



Installation and Operation Instructions

Pipe set for

FriwaMidi cascade

FriwaMaxi cascade

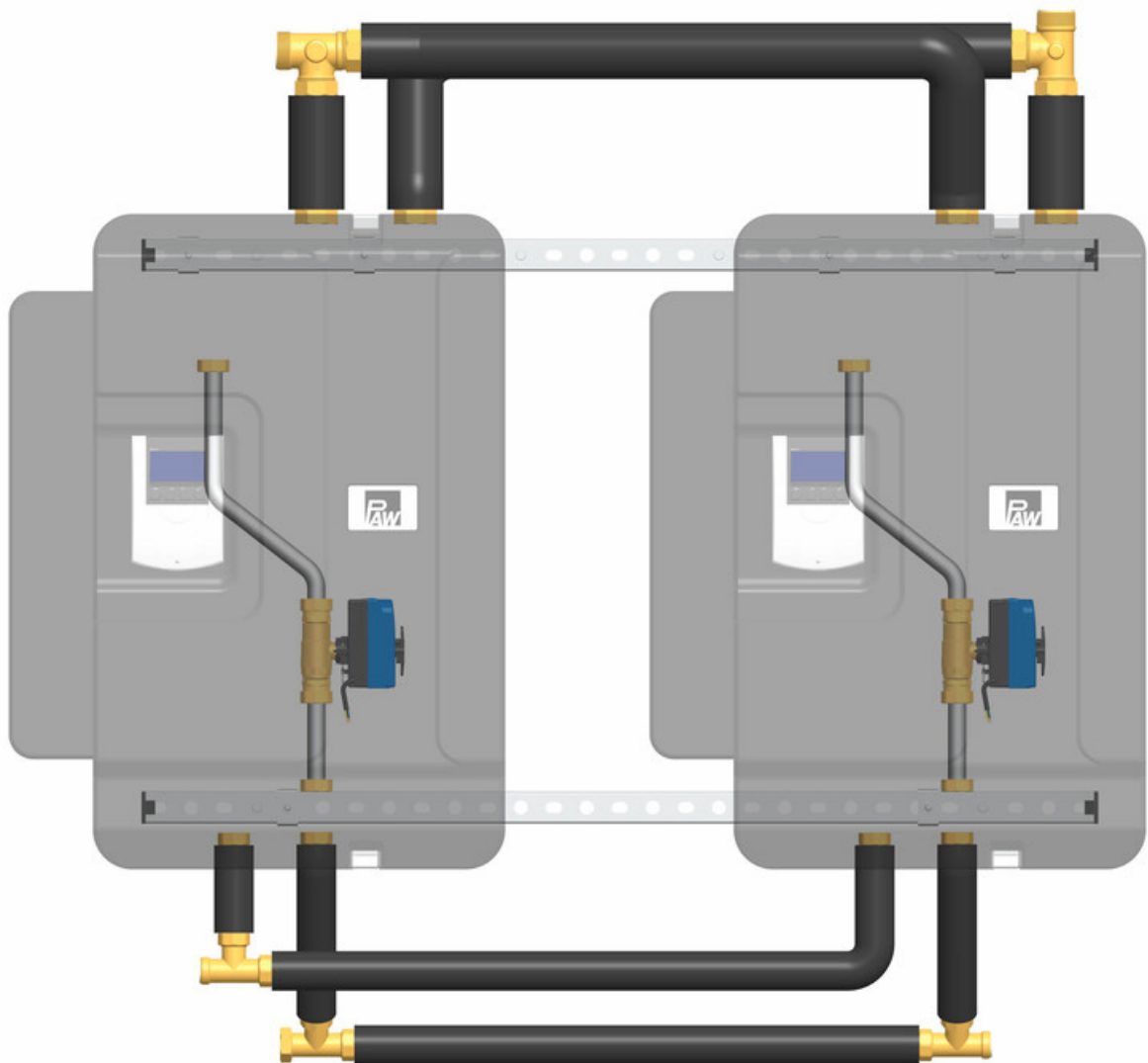


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1 General Information



Carefully read these instructions before installation and commissioning.

Save these instructions in the vicinity of the installation for future reference.

1.1 Scope of these instructions

These instructions describe the assembly and installation of the pipe set for a Friwa cascade.

The chapters called [specialist] are intended for specialists only.

For other components of the installation, such as the domestic hot water modules, storage tanks, controllers and pumps, please observe the instructions of the corresponding manufacturer.

This product complies with the relevant directives and is therefore labelled with the CE mark.

The Declaration of Conformity is available upon request, please contact the manufacturer.

1.2 About this product

With the pipe set, two domestic hot water modules FriwaMidi DN 20 or FriwaMaxi DN 25 can be cascaded.

1.3 Designated use

The pipe set may only be used for the installation of a cascade of two domestic hot water modules FriwaMidi or two domestic hot water modules FriwaMaxi. The technical limit values specified in these instructions must be observed.

Only use PAW accessories with the domestic hot water module. Improper usage excludes any liability claims.


Do not put the product into operation in case of any visible damage.

2 Safety instructions

The installation and commissioning as well as the connection of electrical components require technical knowledge commensurate with a recognised vocational qualification as a fitter for plumbing, heating and air conditioning technology, or a profession requiring a comparable level of knowledge [specialist].

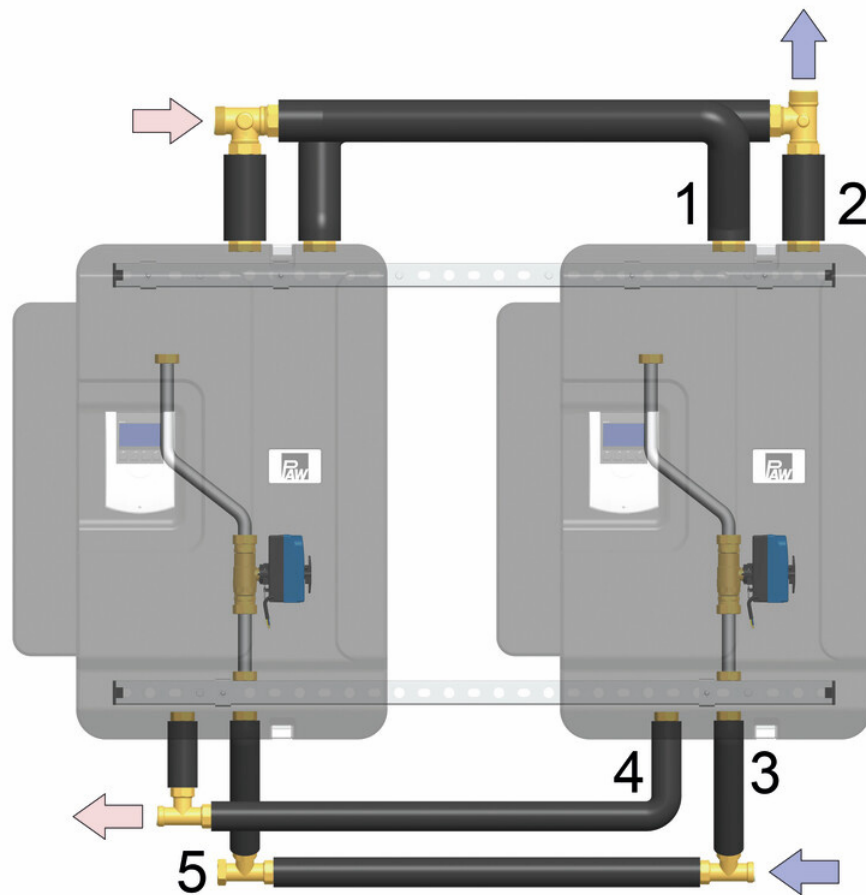
The following must be observed during installation and commissioning:

- relevant local and national regulations
- accident prevention regulations of the professional association
- instructions and safety instructions mentioned in these instructions

WARNING	
	<p>Risk to life and limb due to electric shock!</p> <ul style="list-style-type: none"> ▶ Prior to commencing electrical work on the controller, pull the mains plug! ▶ Only after completing all work, plug the mains plug into a socket. This avoids an unintentional start of the motors.

NOTICE	
<p>Material damage due to mineral oils!</p> <p>Mineral oil products cause lasting damage to seals made of EPDM, whereby the sealant properties are lost. We do not assume liability nor provide warranty for damage to property resulting from sealants damaged in this way.</p> <ul style="list-style-type: none"> ▶ It is imperative to prevent the EPDM sealing elements from making contact with substances containing mineral oils. ▶ Use a silicone- or polyalkylene-based lubricant free of mineral oil such as Unisilikon L250L and Syntheso Glep 1 from Klüber or a silicone spray. 	

3 Product description




Connections

- 1 Primary side/heating side: Flow from the buffer tank
- 2 Primary side/heating side: Return to the buffer tank
- 3 Secondary side/DHW side: Cold water supply
- 4 Secondary side/DHW side: Hot water outlet
- 5 Connection of the circulation

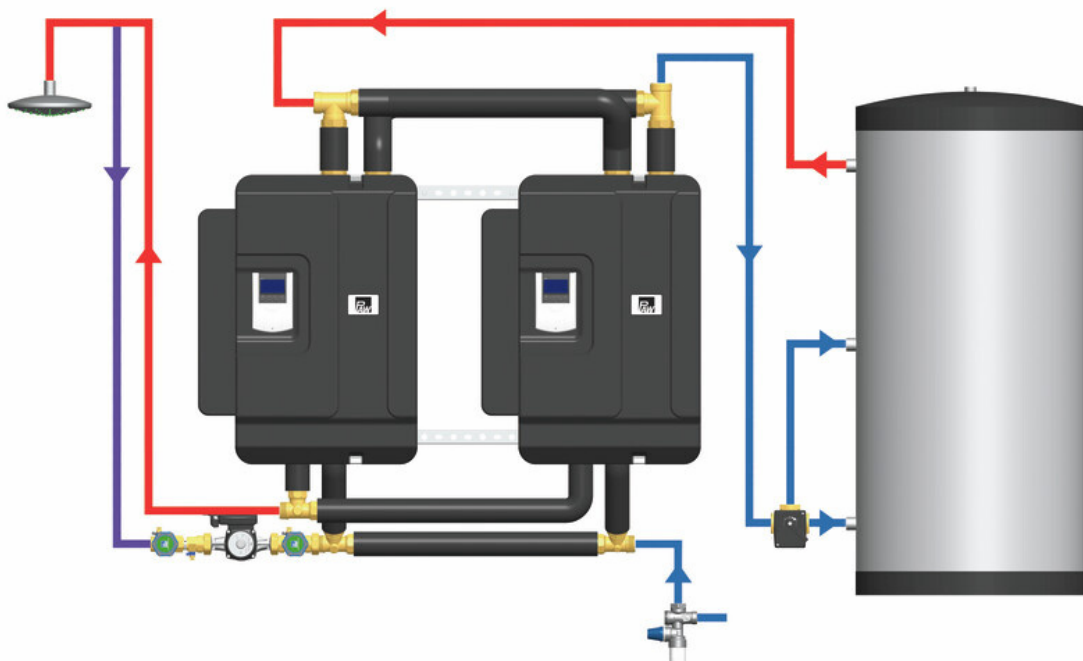
4 Dimensioning and planning

The FriwaMidi and FriwaMaxi are domestic hot water modules which heat potable water operating on the principle of a flow-type water heater.

The DHW module will only work flawlessly if the installation meets certain requirements. Please take some time to plan the assembly.

WARNING	
	<p>Danger of scalding due to hot water!</p> <p>Undesirable circulation of water in the primary circuit can cause the exit of water of up to 90 °C at the withdrawal point.</p> <ul style="list-style-type: none"> ▶ External pumps must not be installed between the domestic hot water module and the buffer tank. ▶ The domestic hot water module must not be connected to a distribution manifold of a heating circuit.

Mounting example:



FriwaMaxi cascade with 2 x FriwaMaxi, with pipe set and optional circulation set (additionally required, item no. 6404136GM7 or 6404136GH10) and return distribution set (additionally required, item no. 640424).

5 Mounting and installation [specialist]

NOTICE

Damage to property!

The installation site must be dry, stable, frost-proof and protected against ultraviolet radiation in order to prevent material damage of the installation.

5.1 Mounting the cascade

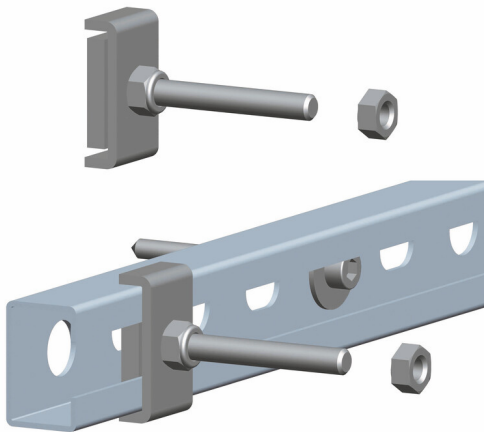
WARNING



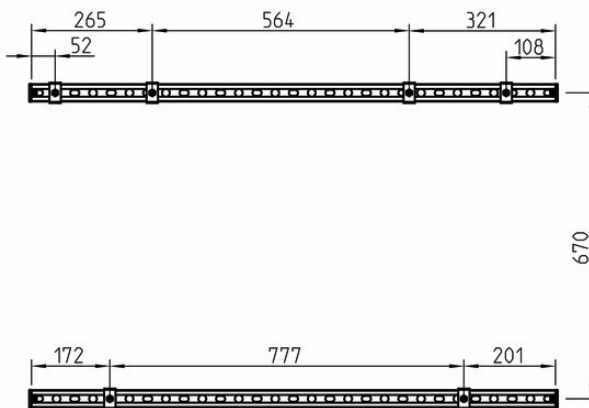
Risk to life and limb due to electric shock!

- ▶ Prior to commencing electrical work on the controller, pull the mains plug!
- ▶ Only after completing all installation work as well as the flushing and filling, the mains plug of the controller can be plugged into a socket. This avoids an unintentional start of the motors.

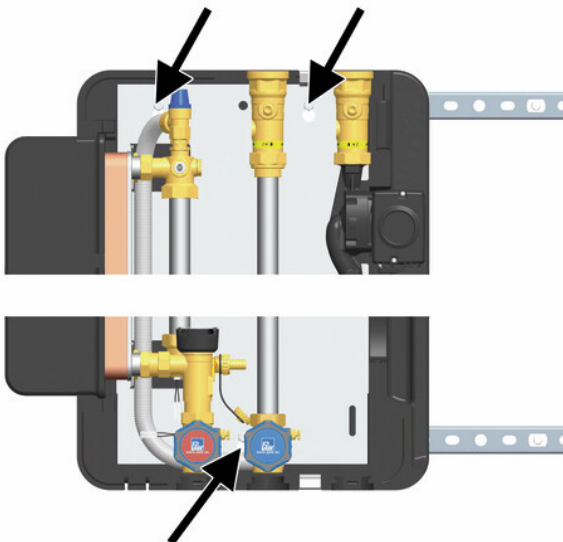
1. Determine the mounting location of the cascade near the buffer tank.
2. Mount the upper rail to the wall with 4 screws (recommended height 1.80 m). The cardboard template of the DHW module shows the position of the drilling holes and the distance between the upper and lower rail.
3. Fix the lower rail at the wall with 2 screws.
4. Remove the DHW module from the packaging and put it on the box.
Notice: The station is very heavy and should be carried by two persons.
5. Open the insulating front shell.



- Slide the 2 T-head screws onto the upper rail and make sure that the big washer is placed at the outside of the rail.

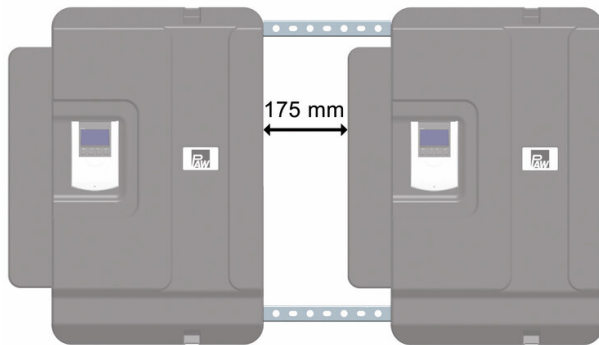


- Adjust the T-head screws.



- Hang the first station onto the screw and make sure that it protrudes beyond the holes in the retaining plate. Tighten the screw with a washer and a nut.
- Pull the station away from the lower rail towards you and slide the T-head screw onto the lower rail behind the hole. Tighten the screw with a washer and a nut.
- Tighten all screws manually.

5 Mounting and installation [specialist]

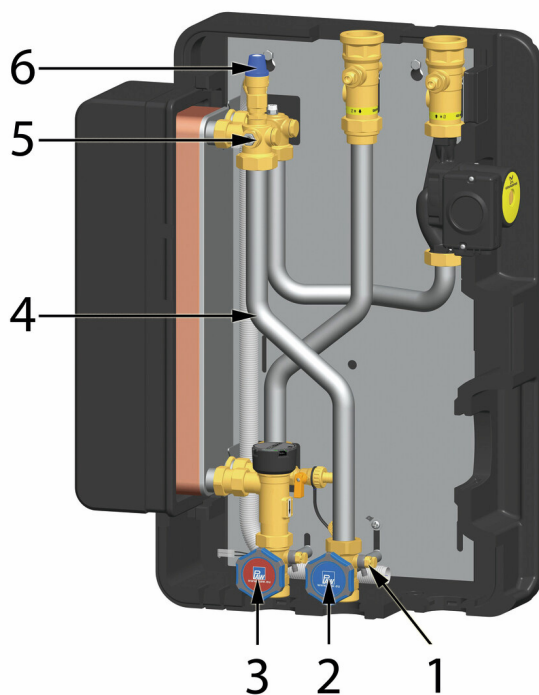


11. In the same way, mount the second DHW module to the wall. Please observe the distance of 175 mm between the stations.
12. Screw the screws of the second DHW module only manually because it still has to be adjusted during the connection of the pipe set.
13. As long as the screws are screwed manually, the position of the stations onto the rails can be modified. For this purpose, the screws have to be relieved by an easy lifting of the stations.
14. Mount the pipe set as follows.

5.2 Mounting the 2-way-zone-valve

The accessory kit can only be mounted in domestic hot water modules of the type FriwaMidi or FriwaMaxi from February 2024 on. For older domestic hot water modules, other assembly sets must be used.

If you have any questions about the spare parts required for your installation, please keep the serial number ready (it is placed in the lower right corner of the retaining plate of the module).



1. Remove the insulating front shell of each module.
2. Close the piston valves (2) and (3) of the domestic hot water circuit.
3. Drain the double bent pipe (4) in the cold water inlet by opening the drain valve (1).
Use a hose for a controlled draining of the liquid.
4. Actuate the pressure relief valve (6) several times to vent the pipe.
5. Dismount the pipe (4) in the cold water inlet of the module between the piston valve (2) and the connection piece (5) at the heat exchanger.

NOTICE

Use the new seals included! Screw the thread connections at first manually and adjust the pipes, in order to guarantee a low-tension installation.

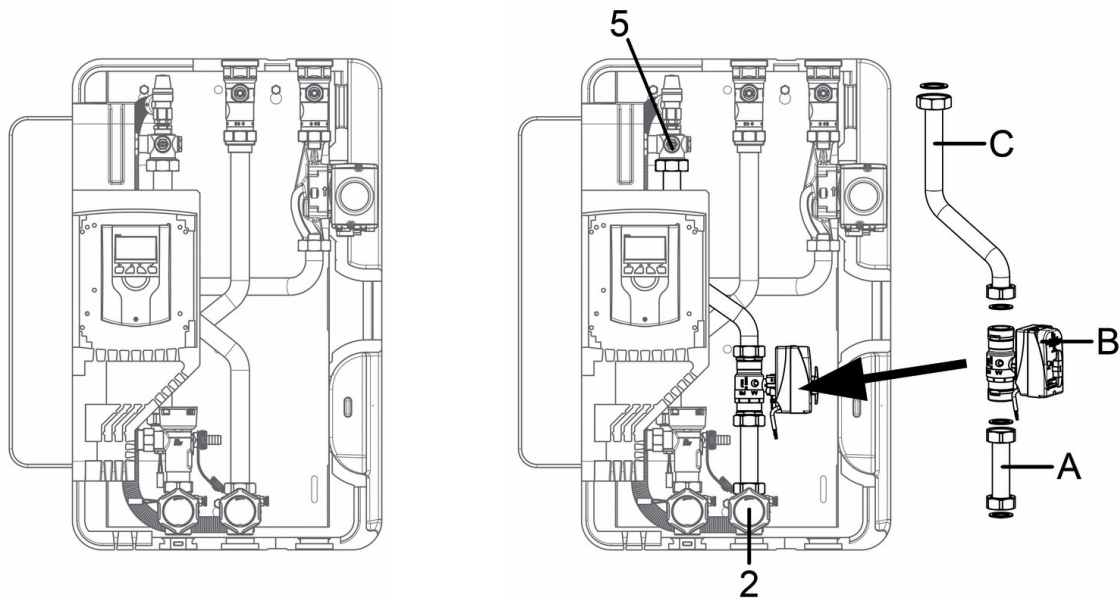
Procedure for one module:

1. Mount the short and straight pipe section (A) on the piston valve (2).
2. Screw the zone valve (B) on it in such a way that the actuator is aligned laterally.

The cable of the actuator must point downwards (flow A to B, from the bottom to the top).

5 Mounting and installation [specialist]

3. Screw the short end of the long double bent pipe (C) between the zone valve and the elbow piece (5).
4. Firmly tighten all screw connections afterwards.
5. Connect the valve to the controller of the module (see chapter for the controller connection) and activate the automatic operation mode (see the separate instructions of the zone valve).
6. Mount the other domestic hot water modules to the wall in the same way.
7. Connect the controllers of the cascade with the delivered communication cable (see chapter for the controller connection).



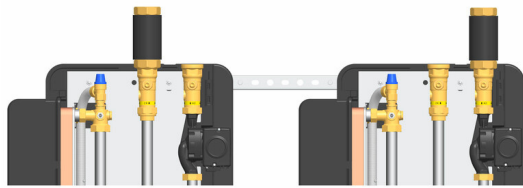
Before

Installation of the accessory kit for cascade operation

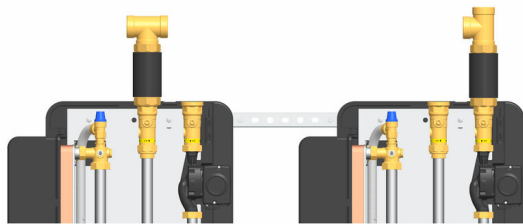
5.3 Mounting the pipe set

NOTICE

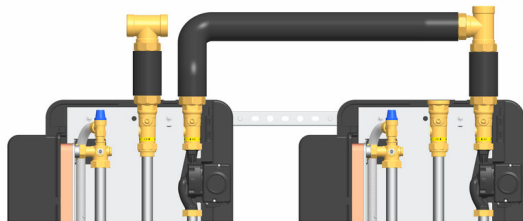
Use the new seals included! Screw the thread connections at first manually and adjust the pipes, in order to guarantee a low-tension installation.



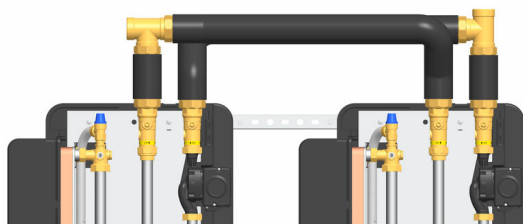
1. Screw a short, straight pipe onto the flow connection of the left domestic hot water module.
2. Screw the second short, straight pipe section onto the return connection of the right domestic hot water module.



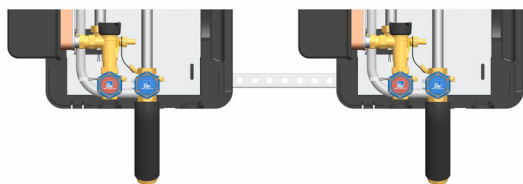
3. Screw a T-piece onto each short pipe. Depending on the piping, the T-pieces can be mounted in numerous ways (outlet to the side or to the top).



4. Screw a triple bent pipe onto the T-piece of the right module and at the return of the left module. Notice: The pipes can not be interchanged!



5. Screw a long triple bent pipe between the T-piece of the left module and the flow of the right module. Notice: For the connection of the pipes, it may be necessary to slightly move the modules on the rails.

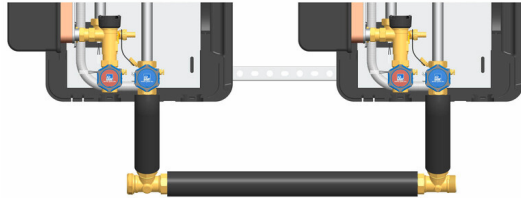


6. Screw a short single bent pipe onto each cold water inlet of the domestic hot water modules. The opening of the pipes must point backwards.

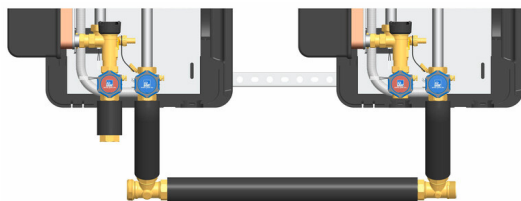
5 Mounting and installation [specialist]



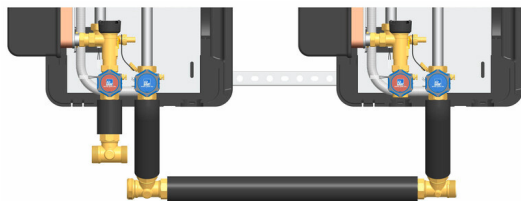
7. Screw the T-pieces onto the ends of the long, straight pipe.



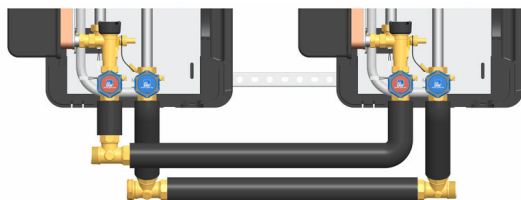
8. Mount the enclosed group between the cold water inlets of the two modules.
Notice: The cold water inlet can be connected from the right or from the left.
A piping according to the Tichelmann principle is recommended. Here: Inlet from the right, outlet to the left.



9. Screw the short, straight pipe section on the hot water connection of the left module.



10. Screw the T-piece onto the end of this pipe.



11. Screw the long single bent pipe between the T-piece of the left module and the hot water connection of the right module.

12. Firmly tighten all screw connections and check the piping for tightness.
13. Put the domestic hot water modules into operation according to the instructions.

5.4 Controller connection FC3.10

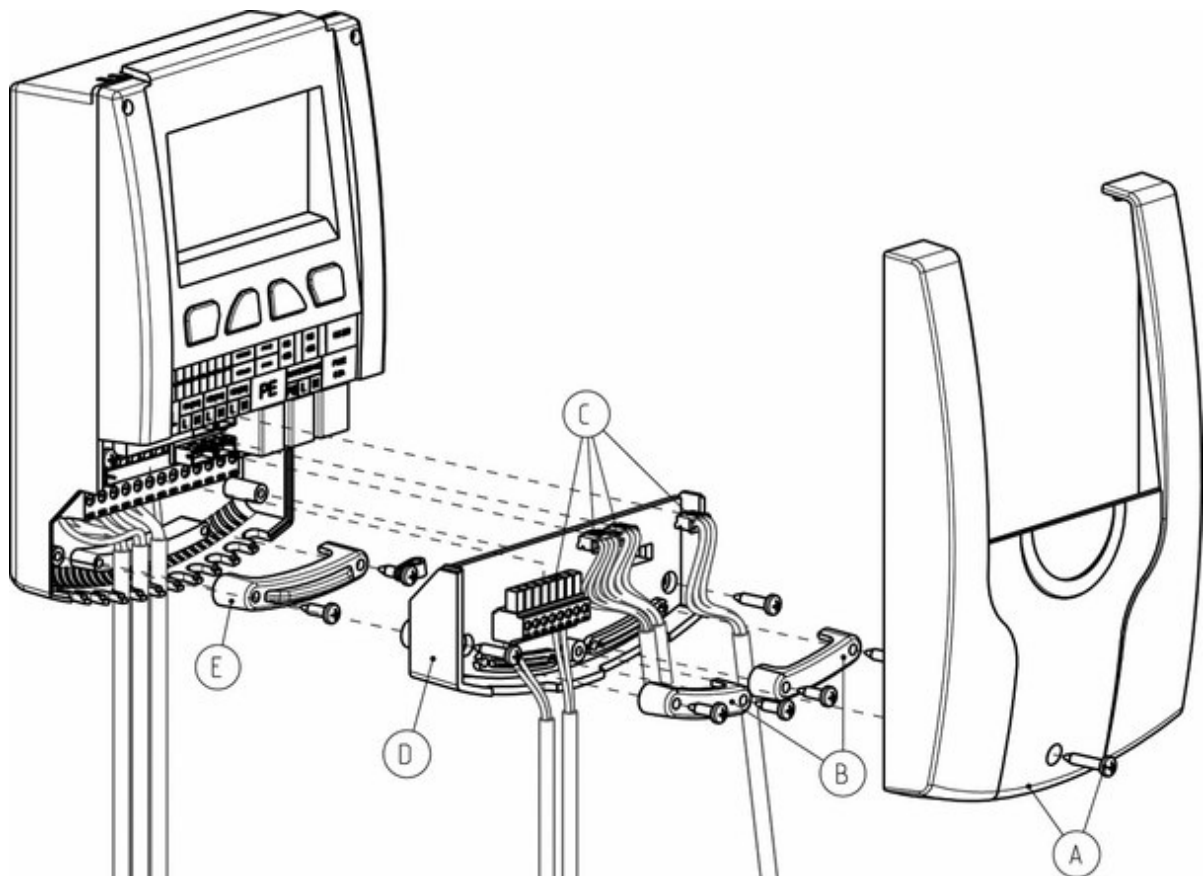
The following illustrations show how to connect the 2-way zone valves (switch valves) electrically to the controller, and how to connect the controllers with each other in order to establish a communication between them.

WARNING



Risk to life and limb due to electric shock!

- ▶ Prior to commencing electrical work on the controller, pull the mains plug!
- ▶ Only after completing all work, plug the mains plug into a socket. This avoids an unintentional start of the motors.



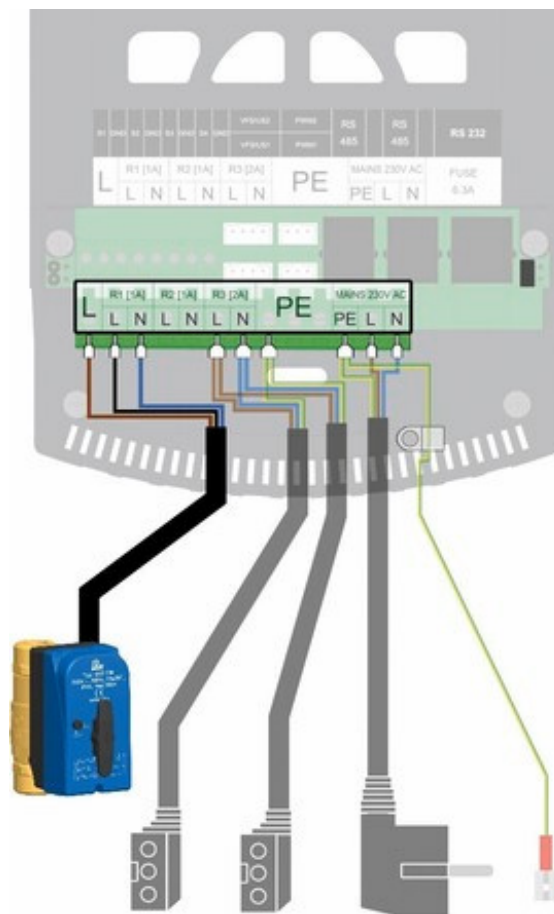
5 Mounting and installation [specialist]

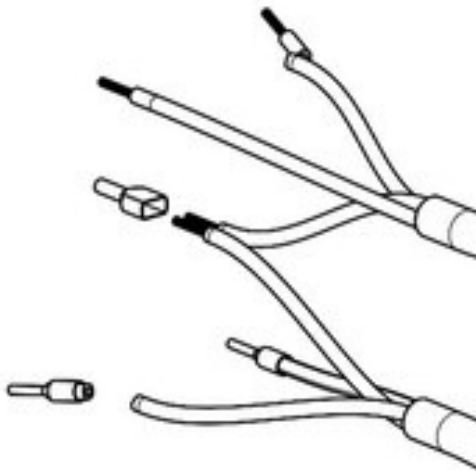
1. Remove the white front panel (A) of the controller.
2. Then, remove the strain reliefs (B).
3. After that, remove the sensor cables of the VFS/US sensors, of the PWM signal and the temperature sensors from the controller circuit board plug connector (C). Alternatively, the entire PCB connector with cables can be pulled out.
4. In the next step, unscrew the two screws to remove the intermediate level (D).
5. Remove the strain relief on the 230 V level (E).
6. Connect the 2-way zone valve to the relay 1. Observe the polarity of the PWM connection:

Brown: L_{const}

Black: L

Blue: N





7. If, in addition to the 2-way zone valve, the 3-way valve for the stratification is also supposed to be connected to the relay 2, connect both wires (L_{const}) to "L" by means of a duo wire end ferrule (twin wire end ferrule).

See controller instructions, chapter "Stratification".

8. Mount the strain relief of the 230 V level and the intermediate level.
9. Connect the controllers with each other via a bus line. To do this, put the plug of the bus line into the socket marked with "RS 485".

Recommendation:

Arrange the controllers from left to right in the following order:

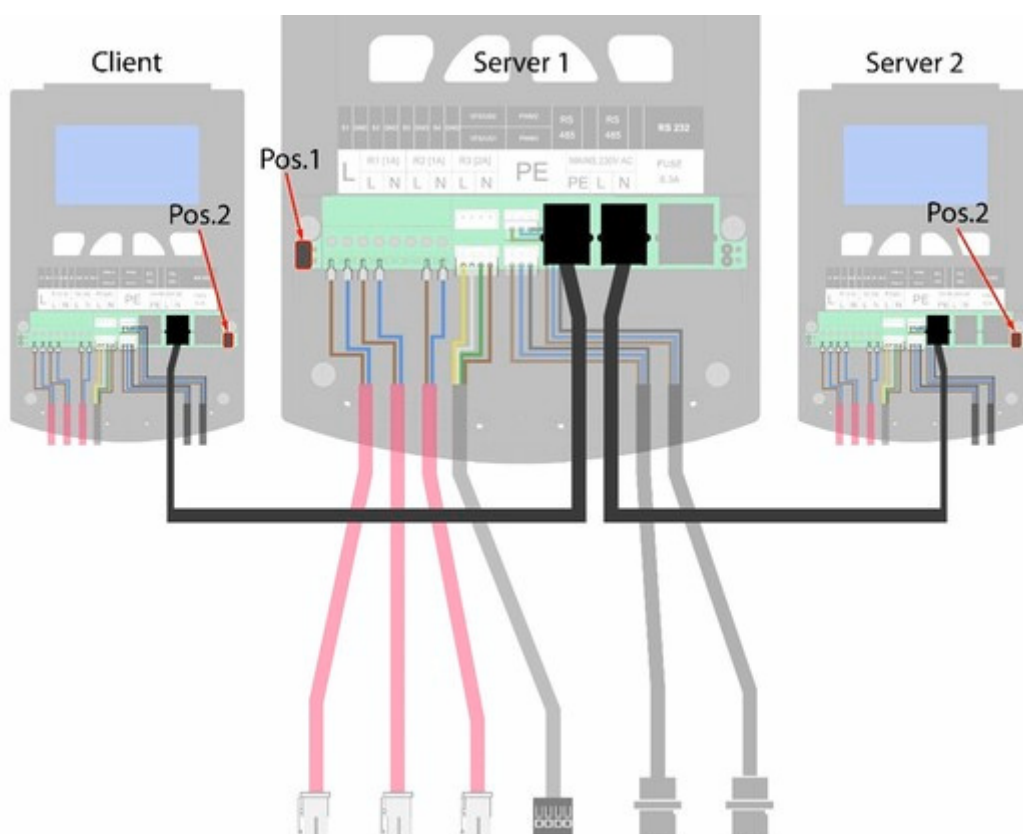
client, server 1, server 2, server 3.

Observe the controller instructions.

Cascade connection of the domestic hot water modules

The following illustration shows how the three domestic hot water modules must be connected via two bus lines in a cascade connection.

5 Mounting and installation [specialist]



Plug the jumper of the first and the last participant of the modbus communication into the plug connector which is marked as "Pos. 2".

The jumper of the controller which is connected between the first and the last participant must be plugged into the marked "Pos. 1" of the plug connector.

After that, mount the two strain reliefs and the front panel of the controller.

Set up the power supply of the installation and put the controller into operation according to the controller instructions.

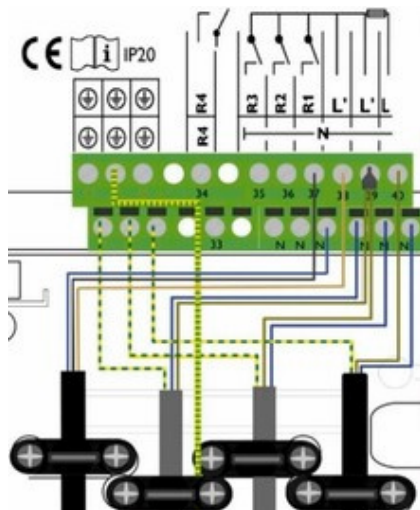
The following table shows the required positions of the jumpers, depending on the number of the domestic hot water modules / cascade modules which are part of the cascade connection.

Number of cascade modules	Client	Server 1	Server 2	Server 3
2	Pos. 2	Pos. 2	-	-
3	Pos. 2	Pos. 1	Pos. 2	-
4	Pos. 2	Pos. 1	Pos. 1	Pos. 2

5.5 Controller connection FC4.13

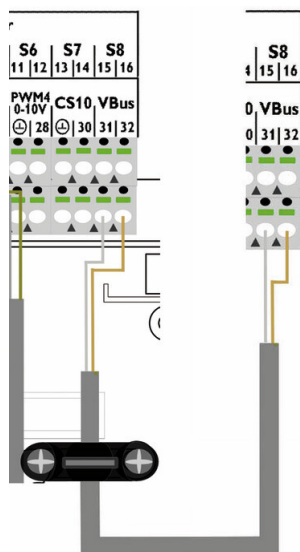
The following illustrations show how to connect the 2-way zone valves (switch valves) electrically to the controller, and how to connect the controllers with each other in order to establish a communication between them.

WARNING	
	<p>Risk to life and limb due to electric shock!</p> <ul style="list-style-type: none"> ▶ Prior to commencing electrical work on the controller, pull the mains plug! ▶ Only after completing all work, plug the mains plug into a socket. This avoids an unintentional start of the motors.



1. Open the front panel of the controller.
2. Connect the 2-way zone valve to the corresponding controller.

Black: R1
 Blue: N
 Brown: L'



3. Connect all controllers with each other by using the enclosed connecting lines. Observe the polarity of the PWM connection:

Brown: VBus-
 White: VBus+

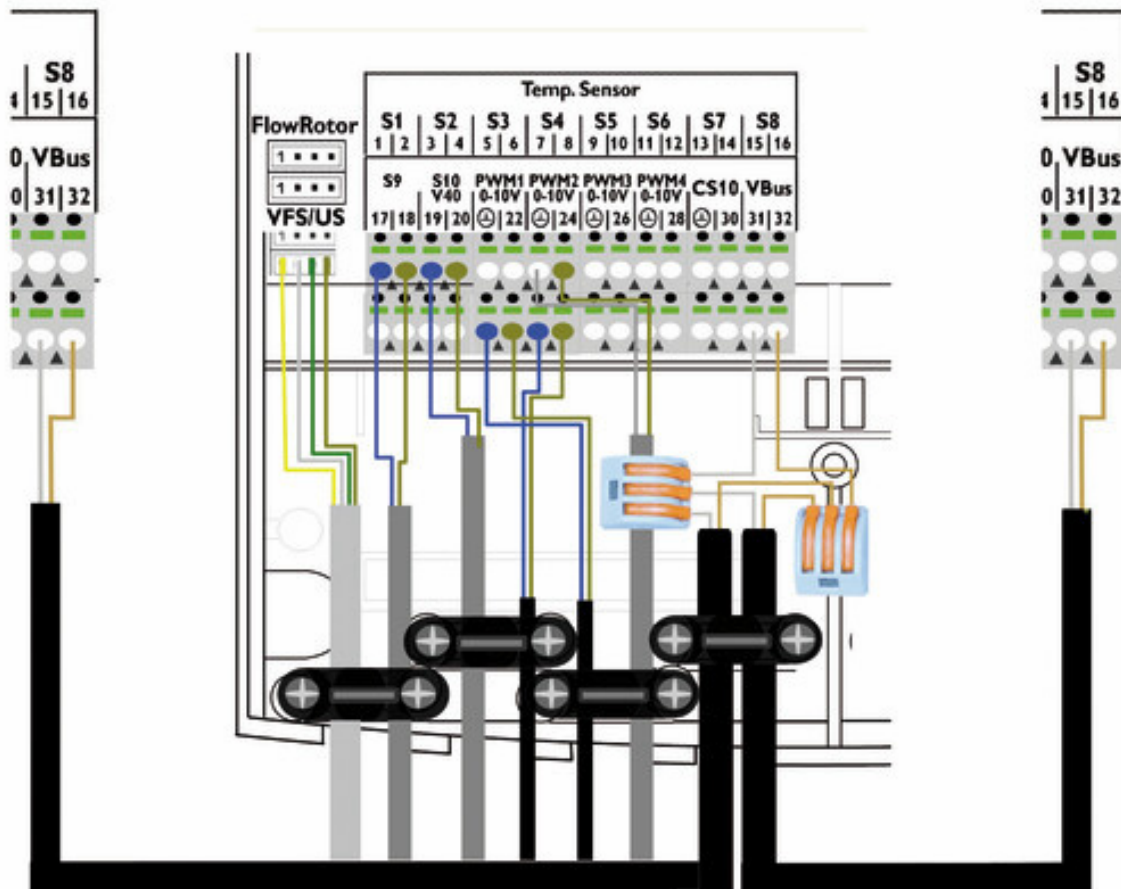
4. Mount the strain reliefs.
5. Close the front panel of the controller.
6. Set up the power supply of the installation and put the controllers into operation according to the controller instructions.

5 Mounting and installation [specialist]

When installing a three- or four-fold cascade, two VBus lines are brought together at at least one module. To connect the VBus lines of the two adjacent modules to the centre module, it is necessary to duplicate the VBus terminals in the controller.

The WAGO terminals included in the accessory bag can be used for this purpose. Put **VBus+** and **VBus-** respectively, by means of the lines included, on a WAGO terminal and connect both VBus lines.

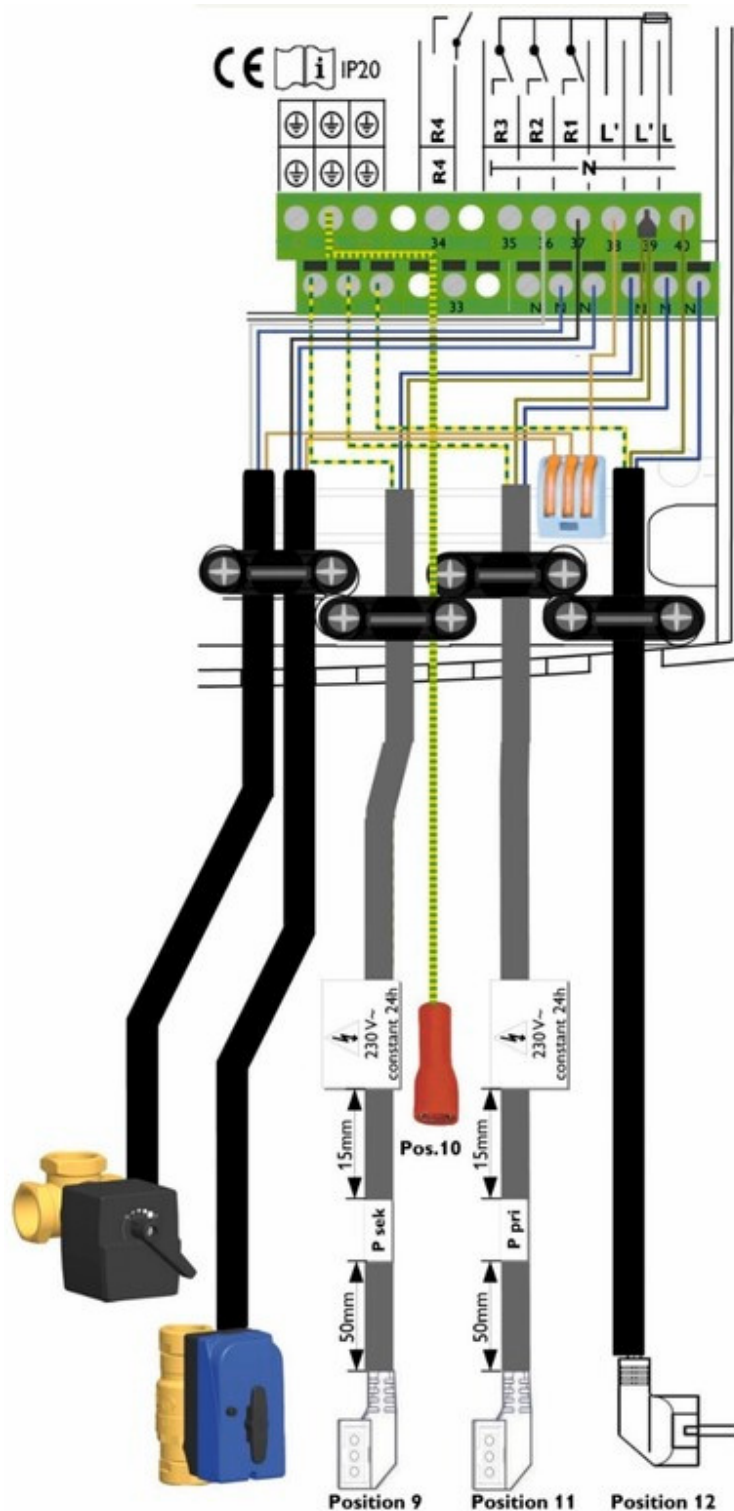
Observe the polarity!



Operation of the controller FC4.13

A detailed description of the commissioning of the controller can be found in the controller instructions.

If not only the switch valve, but also the 3-way valve for stratification is supposed to be connected, double L' by means of a WAGO terminal (see example).



6 Scope of delivery [specialist]

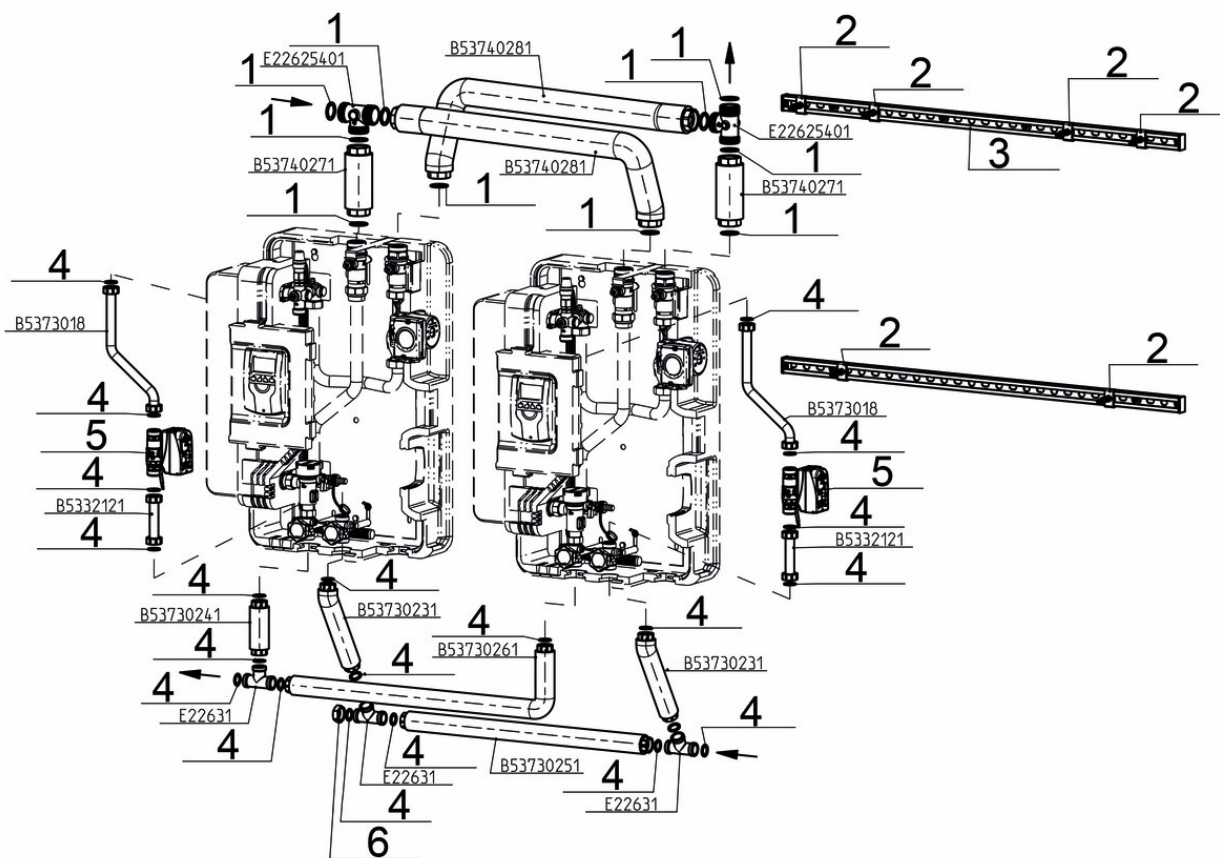
NOTICE

Serial number

Complaints and requests/orders of spare parts will only be processed with information on the serial number!

The serial number is placed on the support sheet of the station.

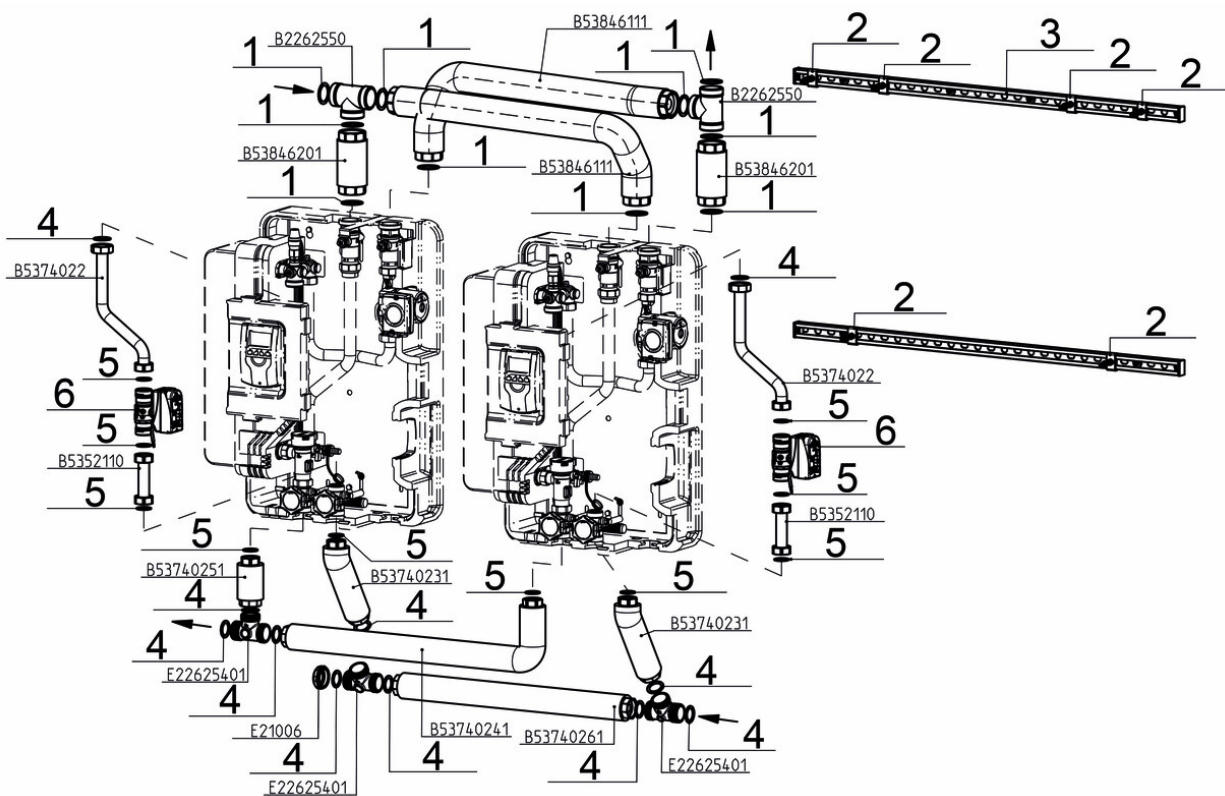
6.1 Spare parts pipe set for FriwaMidi



Position	Spare part	Item number
1	Seal 44.0 x 32.0 x 2.0, 1", for thread connection 1½", 10 pieces	N00036
2	T-head screw, M8 x 65 mm	N00436
3	Wall mounting rail set, profile 28x24, galvanised, 1.15 m	N00435
4	Seal 30.0 x 21.0 x 2.0, ½", for thread connection 1", 10 pieces	N00024

Position	Spare part	Item number
5	2-way zone valve DN 20, drinking water, 2 x 1" ext. thread, with actuator 230 V / 50 Hz - 12s/90°	N00022
6	Brass cap 1"	N00453
no pos.	Screw-in fitting, 1 ½" ext. thread x 1" int. thread	N00149

6.2 Spare parts pipe set for FriwaMaxi

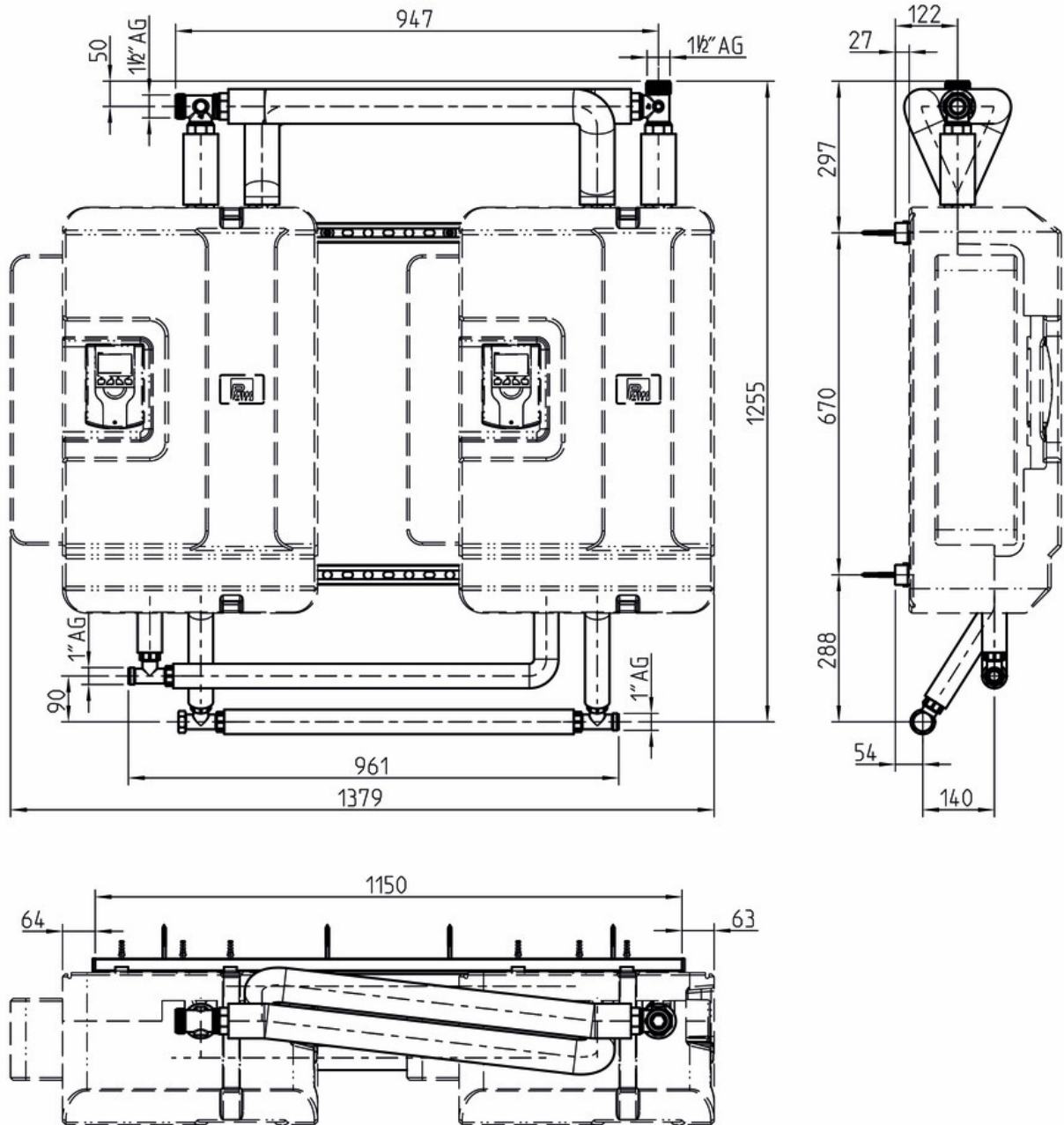


Position	Spare part	Item number
1	Seal 55.0 x 42.0 x 2.0, 1¼", for thread connection 2", 10 pieces	N00047
2	T-head screw, M8 x 65 mm	N00436
3	Wall mounting rail set, profile 28x24, galvanised, 1.15 m	N00435
4	Seal 44.0 x 32.0 x 2.0, 1", for thread connection 1½", 10 pieces	N00036
5	Seal 38.0 x 27.0 x 2.0, ¾", for thread connection 1¼", 10 pieces	N000174
6	2-way zone valve DN 25, drinking water, 2 x 1¼" ext. thread, with actuator 230 V / 50 Hz - 12s/90°	N00028

7 Technical data

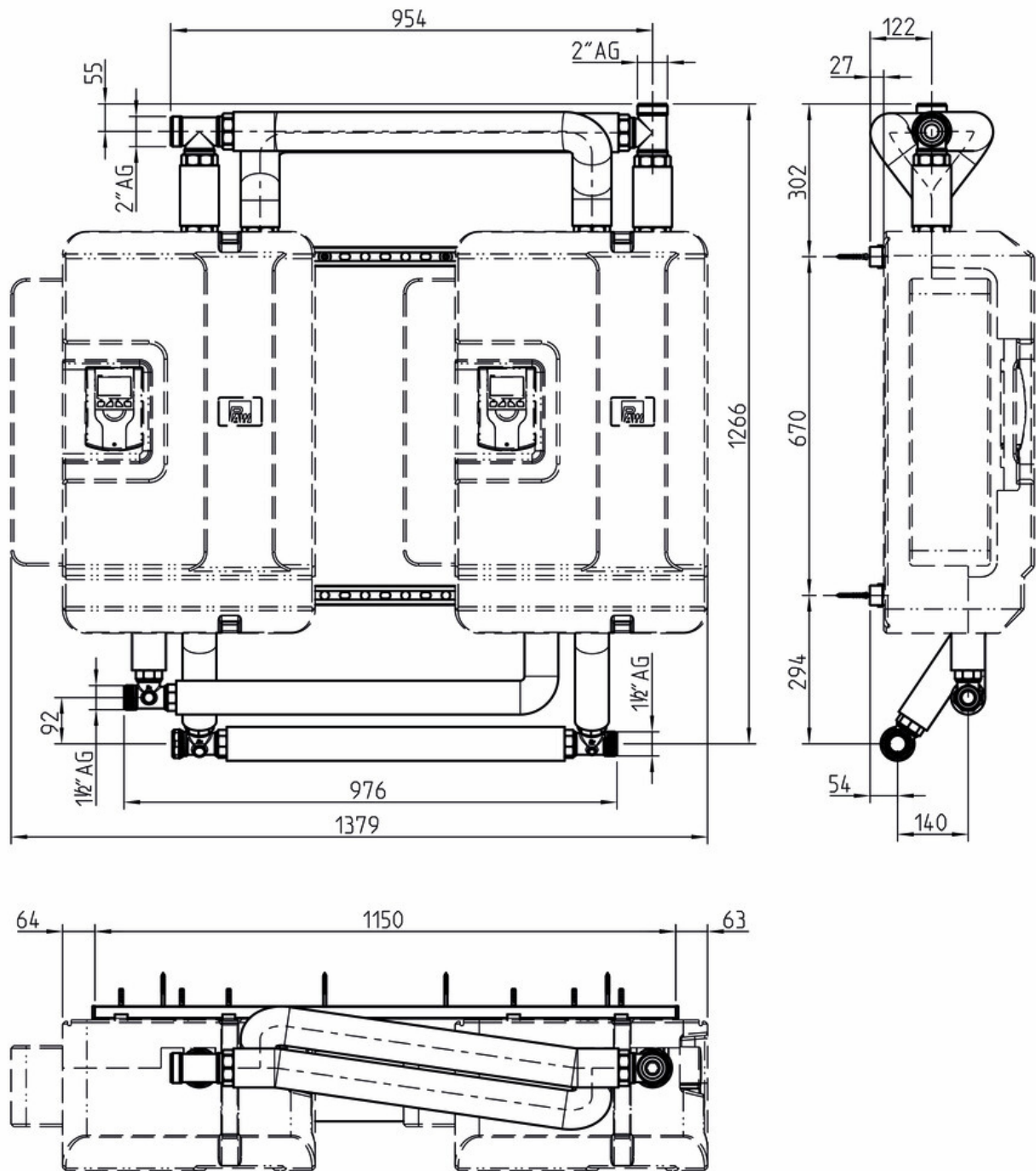
	Pipe set FriwaMidi	Pipe set FriwaMaxi
Dimensions		
Height (centre pipe connection)	1225 mm	1266 mm
Width (pipe set primary circuit)	947 mm	954 mm
Width (pipe set secondary circuit)	961 mm	976 mm
Width (with domestic hot water modules)	1379 mm	
Depth (centre pipe connection)	194 mm	
Pipe connections		
Primary circuit (storage tank circuit)	1½" ext. thread	2" ext. thread
Secondary circuit (DHW circuit)	1" ext. thread	1½" ext. thread
Operating data		
Degree of protection	IP44 (standard IEC 529)	
Nominal voltage	230 V AC	
Nominal pressure	PN 10	
Max. temperature of medium	110 °C	
Setting time of the valve	12 sec. / 90°	
Materials		
Valves and fittings	Stainless steel, approved for domestic hot water	
Valve housing	CW617DW	
Ball	CW617N	
Seals: o-rings	PTFE G 502, Perox, FPM	
Insulation	EPP	

Dimensional drawing pipe set for FriwaMidi cascade



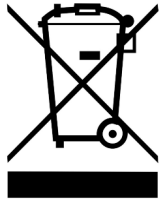
7 Technical data

Dimensional drawing pipe set for FriwaMaxi cascade



8 Disposal

NOTICE



Electrical and electronic devices must not be disposed of in the household waste.

For your return, there are free collection points for electrical appliances and, if necessary, additional points of acceptance for the reuse of the devices in your area.

The addresses can be obtained from your city or communal administration.

If the old electrical or electronic device contains personal data, you are responsible for deleting it before returning the device.

Batteries and rechargeable batteries must be removed prior to the disposal of the product. Depending on the product equipment (partly with optional accessories), single components can also contain batteries and rechargeable batteries.

Please observe the disposal symbols on the components.

Disposal of transport and packaging materials

The packaging materials are made of recyclable materials and can be disposed of with recyclable materials.



9 Commissioning report

9 Commissioning report

System operator		
Location of installation		
Serial numbers		
Valve R1		
Valve R2		
Valve R3		
Valve R4		
Functioning during manual operation mode		
Valve R1	<input type="checkbox"/>	OK
Valve R2	<input type="checkbox"/>	OK
Valve R3	<input type="checkbox"/>	OK (optional)
Valve R4	<input type="checkbox"/>	OK (optional)
Pipeline	Diameter = mm	Length = m
Equipment	<input type="checkbox"/> with circulation line	<input type="checkbox"/> without circulation line
Have all the pipes of the primary and secondary circuit been checked for tightness?	<input type="checkbox"/> checked	
Are all cables properly connected?	<input type="checkbox"/> checked	
Are the controllers set to cascade operation mode?	<input type="checkbox"/> checked	
Installation company	Date, signature	

Item no. 99640429xx-mub-en

Translation of the original instructions

We reserve the right to make technical changes without notice!

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