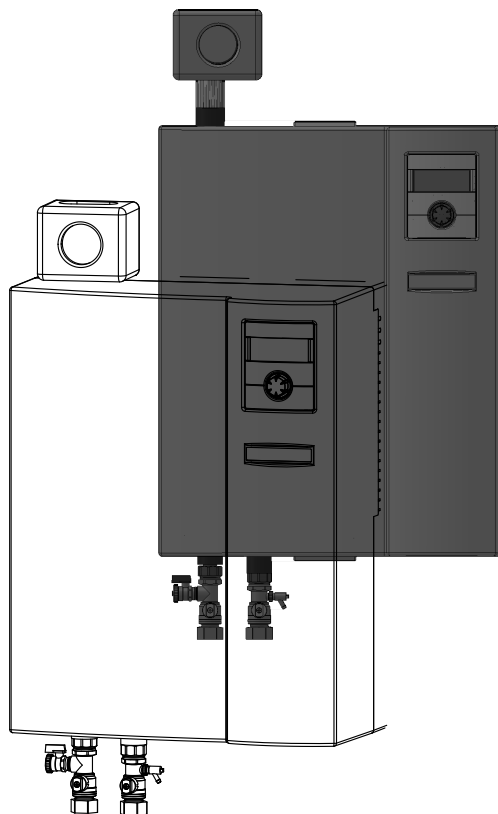
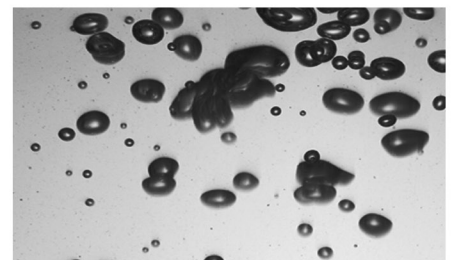
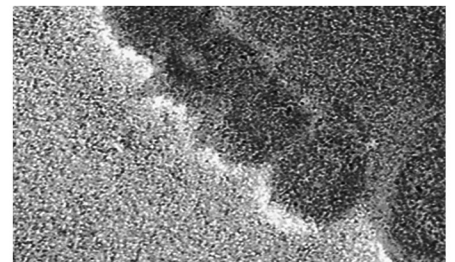


HYDRAULIC MODULE

Accessories for Dual Air/Water Heat Pumps

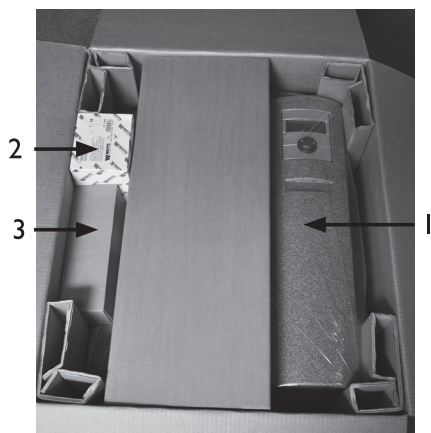


HMD 1
HMD 1/E
HMD 1/R
HMD 1/RE



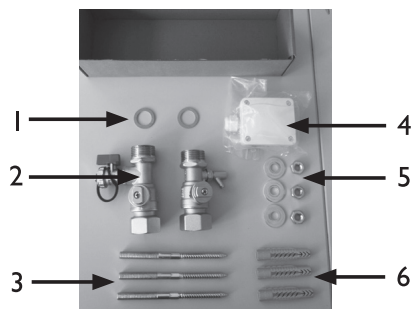


Scope of delivery



- 1 Hydraulic module
- 2 Safety assembly
- 3 Accessories package

Example of layout of the accessory package:



- 1 Flat gasket 1" (2)
- 2 Ball valves (2)
- 3 Hanger bolts (M 10) for wall bracket (3)
- 4 Outdoor sensor
- 5 Nuts (M 10), plain washers (3 each)
- 6 Anchors for wall bracket (3)
- 7 Screws for strain relief (16 - not illustrated)

- ① Check the delivery for outwardly visible signs of damage...
- ② Check that nothing is missing from the scope of supply.
Any defects or incorrect deliveries must be reported immediately.



NOTE.

Note the unit model.



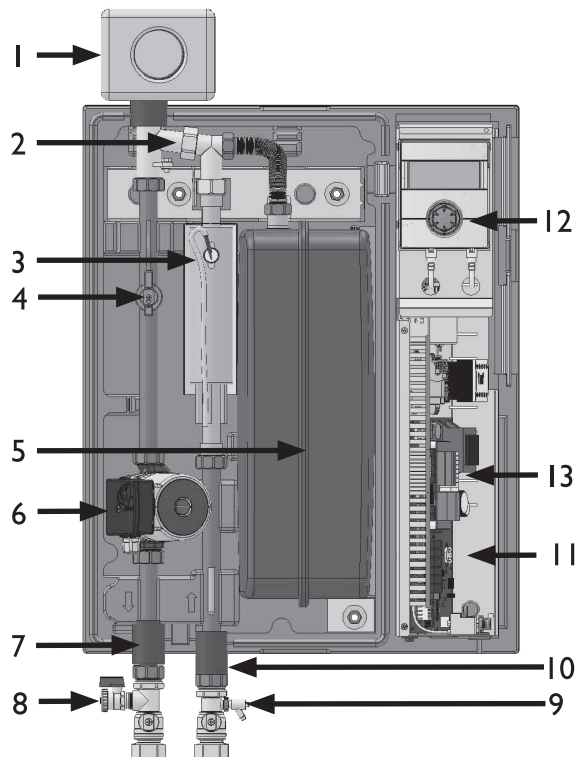
Overview "Technical data/scope of delivery" or rating plate on unit.



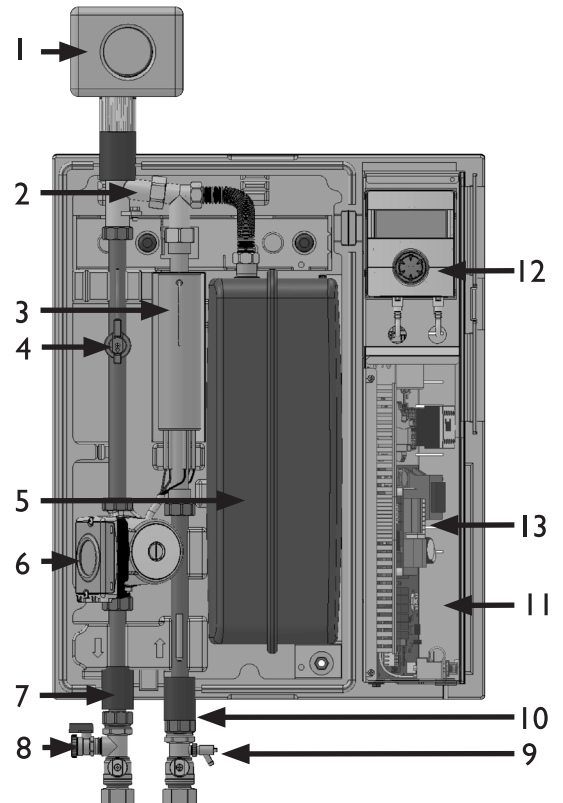
COMPONENTS OF THE UNIT

FOUR VERSIONS OF THE HYDRAULIC MODULE ARE AVAILABLE:

HMD I(E)



HMD I/R(E)



COMPONENTS OF THE UNIT	
1	Safety assembly for heating circuit (insulated)
2	Air separator
3	Continuous flow heater 6kW
4	Flow monitor
5	Expansion vessel 12l
6	Circulating pump for heating circuit (Energy efficient circulating pump = E-variant)
7	Forward flow outlet
8	Fill/empty cock for heating circuit
9	Ventilation
10	Forward flow inlet
11	Electrical switch cabinet
12	Control element, regulation
13	Comfort board (E-variant)



Installation

The following applies to all work to be done:



NOTE.

Always comply with the applicable local accident prevention regulations, statutory regulations, ordinances, guidelines and directives.

INSTALLATION LOCATION



ATTENTION

Install the unit only inside buildings.

The installation area must be frost-free and dry. It must fulfil the relevant local regulations.



Dimensional drawing and installation plan for respective model.

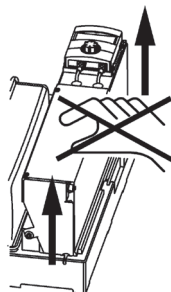
TRANSPORT TO INSTALLATION LOCATION

To prevent damage during transport, always transport the unit to final installation location in its original packaging.



ATTENTION

The unit must not be lifted up by the switch box and transported.



ATTENTION

Never use components and hydraulic connections on the unit for purposes of transport.

INSTALLATION



CAUTION!

Ensure the wall has the necessary load bearing capacity.



Possible installation situation, Example: HMD I(E) with row tank

- 1 Hydraulic module
- 2 Buffer storage tank
- 3 Domestic hot water tank

① Hold the drilling template at the right height and mark the 3 drilling holes...



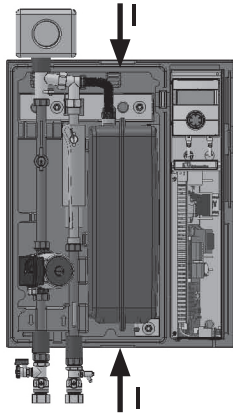
Note the safety and service clearances required, see "Installation plan".

② Lift the hydraulic module out of the box:





- ③ Remove the top section from the front by pulling on the recessed grips.



Example: HMD I:

I Recessed grips

- ④ Remove internal packaging material (transport safeguards).
- ⑤ Use the anchors and bolts supplied to fix the hydraulic module to the wall:



CAUTION!
Hands and fingers could be crushed during the following tasks!

The anchors are only suitable for use in the following types of walls:

- Concrete
- Solid lightweight concrete blocks
- Cavity blocks made of lightweight concrete
- Cellular concrete
- Prestressed concrete - hollow ceiling/floor slabs
- Natural stone with sealed joints
- Solid sand-lime blocks

- Perforated sand-lime bricks
- Solid bricks
- Vertically-perforated bricks
- Hollow floors/ceilings made of clay bricks, concrete or similar
- Solid gypsum boards
- Gypsum boards and gypsum fibre boards
- Particle boards

The board material must be dimensioned with sufficient thickness to ensure secure fixing.

Appropriate fixing material must be provided on site for other types of wall constructions.

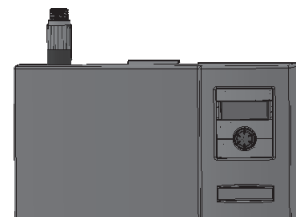
! ATTENTION

Leaving a gap between the unit and the wall helps back ventilation and may not be sealed or closed off.

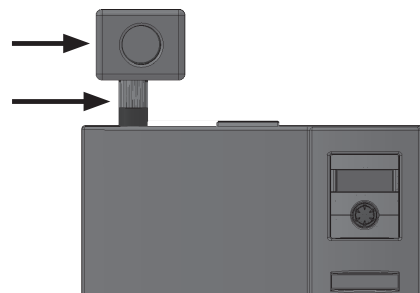
Cable ducts must be laid at a distance of at least 2 cm from the hydraulic module.

FOR REVERSIBLE VARIANT:

- ⑥ Mount thread covers on the hanger bolts...
- ⑦ Screw adapter with safety component onto hydraulic module.



- ⑧ Following the leak test, use insulation included in the scope of supply to insulate adapter and safety component.





INSTALLATION / HYDRAULIC CONNECTION TO HEATING CIRCUIT

The connections for the heating circuit are located on the underside of the unit.

The connection for the safety assembly is on the top of the unit:



NOTE.

Dimension heating system so that the free compression of the circulating pumps integrated in the unit always ensures the minimum heating water flow rate.

Always take into account the connection pipes between the heat pump and the hydraulic module.



Planning manual.



DANGER!

Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on!



ATTENTION

When installing the connections, always secure the connections on the unit against twisting, to prevent damage to the copper pipes inside the unit.

- ① Flush heating circuit thoroughly before connecting the unit to the heating circuit...



see "Flushing, filling and bleeding the system",



NOTE.

Contamination and deposits in the heating circuit can cause malfunctions.

- ② Install filling and draining devices, shut-off valves and non-return valves at the required locations in the heating circuit.



"Hydraulic connection" documents.

SAFETY ASSEMBLY

The safety assembly for the heating circuit is in the extra box.

Mount the safety component on the connection provided on the top of the assembly.

The safety drain of the safety valve must lead into the drain via a funnel siphon in accordance with the applicable standards and regulations!

The safety drain must be connected!

EXPANSION VESSELS

The expansion vessel for the heating circuit is integrated.

Always check whether the size of the expansion vessel is large enough for the system. If necessary, an additional expansion vessel must be installed on site according to the relevant standards and guidelines.



NOTE.

The admission pressure of the expansion vessel must be adjusted to the system (approx. 0.5 bar less than the system filling pressure) according to the calculation to the relevant standards (EN 12828).



Electrical connections

The following applies to all work to be done:



DANGER!
Risk of fatal injury due to electric shock!
Electrical connections may be installed only by qualified electricians.

Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on!



WARNING!
During installation and while carrying out electrical work, comply with the relevant EN-, VDE and/or local safety regulations.

Comply with technical connection requirements of the responsible power supply company (if required by the latter)!



WARNING!
Install electric connections only according to the terminal diagram that applies to your model.



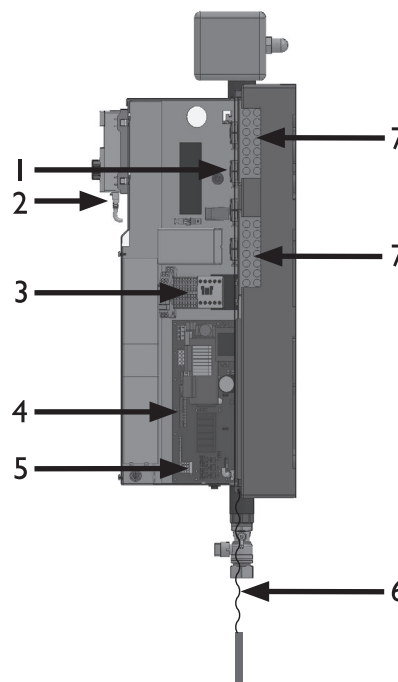
NOTE.
All live wires must be stripped before they are installed in the cable duct of the switch cabinets!



ATTENTION
The power supply for the heat pump and the electric heating element must be equipped with a three-phase automatic circuit-breaker with at least 3mm contact spacing according to IEC 60947-2.
Note the level of the release current.

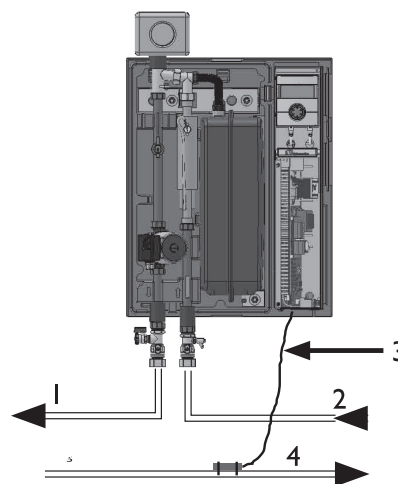


Overview "Technical data/scope of delivery", "Electric" section.



Example: HMD I:(E)

- 1 Terminal strip, power supply cable
 - Heat pump
 - Heating element
- 2 Bus cable connection
- 3 Control voltage
- 4 230 V inputs
- 5 Terminal strip, external sensors
- 6 Return flow sensor
- 7 Cable routing



Example: HMD I:

- 1 Flow to the heating circuit/
Domestic hot-water tank
- 2 Flow from heat pump
- 3 Return flow sensor - 1.5m
on the hydraulic module
- 4 Return flow to heat pump



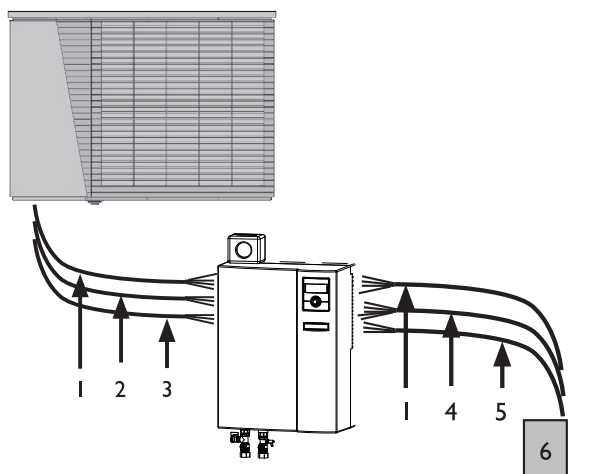
Use cable ties and heat transfer compound to fix the return flow sensor (3) to the return flow (heat carrying pipe) to the heat pump (4).

Hydraulic connections documents

The electrical connection between the heat pump and hydraulic module is made using the 3 pre-installed cables on the heat pump (5m).

On site, the hydraulic module is connected from the subdistribution board using the following cables

"Terminal diagram" for respective model.

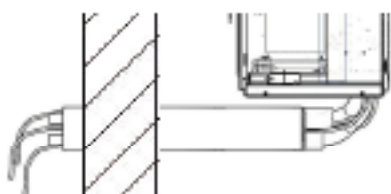


- 1 Compressor (5 cores)
- 2 Control (3 cores)
- 3 LIN-Bus (3 cores, shielded)
- 4 Heating element load cable (5 cores)
- 5 Control voltage (3 cores)
- 6 Subdistribution board

If laid on site:

- Seal reserve conduits on unit side...

Feed the three connection cables through the three ducts of the wall penetration - use lubricant!



NOTE.

When laying the cable inside the building, ensure that unshielded power supply cables (outdoor unit voltage supply) and shielded cables (LIN-Bus) are laid separately from each other.

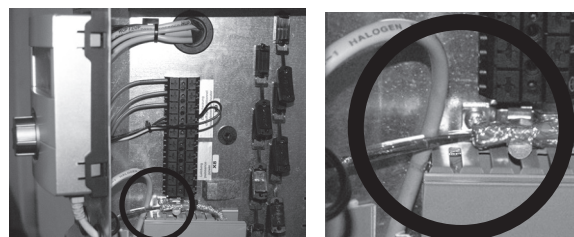
If the wall penetration is used, the necessary distance from adjacent pipes and cables is ensured.

NOTE.

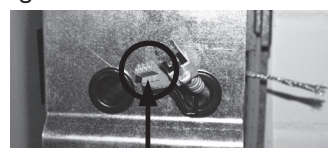
The control element of the heat and heat pump regulator can be connected with a computer or network using a network cable designed for such purposes, therefore allowing the heating and heat pump regulator to be controlled remotely. If such a connection is required, install a shielded network cable (category 6, with RJ-45 connector) during the electrical connection work and connect it parallel to the existing control cable of the heating and heat pump regulator.

CONNECT BUS CABLE

- ① Strip the BUS cable insulation and push the shield back over the insulation.
- ② Insert the end of the insulated cable with the shield into the shield terminal.



- ③ Feed the end with the individual cores through one of the two grommets.

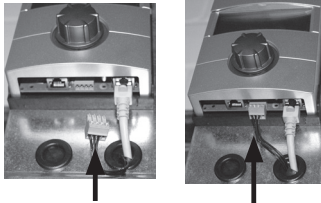


Core assignment:





- ④ Pull off the green bus connector from the bottom of the control element and connect the cable as shown in the terminal diagram, then re-attach the connector to the control element.



After completing all electrical installation work, close the switch cabinet inside the unit. Close the unit if no further installation work inside the unit is to be performed immediately.

Flushing, filling and bleeding the system

! ATTENTION
The system must be absolutely free from air before commissioning.

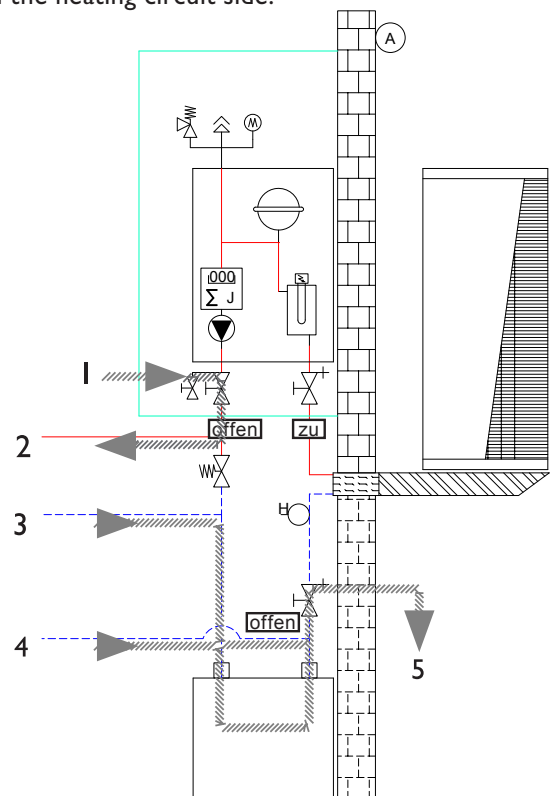
Contamination and deposits in the system can cause malfunctions.

FLUSHING, FILLING AND BLEEDING THE HEATING CIRCUIT

! ATTENTION
Do not exceed a pressure of 2.5 bar when flushing the unit. The drain line of the heating circuit safety valve must be closed before flushing and filling.

Example: HMD 1(E) with row tank-connection

- ① Connect hose to the filling and draining tap and lay it to a drain...
- ② Connect the filling and drain tap at the hydraulic module (heating water outlet to the heat pump)...
- ③ Close shut-off valves in the hydraulic module on the heat pump side. Open shut-off valves of the module on the heating circuit side.



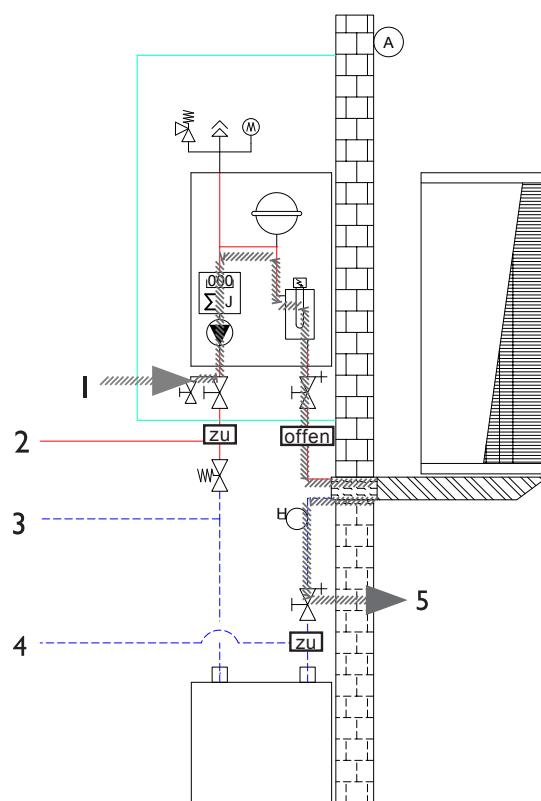
- 1 Filling tap
- 2 Flow, heating water / domestic hot water
- 3 Return flow, heating water
- 4 Return flow, domestic hot water
- 5 Drain



“Switching valve” operating manual



- ④ Dismantle the motor of the 3-way valve for the domestic water heating (accessories). To do so, remove the U-bolt on the motor base and carefully pull off the motor from above....
- ⑤ Turn stem through 180° and flush domestic hot water circuit for approx. 1 minute...
- ⑥ Turn stem through 180° back to starting position (rounded side of stem points to B)...
- ⑦ Flush heating circuit! If necessary, the heating and domestic hot water circuit can be flushed at the same time! To do so, turn stem through 30°...
- ⑧ After completing the flushing and filling procedure, move stem to the starting position and mount the motor of the 3-way valve...
- ⑨ The unit is bled automatically when the bleeders (black cap) of the safety assembly are open. If the heating circuit is filled or emptied, the bleeding valve opens...
- ⑩ Open shut-off valves in the hydraulic module on the heat pump side. Close shut-off valves of the module on the heating circuit side. Close shut-off valves on site on the heating pump side:



- 1 Filling tap
- 2 Flow, heating water / domestic hot water
- 3 Return flow, heating water
- 4 Return flow, domestic hot water
- 5 Drain

- ⑪ Exchange hoses at filling and emptying taps and flush condenser of the heat pump via return flow...
- ⑫ In addition, open the bleeding valve on the condenser of the heat pump. Bleed condenser and then close the bleeding valve again when fully bled.

Insulating the hydraulic connections

You must insulate the fixed piping of the heating circuit, the connection pipes between the hydraulic module and the heat pump and the connections of the domestic hot water tank.

In (R) variant vapour diffusion tight



NOTE.

Insulate in accordance with applicable local standards and directives.



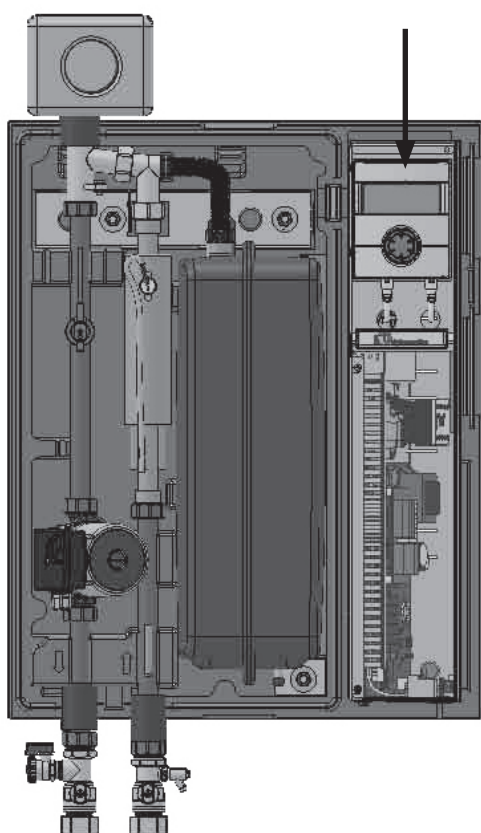
Control element



DANGER!

Risk of fatal injury due to electric shock!
Electrical connections may be installed only by qualified electricians.
Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on!

In the top part of the unit's switch box housing there are 4 recesses for fixing the control element:



Example: HMD I



NOTE.

A connection to a computer or a network can be installed via the left bushing on the bottom of the control element, thus allowing the heating and heat pump regulator to be controlled remotely. One precondition is that a shielded network cable (category 6) has been installed through the unit as part of the electrical connection work.



Operating manual for the heating and heat pump regulator, version "Qualified technician", "Web server" section.

If this network cable is available, insert the network cable's RJ-45 plug into the left bushing of the control element.



NOTE.

The network cable can be retrofitted at any time.

Commissioning

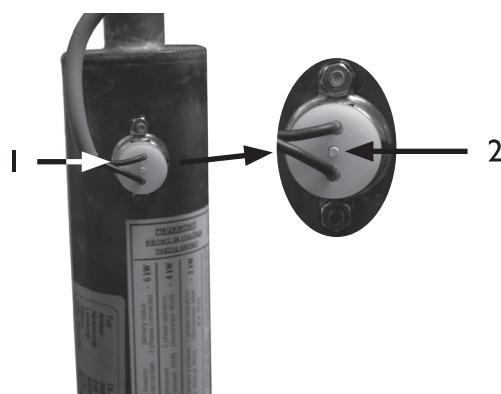


Follow the instructions in the section entitled "Commissioning" in the operating manual for your heat pump.

SAFETY TEMPERATURE LIMITER

A safety temperature limiter is built into the electric heating element. In the event of a malfunction in the heat pump or air in the system, check whether the reset button of the safety temperature limiter has tripped. If this is the case, push in the button.

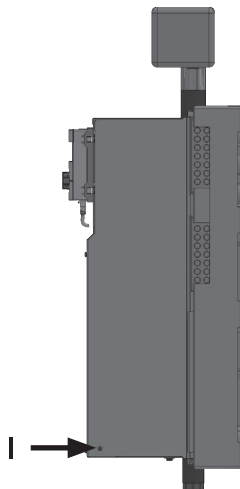
Example: HMD I(E)



- 1 Safety temperature button on electric heating element
- 2 Reset knob



HMD I/R(E):



- I Safety temperature limiter and Reset button (under cap)

SWITCHING ON FOR THE FIRST TIME

When the control voltage is switched on the following may be displayed:



If this display disappears the unit can be operated properly. Otherwise, check the 3-phase cable for the BUS connection to the outdoor unit.

- NOTE.** When starting up for the first time, the heating up phase until the compressor starts can take several hours.

Dismantling



DANGER!
Risk of fatal injury due to electric shock!
Electrical connections may be installed only by qualified electricians.

Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on!



WARNING!
Only qualified heating or cooling system technicians are allowed to remove the unit from the system.



WARNING!
Only qualified cooling system technicians are allowed to dismantle the unit and its components.



ATTENTION
Recycle or provide for proper disposal of unit components in accordance with the applicable regulations, standards and directives.

REMOVAL OF THE BUFFER BATTERY

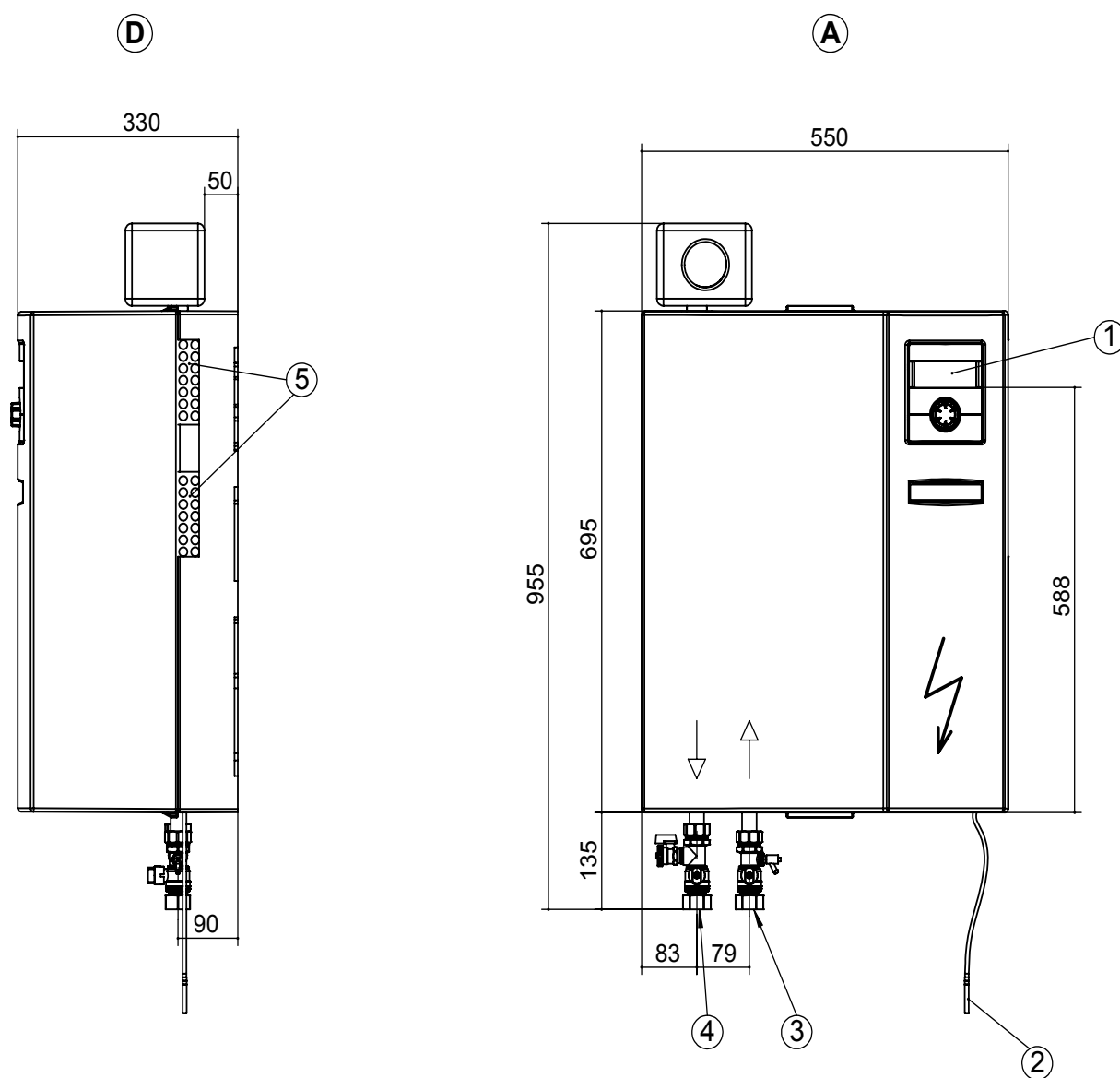


ATTENTION
Before scrapping the heating and heat pump regulator, remove the buffer battery on the processor board. The battery can be pushed out using a screwdriver. Dispose of battery and electronic components in keeping with environmental considerations.



Dimensional drawings

HMD 1(E)



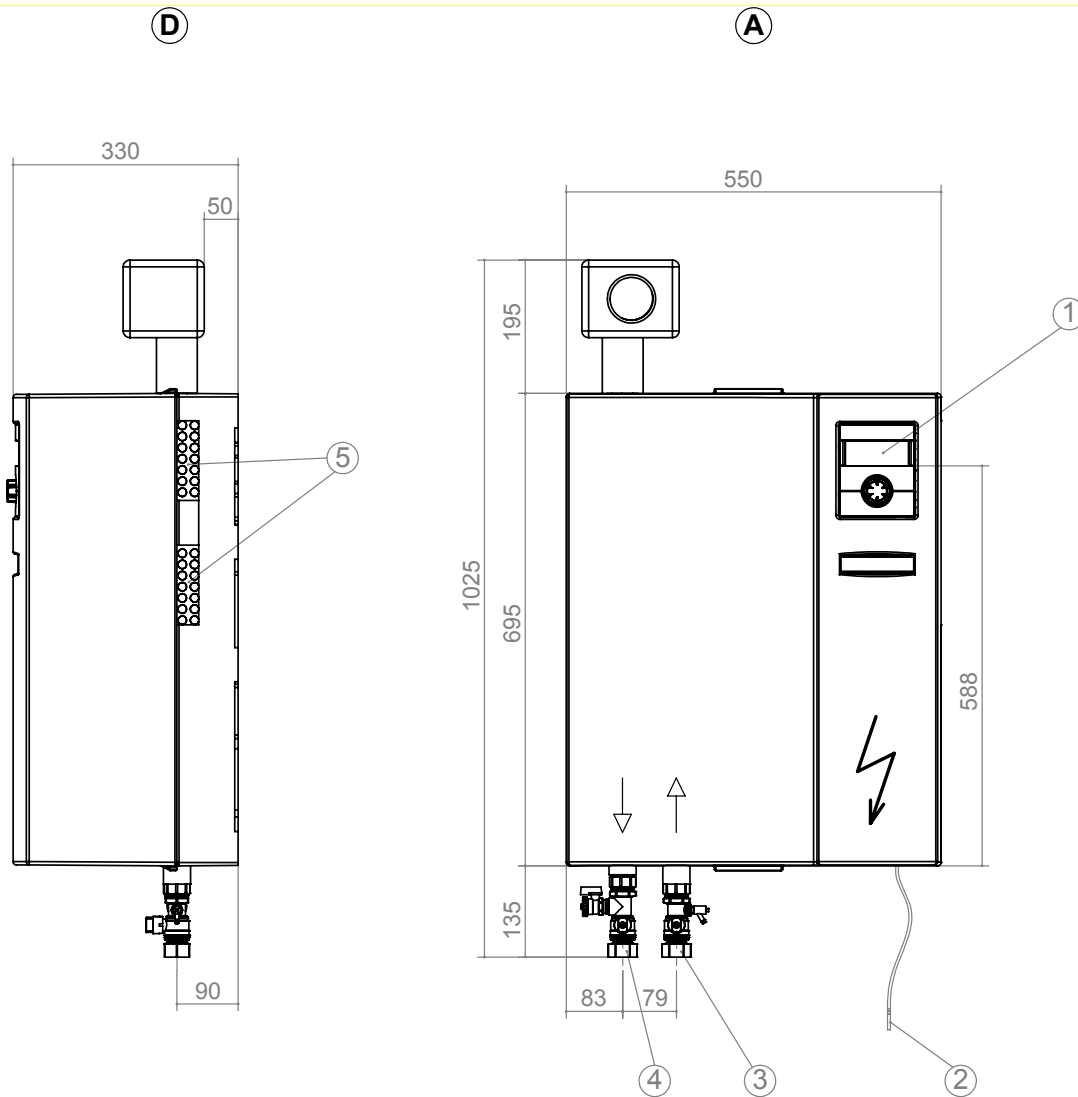
Legende: D819396-

We reserve the right to modify technical specifications without prior notice.
All dimensions in mm.

- A Front view
- D Side view from right

The hydraulic module is installed in the heating flow!

Item	Designation	Dim.
1	Control element	
2	Return flow sensor approx. 5.5m from unit	
3	Heating water inlet (forward flow)	Rp 1½ IG
4	Heating water outlet (forward flow)	Rp 1½ IG
5	Penetrations for electric/sensor cables	



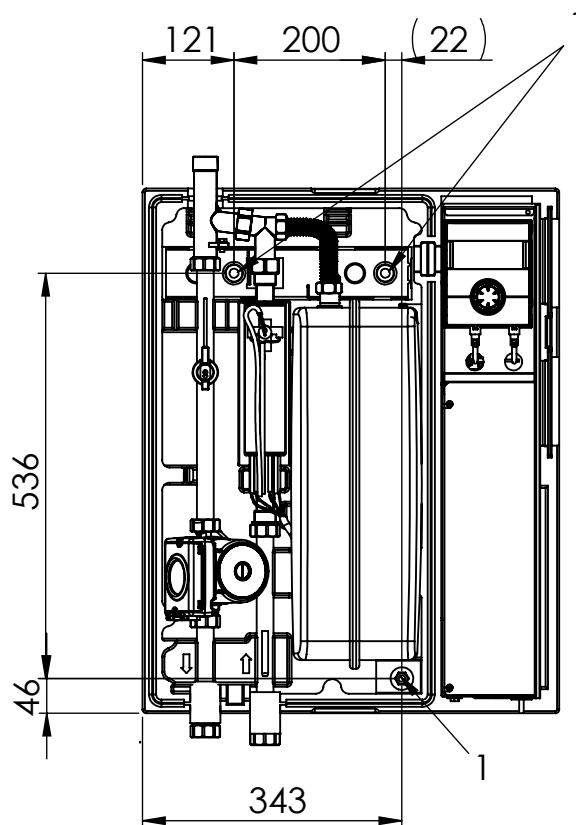
Legende: D819412a

We reserve the right to modify technical specifications without prior notice.
All dimensions in mm.

- A Front view
- D Side view from right

The hydraulic module is installed in the heating flow!

Item	Designation	Dim.
1	Control element	
2	Return flow sensor approx. 5.5m from unit	
3	Heating water inlet (forward flow)	Rp 1½ IG
4	Heating water outlet (forward flow)	Rp 1½ IG
5	Penetrations for electric/sensor cables	



Legende 819403-

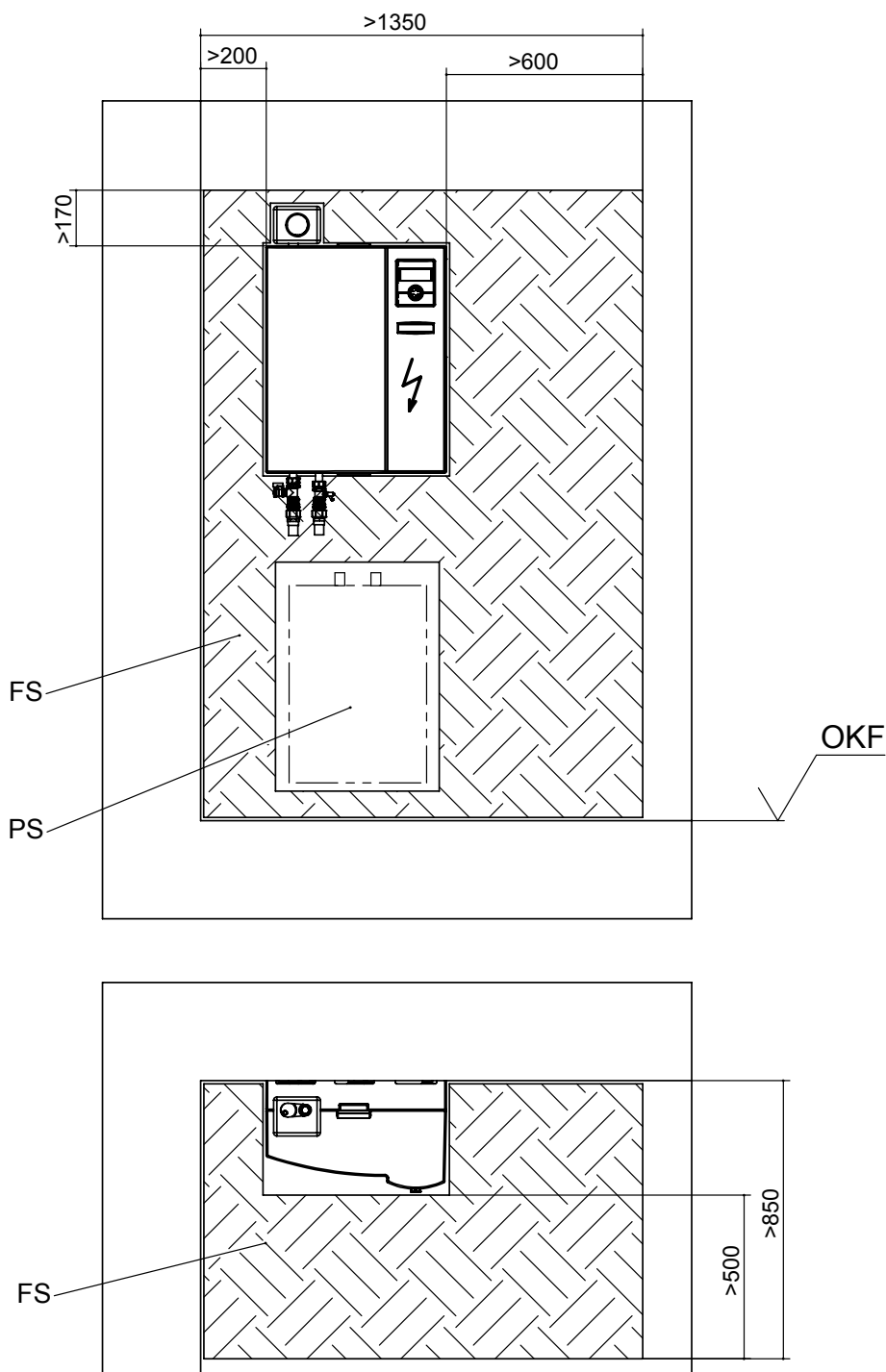
Spacings for drilling pattern

1= hole for anchor (extra box) \varnothing 12



Installation plan

HMD 1(E)



Legende: 819398-

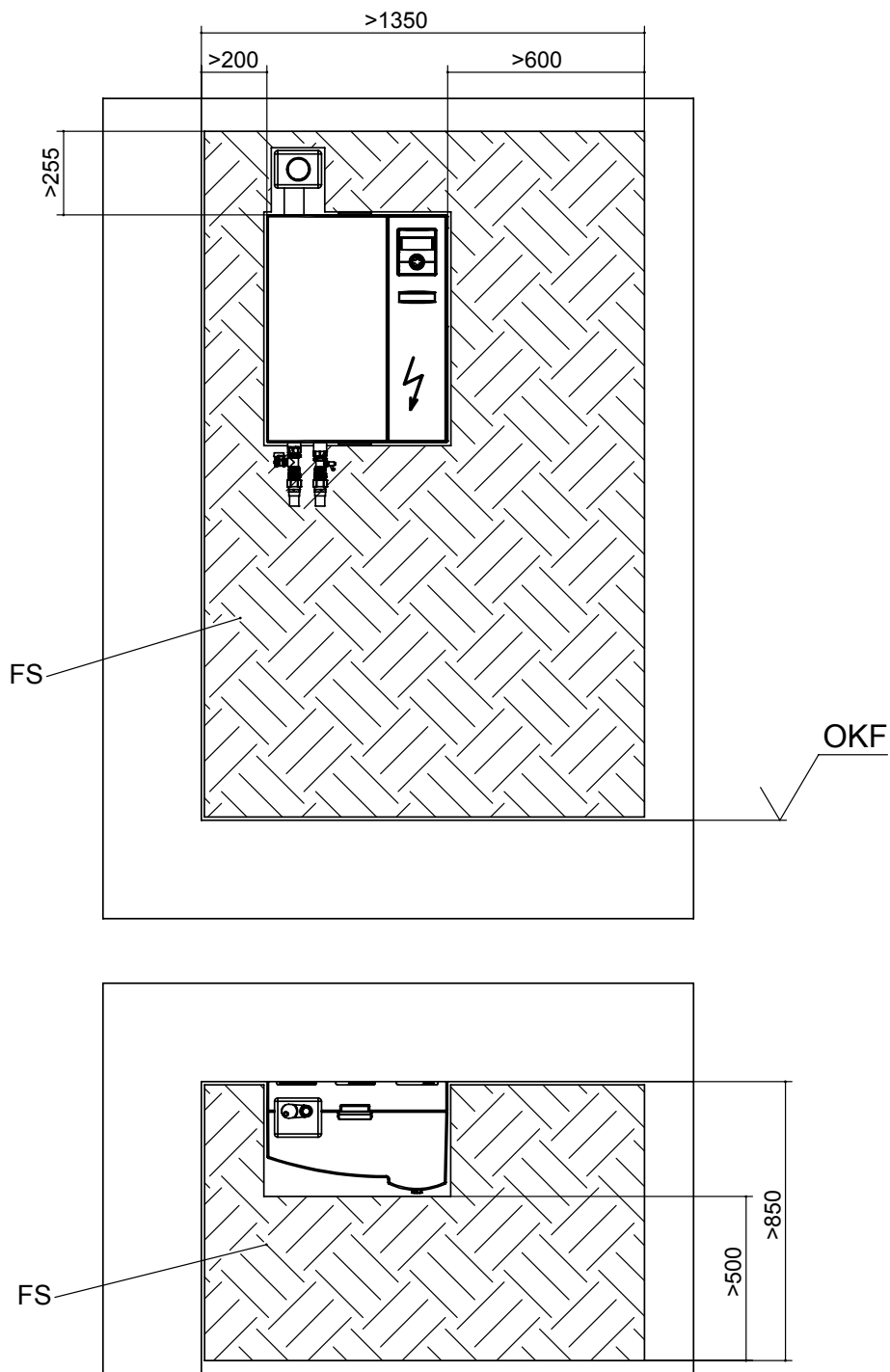
All dimensions in mm.

- OKF Top surface finished floor
- FS Free space for service purposes
- PS Free space for wall-mounted buffer storage tank 50L (accessories) possible



Installation plan

HMD 1/R(E)



Legende: 819413a

All dimensions in mm.

- OKF Top surface finished floor
- FS Free space for service purposes



Technical data/scope of delivery

Unit designation

Accessory for heat pump model	LWD 50ASX - LWD 70ASX LWD 50ARSX - LWD 70ARSX	• applicable — not applicable
	Functionally necessary	• applicable — not applicable
Installation location	Indoors Outdoors	• applicable — not applicable
	Maximum indoor temperature	°C
	Maximum relative humidity	%
Conformity		CE
Heating circuit	Heating circuit efficiency pump	integrated: • yes — no
	Heating circuit free compression Δp (factory setting) Maximum free compression Δp_{max} Volume flow	bar bar l/h
	Volume flow: minimum flow rate maximum flow rate	l/h
	max. permissible operating pressure	bar
	Integrated expansion vessel Volume Initial pressure	• yes — no l bar
	Buffer tank	integrated: • yes — no
	Heat metering and/or flow rate display	integrated: • yes — no
General unit data	Housing dimensions (Height Width Depth)	mm mm mm
	Total weight	kg
	Connections	Heating water inlet (forward flow) Hot water outflow (forward flow)
Electrics	Voltage code three-phase circuit breaker heat pump 5 kW**)	... A
	Voltage code three-phase circuit breaker heat pump 7 kW**)	... A
	Voltage code circuit breaker control voltage **)	... A
	Voltage code circuit breaker electric heating element 1~230V**)	... A
	Voltage code circuit breaker electric heating element 3~230V**)	... A
	Protection type	IP
	Output electric heating element 3 2 1 phase	kW kW kW
	Heating circuit pump: maximum power consumption current consumption	kW A
Safety equipment	Safety assembly heating circuit Safety assembly heat source	in scope of delivery: • yes — no
Heating and heat pump regulator		Incl. in scope of delivery: • yes — no
Overflow valve		integrated: • yes — no

** comply with local regulations

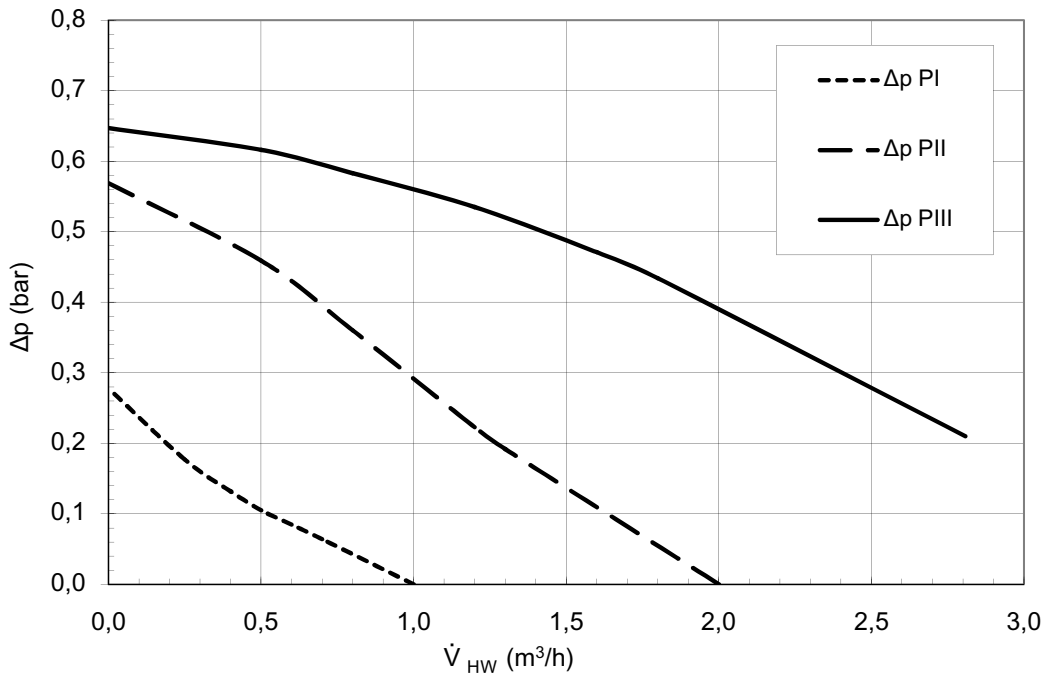


	HMD 1/S	HMD 1/SE	HMD 1/RS	HMD 1/RSE
	• —	• —	— •	— •
	•	•	•	•
	• —	• —	• —	• —
	—	—	35	35
	—	—	60	60
	•	•	•	•
	—	—	—	—
	0,46 0,46 1600	0,46 0,54 1600	0,46 0,46 1600	0,46 0,54 1600
	900 2000	900 2000	900 2000	900 2000
	3	3	3	3
	• 12 1,5	• 12 1,5	• 12 1,5	• 12 1,5
	—	—	—	—
	•	•	•	•
	695 550 330	695 550 330	695 550 330	695 550 330
	25	25	25	25
	R 1" Innen	R 1" Innen	R 1" Innen	R 1" Innen
	R 1" Innen	R 1" Innen	R 1" Innen	R 1" Innen
	1~/N/PE/230V/50Hz C16	1~/N/PE/230V/50Hz C16	1~/N/PE/230V/50Hz C16	1~/N/PE/230V/50Hz C16
	1~/N/PE/230V/50Hz C20	1~/N/PE/230V/50Hz C20	1~/N/PE/230V/50Hz C20	1~/N/PE/230V/50Hz C20
	1~/N/PE/230V/50Hz B16	1~/N/PE/230V/50Hz B16	1~/N/PE/230V/50Hz B16	1~/N/PE/230V/50Hz B16
	1~/N/PE/230V/50Hz B32	1~/N/PE/230V/50Hz B32	1~/N/PE/230V/50Hz B32	1~/N/PE/230V/50Hz B32
	3~/PE/230V/50Hz B16A	3~/PE/230V/50Hz B16A	3~/PE/230V/50Hz B16A	3~/PE/230V/50Hz B16A
	20	20	20	20
	6 4 2	6 4 2	6 4 2	6 4 2
	0,12 0,53	0,07 0,31	0,12 0,53	0,07 0,31
	• —	• —	• —	• —
	•	•	•	•
	—	—	—	—
	813306c	813312b	813311b	813313b



HMD 1/(R)S

Free compression

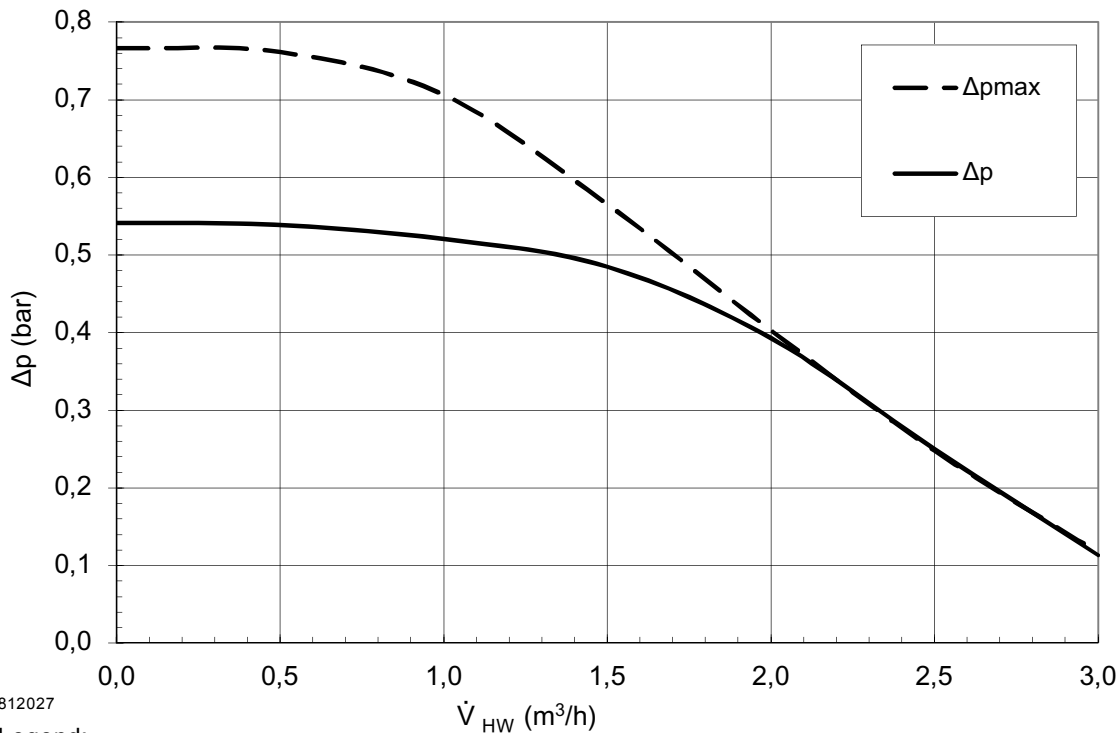


812027

Legend:

- \dot{V}_{HW} Heating water volume flow in m³/h
- Δp PI Free compression, pump power level I
- Δp PII Free compression, pump power level II
- Δp PIII Free compression, pump power level III

HMD 1/(R)SE

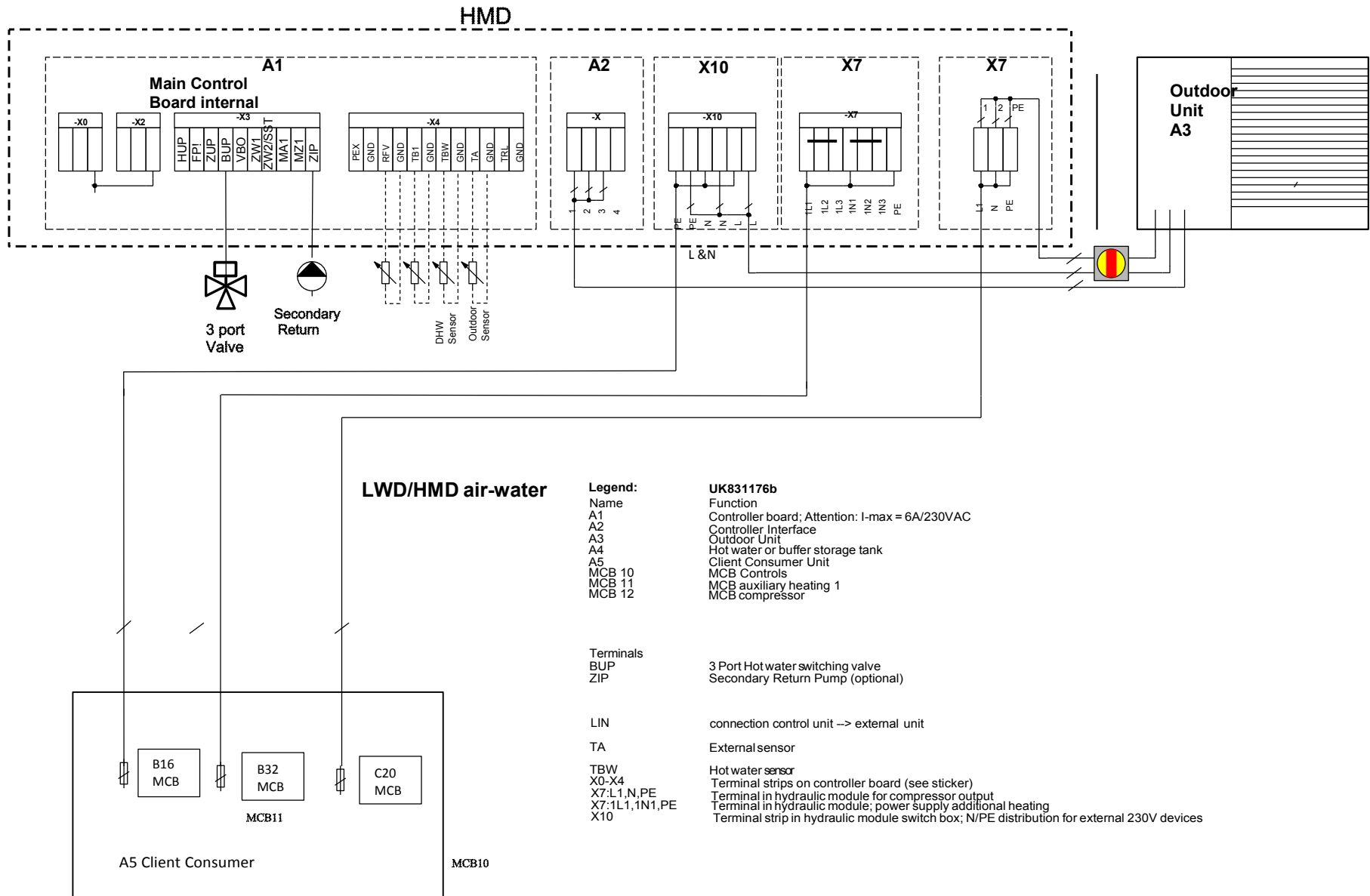


812027

Legend:

- \dot{V}_{HW} Heating water volume flow in m³/h
- Δp Free compression (factory setting)
- Δp max Free compression maximum

HMD1 Terminal Diagram V1.5



LWD70A-SX/HMD1 Wiring Guide

X7 - Heater Supply 230V 6kW

Use **B32 MCB**

X7 - Compressor Supply 230V 14A Max Run, 45A Start Current

Use **C20 MCB** motor rated

Screened Coms. cable from outdoor unit, if extending use screened cable 1.5mm 3 core. Max length 30m. Wire into right hand green terminal plug
Not Cat.5

Secure the cable with screen in clip

X10 - Controls supply 230V 10A Max

Use **B16 MCB**

In from supply and out to Heat Pump

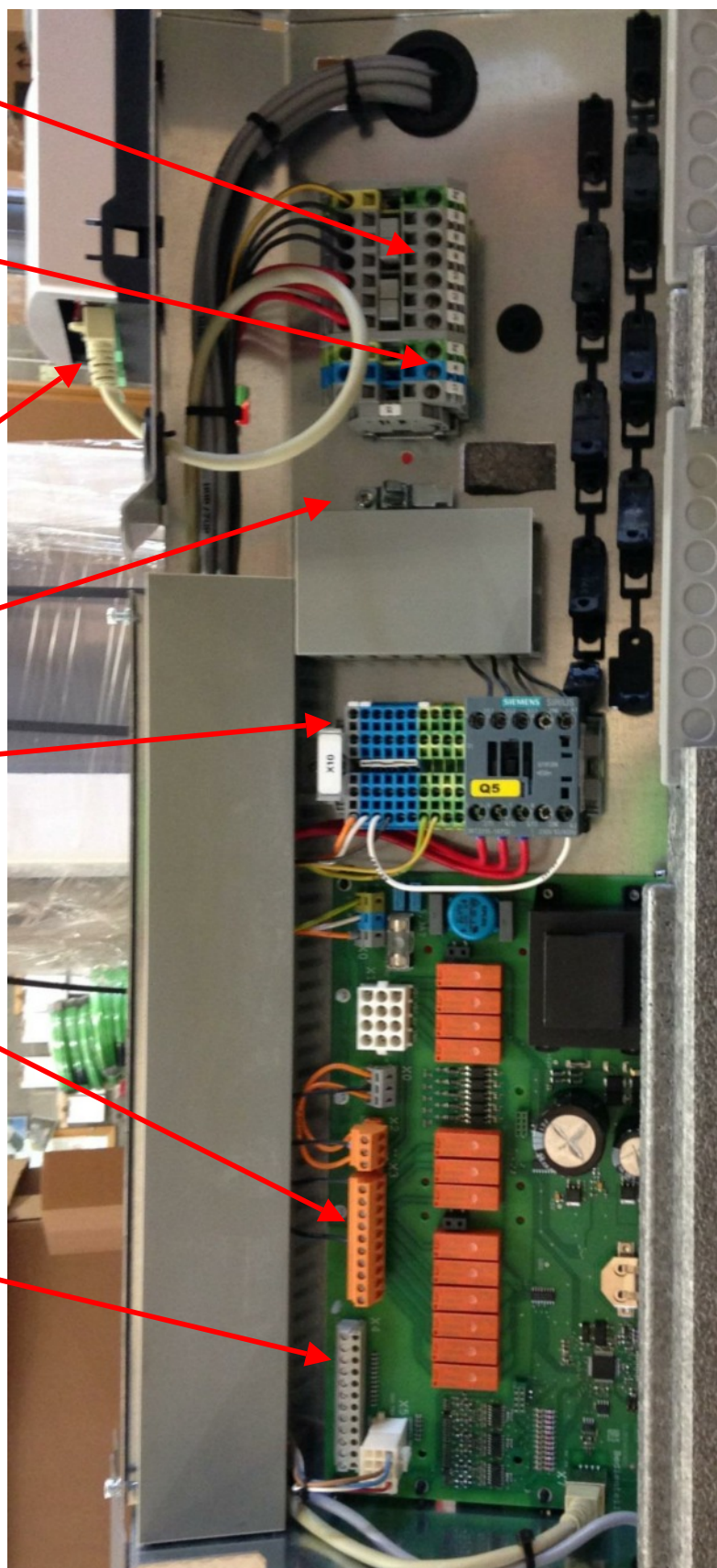
X3 - 230V Ancillaries out

BUP- 3 port valve switched live - black
ZIP - Secondary return if fitted.

X4 - Sensor input

TA - Outdoor Temp - Fit on North Wall
TBW - DHW

Locate the temperature sensor coiled up in the case and securely fix to the common return pipe with cable ties and conducting paste then lag well.



Three separate power supplies are connected to the HMD unit from the consumer unit.

The outdoor unit has 3 trailing cables (20A, 16A and Coms.). The cables are wired into the HMD unit inside the building. The larger cable powers the compressor and is connected to X7 block, L, N, PE. The smaller cable is connected to X10 on the HMD unit. It is recommended to fit a locking 4 pole isolator next to the outdoor unit for the two power cables but not for the coms.