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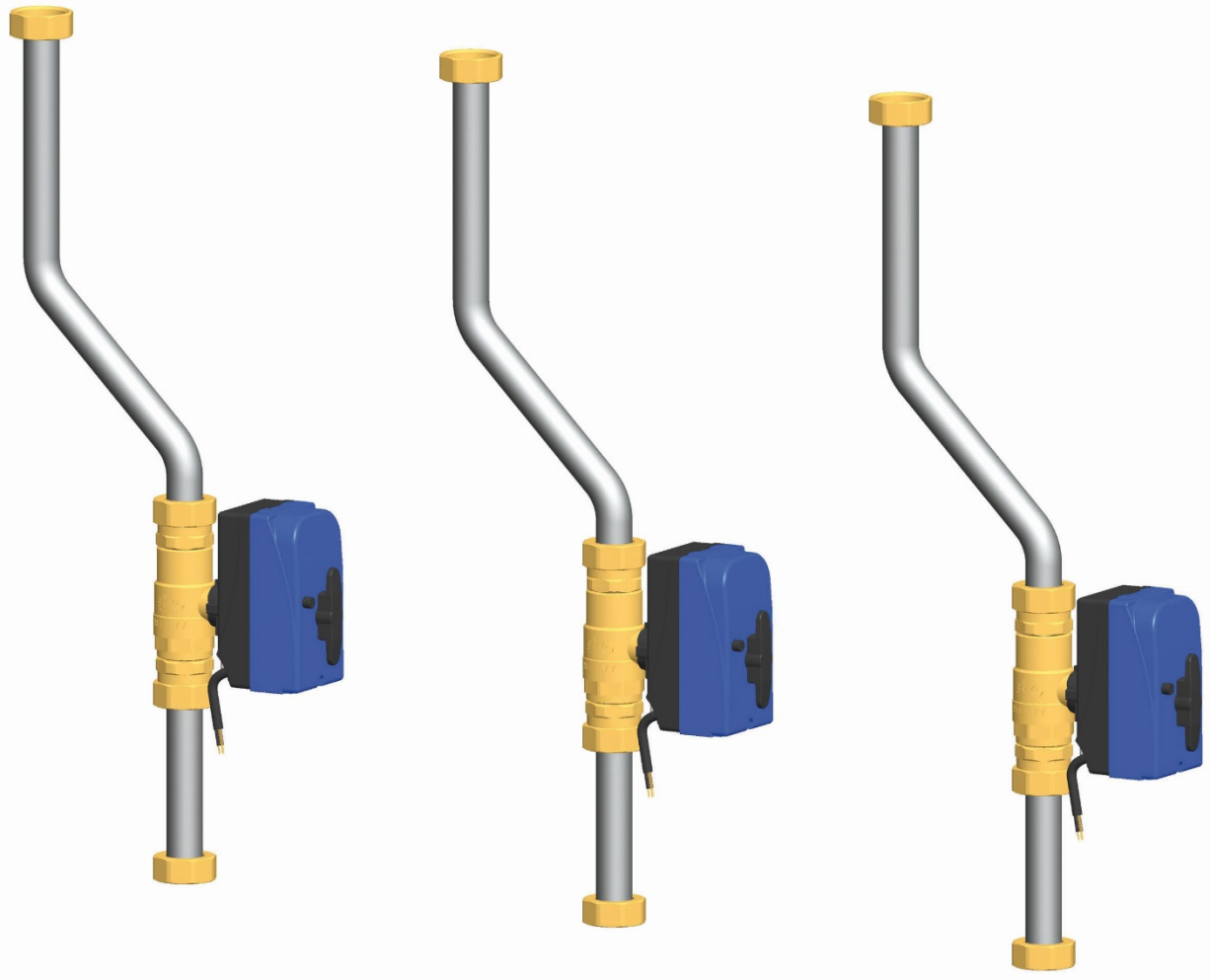
English

Installation Instructions

Switch valve set for the 3- and 4-fold cascade FriwaMidi / FriwaMaxi



Contents

Item no. 9964042xx1-mub-en - Version V02 – Date 2021/11

Translation of the original instructions

We reserve the right to make technical changes without notice!

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Carefully read these instructions before installation and commissioning.
Save these instructions in the vicinity of the installation for future reference.

1 General Information

1.1 Scope of these instructions

These instructions describe the assembly of the switch valve set for the 3-fold and 4-fold cascade of the FriwaMidi DN 20 and the FriwaMaxi DN 25.

The chapters called [specialist] are intended for specialists only.
The commissioning of the Friwa modules is described in the respective instructions of the domestic hot water modules that are enclosed with the individual modules.
For other components of the installation, such as storage tanks, controllers or pumps, please observe the instructions of the corresponding manufacturer.

1.2 About this product

The switch valve set for the Friwa-Kaskade contains the piping within the individual modules, the thread connections, the required number of connecting lines and 2-way zone valves.
The motor-driven ball valves are DVGW certified and suitable for DHW modules.
In the manual mode, the ball valves can be opened and closed manually.

1.3 Designated use

The switch valve set is used to cascade three or four **identically constructed** domestic hot water modules. The technical data specified in these instructions must be observed.

Improper usage excludes any liability claims.

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 of this manual

WARNING

Risk to life and limb due to electric shock!

- ➢ Prior to commencing electrical work, pull the mains plug!
- ➢ Only after completing all installation work, the mains plug of the controller can be plugged into a socket. Thus, an unintentional start of the motors is avoided.

NOTICE

Material damage due to mineral oils!

Mineral oil products cause lasting damage to seals made of EPDM, whereby the sealant properties get lost. We do not assume liability nor provide warranty for damage to property resulting from sealants damaged in this way.

- ➢ It is imperative to avoid that EPDM gets in contact with substances containing mineral oils.
- ➢ Use a lubricant based on silicone or polyalkylene and free of mineral oils, such as Unisilikon L250L and Syntheso Glep 1 of the Klüber company or a silicone spray.

3 Product description

The switch valve set can only be mounted in domestic hot water modules of the type FriwaMidi or Friwa Maxi from march 2013 on. For other domestic hot water modules, other assembly sets must be used.

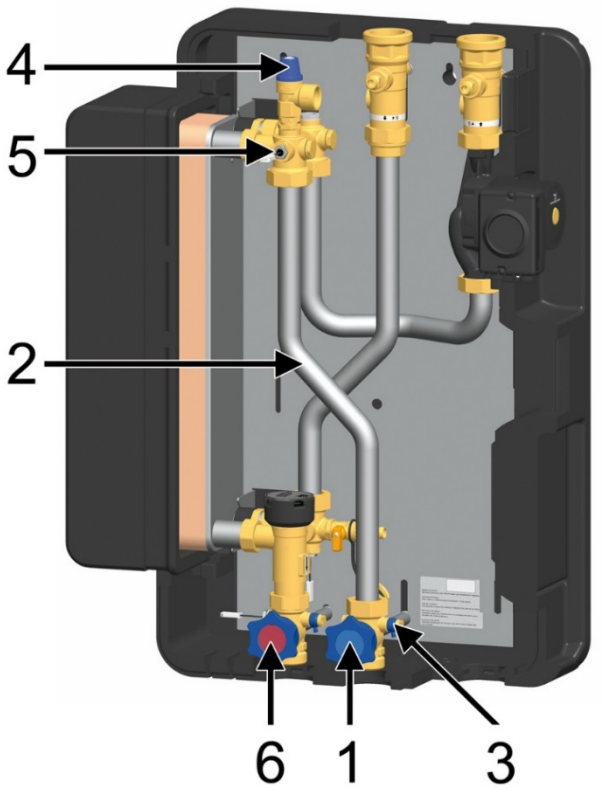
If you have any questions about the required spare parts for your installation, please keep the serial number ready (it is placed in the lower right corner of the support sheet of the module).

NOTICE

Damage to property!

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

3.1 Assembly and installation [specialist]

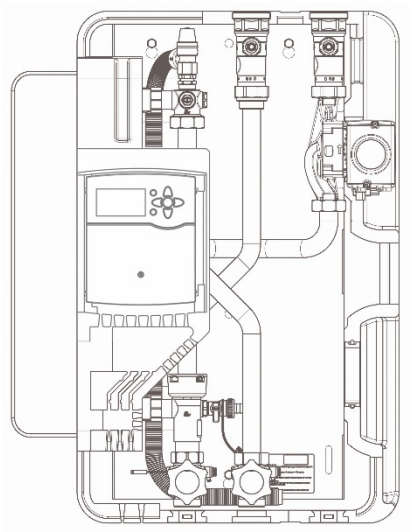
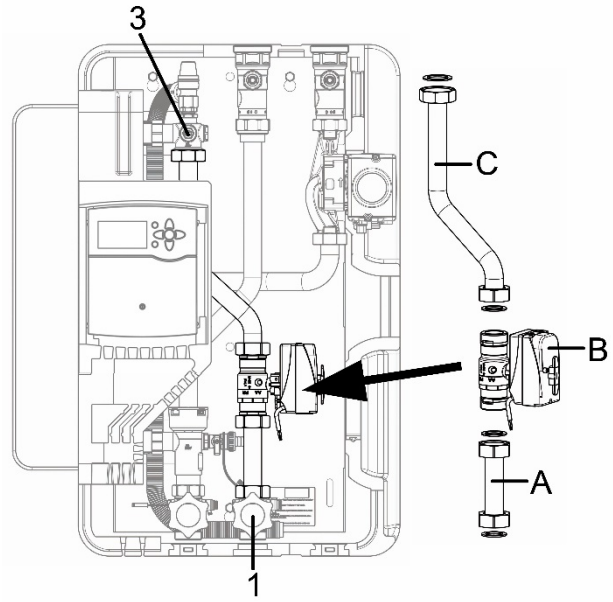


1. Remove the insulating front shell of each module.
2. Close the piston valves (1) and (6) of the domestic hot water circuit.
3. Drain the double bent pipe (2) in the cold water inlet by opening the drain valve (3). Use a hose for a controlled draining of the liquid.
4. Actuate the pressure relief valve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

Procedure for one module:

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

1. Mount the short and straight pipe section (A) on the piston valve (1).
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→B, from the bottom to the top).
3. Screw the short end of the long double bent pipe (C) between the zone valve and the elbow piece (3).
4. Firmly tighten all screw connections afterwards.
5. Connect the valve to the controller of the module (see page 7 ff.) and activate the automatic operation mode (see the separate instructions of the zone valve).
6. Convert the other Friwa modules in the same way.
7. Connect the controllers of the cascade with the communication cable included (see page 7 ff.).

	
Before	**Installation of the switch valve set for cascade operation**

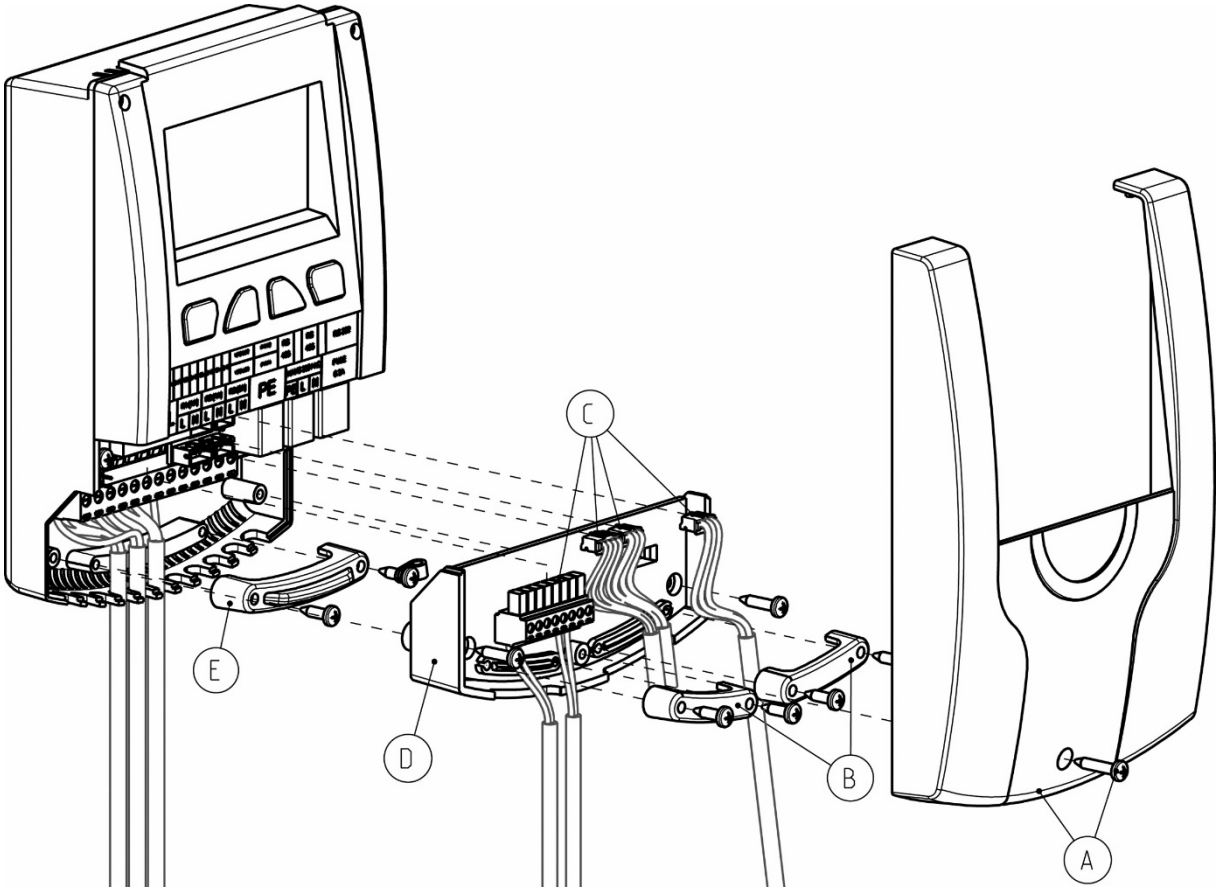
3.2 Controller connection FC3.10

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

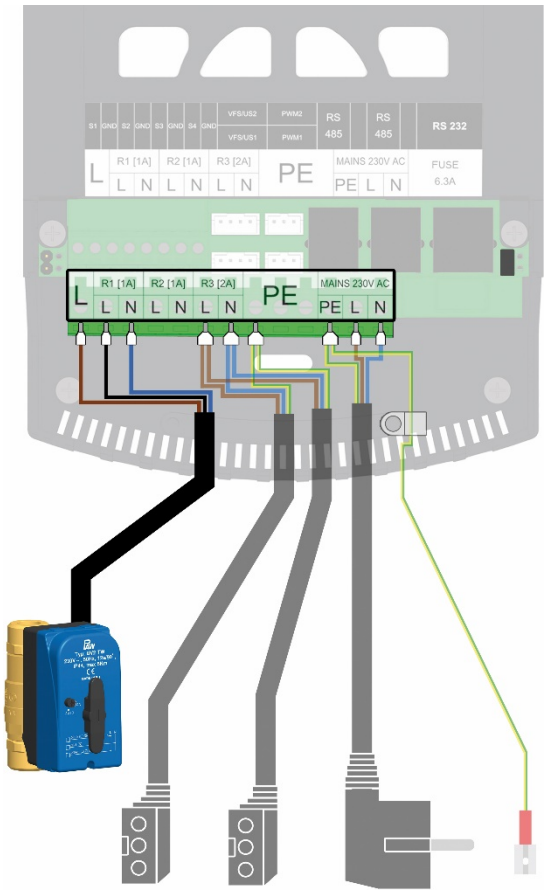
Risk to life and limb due to electric shock!

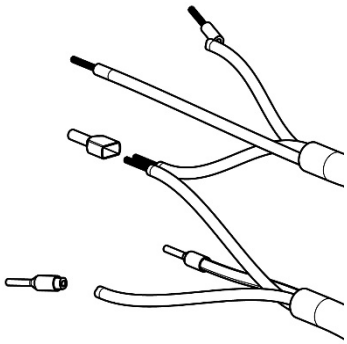
- Prior to commencing electrical work on the controller, pull the mains plug and make sure that a restart is not possible.
- Only after completing all installation work, plug the mains plug of the controller into a socket. This avoids an unintentional start of the motors.



1. Remove the white front panel (A) of the controller.
2. Remove the strain reliefs (B).
3. Remove the sensor cables of the VFS/US sensors, of the PWM signal and of the temperature sensors from the controller circuit board plug connector (C).
4. 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 connection:

Brown:	L_{const}
Black:	L
Blue:	N





7. If, in addition to the 2-way-zone valve, also the 3-way valve for the stratification is meant 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:

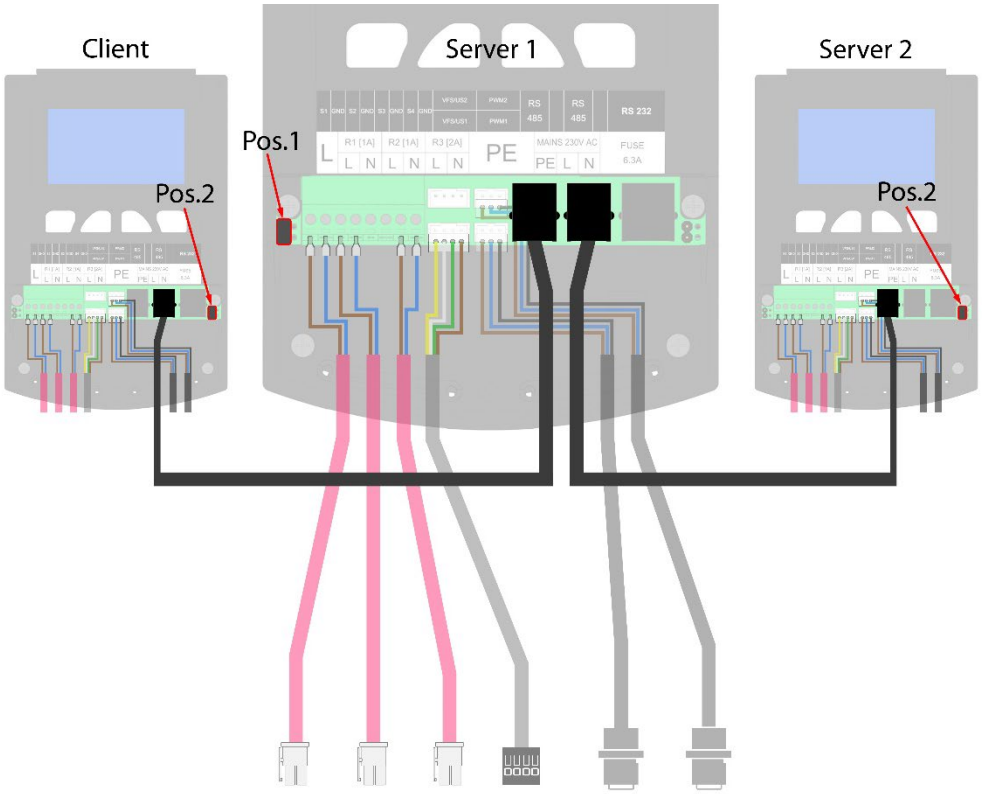
   client, server 1, server 2, server 3.

   Observe the controller instructions.

You will find a detailed description of the operation of the controller and its functions in the controller instructions.

Cascade connection of the domestic hot water modules

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



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 module	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

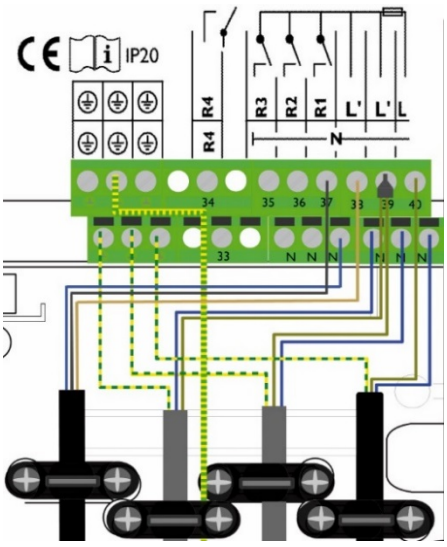
3.3 Controller connection FC4.13

The following figures show how to connect the 2-way zone valves with the controller and how to connect the controllers with each other.

WARNING

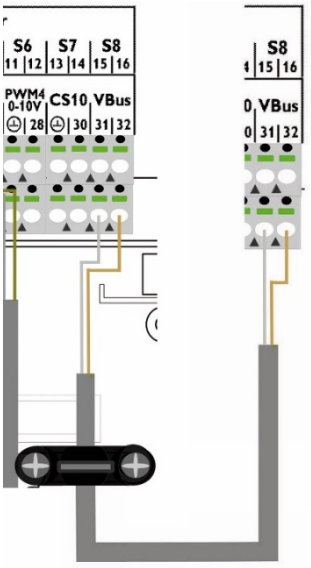
Risk to life and limb due to electric shock!

- Prior to commencing electrical work on the controller, pull the mains plug and make sure that a restart is not possible.
- Only after completing all installation work, the mains plug of the controller can be plugged into a socket. Thus, an unintentional start of the motors is avoided.



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‘



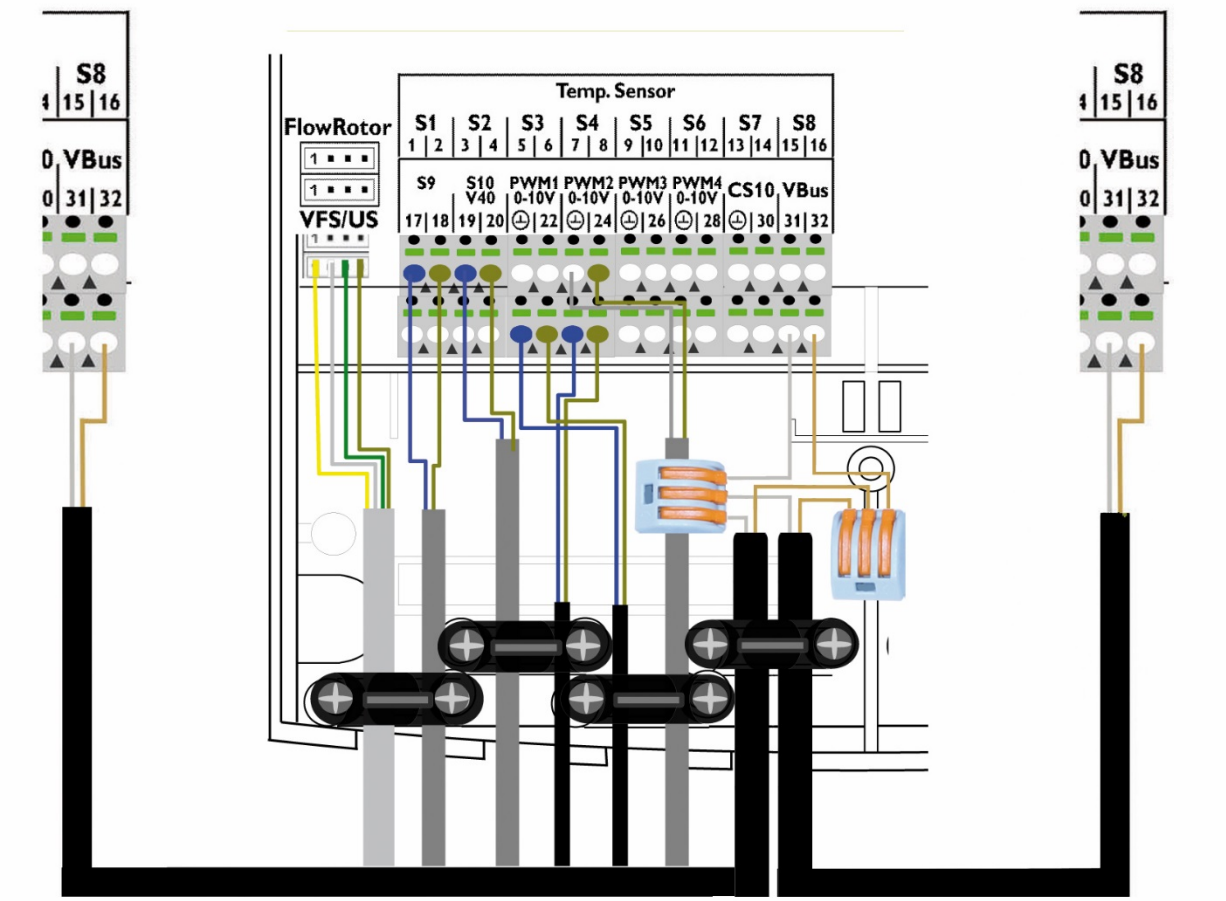
3. Connect all the controllers with each other by using the connecting lines included. Observe the polarity of the connection:

   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.

When installing a 3- or 4-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. For this purpose, the WAGO terminals included in the accessory bag can be used. Put *VBus+* and *VBus-* respectively on a WAGO terminal by means of the lines included and connect both VBus lines.

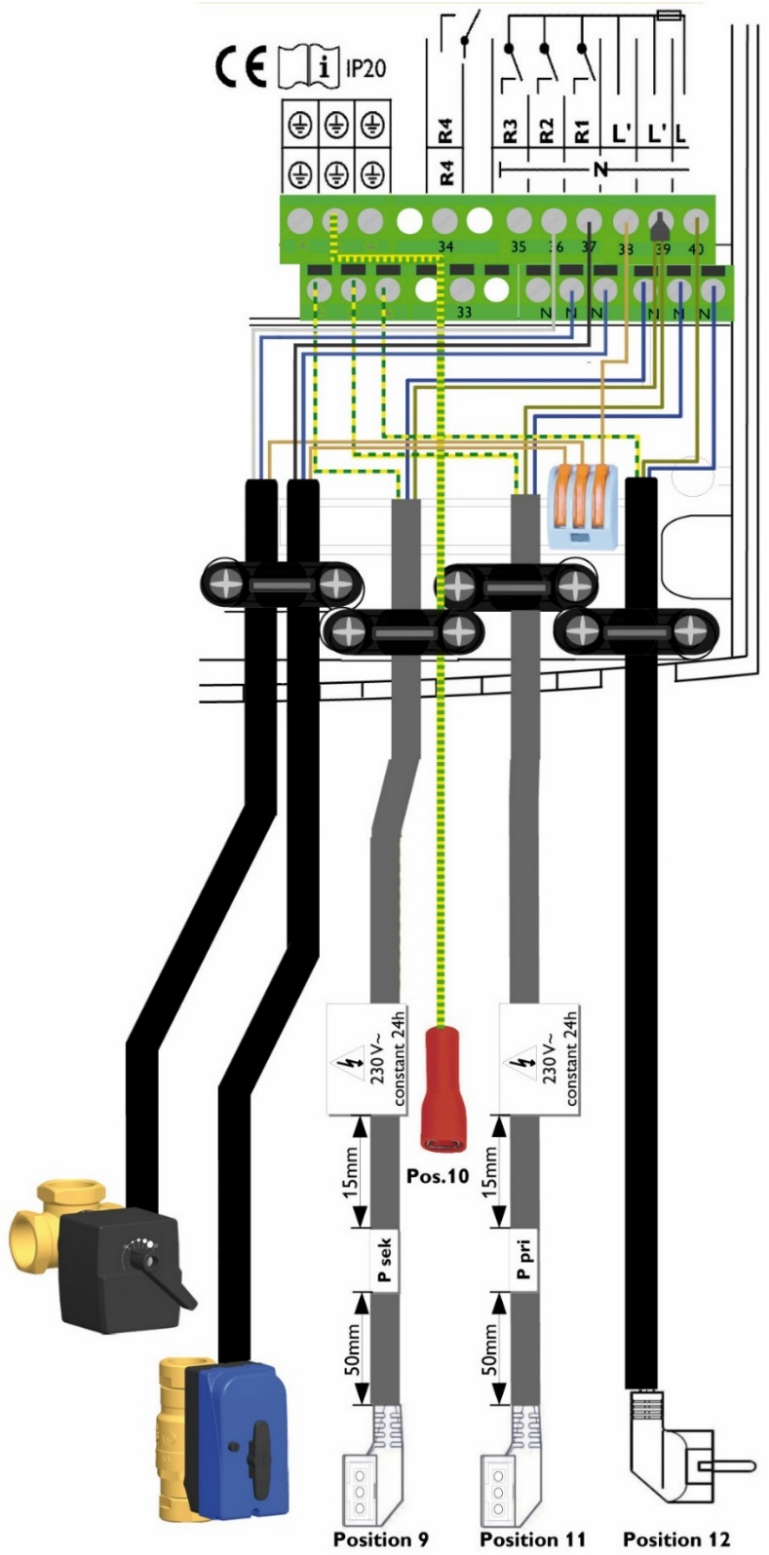
Observe the polarity!



Operation of the controller FC4.13

You will find a detailed description of the commissioning of the controller in the controller instructions (see page 36 / 37).

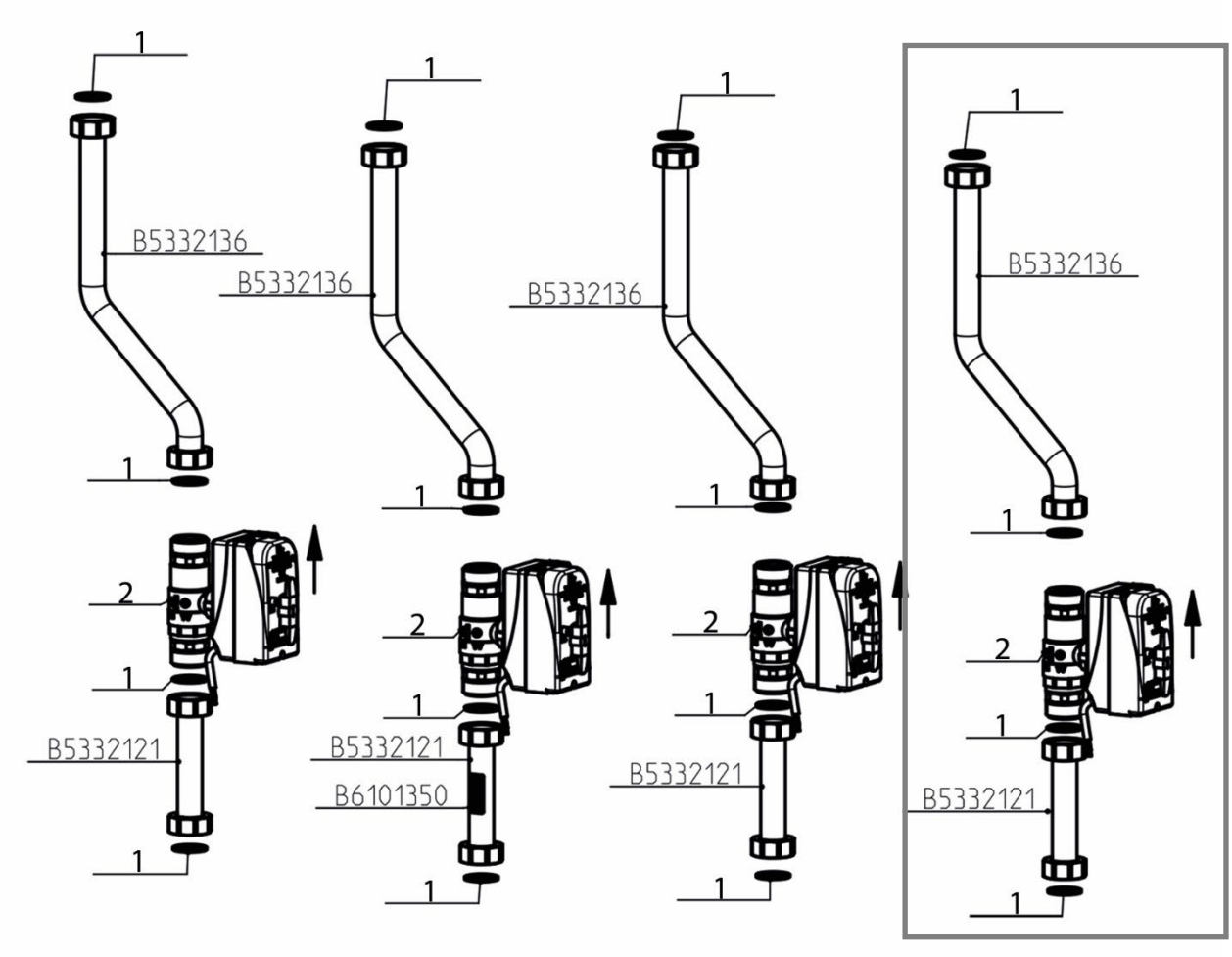
If not only the switch valve but also the 3-way valve for stratification shall be connected, then duplicate L‘ by means of a WAGO terminal (see example).



4 Scope of delivery

NOTICE
Complaints and requests/orders of spare parts will only be processed with information on the serial number! The serial number is placed on the short and straight pipe section.

4.1 Switch valve set FriwaMidi (64042631 + 64042641)

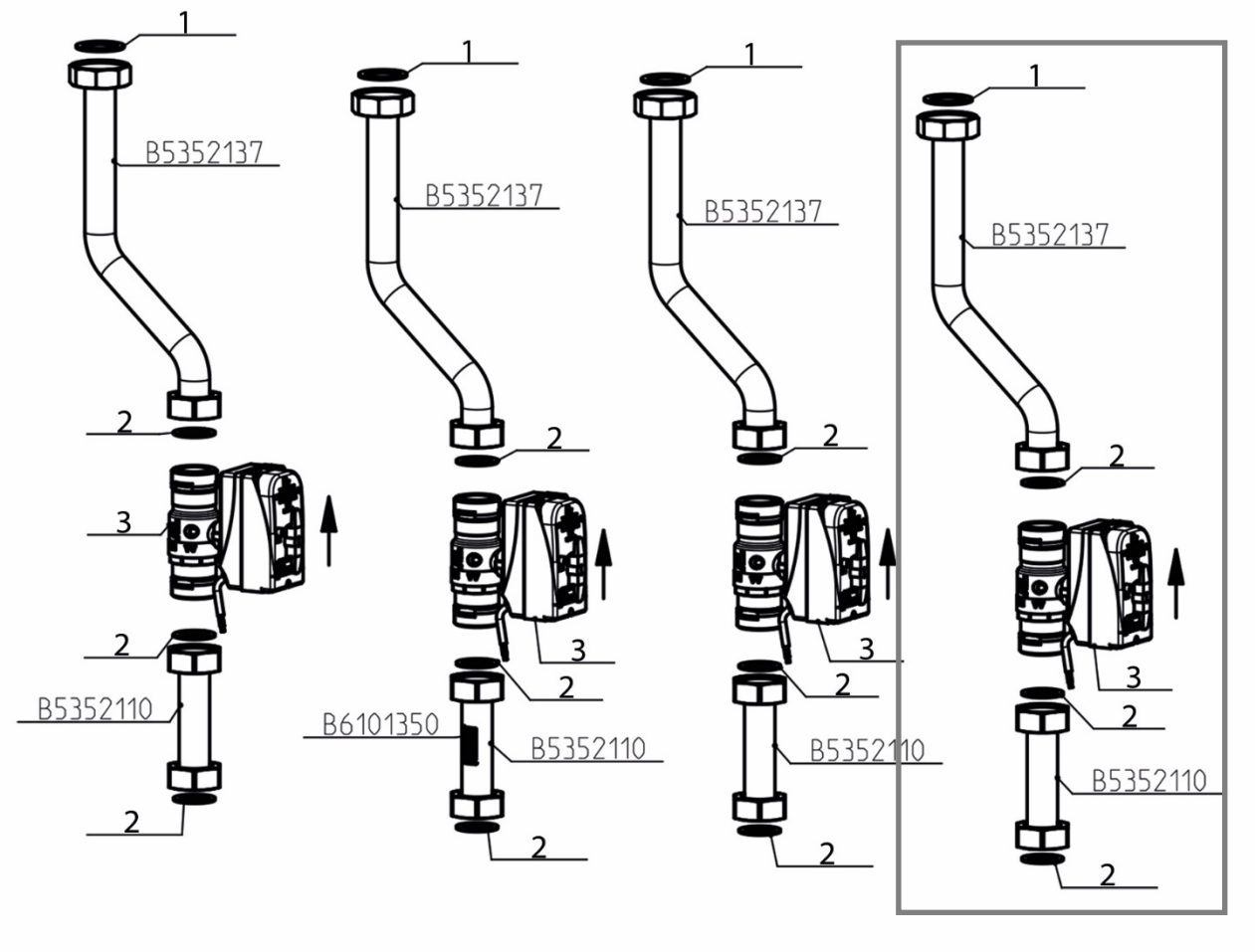


Scope of delivery switch valve set
for 3-fold cascade
(3x 2-way zone valve)
64042631

Scope of delivery
switch valve set
for 4-fold cascade
(4x 2-way zone valve)
64042641

Position	Spare part	Item no
1	Sealing kit, 10 pieces, ½", for thread connection 1"	N00024
2	2-way zone valve DN 20, drinking water, 2 x 1" ext. thread, with actuator 230 V / 50 Hz – 12s/90°	N00022

4.2 Switch valve set FriwaMaxi (64042731 + 64042741)



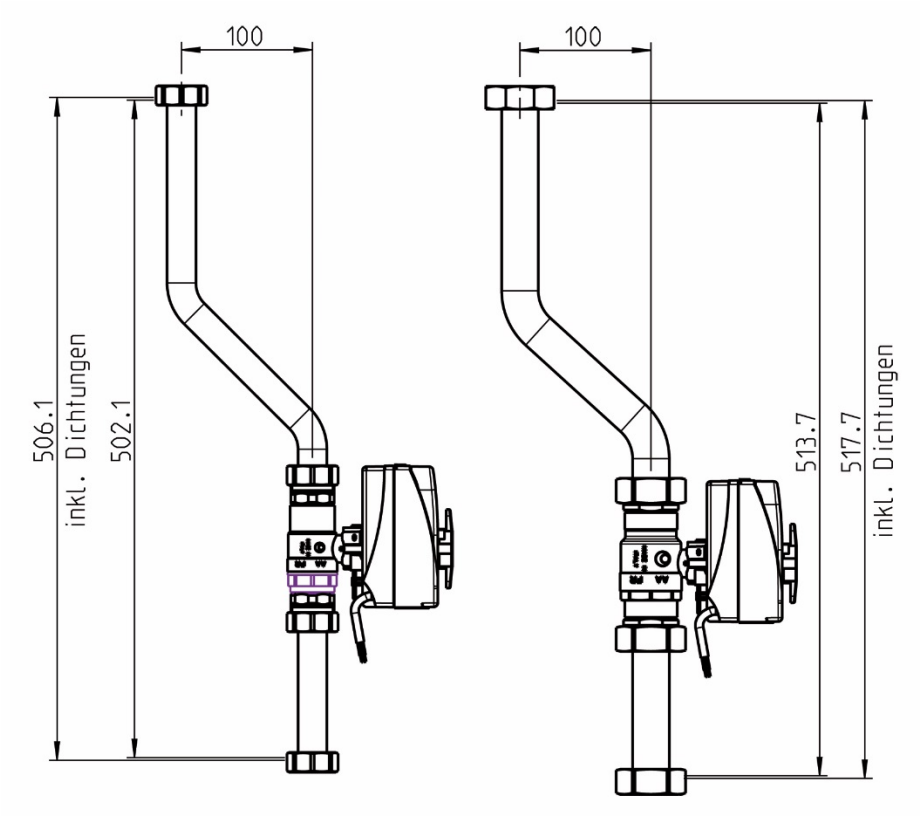
Scope of delivery switch valve set
for 3-fold cascade
(3x 2-way zone valve)
64042731

Scope of delivery
switch valve set
for 4-fold cascade
(4x 2-way zone valve)
64042741

Position	Spare part	Item no
1	Sealing kit, 10 pieces, 1", for thread connection 1½"	N00036
2	Sealing kit, 10 pieces, ¾", for thread connection 1¼"	N00174
3	2-way zone valve DN 25, drinking water, 2 x 1¼" ext. thread, with actuator 230 V / 50 Hz – 12s/90°	N00028

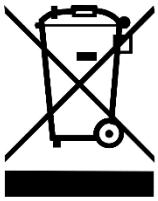
5 Technical data 2-way zone valve

Dimensions	**Switch valve set FriwaMidi**	**Switch valve set FriwaMaxi**
Total height	507 mm	518 mm
Pipe connections	1" external thread	1¼ " external thread
Operating data		
Degree of protection	IP44 (standard IEC 529)	
Nominal voltage	230 V AC	
Nominal pressure	PN 10	
Maximum temperature of the medium	110 °C	
Setting time	12 sec / 90°	
Materials		
Valve housing	CW617DW	
Ball	CW617N	
Valves and fittings	Stainless steel (1.4404)	
Gaskets	PTFE G 502, EPDM, Perox, FPM, AFM34	



Switch valve set FriwaMidi **Switch valve set FriwaMaxi**

6 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.

7 Commissioning report

Installation operator		
Location of installation		
Serial numbers		
Valve R1:		
Valve R2:		
Valve R3:		
Valve R4:		
Functioning during manual operation mode		
Valve R1:	☐	OK
Valve R2:	☐	OK
Valve R3:	☐	OK (optional)
Valve R4:	☐	OK (optional)
Pipes	⌀=	mm l = m
Equipment	☐ with circulation line	☐ without circulation line

Have all pipes in the primary and secondary circuit been checked for tightness?	☐ Checked
Are all cables properly connected?	☐ Checked
Are the controllers adjusted to cascade operation mode?	☐ Checked

Plumbing company	Date, signature

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