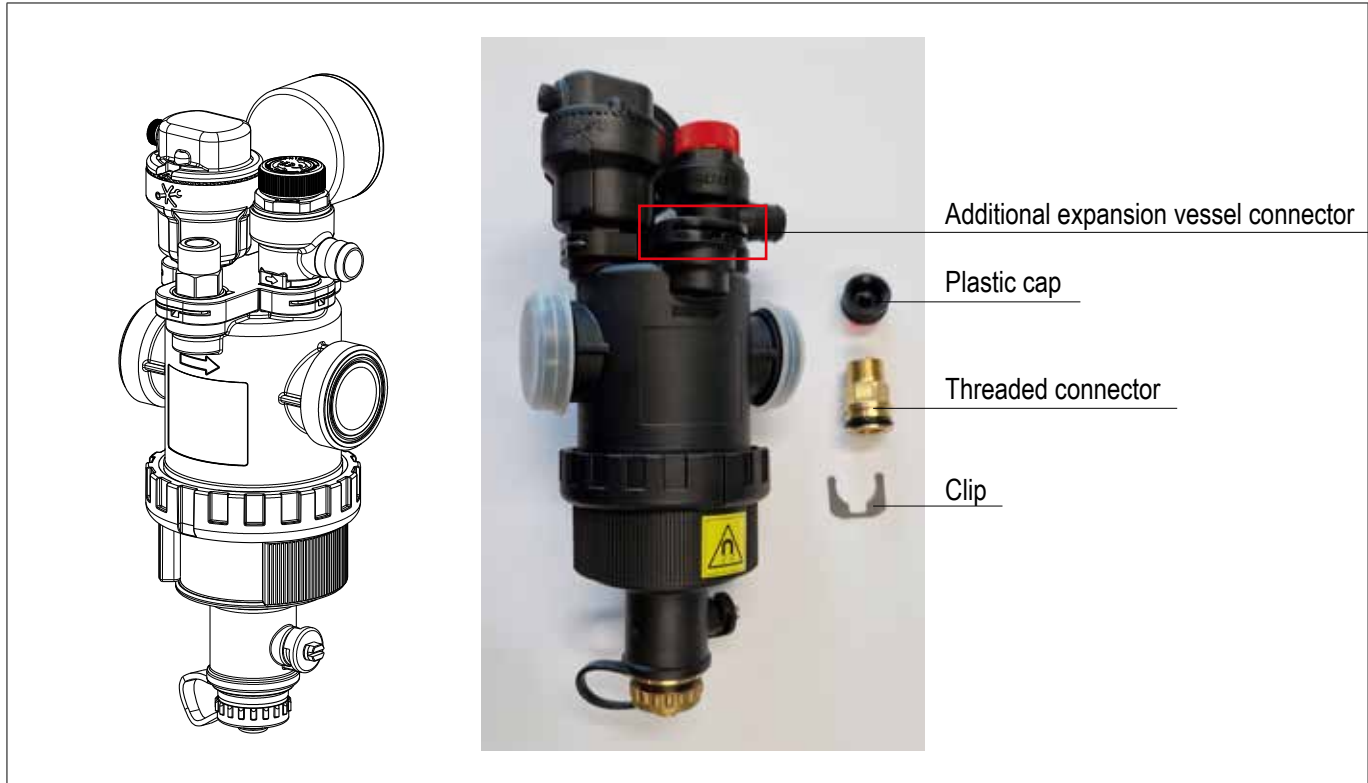
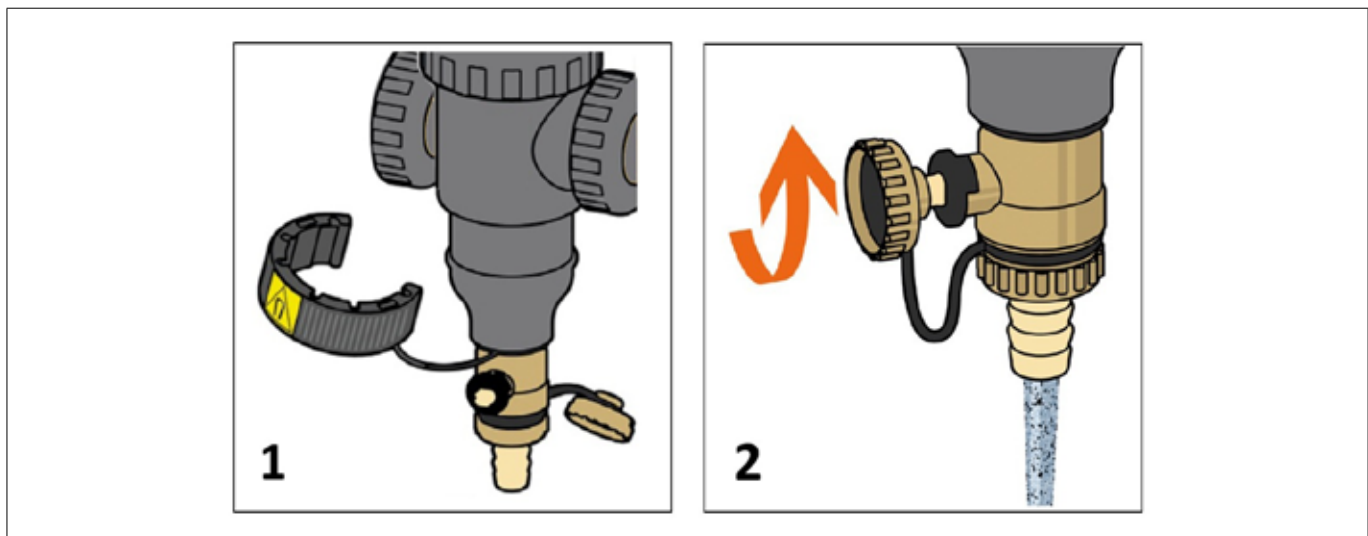


FIG. 12 (Figure caption)

6.1 CLEANING THE DIRT SEPARATOR

Remove the ring housing the magnets (1) and discharge any impurities, even while the system is running, using the tool provided (2).



7 PRESSURE DROPS

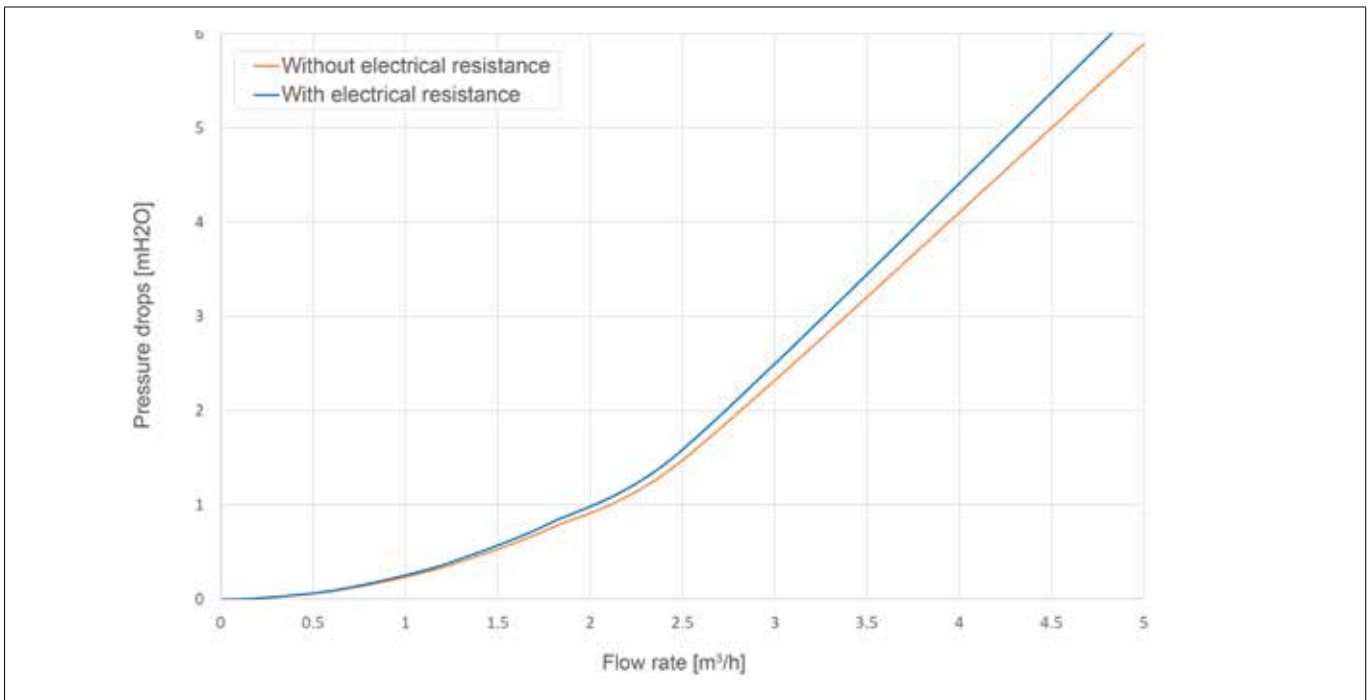


FIG. 13 (Hydrobox pressure drops)

7.1 CIRCULATION PUMP TECHNICAL DATA

7.1.1 GRUNDFOS UPMXL 25-125 180 CIRCULATION PUMP

Power supply voltage	VAC	230
Power supply frequency	Hz	50 / 60
Energy efficiency index	EEI	≤ 0.23
MAX. power input	W	180
MAX. current consumption	A	1.42
MAX. head	m	12.8
MIN. inlet pressure	bar	0.5

TAB. 5 (Technical specifications)

7.1.2 GRUNDFOS UPM10XL 25-125 180 CIRCULATION PUMP

Power supply voltage	VAC	230
Power supply frequency	Hz	50 / 60
Energy efficiency index	EEI	≤ 0.2
MAX. power input	W	100
MAX. current consumption	A	1.5
MAX. head	m	9.6
MIN. inlet pressure	bar	0.5

TAB. 6 (Technical specifications)

7.2 CIRCULATION PUMP CHARACTERISTIC CURVES

7.2.1 GRUNDFOS UPMXL 25-125 180 CIRCULATION PUMP

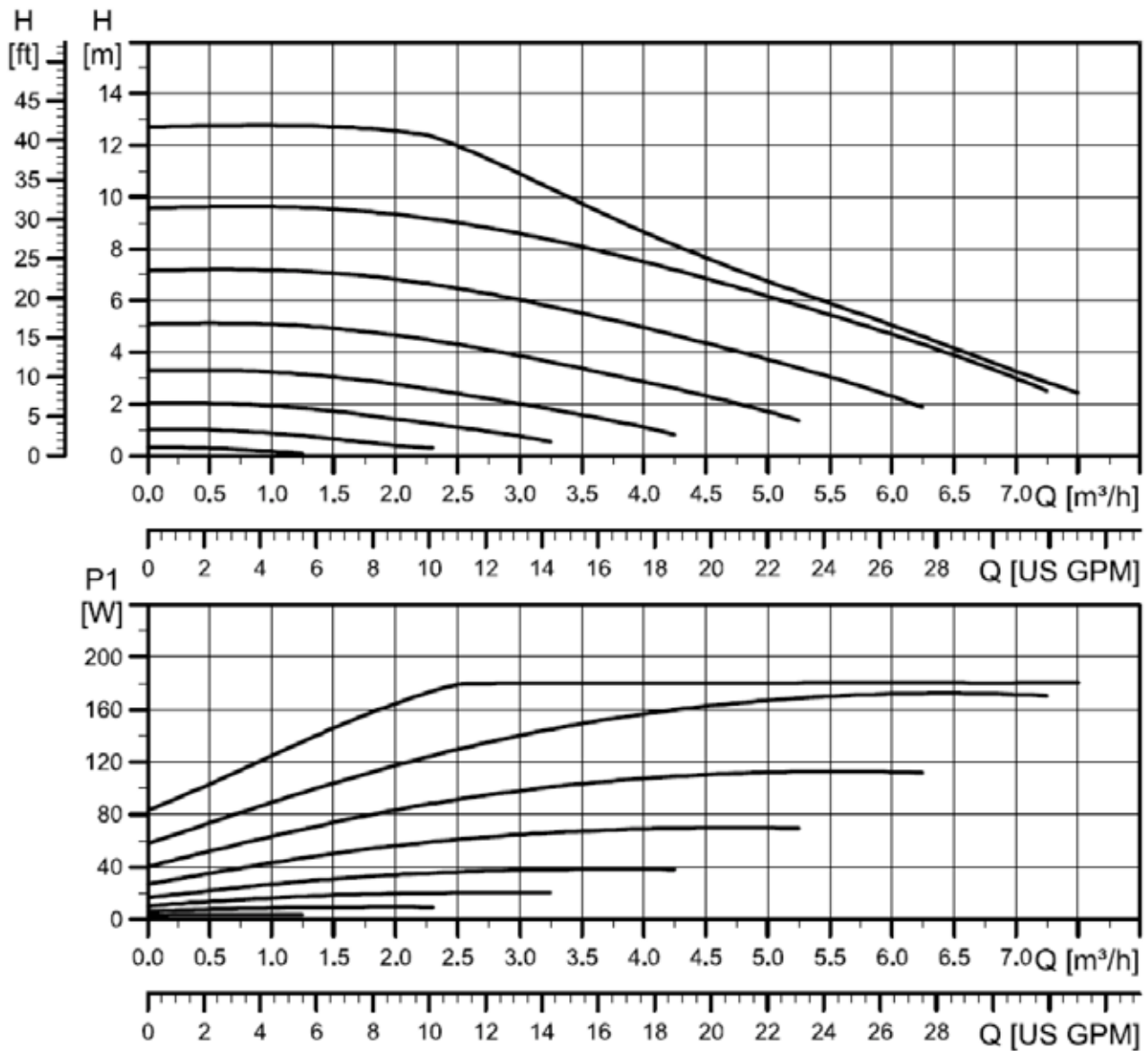


FIG. 14 (Grundfos UPMXL 25-125 180 circulation pump characteristic curves)

7.2.2 GRUNDFOS UPM10XL 25-125 180 CIRCULATION PUMP

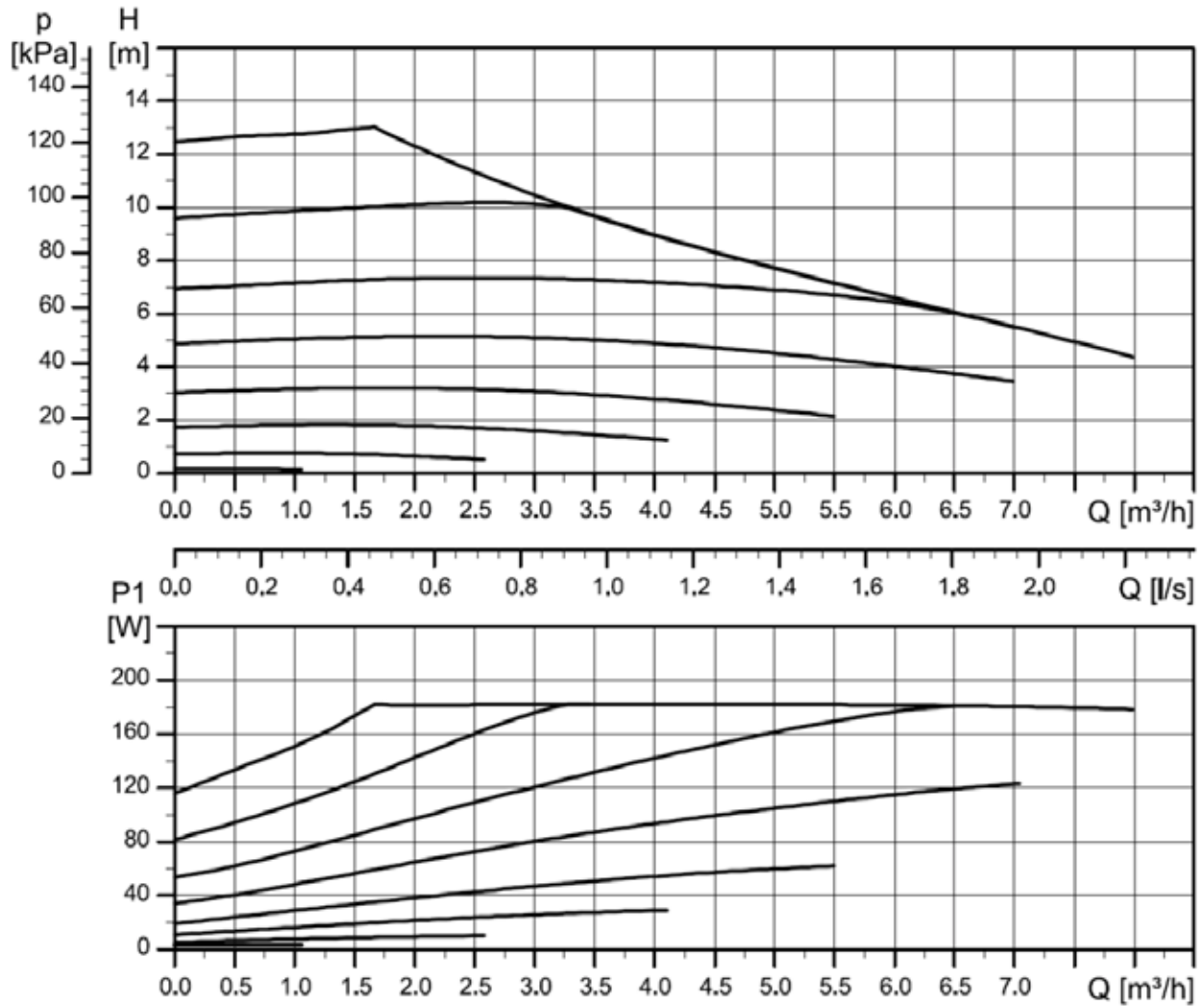
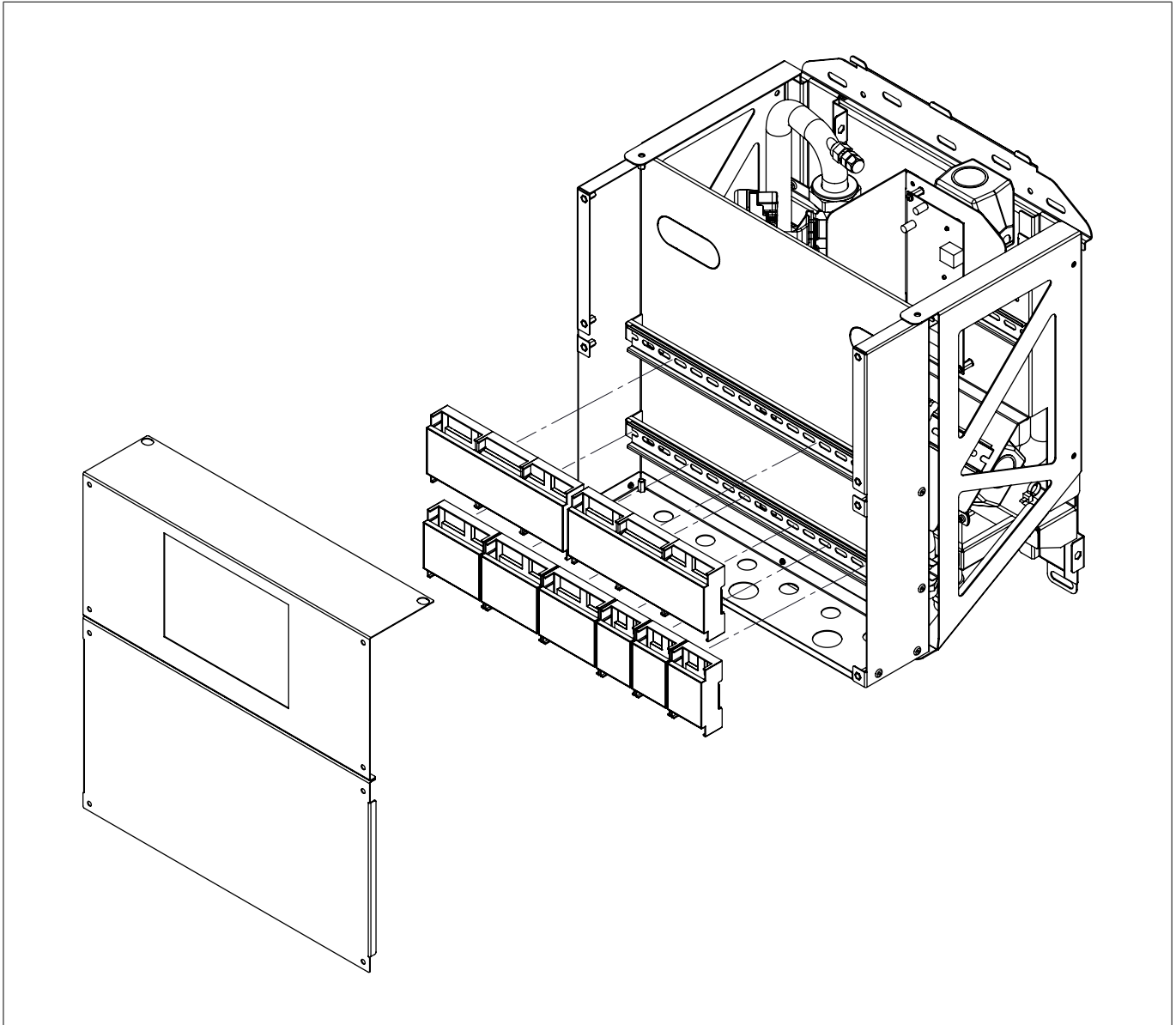
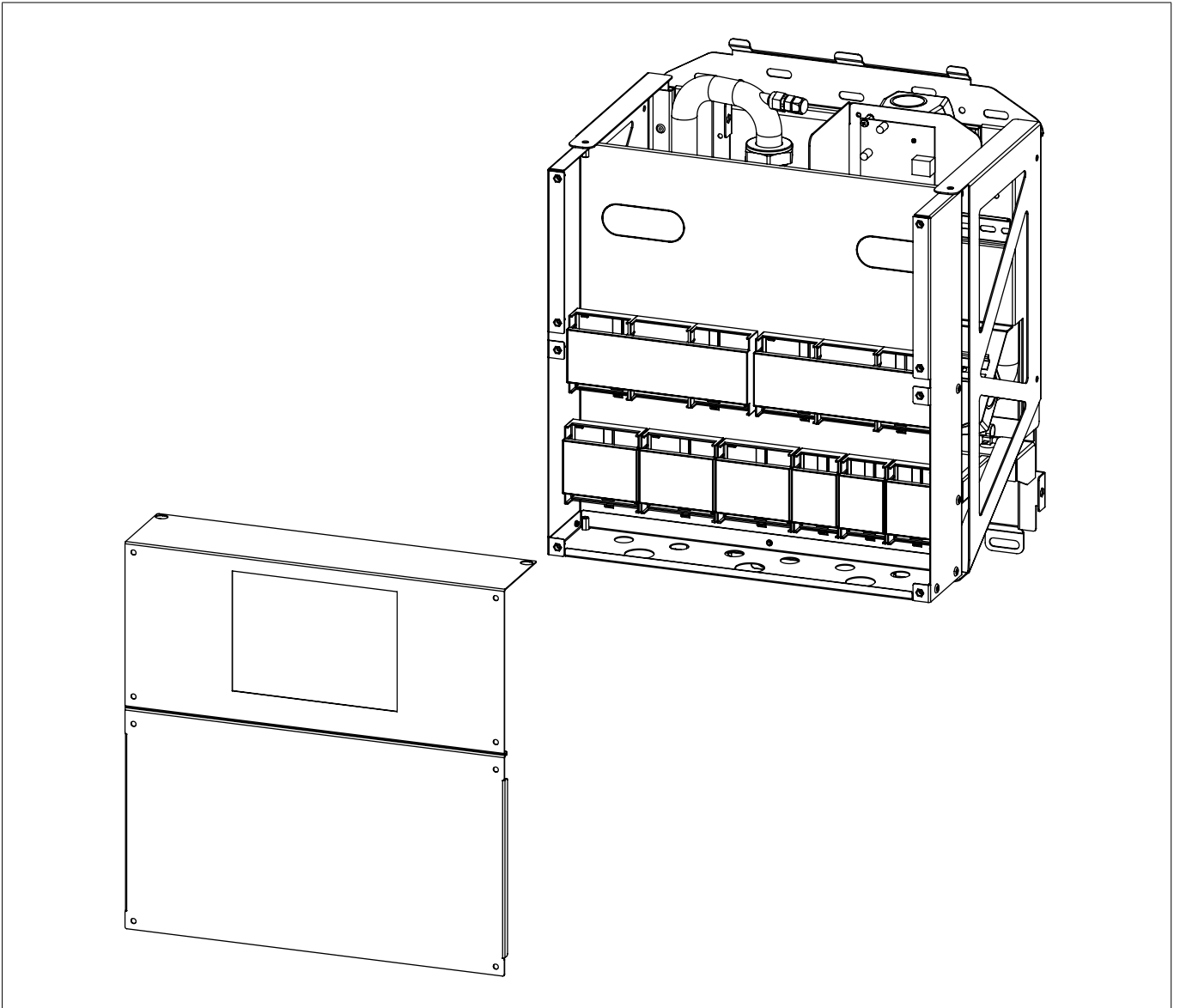


FIG. 15 (Grundfos UPM10XL 25-125 180 circulation pump characteristic curves)

8 ELECTRICAL BOX

The Hydrobox with touch panel has a metal box called an electrical box. Various electronic boards with different functions can be fitted inside it, depending on the system to which the Hydrobox is connected. The electronic boards are mounted in modular DIN rail enclosures that can be 3, 5 or 12 modules. The electrical box can hold 24 modules on each DIN rail, for a total of 24+24. The following figures illustrate an example of how they can be arranged.



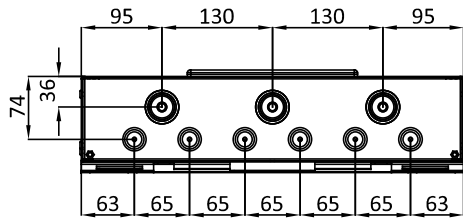
**⚠ WARNING**

THE ELECTRICAL BOX CAN BE SOLD INDIVIDUALLY. IN THIS CASE, THE T-SPLIT BOARD, WHICH WILL OCCUPY 12 DIN MODULES, MUST BE INSTALLED IN THE UPPER DIN RAIL.

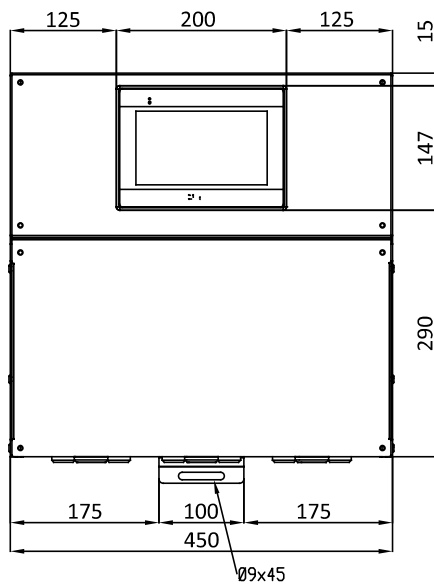
A TOTAL OF 12 MODULES WILL REMAIN IN THE UPPER RAIL AND 24 IN THE LOWER RAIL.

9 ELECTRICAL BOX IN THE ABSENCE OF THE HYDROBOX MODULE

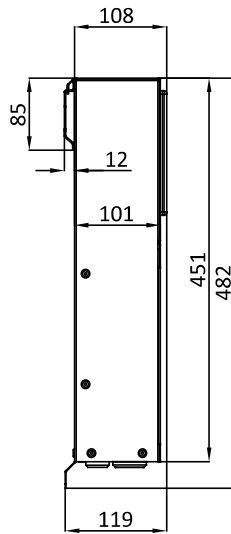
9.1 DIMENSIONS



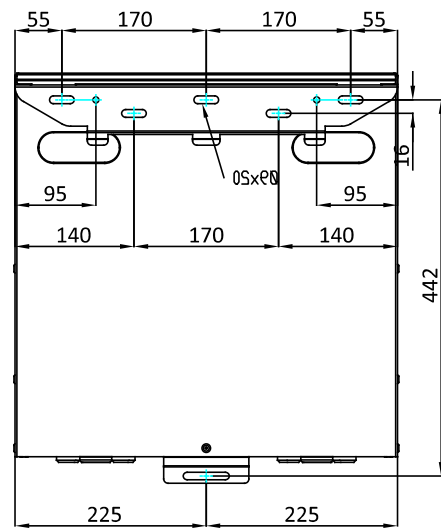
BOTTOM VIEW



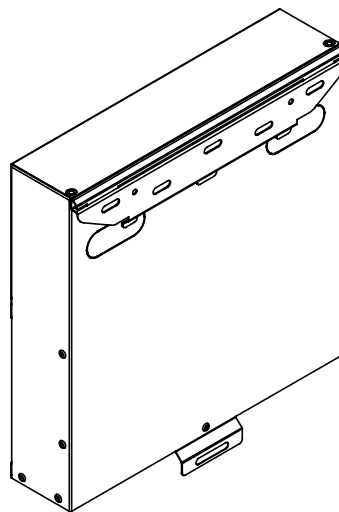
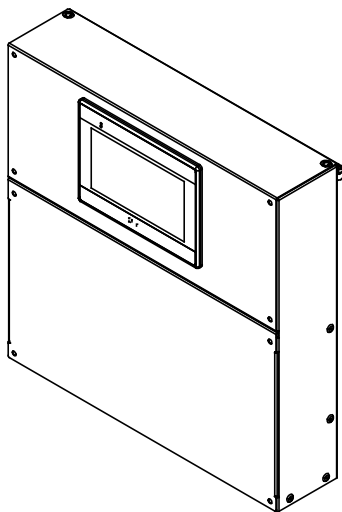
FRONT VIEW



SIDE VIEW

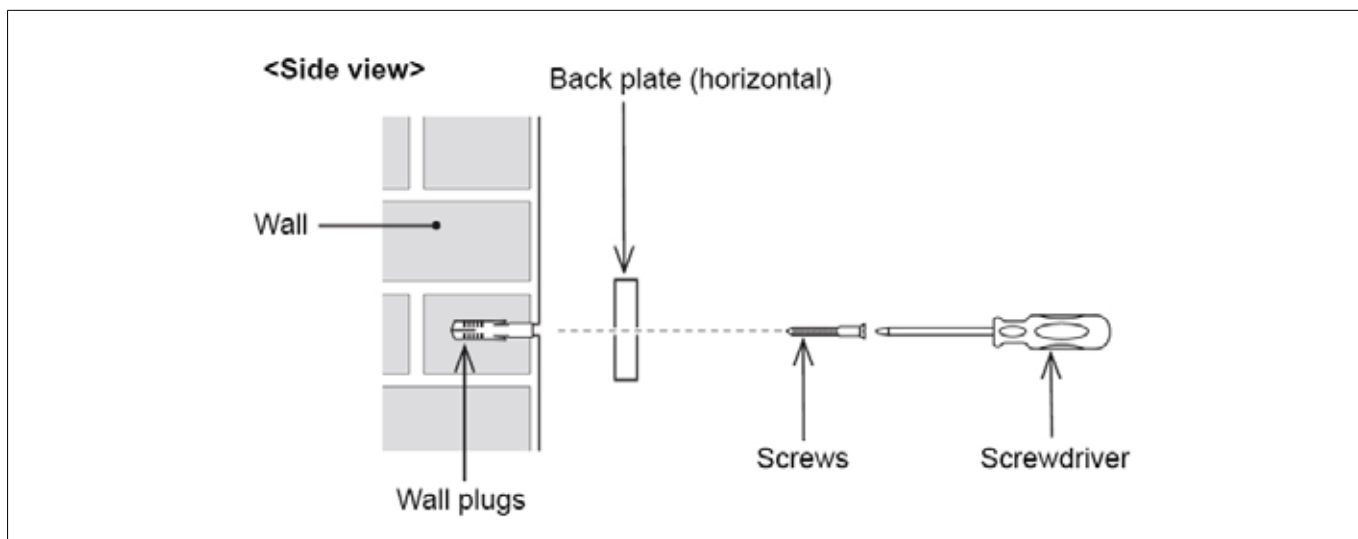


REAR VIEW



9.2 ASSEMBLY PROCEDURE FOR ELECTRICAL BOX

1. Install the included accessory back plate

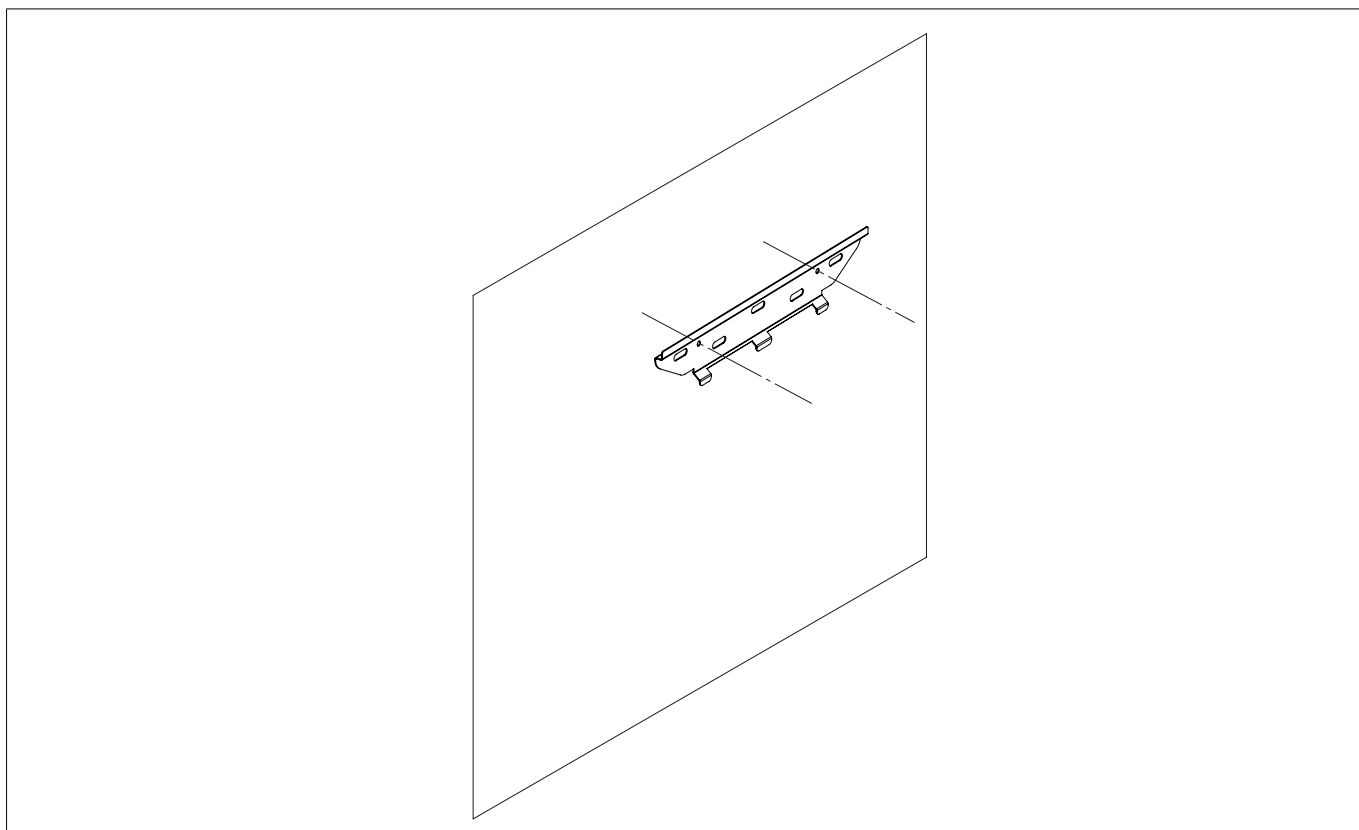


Correctly install the back plate with the notched profile located at the TOP.

The back plate has round or oval screw mounting holes.

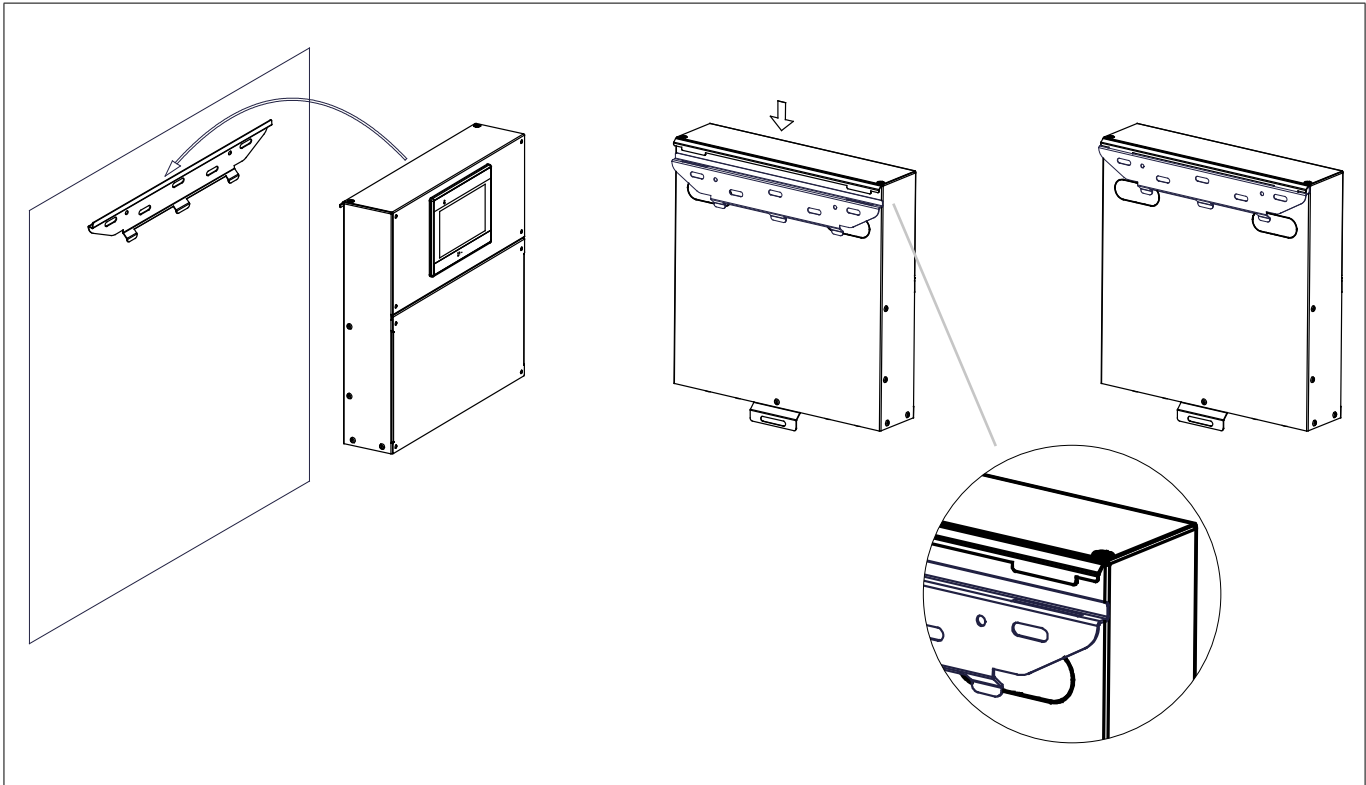
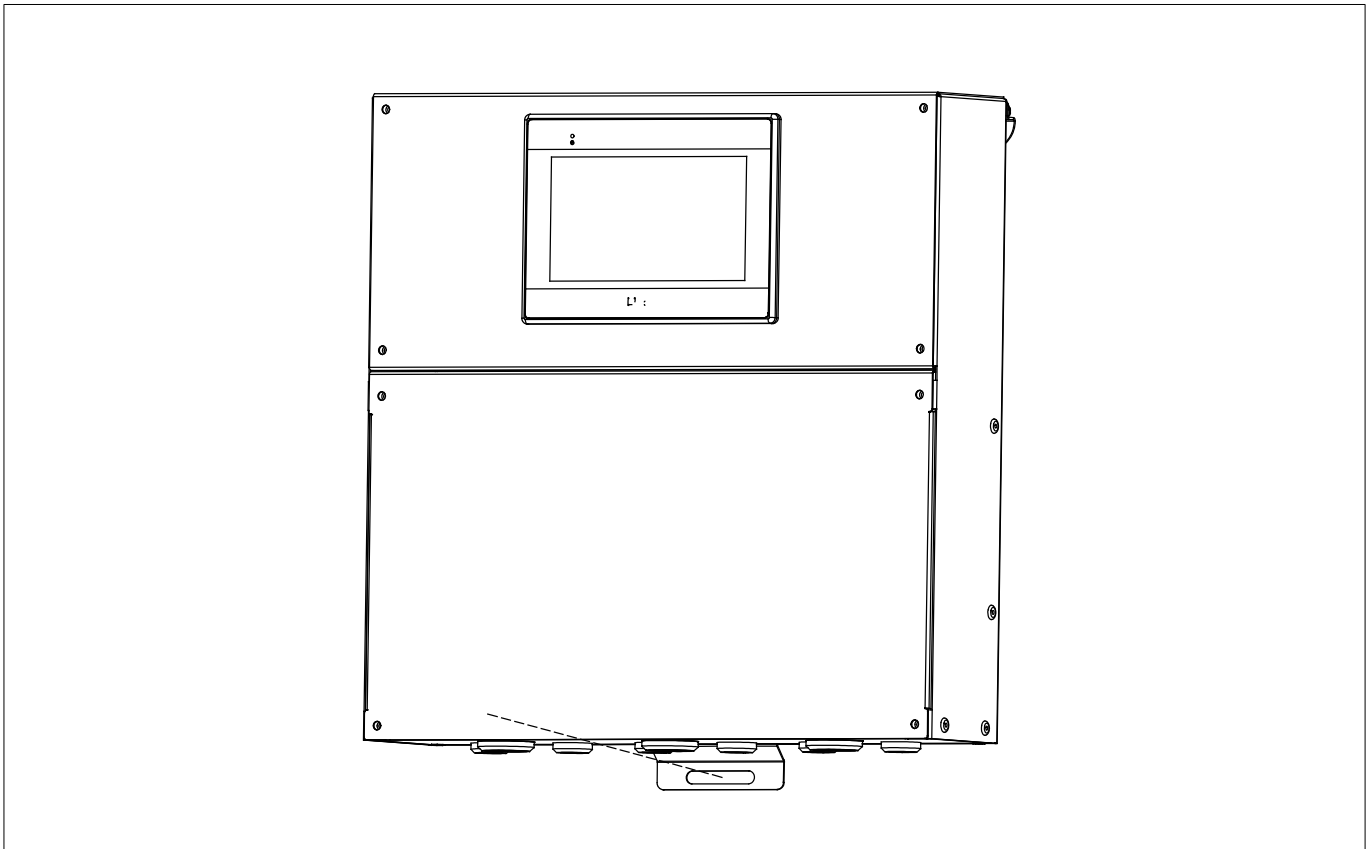
To prevent the unit from detaching from the wall, choose the appropriate number of holes or hole positions and fix the back plate horizontally at a suitable point on the wall.

Ensure that the plate is correctly positioned horizontally.



⚠ WARNING

USE SCREWS AND WALL PLUGS COMPATIBLE WITH THE TYPE OF WALL [NOT SUPPLIED].

2. Clip the electrical box onto the bracket**3. Fasten the unit to the wall with screws and wall plugs at the bottom**



10 CONFIGURATION AND ENABLING OF HYDROBOX DIRECT AND BASIC VERSION

To enable operation of the Hydrobox, go to the "Advanced Settings" screen and enter the designated password to access the "MANUFACTURER" menu.

This screen is password-protected and only authorised personnel may access it.

Go to the "OTHER" section and press the "T-SPLIT" button.

Path: Options (gear) -> ADVANCED -> "Manufacturer" password -> OTHER -> T-SPLIT Settings

10.1 HYDROBOX DIRECT AND BASIC VERSION

Enable the "T-Split/Hydrobox" button as shown in Fig. 16. In the INPUT and OUTPUT columns it is possible to define the operation of the OUTPUTs connected to CONN 3, HEAT and AUX outputs and the input contacts connectable to CONN 5 pins 8, 9, 10.

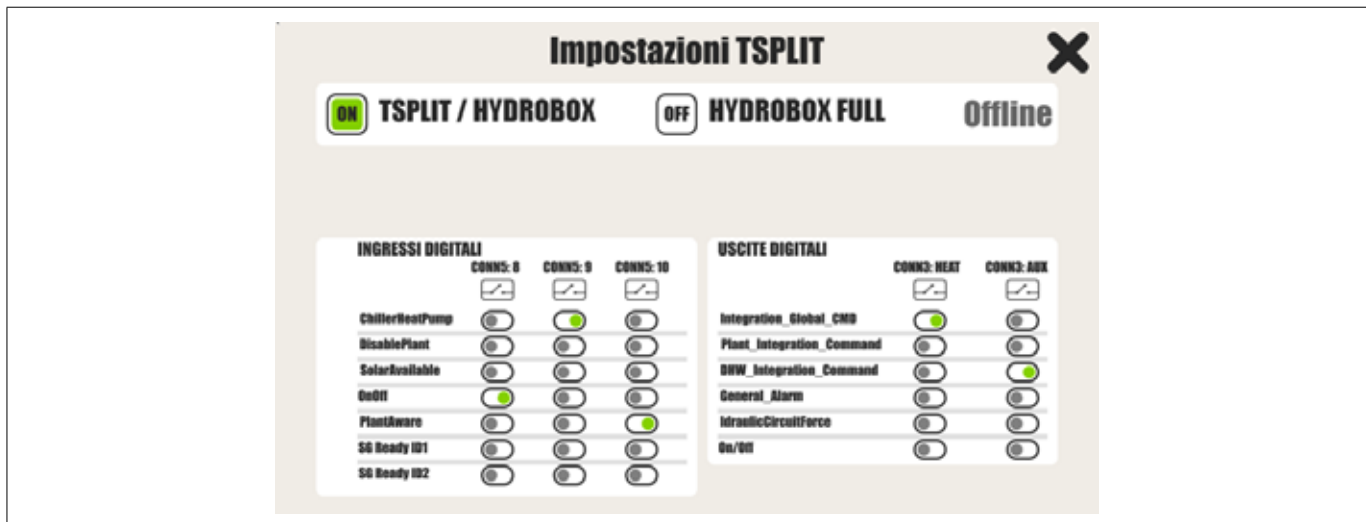


FIG. 16 (Configuration to enable Hydrobox DIRECT or BASIC)

10.2 HYDROBOX FULL VERSION

Enable the "T-Split/Hydrobox" button and the "Hydrobox FULL" button as shown in Fig. 17. In the INPUT columns it is possible to define the operation of the inputs connectable to CONN 5 pins 8, 9, 10.

For the Hydrobox FULL version, the outputs connected to CONN 3 connector are reserved for the factory settings.

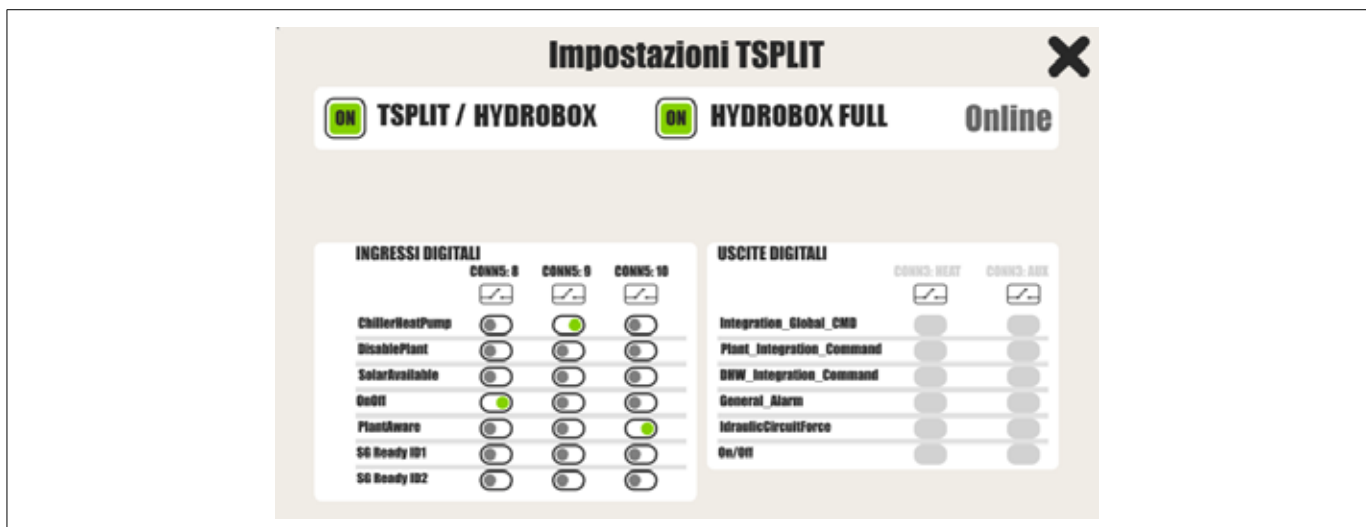


FIG. 17 (Configuration to enable Hydrobox FULL)

11 HYDROBOX - HEAT PUMP ELECTRICAL CONNECTION

All electrical work must be carried out by qualified technical personnel. All wiring must comply with the relevant national regulations.

The Hydrobox must be powered exclusively by the single-phase power terminal block on board the heat pump's secondary panel. The RJ45 CAT7 BUS cable, supplied with the heat pump, must also be connected to the latter. Connect the Hydrobox to the heat pump as shown below in Fig. 18.

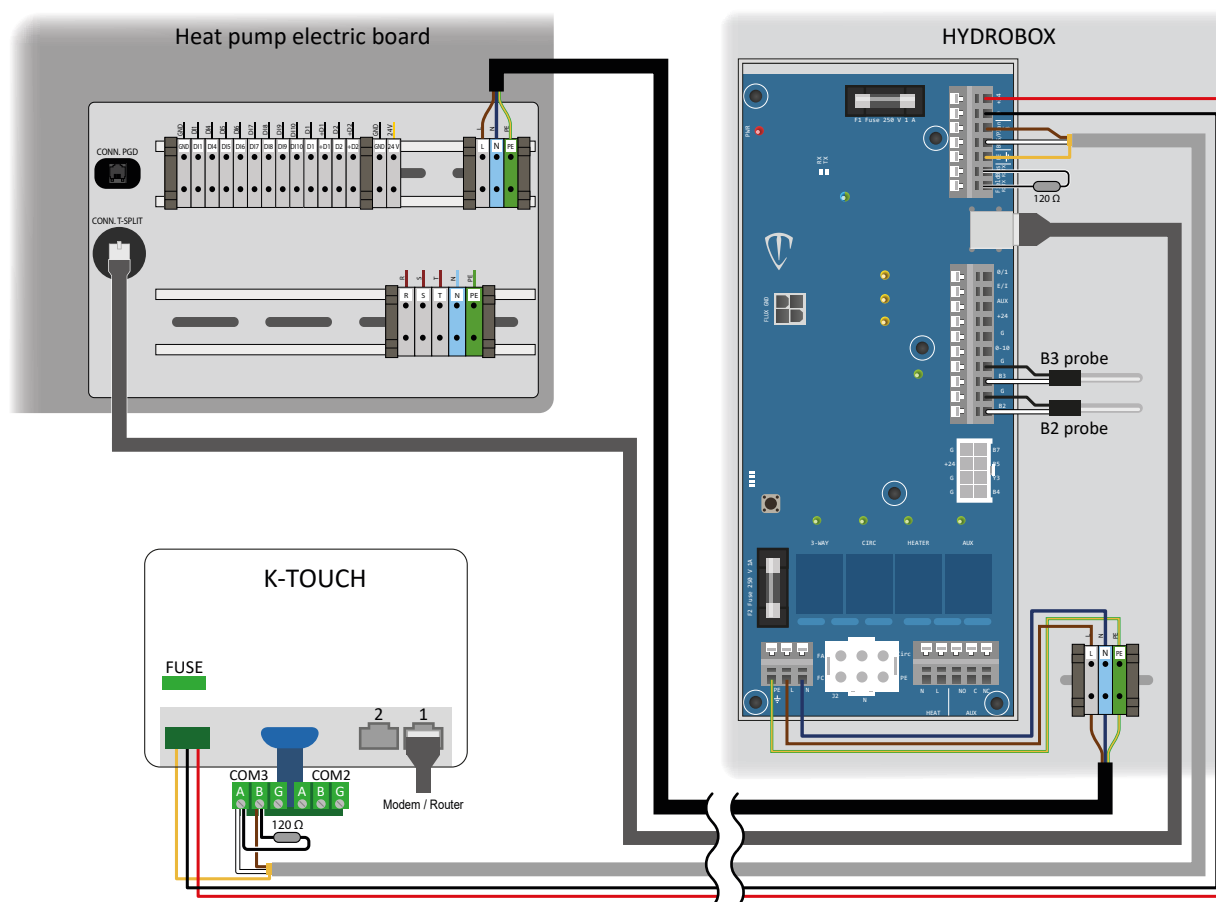


FIG. 18 (Data and power connection between heat pump electric board and Hydrobox)

12 WIRING DIAGRAM

12.1 HYDROBOX DIRECT VERSION WIRING DIAGRAM

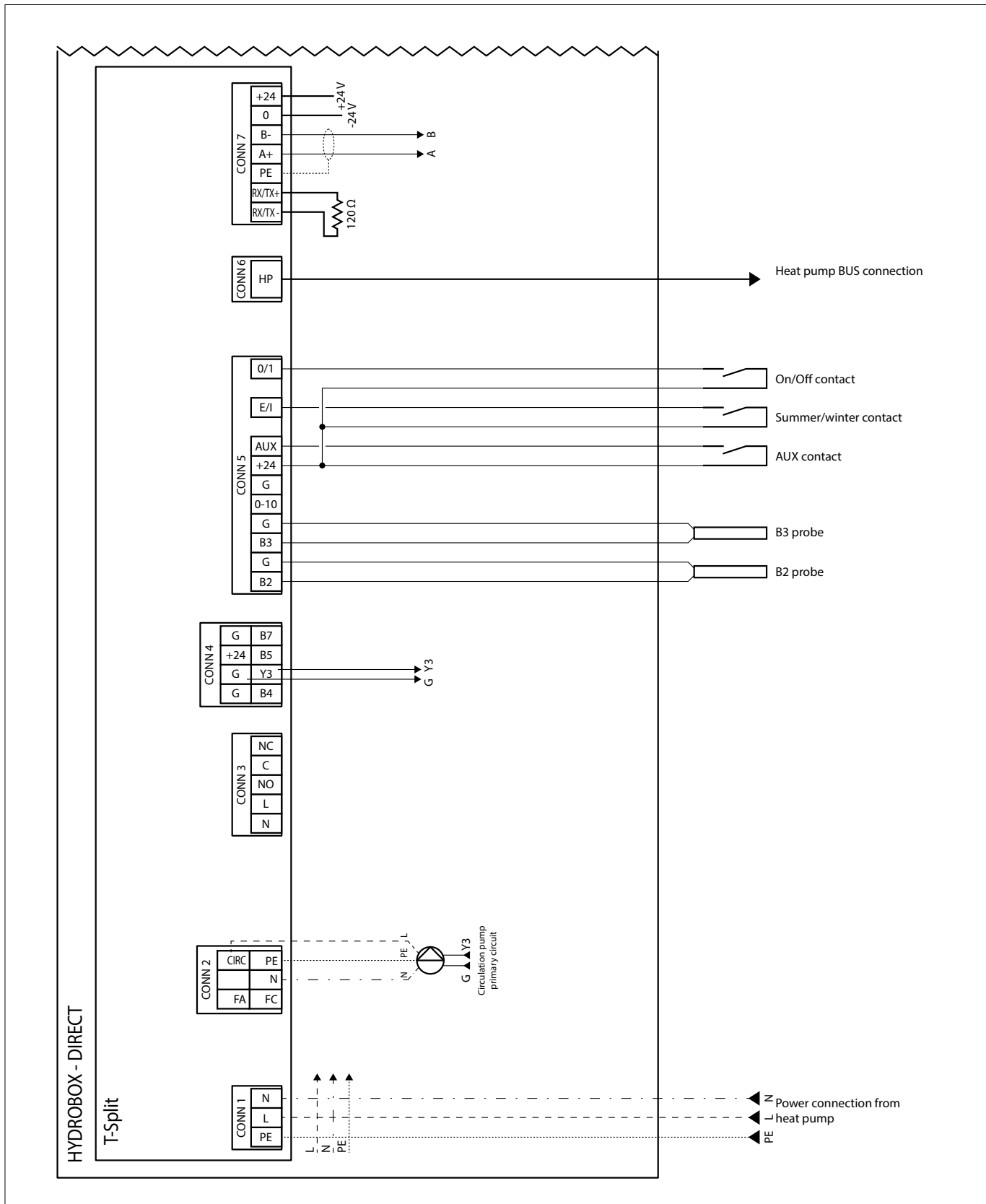


FIG. 19 (Hydrobox Direct version wiring diagram)

12.2 HYDROBOX BASIC VERSION WIRING DIAGRAM

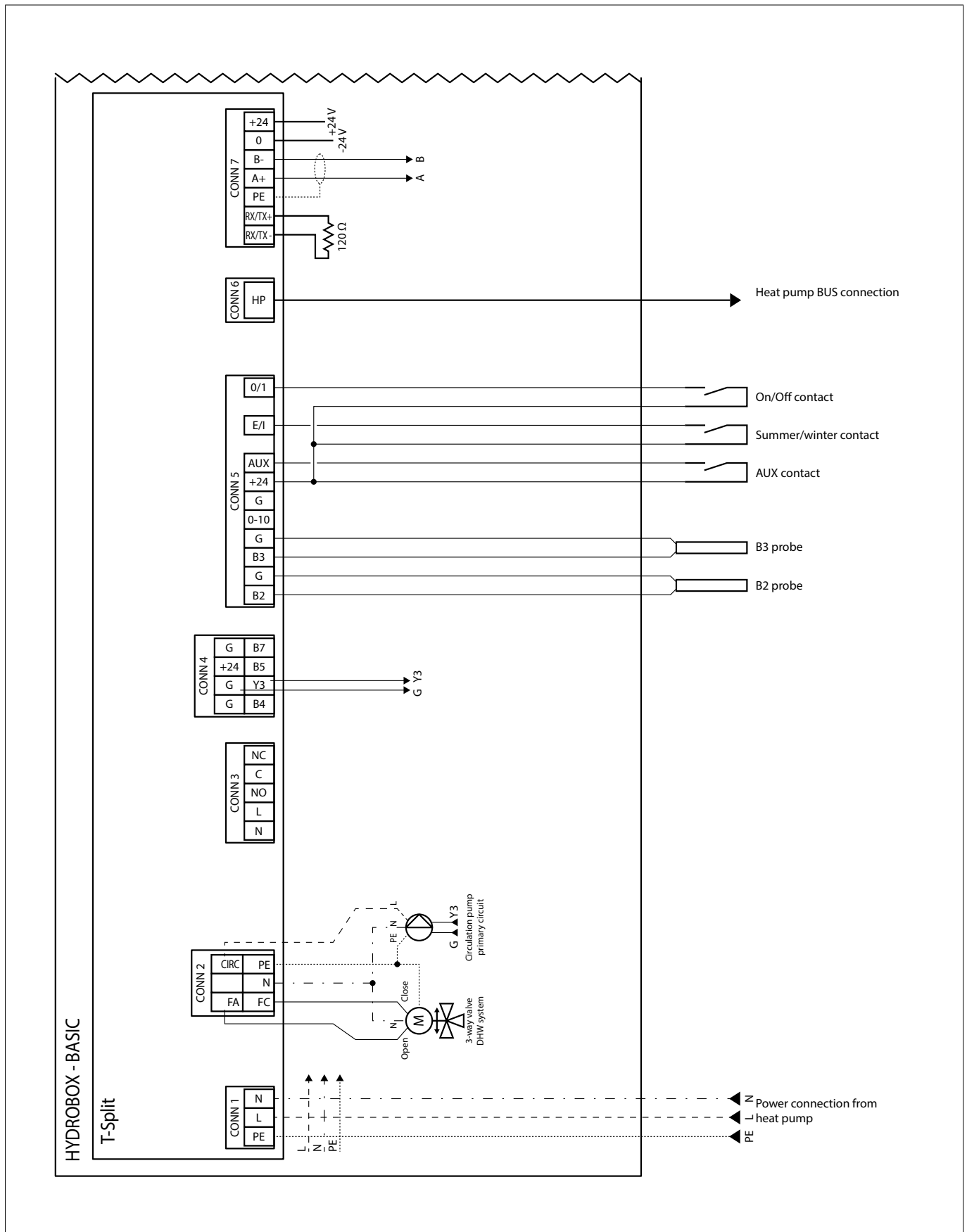


FIG. 20 (Hydrobox Basic version wiring diagram)

12.3 HYDROBOX FULL VERSION WIRING DIAGRAM

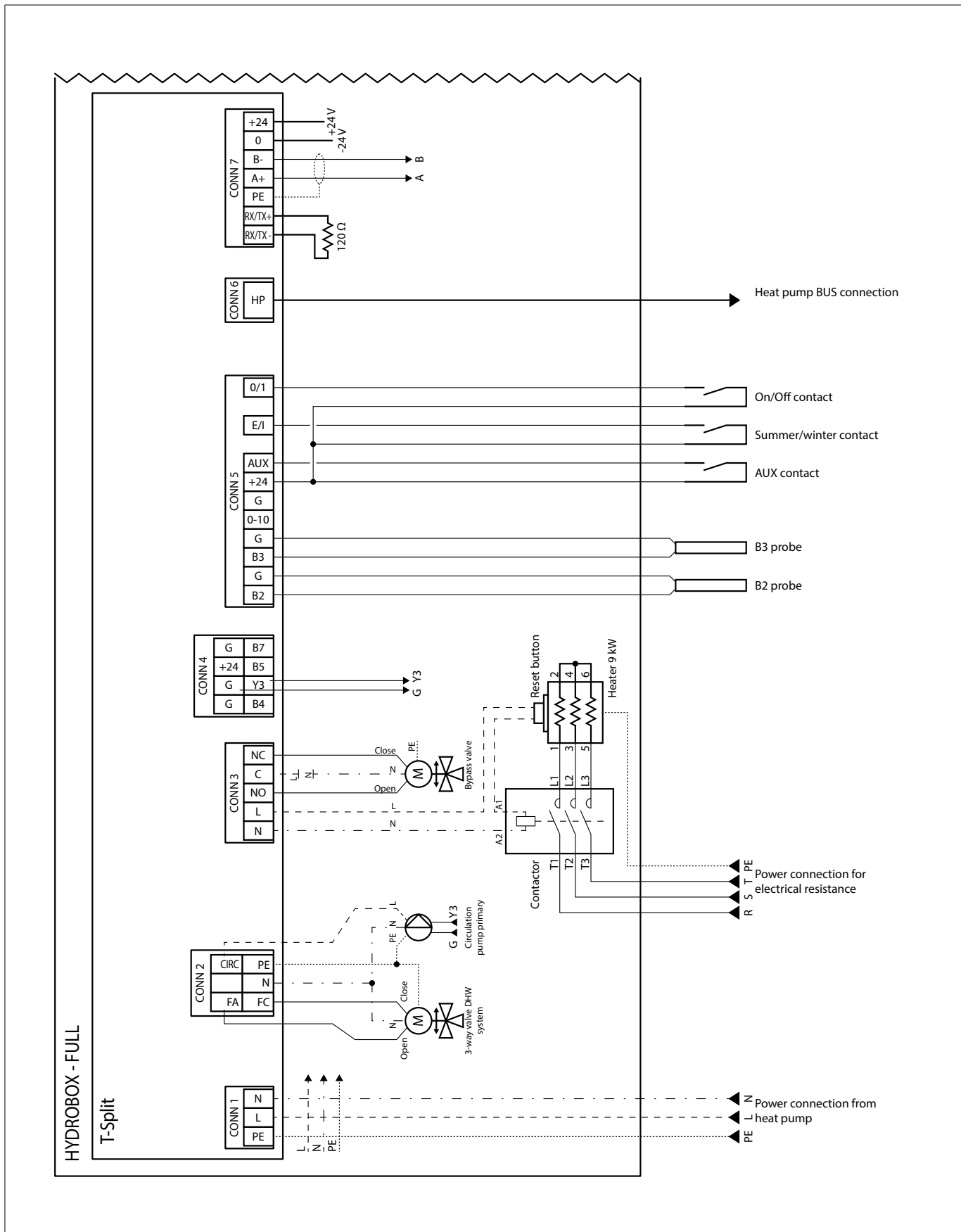


FIG. 21 (Hydrobox Full version wiring diagram)

12.4 HYDROBOX + ELECTRICAL BOX WIRING DIAGRAM

The following is an example of the wiring diagram for a Hydrobox FULL version, equipped with an ELECTRICAL BOX (El.Box) with a K-Touch control panel and 2 CMix peripheral devices on board, where the last peripheral device has a 120 Ω BUS termination resistor.

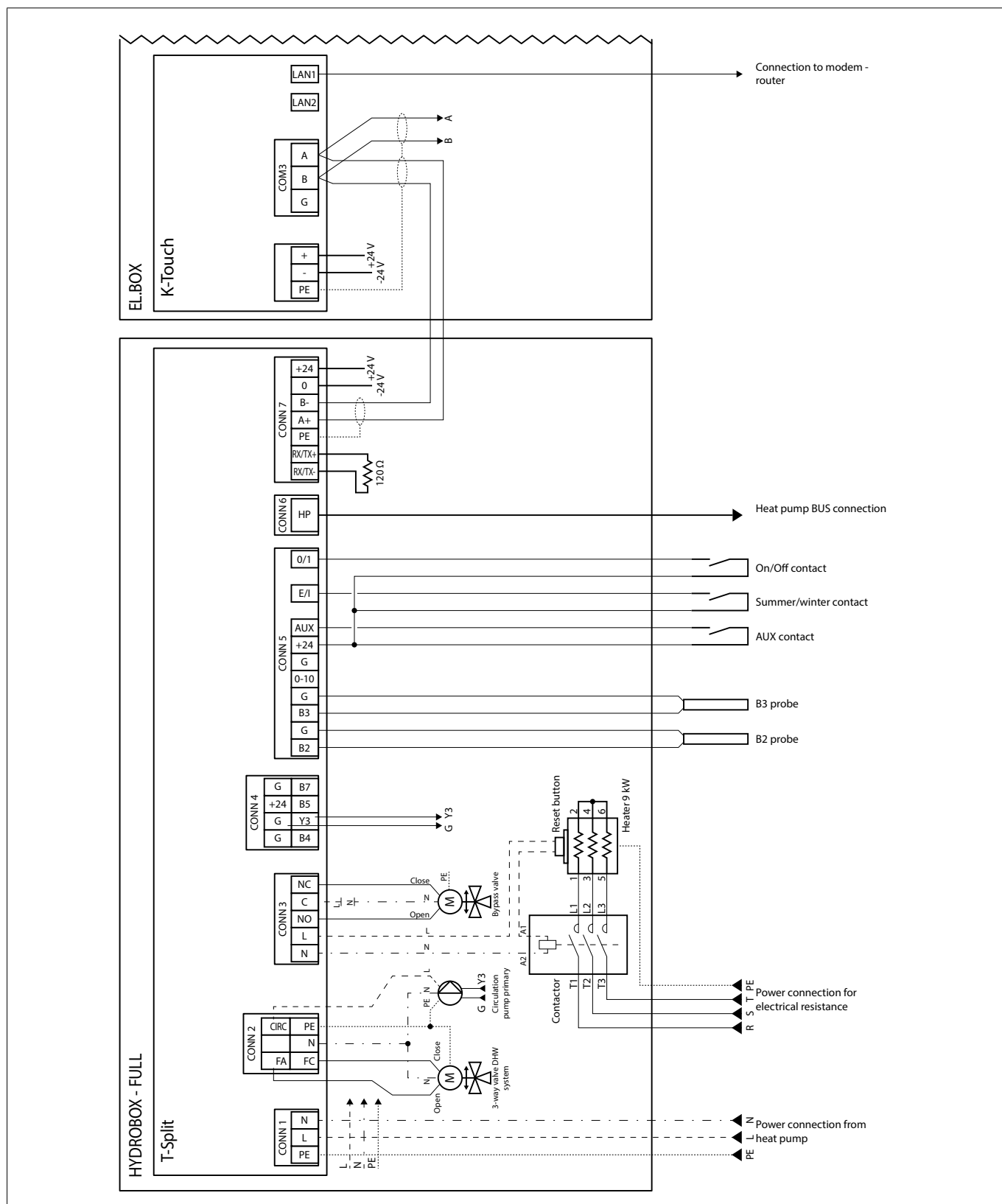


FIG. 22 (Hydrobox Full version with Electrical Box wiring diagram)

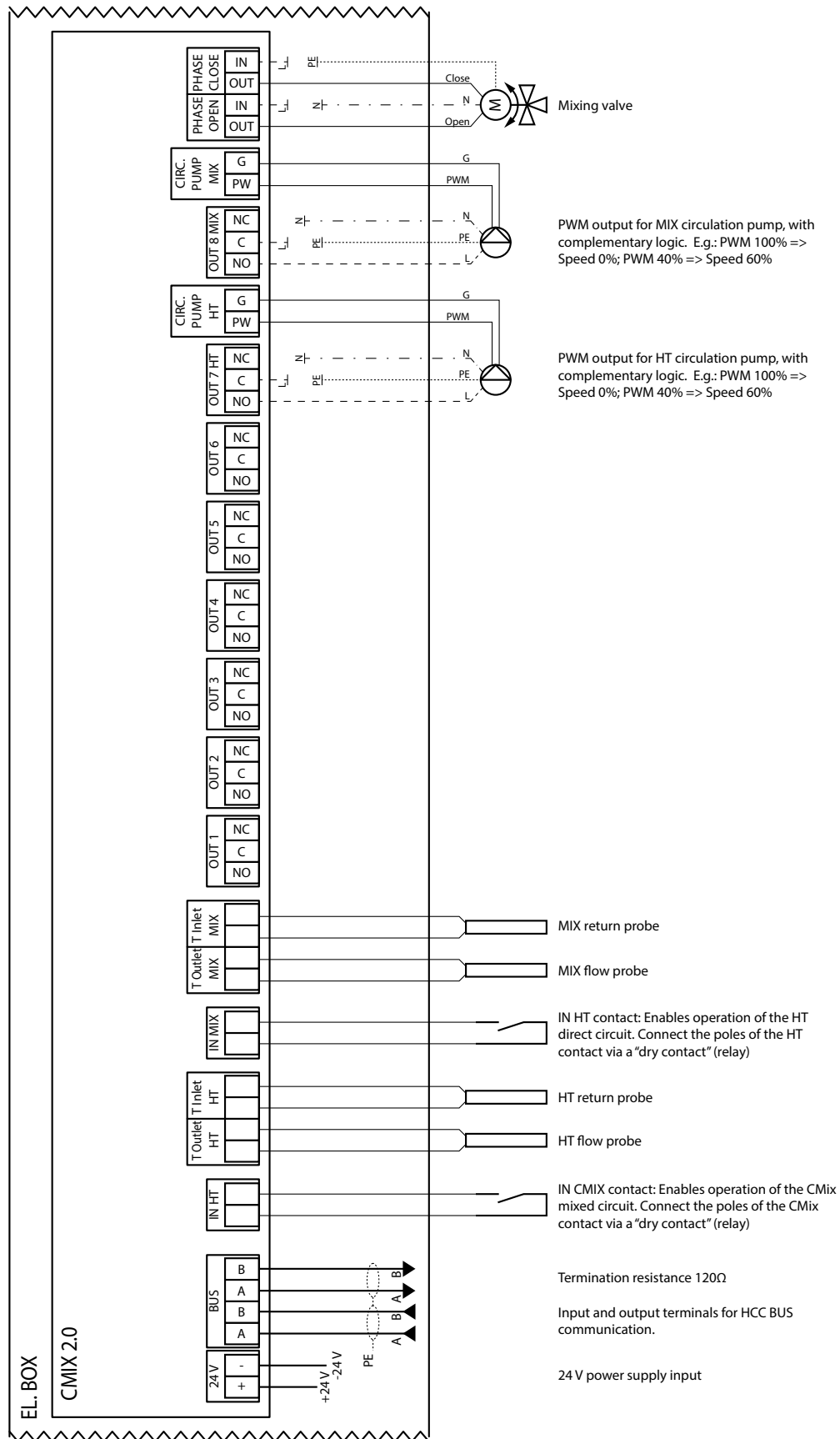


FIG. 23 (CMix wiring diagram)

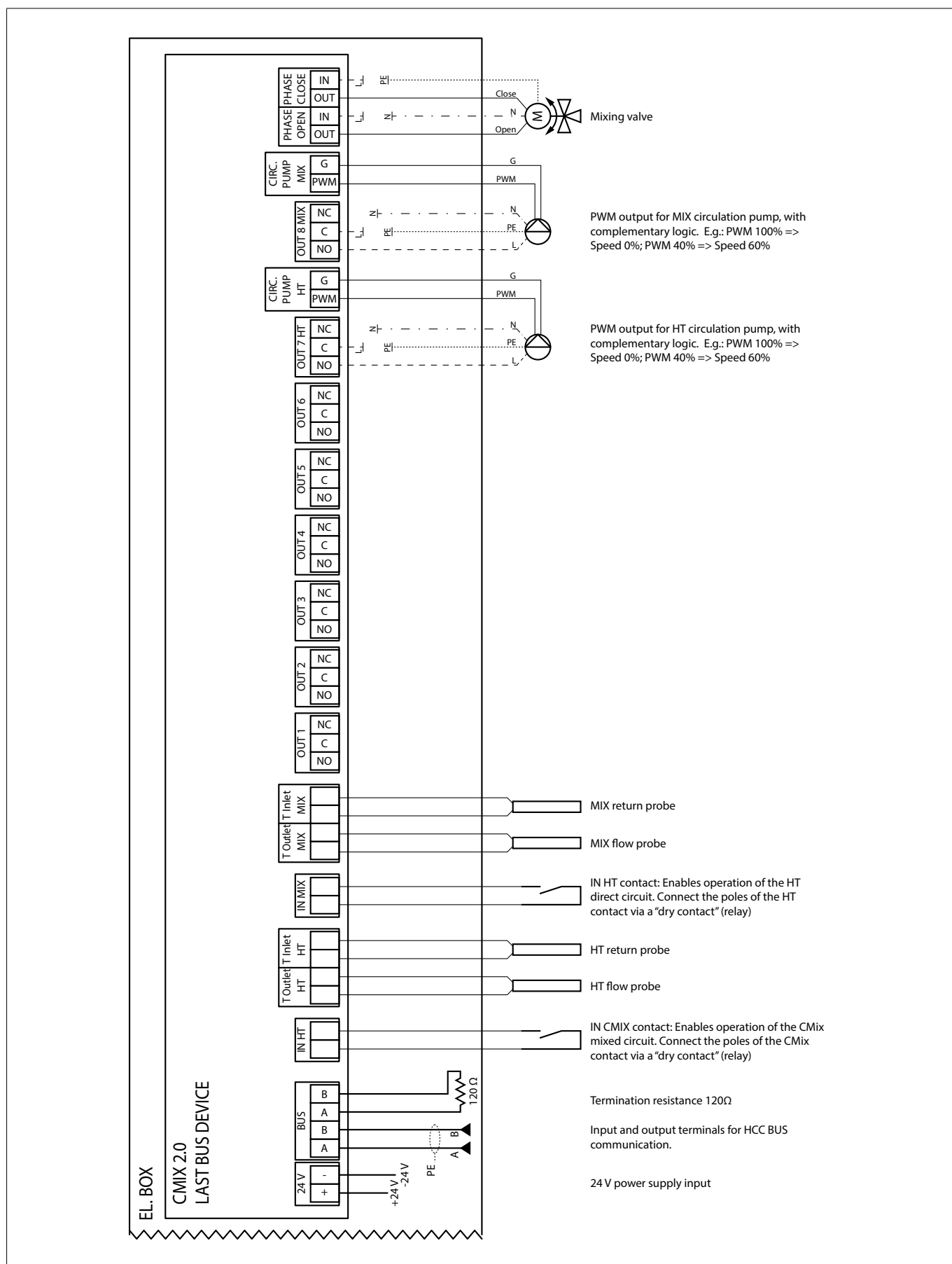


FIG. 24 (CMix wiring diagram, in case of last peripheral device)



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