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English (EN)

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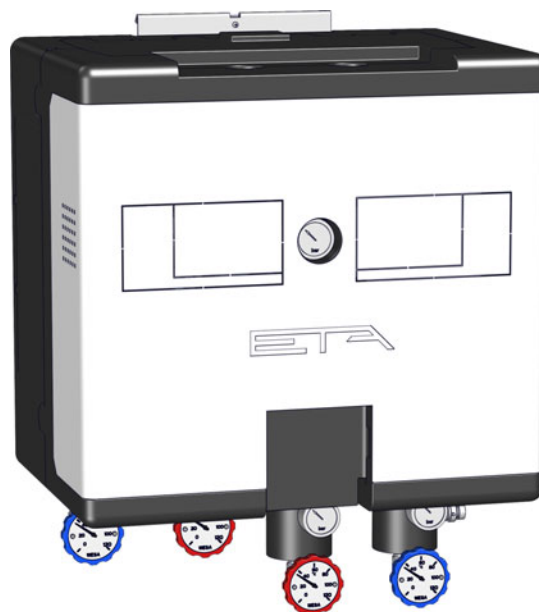
HW:



Heat transfer station 15 - 105 kW



Operating instructions



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1 General

1.1 General information

Copyright


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Subject to technical changes


We reserve the right to make technical modifications without notice. Printing and typesetting errors or changes of any kind made in the interim are not cause for claims. Individual configurations depicted or described here are only available optionally. In the event of contradictions between individual documents regarding delivery scope, the information in our current price list applies.

Software Description

The software version described in this documentation corresponds to the version valid at the time of publication. The software version installed on your product may differ from that described in this documentation.

 A software update to a higher version can be carried out at any time. The required files can be found with the appropriate authorisation on www.eta.co.at.

Explanation of symbols

 Instructions and information

Layout of safety instructions

SIGNAL WORD!

Type and source of danger

Possible effects

- Measures for avoiding the danger

Types of safety instruction

 **CAUTION!**

On non-compliance with this safety instruction, there is a risk of material damage.


 **WARNING!**




















On non-compliance with this safety instruction, there is a risk of physical injury.









 **DANGER!**

On non-compliance with this safety instruction, there is a risk of major physical injury.

Explanation of pictograms

 Switch the boiler on/off with the mains switch.

-  Perform a visual check of the components.
-  Clean the components with a soft cloth, for example.
-  Remove deposits with a vacuum cleaner or an ash vacuum.
-  Remove deposits with the poker.
-  Remove deposits with the cleaning brush.
-  Replace the wear parts (e.g., seals) with new items.
-  Lubricate the components. The lubricant to use is listed in the respective step.
-  Only mount or loosen the components (e.g. screws or nuts) by hand without tools.
-  Tighten the components (e.g., screws or nuts) with a tool.
-  Install the components with some force (e.g., the retaining tube or the Lambda probe).
-  Handle the components carefully, since they break very easily.
-  Measure or check dimensions or clearances on the components.
-  Mark the components so that the correct position can be determined, for example, when mounting.
-  Wear a protective mask to avoid damage to the airways.
-  Seal the components. The sealant to be used is listed in the respective step.
-  Insulate the components. The insulation material to be used is indicated in the respective step.
-  Use adhesive to affix, for example, seals.
-  Use spray adhesive to affix, for example, seals.
-  Only blow out the components with your mouth.

-  Affix a seal. The required cross-section and sealing material are stated in each step.
-  Tighten screws and nuts alternately and evenly.
-  Clean the components by rinsing them with water.
-  Lubricate the components or contact surfaces with copper paste.
-  Lubricate the components or contact surfaces with a dry lubricant, e.g. PTFE.
-  Lubricate the components or contact surfaces with multipurpose grease.
-  Disconnect the component's electrical plug connection.
-  Connect the electrical plug connection to the component.
-  Perform a tactile check on the components.
-  Do not use compressed air to clean the components.
-  Do not use cleaning brushes to clean the components.
-  Do not use an ash vacuum or vacuum cleaner.
-  Do not lubricate the components.
-  No water or moisture in this area.
-  No leaks in the components, e.g. screw connection or maintenance cover.
-  Do not bend the components.
-  Do not allow any components or small parts to fall into it.

1.2 Warranty, guarantee and liability

Requirements

We can only accept liability for the function of our products if they are correctly installed and operated. This is only possible if the conditions below are complied with.

Installation in a dry, frost-proof room

A dry, frost-proof room is required for the installation.

pH value between 8 and 9

The pH value of water used to fill the heating system must be between 8 and 9.

Frost protection for the secondary side

The maximum frost protection content must be adjusted to the local conditions and checked on an annual basis if frost protection is required, for example, on the secondary side for outdoor heating systems.

Permissible water hardness

In order to protect the heat exchanger from calcification, the water hardness of the heating water must be taken into account. Observe the indications outlined in ÖNORM H 5195-1, see [9 "Water hardness"](#).

Expanding the control system

Only components provided by us may be used for expanding the control system, unless these are generally available standard devices, such as thermostats.

Regularly perform cleaning and maintenance

Cleaning and maintaining the product is essential. The required steps and intervals are either contained in this documentation or included as a separate document.

Proper installation

The installing contractor is liable for proper installation according to the corresponding installation instructions and the relevant rules and safety regulations. If you as customer have installed the heating system partly or entirely without relevant training and in particular without up-to-date practical experience, without having the installation checked by a trained and responsible expert, we exclude defects in our delivery and consequential damages resulting from this cause from our warranty, guarantee and liability.

Repairs

Repairs are only permitted using spare parts provided by us. The only exceptions are common standardised parts such as electrical fuses or fastening materials, as long as they possess the required features and do not restrict the functionality of the system.

Repair of defects

For repairs of defects carried out by the customer or by a third party, ETA shall only bear the costs or remain obligated by warranty if this work was approved in writing in advance by the customer service of ETA Heiztechnik GmbH.

2 Declaration of conformity

CE Declaration of Conformity

Manufacturer: ETA Heiztechnik GmbH
Gewerbepark 1, 4716 Hofkirchen an der Trattnach, Austria

Product: Heat transfer module, heat transfer station

Types: ETA heat transfer module

EU Directives:

2014/30/EU Legislation on electromagnetic compatibility

2014/35/EU Legislation for electrical equipment: low voltage directive

2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2 guideline)

Applied standards:

EN 60335-1:2020 Household and similar electrical appliances - Safety -
Part 1: General requirements

IEC 61000-6 1/2:2005 Electromagnetic compatibility (EMC):
Generic standards - Immunity for residential, commercial and light-industrial environments (1) and
industrial environments (2)

IEC 61000-6 3/4:2011 Electromagnetic compatibility (EMC):
+ A1:2011 Generic standards - Emission standard for residential, commercial and light-industrial environments
(3) and industrial environments (4)

We hereby declare that the product in its standard design as stated here corresponds to the above provisions. The sole responsibility for issuing this declaration of conformity lies with the manufacturer. The technical documentation for this product is managed by ETA Heiztechnik GmbH. Signed for and on behalf of:

Hofkirchen, 12/01/2021



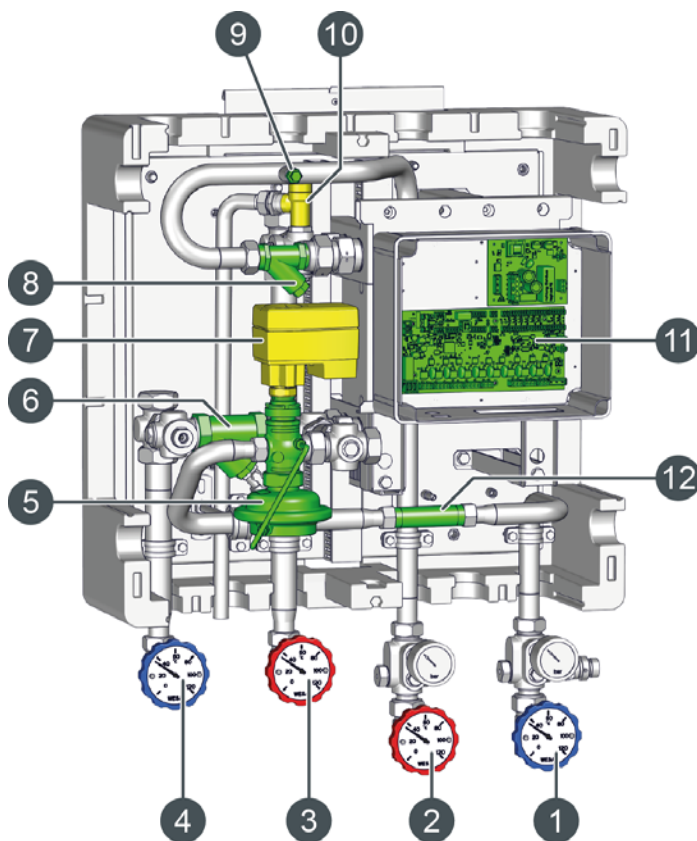
Ing. Johann Eibelhuber
Quality assurance




DI Ferdinand Tischler
Management

3 Description

Connections and components



- 1 Return for primary side and connection for discharge
- 2 Flow for primary side
- 3 Flow for secondary side
- 4 Return for secondary side
- 5 Primary valve with pressure-independent flow limiter
- 6 Strainer for secondary side and connection for discharge
- 7 Actuator for primary valve
- 8 Strainer for primary side
- 9 Bleed screw for primary side
- 10 Safety valve with 3 bar opening pressure
- 11 Circuit board [GM-C]
- 12 Adapter for optional heat meter

 The connections for the secondary circuit can also be guided out of the top of the heat transfer station.

Measurements

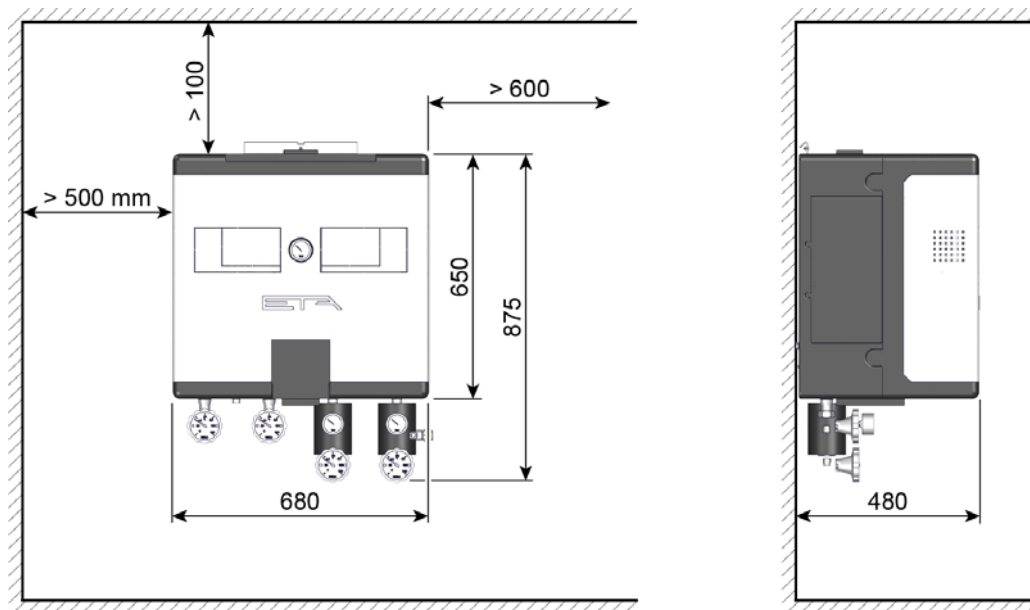


Fig. 3-1: Measurements

Technical data

Type	Number of plates in heat exchanger	Maximum output [kW], (see practical example)				Primary valve K_{vs} [m ³ /h]	Primary side				Secondary side			Weight [kg]
		1	2	3	4		V_{max} [m ³ /h]	PN	DN	V_{max} [m ³ /h]	PN	DN		
15	16	22	9	18	8	1.6	0.40	16	G1"	0.90	6	Rp 1"	45	
30	26	35	17	30	12	1.6	0.63	16	G1"	1.41	6	Rp 1"	47	
40	36	54	25	46	18	2.5	0.98	16	G1"	2.14	6	Rp 1"	49	
60	50	83	36	72	25	4	1.57	16	G1"	2.96	6	Rp 1 ¼"	51	
75	60	101	43	110	30	6.3	2.46	16	G1"	3.54	6	Rp 1 ¼"	53	
90	80	121	52	136	35	8	3	16	G1"	4.31	6	Rp 1 ½"	55	
105	100	141	61	160	41	8	3.50	16	G1"	5.05	6	Rp 1 ½"	57	

Maximum temperatures

Maximum primary temperature	100 °C
Maximum secondary temperature	100 °C

i In the case of external local heating networks and external district heating networks, clarify special requirements and the maximum possible flow temperatures with the operator in advance.

Practical examples for dimensioning

Example	Primary side			Secondary side		
	Network type	Flow	Return	Heating system	Flow	Return
1	District heating network	90 °C	42 °C	Radiators with or without buffer storage tank	65 °C	40 °C
2	Micro network with ETA boiler	75 °C	43 °C	Radiators with or without buffer storage tank	65 °C	40 °C
3	Micro network with ETA boiler	75 °C	36 °C	Underfloor heating with mixer and/or buffer storage tank	65 °C	28 °C
4	Micro network with ETA boiler	75 °C	33 °C	Underfloor heating directly on heat exchanger ^a	35 °C	28 °C

a) For underfloor heating systems that are connected directly to the heat exchanger, the maximum output is mainly limited by the pressure drop (maximum 2 mWs) over the heat transfer station

Mode of operation

The heat supplied by the heat producer reaches the primary valve on the underside of the heat transfer station. This valve is preset and thus can limit the maximum flow rate. The flow rate is adjusted during commissioning.

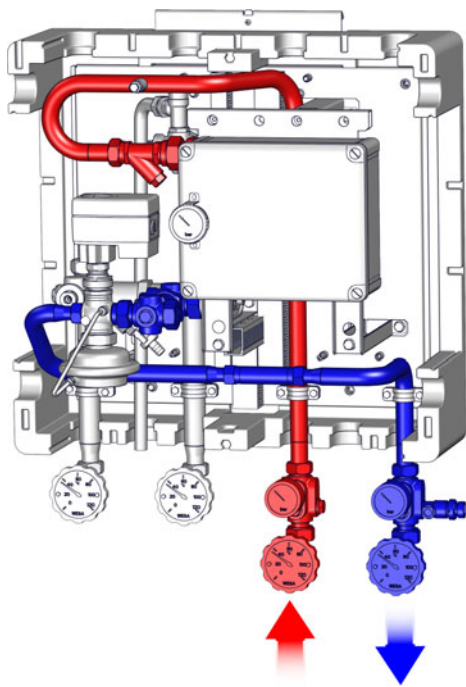


Fig. 3-2: Primary circuit

The secondary side, i.e. the consumers, receive heat via the heat exchanger. A pump must be installed on site for the secondary side.

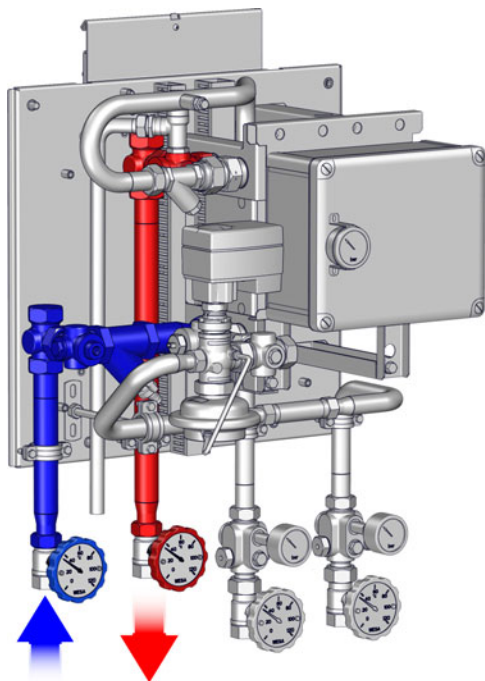


Fig. 3-3: Secondary circuit

The heat transfer station is controlled via a CAN-bus connection to an existing ETAtouch control system. A stand-alone solution with a separate ETAtouch control panel is also possible. Power is supplied via a 230 V Schuko socket.

i The return temperature can also be limited with the optional heat meter for the primary side. This does not replace hydraulic calibration, however.

Also possible is a restriction of the flow rate of the primary circuit in the heat exchanger through the primary valve. This enables temperature management of the primary side.

Ball valves with integrated thermometer

The ball valves are opened or closed by turning the thermometer. The markings show the current position.

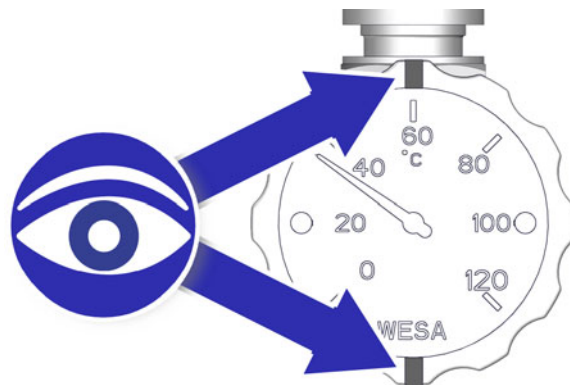


Fig. 3-4: Ball valve open

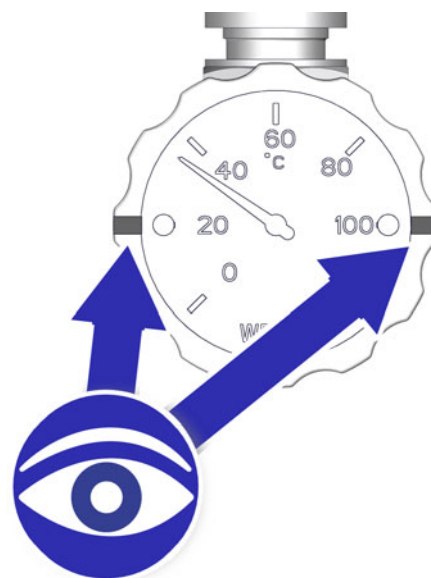


Fig. 3-5: Ball valve closed

4 Installation

Mounting the heat transfer station on the wall

Remove the front cover and the insulation on the bottom.

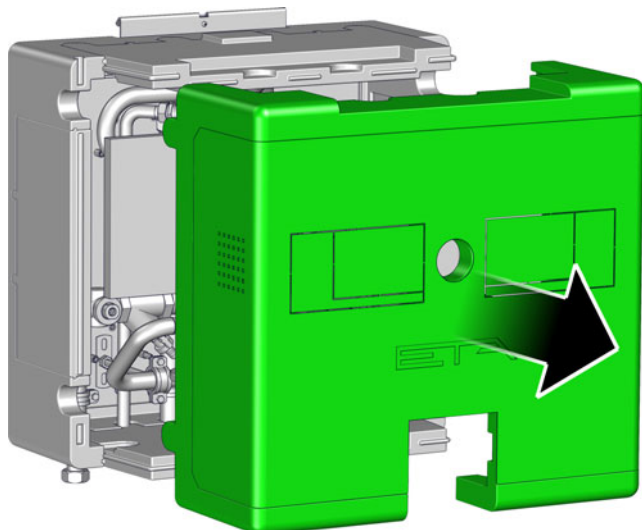


Fig. 4-1: Front cover

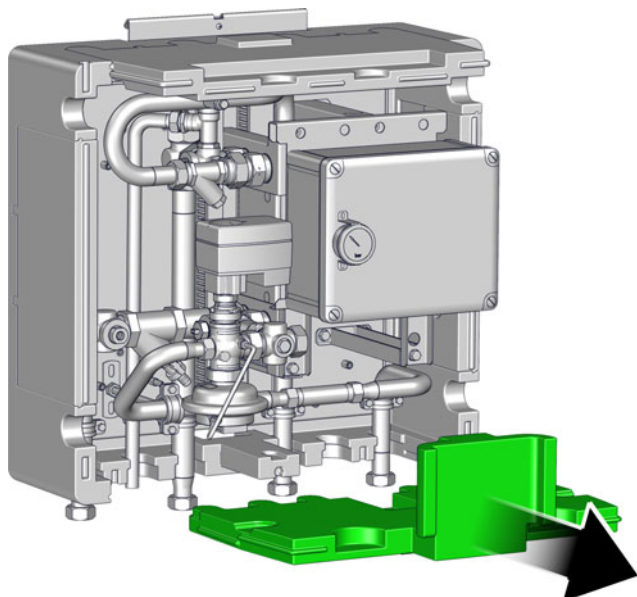


Fig. 4-2: Insulation

Fit the wall mount with suitable screws and hang the heat transfer station in the mount. Note the dimensions of the heat transfer station and the required clearances for maintenance; see diagram [Fig. 3-1: "Measurements"](#).

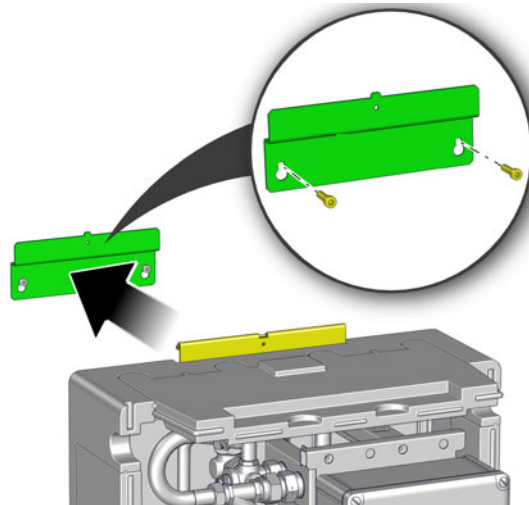


Fig. 4-3: Wall mount

Secure the heat transfer station to the wall mount with a screw.

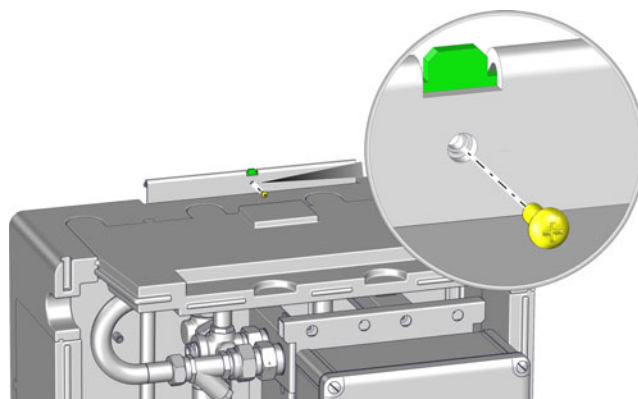


Fig. 4-4: Screw

Align the heat transfer station vertically to the wall with the help of the setting screws.

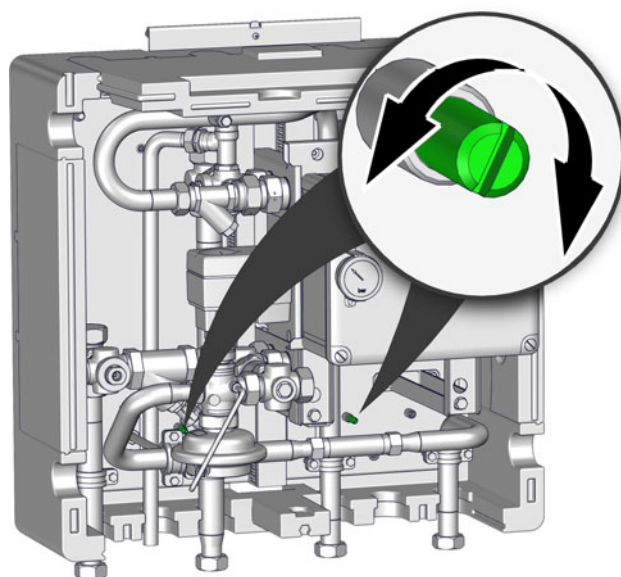


Fig. 4-5: Set screws

Set a clearance of approx. 5 - 15 mm to the wall so that the insulation can be mounted properly.

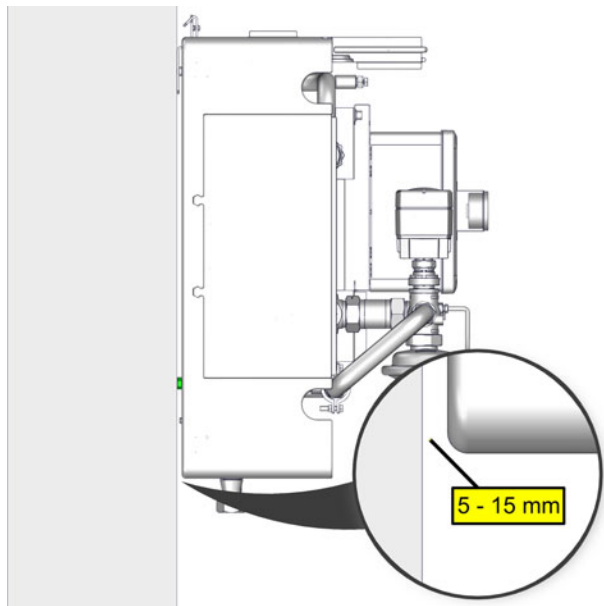


Fig. 4-6: Distance to the wall

Mounting the connections

Mount the connections for the primary circuit on the heat transfer station. The return is equipped with an emptying device.

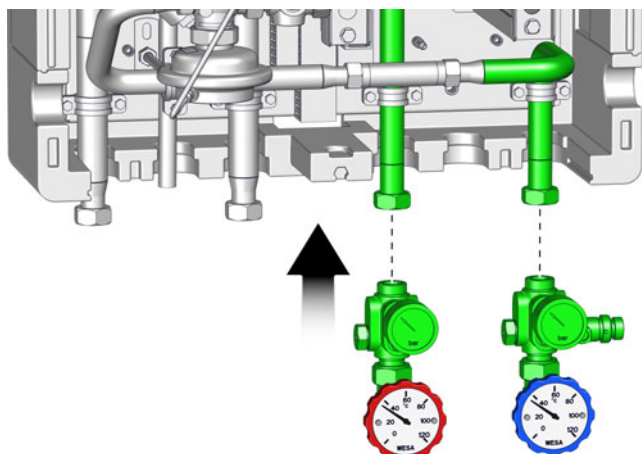


Fig. 4-7: Connections for primary circuit

Then mount the connections for the secondary circuit. Make sure that the flow and return are properly positioned.

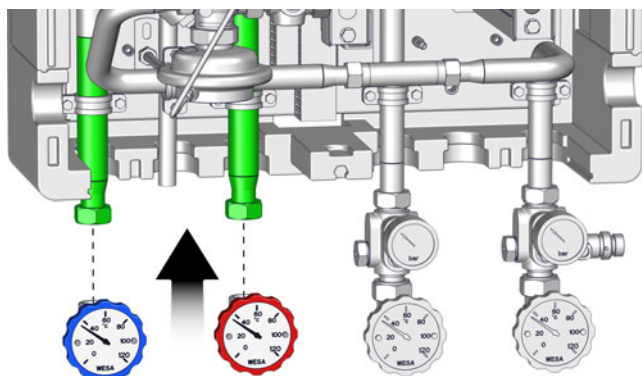


Fig. 4-8: Connections for secondary circuit

Turning the connections for the secondary side

If required, the connections (flow and return) for the secondary side can also be guided out of the top of the heat transfer station. See the following illustrations for this. Seals must be attached to all screw joints.

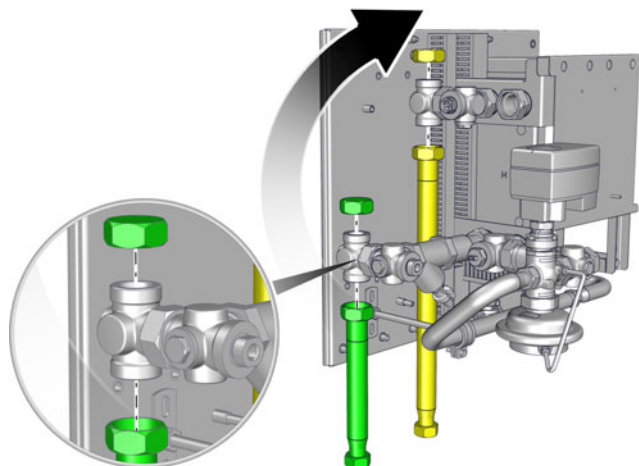


Fig. 4-9: Dismantling the piping

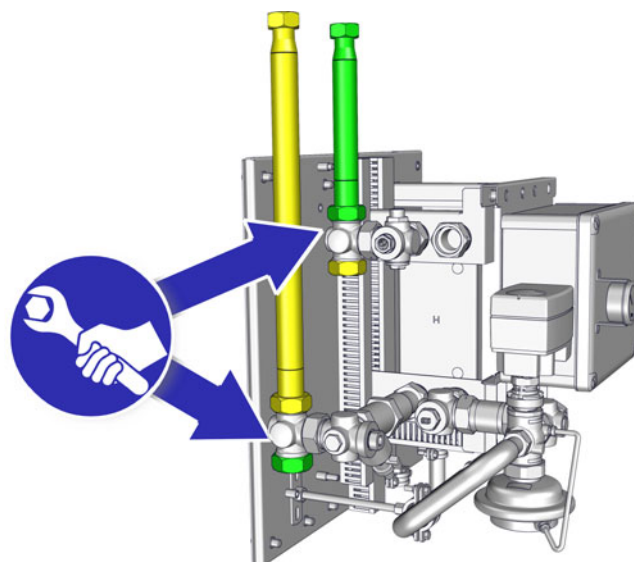


Fig. 4-10: Piping led out at the top

Installing outlet pipes for the safety valve

A safety valve with 3 bar opening pressure has already been installed for the secondary circuit at the factory. The outlet is already guided to the bottom of the heat transfer station in a pipe. Connect the safety valve outlet to this pipe.

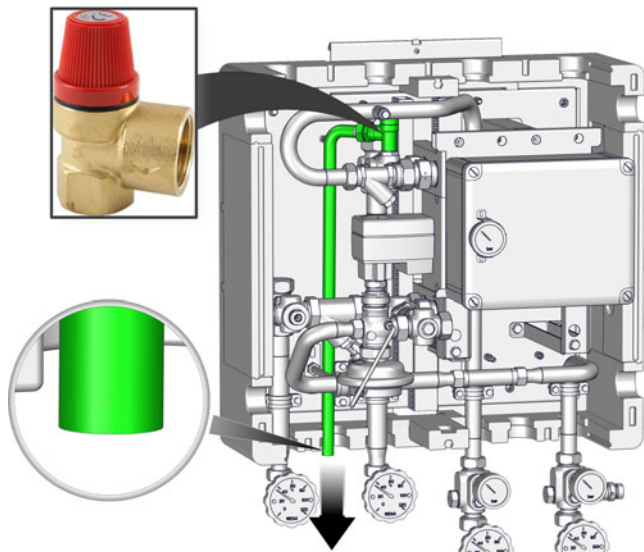


Fig. 4-11: Safety valve outlet

! DANGER!

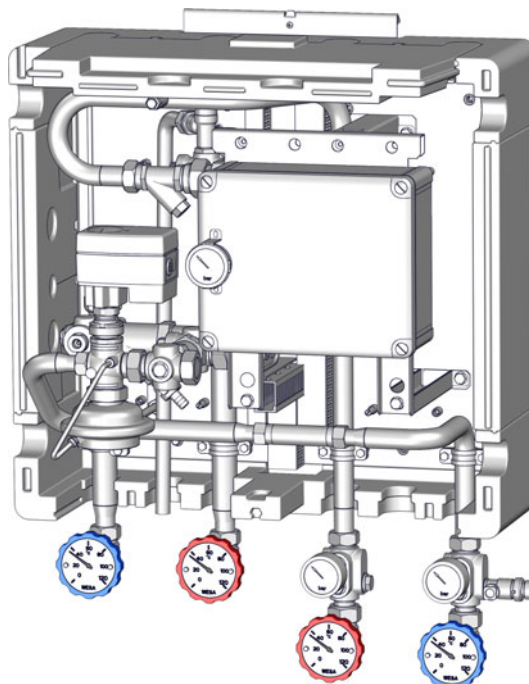
Safety valve outlet

The safety valve outlet must be directed to the ground in a pipe so nobody is endangered when hot water or steam is drained.

- ▶ The safety valve outlet must be fed to the sewage system (e.g. duct) via a clearly visible, open route (siphon funnel). This will ensure that malfunctions, especially a failure of the safety valve to close, can be detected. If no connection is available to the sewage system, the outlet must be directed to the ground in a pipe.

Installing the piping

Connect the piping of the heat producer on the primary side and the piping for the heat consumer on the secondary side.



There is a bleed screw on the top area of the heat transfer station for bleeding the primary side.

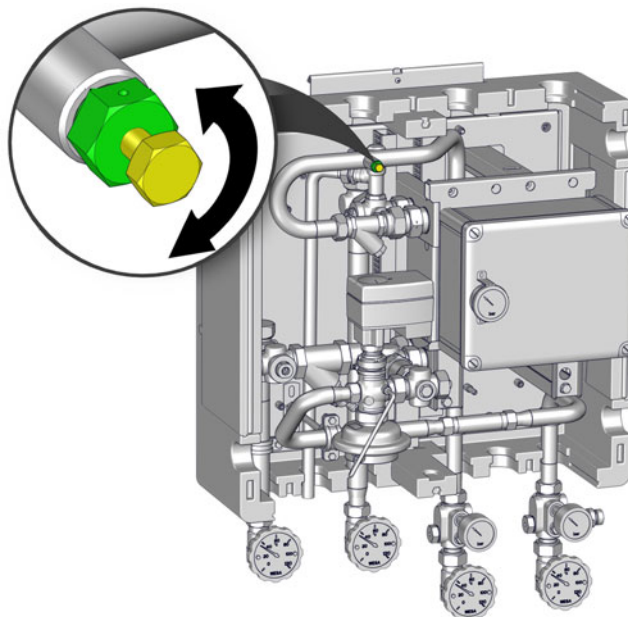


Fig. 4-12: Bleed valve for the primary side

A connection for a membrane expansion vessel is available for the secondary side.

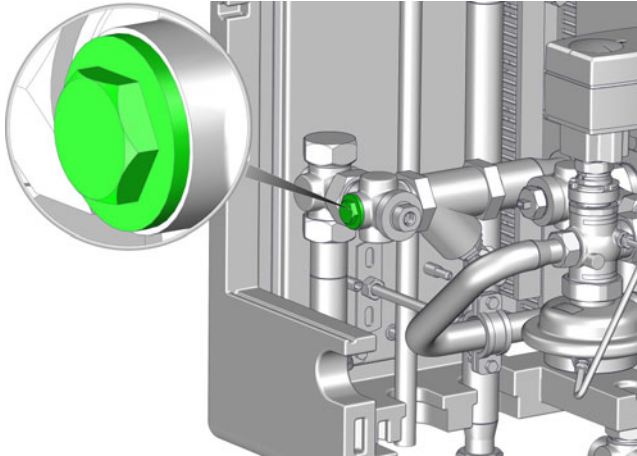


Fig. 4-13: Connection for membrane expansion vessel

For frost protection in the secondary circuit, guide the safety valve outlet into a canister



DANGER!

Safety valve outlet

The safety valve outlet must be directed to a canister with sufficient dimensions in a pipe so nobody is endangered by hot water or steam.

- ▶ The safety valve outlet must be directed into the canister via a clearly visible, open route (siphon funnel) so that malfunctions, especially a failure of the safety valve to close, can be detected. In the same way, the frost protection is collected when opening the safety valve and can be filled again.

4.1 Heat flow meter

Installing the heat meter

Optionally, a heat meter can be installed in the heat transfer station. This is available separately from ETA.

1. Remove the front cover and switch off the heat transfer station on the mains switch.
2. Block the flow and return lines on the primary side.
3. Remove the adapter in the return line. Hot water may leak out.

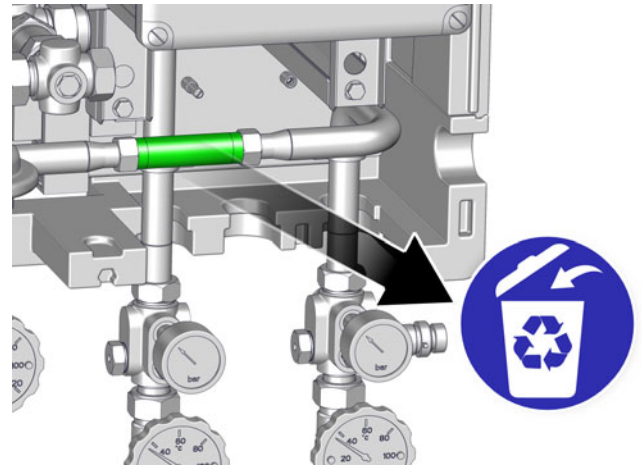


Fig. 4-14: Adapter

4. Insert the measuring unit of the heat meter. During installation, make sure the direction of flow is correct for the measuring unit.

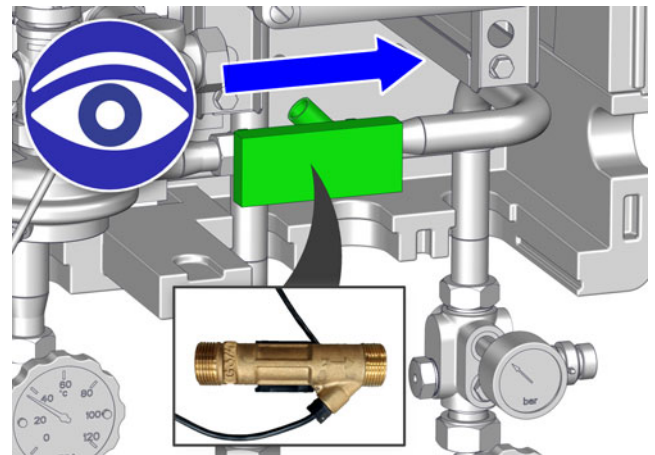


Fig. 4-15: Measuring unit

5. The temperature sensors of the heat meter are colour-coded (flow = red, return = blue). Insert them into the immersion sleeves at the flow (red) and return (blue) connections of the primary circuit.

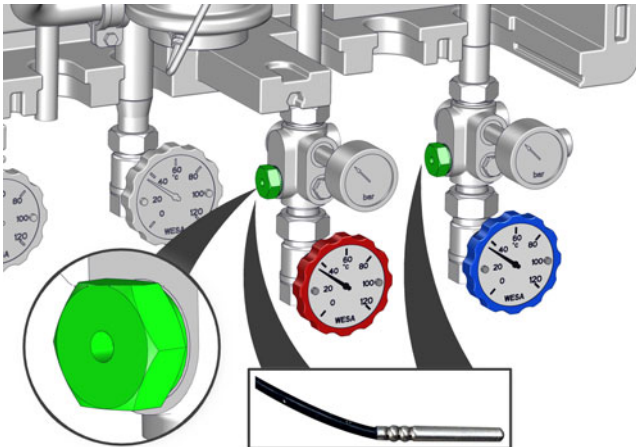


Fig. 4-16: Temperature sensor

i Depending on the heat meter, a return temperature sensor may already be installed in the measuring unit.

6. The display of the heat meter can be attached to the front of the heat transfer station.

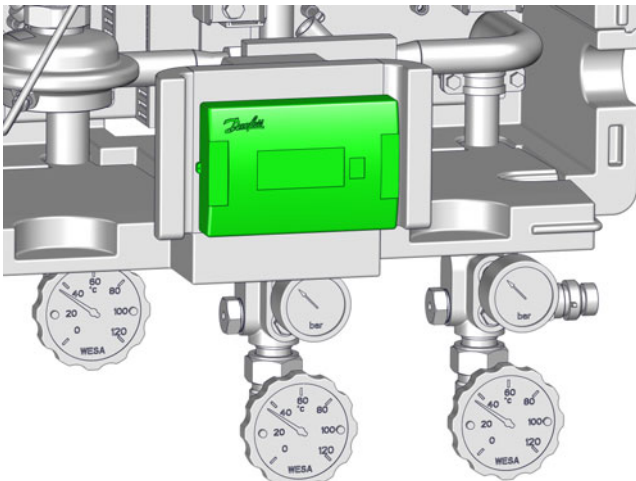


Fig. 4-17: Display

7. Connect the heat meter electrically. See chapter [6.5 "Heat flow meter"](#).
8. Open the flow and return lines of the primary circuit and bleed the primary circuit. Switch the heat transfer station back on at the mains switch and refit the front cover.

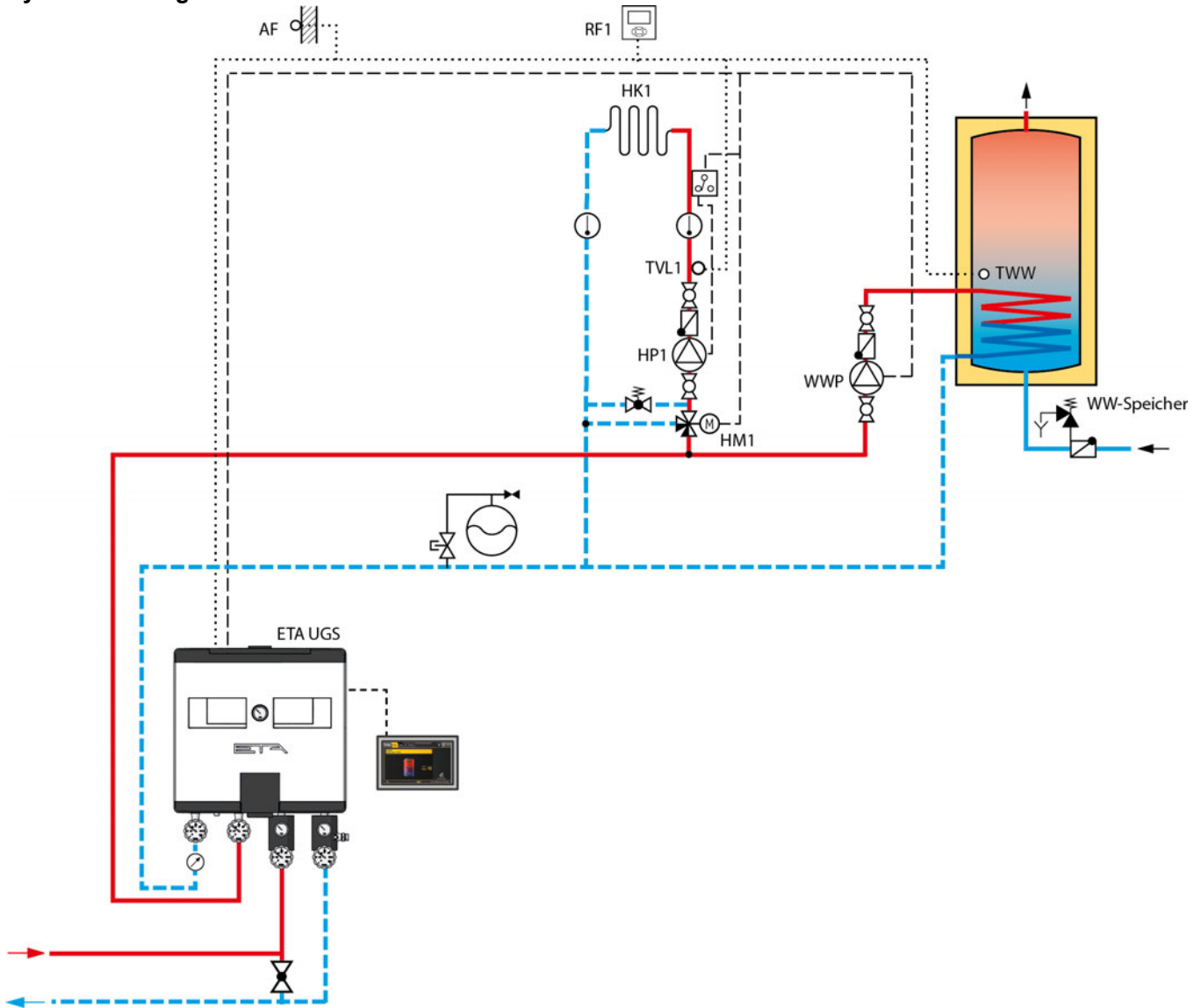
5 Configuration

General explanation provided in the additional document

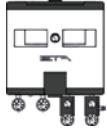
5.1 Example 1

A general description for the configuration with the assistant is provided in the document "Control extension - configuration". The configuration of the individual examples is described subsequently.




Hydraulic configuration



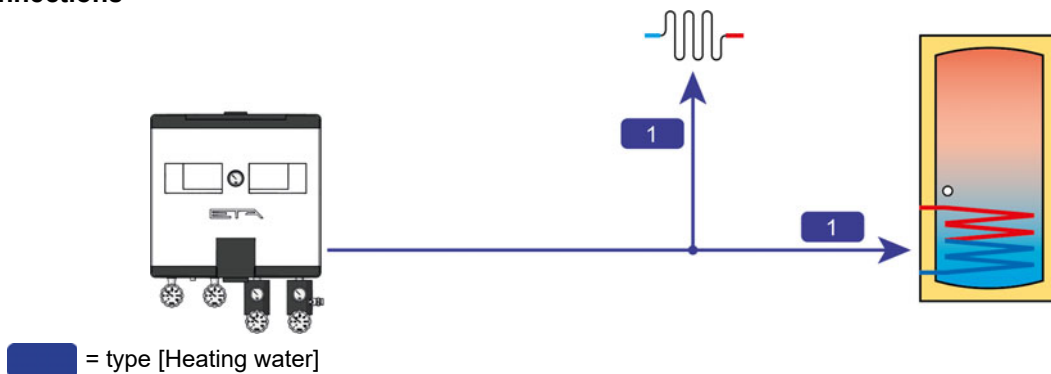
Circuit board [GM-C 1]

Function blocks		Description
	Heat Transfer Module	Transfer station
	Hydraulic environment	
	Hydraulic variants	Consumer with its own pump
	Primary valve	3 point control (230 V)
	Options	
<input type="checkbox"/>	Module is a consumer within an ETA system	Only select this option if the heat transfer module is a consumer in an ETA heating system. This option may not be selected for stand-alone operation (e.g., as district heating station).
<input checked="" type="checkbox"/>	Primary return sensor	

Circuit board [GM-C 1]

Function blocks		Description
	HWT	Hot water tank
	Hydraulic environment	
	Charging pump	Standard pump
	Flow mixing valve	no
	Circulation pump	No
	Heating circuit	Heating circuit
	Hydraulic environment	
	HC type	Underfloor heating
	Heating circuit pump	Standard pump
	Heating circuit mixing valve	3 point control (230 V)
	Settings	
	Room sensor	Digital
	Sys	System
	Settings	
	Outside temperature sensor	via circuit board input
	Display external fault message on the screen	No
	Output all fault messages	No

Connections



Producers	Consumers
1 GM-C 1: HTM: Flow	1 GM-C 1: HC: .
	1 GM-C 1: HW: .

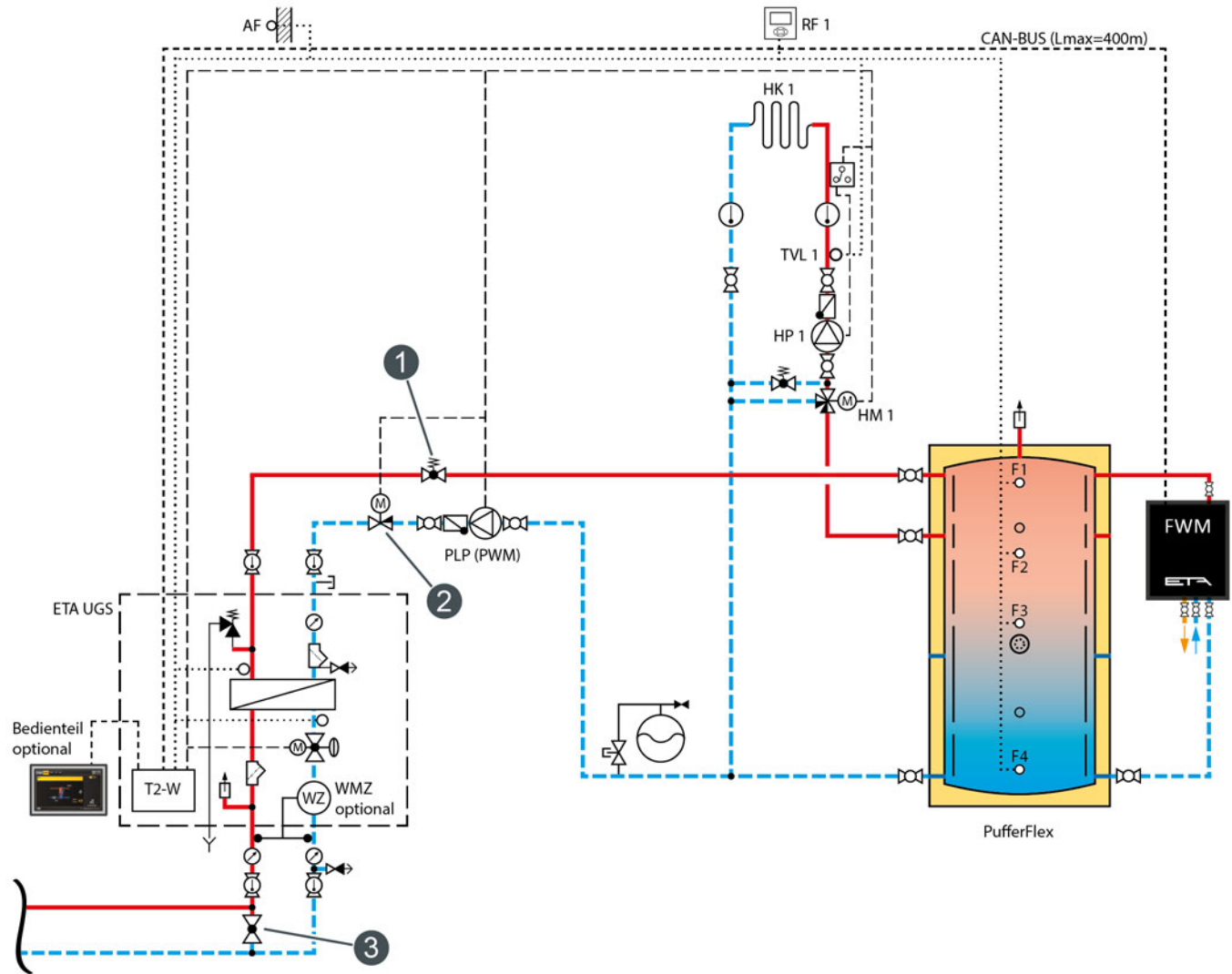
Terminal assignments

If the heat transfer station is a consumer in an ETA heating system, a CAN-bus connection to the ETAtouch control must be established.

Description	[GM-C 1]
Heat transfer station [HTM]	
Secondary flow	S500 T3
Primary valve	S6
Primary return	S500 T5
System [Sys]	
Outside temperature sensor	S501 T7
Hot water tank [HW]	
Hot water tank	S500 T6
Charging pump for hot water tank	S3
Heating circuit [HC]	
Heating circuit pump	S7
Flow	S502 T13
Heating circuit mixing valve	S8
Room sensor	S511

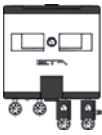
5.2 Example 2

Hydraulic configuration

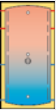




- 1 A continuous reducing valve is only required if no PWM-controlled pump is installed.
- 2 A 2-way valve or a solenoid valve is only required if the consumers cannot be connected to the heat transfer station in a hydraulically decoupled manner.
- 3 Overflow valve: If the network pump is in continuous operation, then an overflow valve (radiator valve with $k_v < 0.4$) is required in the network to ensure a minimum flow for the network pump. If the overflow valve is installed at the end of the line, the line is also kept warm.


Circuit board [GM-C 1]

Function blocks		Description
	Heat Transfer Module	Heat transfer station
	Hydraulic environment	
	Hydraulic variants	Buffer storage tank
	Primary valve	3 point control (230 V)
	Secondary pump	with speed control
Options		
<input type="checkbox"/>	Module is a consumer within an ETA system	Only select this option if the heat transfer module is a consumer in an ETA heating system. This option may not be selected for stand-alone operation (e.g., as district heating station).
<input checked="" type="checkbox"/>	Primary return sensor	

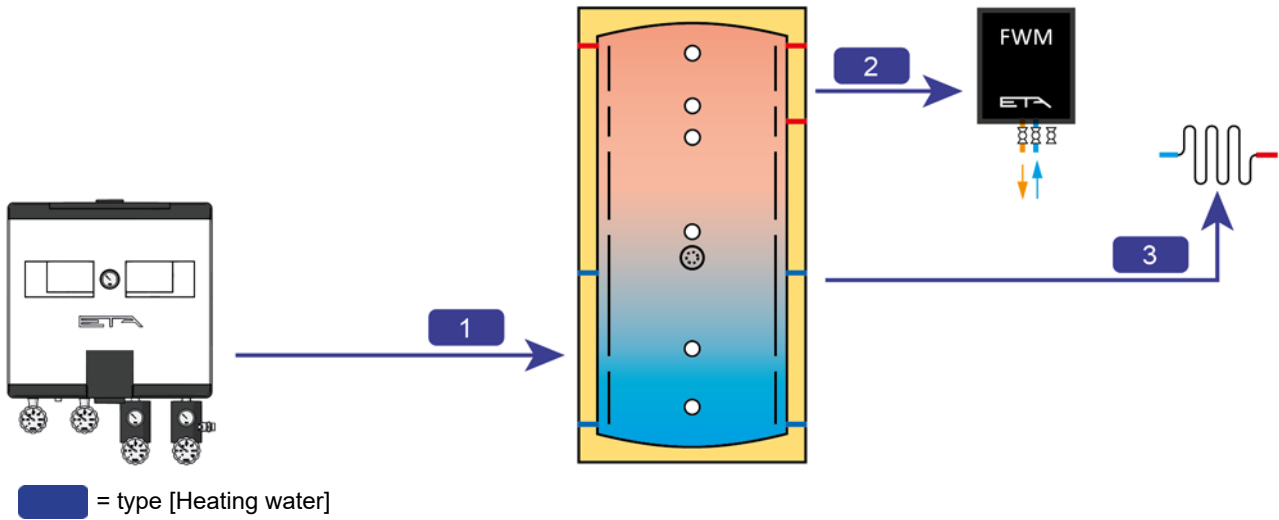
Circuit board [GM-C 1]

Function blocks		Description
	BufferFlex	Buffer storage tank
	Basic settings	
	Temperature sensor number	4
	Consumer levels	2
	Solar heating system	
	Solar heating system	not available
	Additional functions	
Combination tank	No	
Start relief for log boiler	No	
	Heating circuit	Heating circuit
	Hydraulic environment	
	HC type	Underfloor heating
	Heating circuit pump	Standard pump
	Heating circuit mixing valve	3 point control (230 V)
	Settings	
	Room sensor	Digital
	Sys	System
	Settings	
	Outside temperature sensor	via circuit board input
	Display external fault message on the screen	No
	Output all fault messages	No

Circuit board [EM-FC 7]

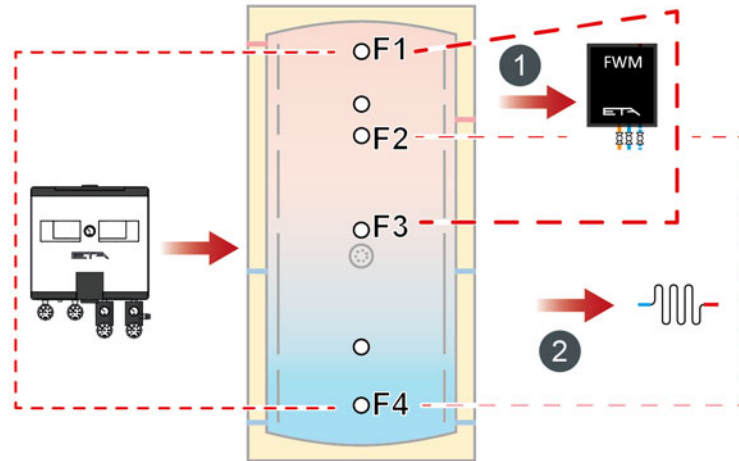
Function blocks		Description
	FWM 2pumps	ETA fresh water module
	Settings	
Size	1 or 2	

Connections



Producers		Consumers	
1	GM-C 1: HTM: Flow	1	GM-C 1: BufferFlex: .
2	GM-C 1: BufferFlex: Consumer level 1 (top)	2	EM-FC 7: FWM: .
3	GM-C 1: BufferFlex: Consumer level 2	3	GM-C 1: HC: .


Levels in buffer



Levels in buffer		Sensor assignment in buffer (from - to)
Boiler/buffer producer		
	Buffer top	Sensor 1 (top)
	Buffer bottom	Sensor 4
Consumer 1 (top)		
	Buffer top	Sensor 1 (top)
	Buffer off	Sensor 3
Consumer 2		
	Buffer top	Sensor 2
	Buffer off	Sensor 4

i From temperature sensor 4 in the buffer, the release for the heating circuit is assigned to the second sensor [Sensor 2]. Thus greater thermal energy is available in the buffer for the fresh water module.

Terminal assignments

 If the heat transfer station is a consumer in an ETA heating system, a CAN-bus connection to the ETAtouch control must be established.

Description	[GM-C 1]
Heat transfer station [HTM]	
Secondary flow	S500 T3
Primary valve	S6
Primary return	S500 T5
Secondary pump	S4, S506
System [Sys]	
Outside temperature sensor	S501 T7
Buffer storage tank [BufferFlex]	
Sensor 1 (top)	S501 T8
Sensor 2	S501 T9
Sensor 3	S501 T10
Sensor 4	S501 T11
Heating circuit [HC]	
Heating circuit pump	S7
Flow	S502 T13
Heating circuit mixing valve	S8
Room sensor	S511

6 Electrical connections

6.1 Requirements

The electrical connections must only be carried out by qualified specialist personnel


WARNING!

Injury risk

Injuries due to electric shock

- ▶ The electrical installation must only be carried out by specialist personnel with the corresponding qualifications.
- ▶ The electrical system must be installed in accordance with the circuit diagram or electrical connection.

Power supply for the heat transfer station

 Power is supplied to the heat transfer station via the power plug that has already been fitted; this is performed independent of the boiler. The heat transfer station can also be permanently wired to the electrical distributor.

DANGER!

Electric shock



There are live parts on the circuit boards. If touched, they can cause injury and property damage.

- ▶ Before beginning any work, isolate the system completely from all power sources, ensure that it cannot be switched back on, and verify that it is safely isolated from the power supply.

WARNING!

Damage to circuit boards

Circuit boards can be damaged by electrostatic discharge. Therefore, observe the ESD protection measures when handling the circuit boards.

- ▶ Dissipate electrostatic energy before and while touching circuit boards. Discharge yourself, for example, by touching earthed metallic objects (boiler body, heating pipes). Conductive straps or special ESD work shoes are recommended.
- ▶ Do not bring the circuit board into contact with conductive objects whose electrostatic charge has not yet dissipated.
- ▶ Only touch the circuit board at the outer edges and not at the terminals and solder joints.

CAUTION!

Flexible stranded conductors

If flexible stranded conductors are not used for the wiring, the contacts in the plug connections will be subjected to excessive mechanical strain. In this case, the warranty for the electronics would be invalidated.

- ▶ Only use flexible stranded conductors for the wiring.

WARNING!

Configuration errors caused by multiple use of node numbers with circuit boards and ETAtouch control panels of the same type

It is impossible to identify circuit boards and ETAtouch control panels when node numbers are assigned more than once.

- ▶ Set the node numbers correctly and conclude by checking them once again.

Maximum outputs


230 V output	Maximum power
A single output	250 W
Sum of all outputs	700 W

Potential-free output (special function)	Maximum switching capacity
A single relay output	500 W

6.2 CAN bus installation

Notes for CAN-Bus cables

The CAN Bus cables must have the following specification:

- As topology in the CAN Bus, only one "line topology" is allowed. A "star topology" is not permitted.
- The maximum total length of all used CAN-Bus cables is 400 m. When laying the cables, make sure the distance between the circuit boards is as short as possible. If the total length is disregarded, proper operation cannot be guaranteed.
-  The optional CAN router circuit board [EC-R] can be used to extend the CAN network. For more information, please refer to the instructions for the circuit board [EC-R].
- Only CAT6 cables or higher-quality cables may be used for the CAN-Bus lines.

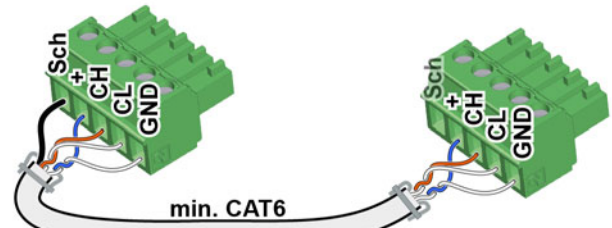


Fig. 6-1: CAN-Bus cable (CAT6 and single-sided shield)

Terminal designation

Sch	Shield
+	Power supply
CH	Data line CH
CL	Data line CL
GND	Earth

CAN-bus connection to the ETAtouch control system

The following example shows the CAN-bus connection from the heat transfer station to the boiler's ETAtouch control. This example applies accordingly to other CAN-bus connections.

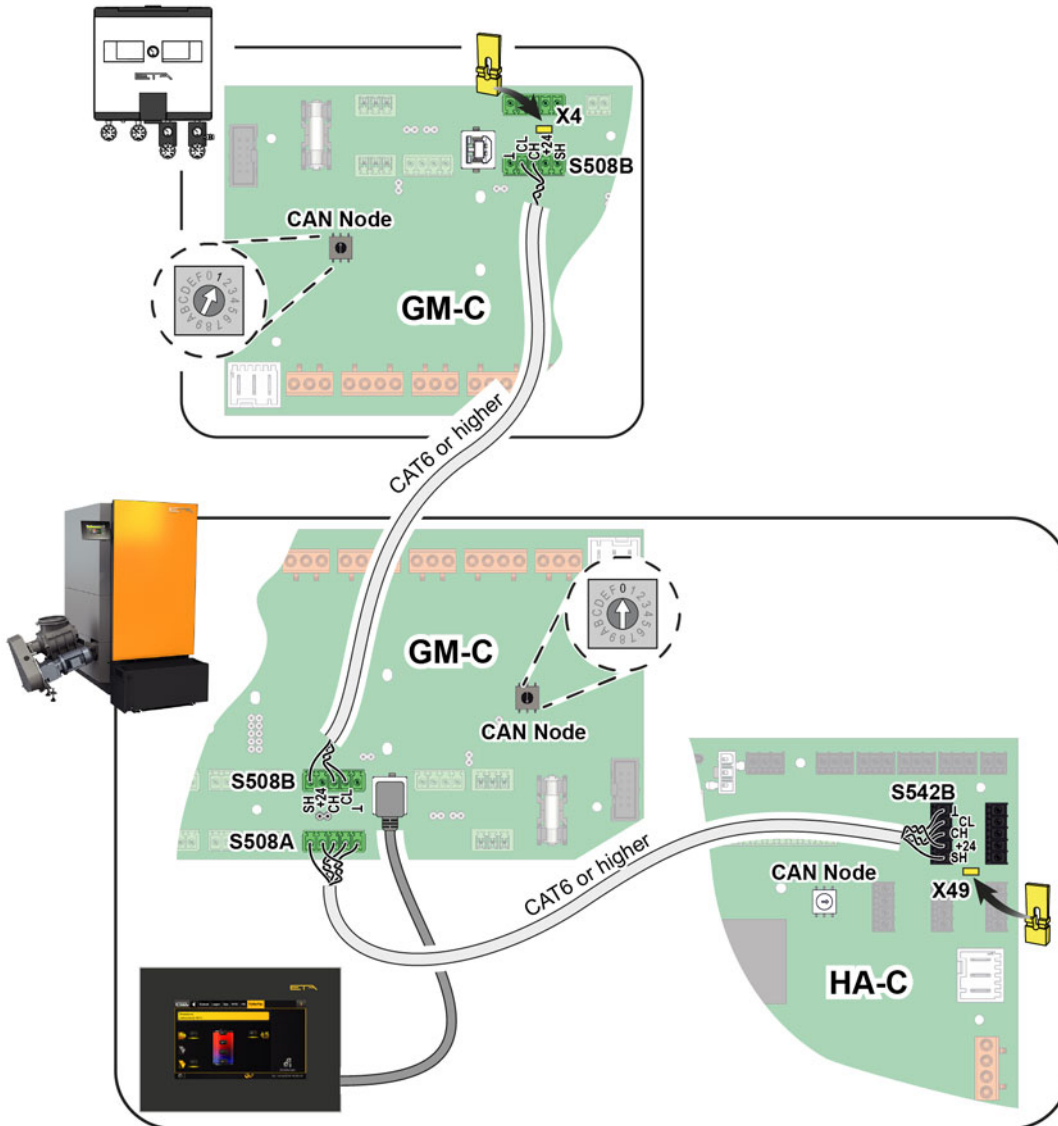
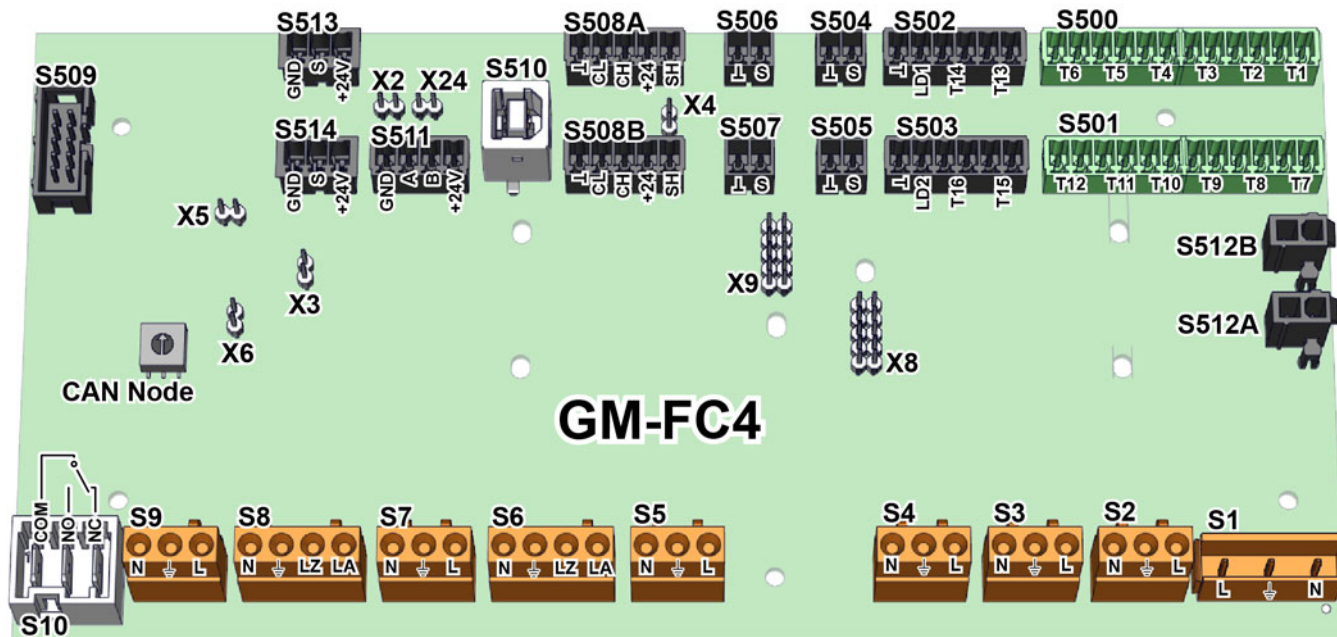


Fig. 6-2: CAN-bus connection to the boiler

6.3 GM-FC4 circuit board



i Only use flexible cables, for example for: pumps, mixers and temperature sensors. Please note the instructions for wiring, see [6.1 "Requirements"](#) and CAN-Bus lines, see [6.2 "CAN bus installation"](#).

These terminals can be used


Terminal	Function	Minimum cross-section	Standard assignment
S2	230 V output	3 x 1 mm ²	Pump
S3	230 V output	3 x 1 mm ²	Charging pump for hot water tank
S4	230 V output	3 x 1 mm ²	Pump
S5	230 V output	3 x 1 mm ²	Pump
S7	230 V output	3 x 1 mm ²	Heating circuit pump
S8	230 V output	4 x 1 mm ²	Heating circuit mixing valve
S9	Supply extension 230 V		for optional heat meter (Earthing pre-wired at the factory)
S10	Potential-free output (Sonderfunktion)		Circulation pump / burner
S500 T1	Temperature input	2 x 0.5 mm ²	
S500 T2	Temperature input	2 x 0.5 mm ²	
S500 T4	Temperature input	2 x 0.5 mm ²	
S500 T6	Temperature input	2 x 0.5 mm ²	Hot water tank
S501 T7	Temperature input	2 x 0.5 mm ²	Outside temperature sensor
S501 T8	Temperature input	2 x 0.5 mm ²	Buffer sensor 1
S501 T9	Temperature input	2 x 0.5 mm ²	Buffer sensor 2
S501 T10	Temperature input	2 x 0.5 mm ²	Buffer sensor 3
S501 T11	Temperature input	2 x 0.5 mm ²	Buffer sensor 4
S501 T12	Temperature input	2 x 0.5 mm ²	Buffer sensor 5
S502 T13	Temperature input	2 x 0.5 mm ²	heating circuit 1: Flow (for buffer operation)
S502 T14	Temperature input	2 x 0.5 mm ²	
S502 LD1	LED output	2 x 0.5 mm ²	
S503 T15	Temperature input	2 x 0.5 mm ²	
S503 T16	Temperature input	2 x 0.5 mm ²	
S503 LD2	LED output	2 x 0.5 mm ²	
S504	PWM output / analogue output	2 x 0.5 mm ²	Speed for pump on terminal [S2]
S505	PWM output / analogue output	2 x 0.5 mm ²	Speed for pump on terminal [S3]

These terminals can be used

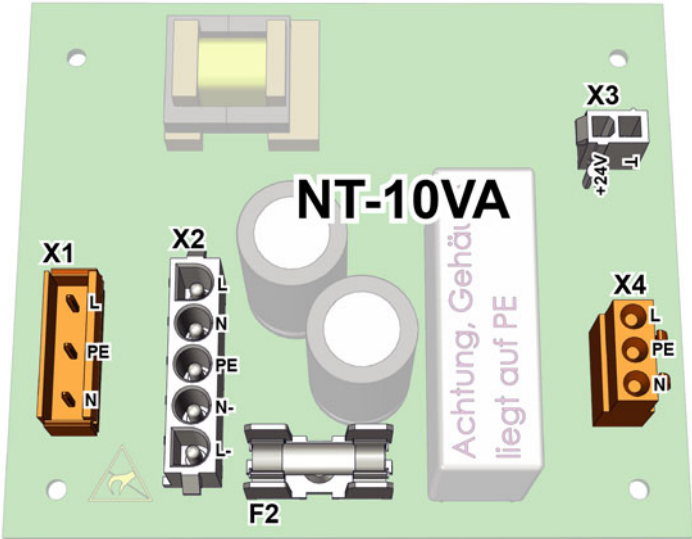
Terminal	Function	Minimum cross-section	Standard assignment
S506	PWM output / analogue output	2 x 0.5 mm ²	Speed for pump on terminal [S4]
S507	PWM output / analogue output	2 x 0.5 mm ²	Speed for pump on terminal [S5]
S508A	CAN-Bus	see 6.2 "CAN bus installation"	CAN-bus connection to the ETAtouch control system
S508B	CAN-Bus	see 6.2 "CAN bus installation"	
S509	Signal wire		to circuit board [MK-E]: terminal [S517]
S510	Data line		to ETAtouch control panel
S511	RS-485 bus	see room sensor instructions	Digital room sensor
S512B	Supply 24 V	2 x 0.75 mm ²	
S513	Analogue, digital, counter input	3 x 0.75 mm ²	
S514	Analogue, digital, counter input	3 x 0.75 mm ²	

These terminals are already pre-wired at the factory

Terminal	Function	Standard assignment
CAN node	CAN bus node switch	
S1	Supply 230 V	from circuit board [NT-10VA]: terminal [X4]
S6	230 V output	Actuator for primary valve
S10	Potential-free output (Sonderfunktion)	Circulation pump / burner
S500 T3	Temperature input	Secondary flow
S500 T5	Temperature input	Primary return
S512A	Supply 24 V	from circuit board [NT-10VA]: terminal [X3]
X2	CAN bus supply GND (for standalone mode)	
X3	Boot jumper	
X4	CAN-Bus terminal resistor	
X5	RS-485 bus terminal resistor	
X8	Terminal for plug-in circuit board	
X9	Terminal for plug-in circuit board	
X24	CAN-Bus supply +24 V (for stand-alone operation)	

 Counter inputs or frequency inputs record digital frequencies and are therefore intended for special sensors (e.g. digital flow sensors).

6.4 NT-10VA circuit board



These terminals are already pre-wired at the factory

Terminal	Function	Standard assignment
F2	Fuse 230 V, T 6,3 A	
X1	Supply 230 V	Mains power input
X2	230 V input	Mains switch
X3	Supply extension 24 V	to circuit board [GM-C]: terminal [S512A]
X4	Supply extension 230 V	to circuit board [GM-C]: terminal [S1]

6.5 Heat flow meter

Connect heat flow meter

Connect the wiring according to the following illustration. The M-Bus circuit board shown is optionally available and only required when the heat meter is to be evaluated by the ETAtouch control system.

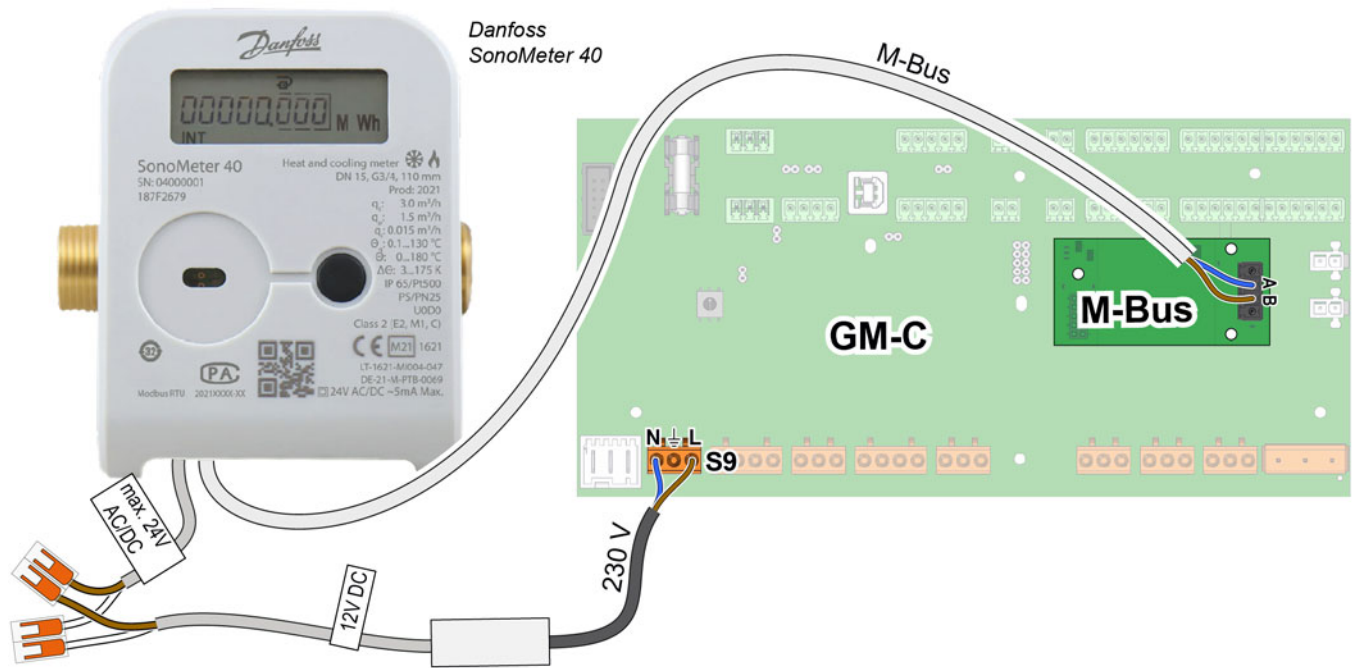



Fig. 6-3: Connect heat flow meter

7 Commissioning

7.1 Filling the heating system


Monitoring the screw joints

 Due to vibration and thermal expansion, all screw joints must be inspected and tightened prior to commissioning.


Permissible media

- Heating water according to ÖNORM H 5195-1.

The permissible water hardness for the heating water can be determined from the table in Section [9 "Water hardness"](#).

 The requirements of ÖNORM H 5195-1 apply as minimum requirements for the heating water. If stricter country-specific regulations exist, they are to be heeded.

- Water/glycol mixtures with a glycol ratio of minimum 20% and maximum of 30%

 Glycol has a higher viscosity than water. When admixing glycol, the pumping data must be corrected according to the mixing ratio. Proper use includes compliance with these instructions as well as the information and labelling on the pump.

Filling and bleeding the heating system


Fill the heating system and take note of the maximum water pressure. Carefully bleed the heating system after filling.

7.2 Setting the flow rate

7.2.1 Primary side characteristic curve

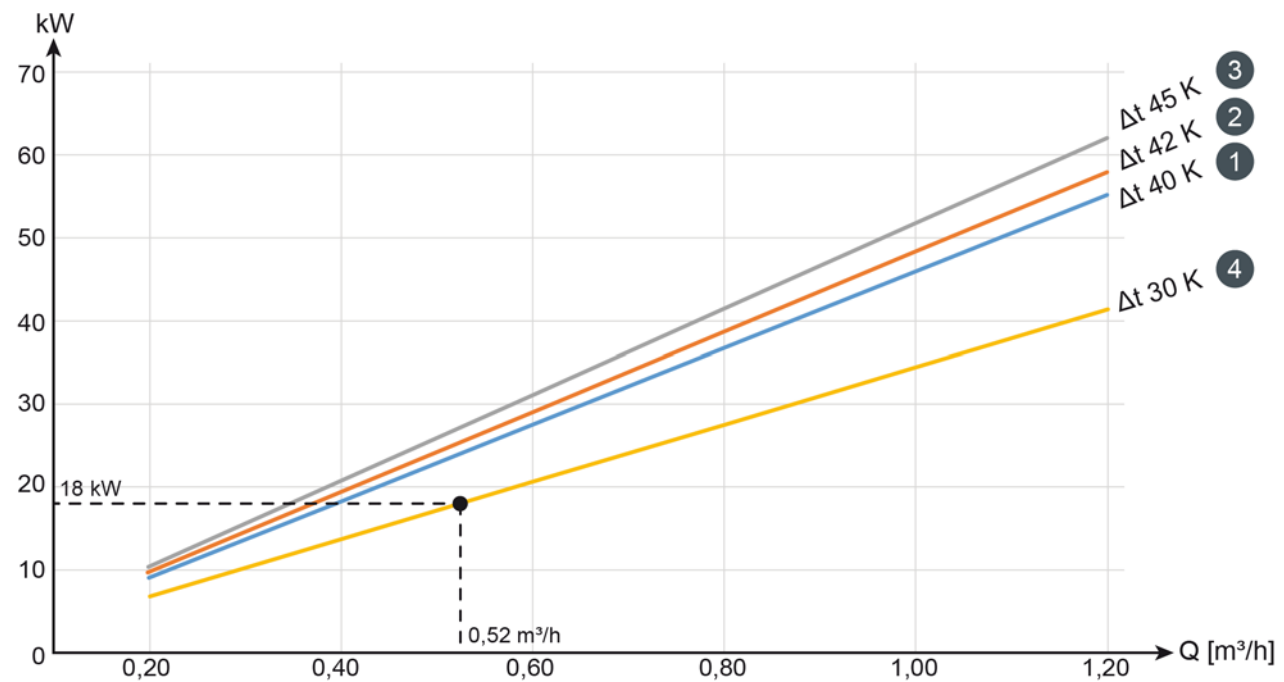
Primary side characteristic curves

Using the table, a primary side spread of 30 K results for the secondary side radiator heating (18 kW, 20 K spread). At 18 kW power and 30 K spread a primary side flow rate of approx. 0.52 m³/h results from the performance chart.

 The temperature difference of the heat exchanger of 5 K is already taken into consideration in the table.

Primary spread Flow - return		Secondary spread Flow - return	
1	75°C - 35°C = 40 K		35 °C - 30 °C = 5 K
2	75°C - 33°C = 42 K		35 °C - 28 °C = 7 K
3	75°C - 30°C = 45 K		35 °C - 25 °C = 10 K
4	75 °C - 45 °C = 30 K		60 °C - 40 °C = 20 K

Performance chart



7.2.2 Determination of volume flow

Adjusting diagram

The primary-side volume flow is adjusted using the adjusting throttle on the primary valve, see the following example.

Example:

A primary side flow rate of $0.52 \text{ m}^3/\text{h}$ is required. On the basis of the adjusting diagram, a value of 3.8 rotations is obtained for heat transfer station type 15 (or type 30). The restrictor must, therefore, be opened about 3.8 rotations from the closed position.

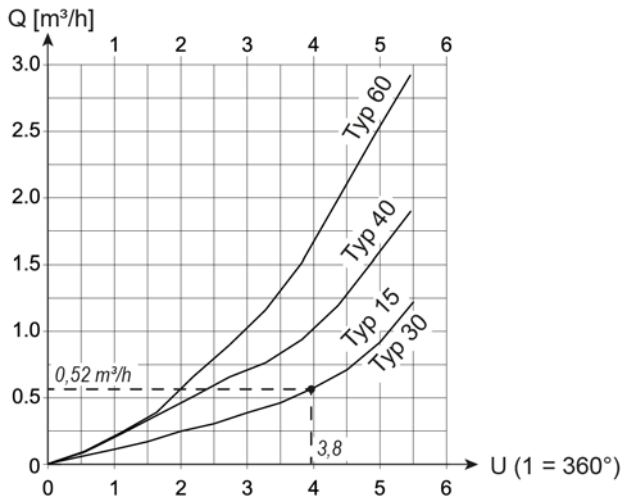


Fig. 7-1: Type 15-60

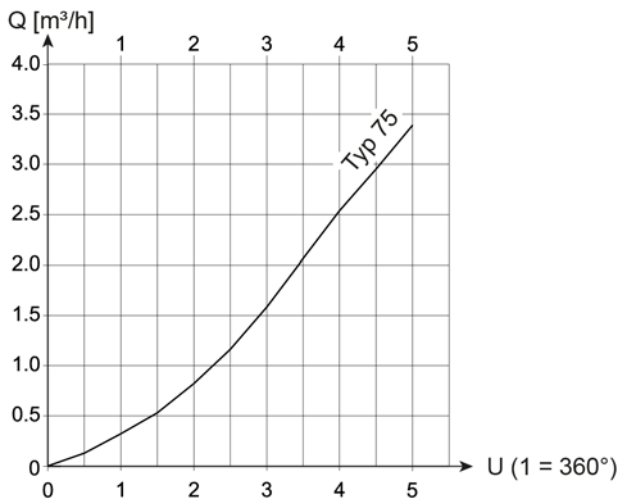


Fig. 7-2: Type 75

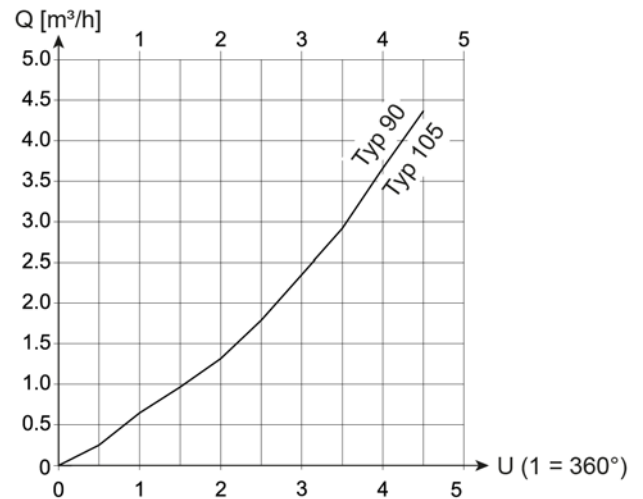


Fig. 7-3: Type 90-105

Setting primary side flow rate

1. Carefully remove the actuator from the primary valve.

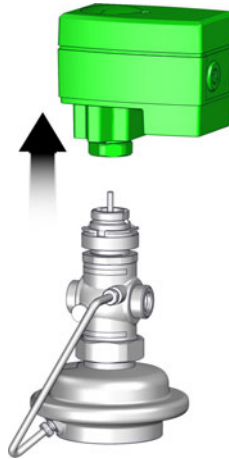


Fig. 7-4: Actuator

2. Remove the safety ring for the setting.

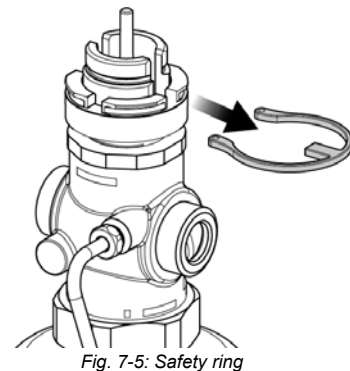


Fig. 7-5: Safety ring

- Close the restrictor (knurled screw with recess for positioning) completely by turning clockwise.

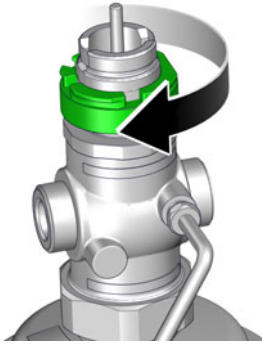
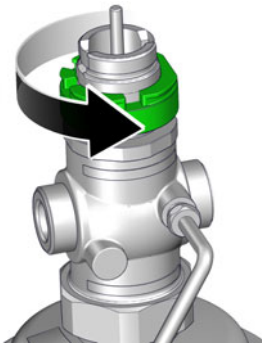


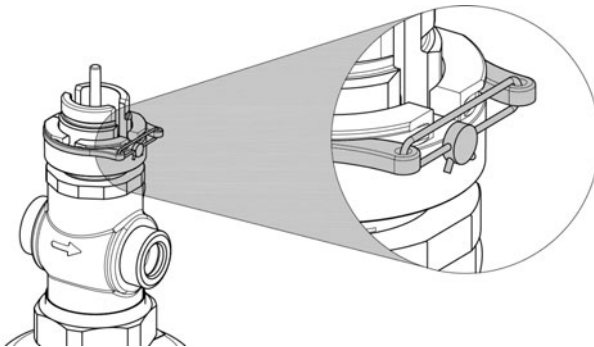
Fig. 7-6: Restrictor

- Reopen the restrictor counterclockwise by the required number of rotations ("U").



Determine the required number of rotations from the adjusting diagram (see [Fig. 7-1: "Type 15-60"](#)).

- Reattach the safety ring. This can also be sealed if necessary.



- Carefully reassemble the actuator.

7.2.3 Example calculation

Example with 2 heating circuits

A building with two heating circuits should be supplied by way of a heat transfer station. Total heat output is 18 kW. Radiators (60°- 40 °C) which provide 70% of the total heat output are installed. The remaining 30% is designed as underfloor heating (35-28 °C).

Determining the average return temperature

- ✓ The average return temperature of the heating circuits is required for the design of the primary side in order to determine the required spread of the primary side.
- 70% of the heating output is provided by the radiators. with 60° flow and 40° return.
=> 40 °C x 0.7 = 28 °C

30% of the heating output is provided by the underfloor heating designed for 35-28°C.
=> 28 °C x 0.3 = 8.4 °C
 - Therefore, the average return temperature on the secondary side is **36.4 °C** (= 28° + 8.4°).

i ⇒ The grade of the heat exchanger must be added to this average (at 5 K in this case) in order to calculate the average return temperature on the primary side.

⇒ This results in an average return temperature of **41.4 °C** (= 36.4° + 5 K) on the primary side.

Determining flow rate and pressure loss on the primary side

- The performance chart for the primary side shows that the average return temperature of 41.4 °C lies between the 35 °C and 45 °C characteristic curves. See chapter [7.2.1 "Primary side characteristic curve"](#), graphic "[Performance chart](#)".
- Since a characteristic curve with the exact spread of 75° flow - 41.4 °C return does not exist, the flow is calculated using the following formula:

$$Q \text{ [m}^3\text{/h]} = \frac{P \text{ [kW]}}{c \left[\frac{\text{Wh}}{\text{kg K}} \right] \times \Delta T \text{ [K]}}$$

Q	Flow
P	Output
c	specific heating capacity. For 1.16 [Wh/kgK] of water, this corresponds to
ΔT	spread between flow and return

The values from the example result in a primary-side flow rate of **0.46 m³/h**.

$$Q = \frac{18}{1,16 \times (75 - 41,4)}$$

- It is evident from the "adjusting diagram" (see graphic [Fig. 7-1: "Type 15-60"](#)) that for 0.46 m³/h the restrictor for heat transfer station type 15 must be opened by **3.5 rotations**.

7.3 Concluding activities

Refitting the insulation

Refit the front cover and all the insulation of the heat transfer station previously removed. Also reattach the insulation for the primary connections (flow, return).

8 Rectifying problems

Cleaning the strainer

i If the performance of the heat transfer station decreases during operation, often the strainer is dirty. Therefore, clean the strainer first before carrying out other measures.

The strainers are located on the primary and secondary side. The following describes the cleaning of the strainer on the primary side. This applies accordingly to the secondary side.

1. Close the ball valves for flow and return of the primary and secondary side in order to limit water leakage.
2. Carefully remove the front panel.
3. Remove the cap on the strainer and catch the escaping water with a towel. Hot water may leak out.

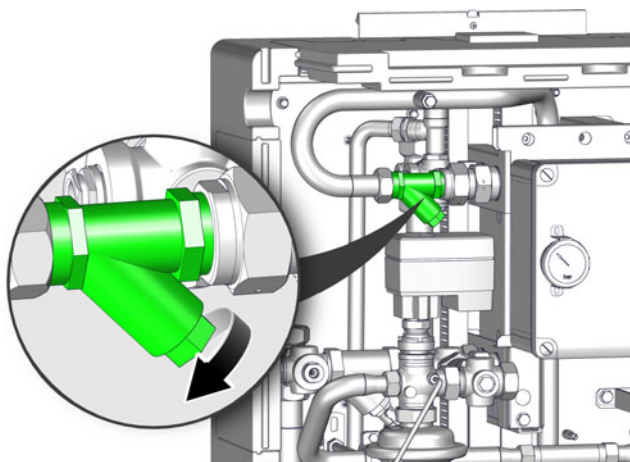


Fig. 8-1: Strainer on the primary side

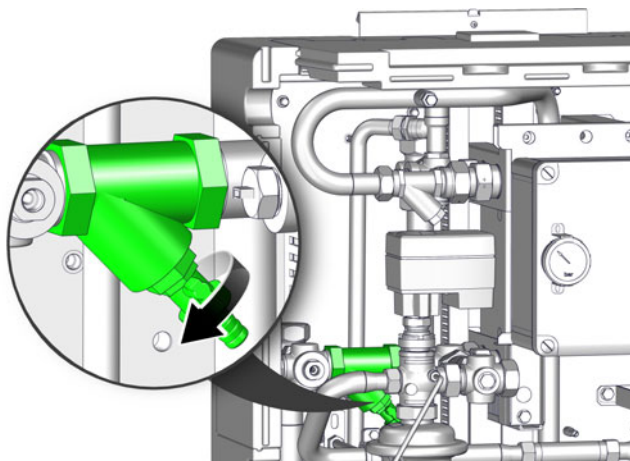


Fig. 8-2: Strainer on the secondary side

4. Clean the strainer and then reinsert it.

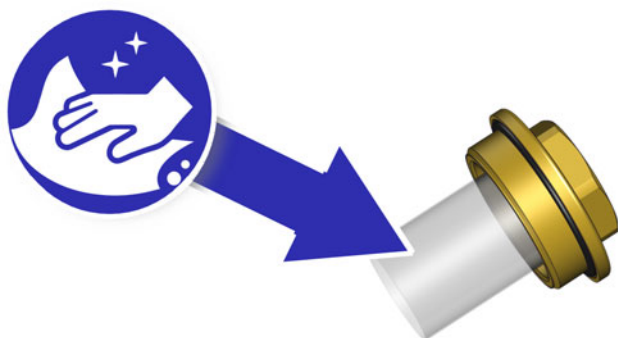
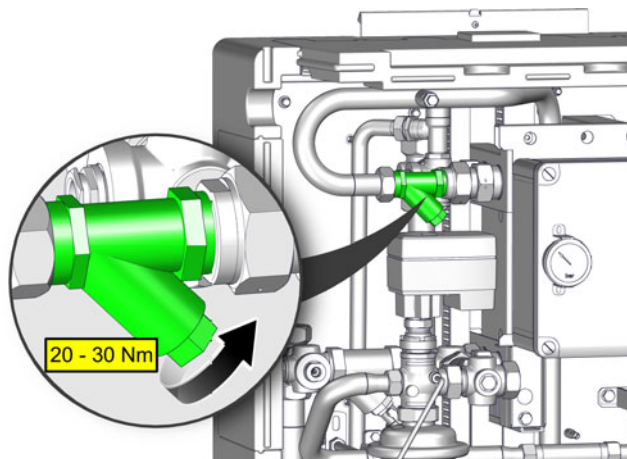


Fig. 8-3: Strainer

5. Fit the sealing cap and tighten it with a maximum of 20-30 Nm. Do not use pipe wrenches for tightening.



6. Reopen the flow and return ball valves.
7. Bleeding the corresponding circuit is required after cleaning. There is a bleed screw on the top for bleeding the primary side.

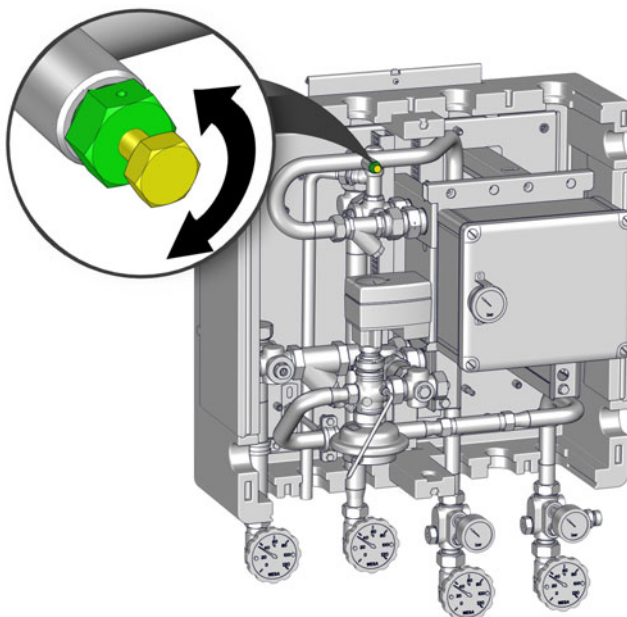


Fig. 8-4: Bleeding the primary side

8. Reattach the front cover

9 Water hardness

Determine permissible water hardness for the heating water according to ÖNORM H 5195-1

Specific water content (litres/kW)		Table 1 Heat producer with large (> 0.3 l/kW) water content			Table 2 Heat producer with small (≤ 0.3 l/kW) water content		
		< 20 l/kW	≥ 20 l/kW < 50 l/kW	≥ 50 l/kW	< 20 l/kW	≥ 20 l/kW < 50 l/kW	≥ 50 l/kW
Total output of the heat producer	≤ 50 kW	16.8 °dH	11.2 °dH	5.6 °dH	11.2 °dH	5.6 °dH	0.6 °dH
	> 50 kW ≤ 200 kW	11.2 °dH	5.6 °dH	2.8 °dH	5.6 °dH	2.8 °dH	0.6 °dH
	> 200 kW ≤ 600 kW	5.6 °dH	2.8 °dH	0.6 °dH	2.8 °dH	0.6 °dH	0.6 °dH
	> 600 kW	2.8 °dH	0.6 °dH	0.6 °dH	0.6 °dH	0.6 °dH	0.6 °dH

Instructions for determination:

1. Determine the water content of the heat producer (in litres) and divide by its output (in kW). If the result is larger than 0.3 l/kW, Table 1 applies. If the value is smaller or equal to 0.3 l/kW, Table 2 applies.
2. Divide the total heating water volume (in litres) by the output (in kW) of the smallest heat producer. The result is the specific water content and this determines the column within the previously calculated table.
3. Read the data for the permissible water hardness from the respective line using the total output of the heat producer.

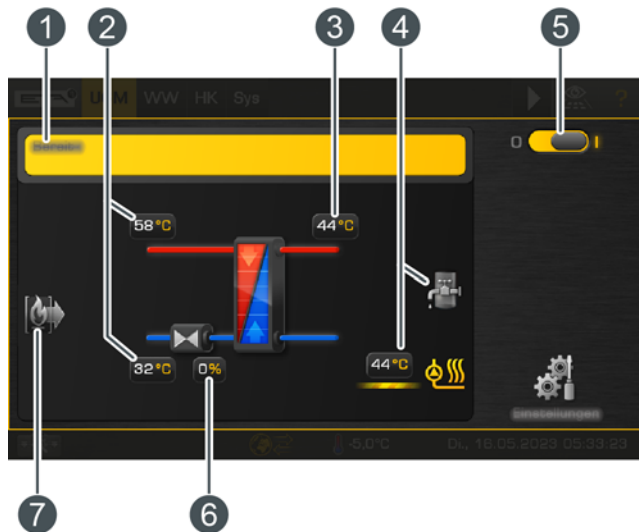
Example: A module with a 45 kW boiler and 1000 litre total water volume



1. For the module, the ratio of water content to output is less than 0.3 l/kW => Table 2.
 2. The maximum output of the module is 45 kW. With a total heating water volume of 1,000 litres, for example, a specific water content of 22.2 l/kW results => average column in Table 2.
 3. The total output of the module is 45 kW; therefore, only the data from the first line (≤ 50 kW) are relevant.
- ⇒ The permissible water hardness in this example is 5.6 °dH.

10 ETAtouch controller

10.1 Function block [handover module]

Overview of the heat transfer module




- 1 Operating condition and information.
The description of the operating conditions can be found in the integrated help with the **?** button.
- 2 Flow and return temperatures on the primary side (heat producer).
These temperatures are only displayed if they are installed and configured.
- 3 Flow temperature of the secondary side (consumer, heat consumer)
- 4 Heat transfer module consumer.
If a consumer is loaded, a line appears, the flow temperature and the symbol are shown in yellow.
- 5 On/off switch for the heat transfer module
 = switched on
 = switched off
- 6 Position of the district heating valve (100% = open)
- 7 Producer of the heat transfer module.
Is only displayed if the heat transfer module is configured as a consumer in an ETA heating system.

Function

The heat is released from the primary side heat producer (e.g.: district heating network) via the heat exchanger to the secondary side consumer. The flow from the heat producer to heat exchanger is regulated with the district heating valve (primary valve), which regulates the heat volume.

The consumers, for example a heating circuit and a hot water tank, are supplied with heat from the separately regulated pump and the changeover valve on the heat transfer station.

The primary valve opens as soon as there is a demand from the consumers. The secondary pump starts after the set delay has expired and supplies the consumers with heat. If there is no demand, the secondary pump is shut down and the primary valve closes.

To protect the consumers, a maximum flow temperature as well as a frost protection limit can be set. Frost protection is also in effect if the module is switched off with the On/Off switch .

10.1.1 Text menu - Adjustable parameters

Settable parameters

Inputs

- ▶ Heat meter
 - ▶ Read out interval


Heat meter

- ▶ Serial no.

A detailed description of the parameters is provided below.


Explanation of [Read out interval]

The interval for reading out the data of the M-bus meter is entered with this parameter.

 Too short an interval can trigger an error message on the M-bus meter. Refer to the M-bus meter operating instructions for the shortest interval to be set.


Explanation of [Serial no.]

With this parameter, the serial number of the M-bus meter is entered. This is needed for identification of the connected M-bus meter (heat flow meter as well as electric meter), so that the function block can read the corresponding data of the meter.

 If in the serial number are letters, the serial number must be rotated while entering. Details to this can be found in the manual of heat flow meter. example: 1234 0A5678 => 56781234


10.2 Software update

Download software update files


 Version 1.XX.X is required for the "BE-P1" control panel software, 2.XX.X for "BE-P2", and 3.XX.X for "BE-P3".

The required files for the software update can be found in the login area on the website www.eta.co.at and also on www.meinETA.at.

1. Download the software update:
 - a) Log in to the website www.eta.co.at with the username and password. In the login area, select the menu item [System Update], and download the appropriate software update.
 - b) Or log in to the website www.meinETA.at with the username and password. In the navigation bar, press the [Settings] button and then select [Installation & software]. Download the appropriate software update.
2. Copy the file to the root directory of a USB-memory stick (FAT32 or FAT16 formatting).

 The file may not be located in any folder and may not be renamed; otherwise, the ETAtouch control system cannot find the file.

Update software

 Software updates must always be carried out separately and successively on the ETAtouch control panel of the boiler itself, and then on all further ETAtouch control panels.






1. Plug the USB-memory stick (with the files for the software update) into the ETAtouch control panel.
2. On the ETAtouch control panel, increase the authorization level to [Service]. To do so, open the system settings  and tap the  [Authorization] symbol. A settings window appears. Enter the password "135" and press [Accept the authorization] to confirm.
3. Open the [Software] menu.
4. Press the  [Software update] button. If an update is available, it will appear on the screen.



Fig. 10-1: Software update menu


 If no USB-memory stick is detected, remove it, plug it in again and press the [Reload] button.


5. Press the  symbol to install the update. Confirm the safety instructions that appear.

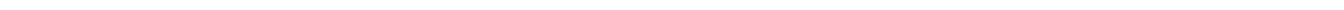
⇒ The software update is then installed.

6. After installation, a prompt appears to remove the USB-memory stick.

⇒ After removing the USB stick, the ETAtouch control panel will restart automatically.

⇒ The software update has been successfully installed and completed when the  symbol is displayed in the lower bar of the screen.

 ⇒ Install the software update on all further ETAtouch control panels in the same way.





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