Instructions **for Use**

BRUNNER Heating Center BHZ 3.0

BRUNNER®
made in germany.

BHZ 3.0

Contents

1 Introduction

1.1 Purpose of this manual

This document contains information about the BRUNNER Heating Center 3.0. Among others, you will find here information about:

- Safety and risks
- Assembly, installation and commissioning
- Product description and principles of operation
- Operating instructions and control description
- Cleaning and maintenance
- Fault finding and troubleshooting
- Decommissioning and disposal
- Technical and commercial data

1.2 Target audience

This document contains also information for the User of the heating system.

1.3 Validity of these instructions

This technical documentation is valid for the BRUNNER Heating Center (BHZ) 3.0 starting from October 2014.

Ulrich Brunner GmbH reserves the right to introduce technical changes, as far as they serve for technical progress, or if they are required by technical safety provisions.

1.4 Keeping of documents

IMPORTANT

READ CAREFULLY BEFORE USE

KEEP FOR FUTURE REFERENCE

The User is responsible for keeping of the BRUNNER Heating Center 3.0 documentation, as well as all other important documents.

1.5 Symbols and text style rules

1.5.1 Specified symbols

In this documentation, a distinction is made between:

Operating personnel as the **User of the system**, i.e. the end user, which has received instructions from the Contractor and does not necessarily have additional qualifications.

Operating personnel as the **Contractor**, i.e. the qualified professionals, which are entitled to perform the indicated specialist works.

In this document, the following symbols are used:

DANGER
A danger of high risk persists, which leads to severe injury or death, if this endangering situation is not avoided.

WARNING
A danger of medium risk persists, which can lead to severe injury or death, if this endangering situation is not avoided.

CAUTION
A danger of low risk persists, which can lead to minor or moderate injury, if this endangering situation is not avoided.

ATTENTION
There is a certain risk, which can lead to a malfunction or damage of the related system and all devices connected with it, if the indicated notifications are not followed.

NOTE

Additional helpful information

1.5.2 Text style rules

In this document, the following text style rules are in use:

Handling or operating instructions with several steps

Descriptions of operations or actions with several steps, when these steps must be performed in chronological sequence.
1. First working step;
2. Second working step;
3. Third step.

→ Final result

Appearance of on-screen display text in this manual

For descriptions of settings performed on the BRUNNER Touch Display, the displayed text is shown as bold letters.

1.6 For your safety

1.6.1 Dangers and safety precautions

Assembly, installation and maintenance works may be performed only by a qualified Contractor.

- Only such activities should be performed, which are described in this manual.

Electrical shock
Electrical installation works may be performed only by a qualified Contractor.

- Electrical connections are under mains voltage. This can lead to electric shock.
- Please observe all valid regulations.

Risk of injury caused by hot water
High water temperatures can lead to scalding. Small kids or elderly people can be in danger even at lower temperatures.

- The highest temperature setting of the connected hot water storage tank must not exceed 65°C.

Avoiding equipment damages and the resulting risks
Sprays, solvents or chlorine-based cleaning agents, paints, adhesives etc. can lead to equipment damage under some circumstances.

Never try to modify for some reason any part or equipment of the heating system, if these modifications could impair the operational safety.

The fresh water module can be used only in such situation, if there are no galvanized pipelines within the home piping system, because the heat exchanger is soldered with copper.

Risk of freezing
When the BHZ 3.0 is not in use for a longer period (e.g. during holidays) in a room without heating, there is a risk that the water will freeze in pipelines. Freezing water can damage the pipelines and cause consequential damages.

- Please instruct the user about the frost protection mode of the heating system.
- The BHZ 3.0 must be installed in rooms with a temperature range between 0 °C and 40 °C.

DANGER
This device can be used by kids above 8 years and persons with limited physical or mental ability, or lacking experience and knowledge, only if they are supervised or have received instructions on safe operation of the device and they are able to understand the resulting dangers. Kids may not play with this device. Cleaning and user-maintenance cannot be performed by kids without supervision.

1.6.2 Warnings

Warnings in this document are emphasized by pictographs and signal words.
The pictograph and the signal word indicate the type, the source or causes of a certain action. The necessary measures or calls for action are indicated.
The result or purpose is shown as well. These warnings refer to possible misuse of the system, which seems likely based on our experience. The residual risks are indicated too.
The residual risks remain:
- despite the means for integration of safety during construction,
- despite the safety precautions,
- despite the additional protective measures.

For certain points, there are also given some recommendations and instructions on the application of protective measures, including personal protective equipment. Special safety instructions and recommendations are applied for transport, handling and storage. Instructions for safe setup and maintenance include separate protective measures too.

Structure of warnings
The warnings that precede each assembly step, are shown as follows:

Hazard for humans
Type, source and causes of danger

Measures
Calls for action

→ Result or safe use

Hazard for the system
Type, source and causes of danger

Measures
Calls for action

→ Result or safe use

1.6.3 Regulations

Among others, the following regulations and guidelines must be observed during installation, commissioning and maintenance of the BHZ 3.0:

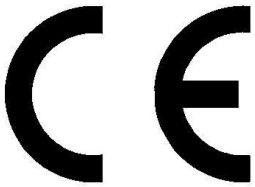
Legal requirements:

- the legal regulations for accident prevention
- the legal regulations for environment protection
- the provisions of the industry associations
- the “Energy Saving in Buildings” law (Energieeinsparungsgesetz-EnEG)
- the Energy Saving Act (Energieeinsparverordnung-EnEV)
- the Master Fireplace Act (MFeuVo) of the respective Federal Countries (FeuVo)
- the Country Building Code and the list of technical building regulations
- the governmental, regional building codes and boiler room equipment listings.

Standards and Guidelines:

- the relevant safety conditions included in DIN, EN, DVGW, TRI and VDE standards
- EN 12828 Heating systems in buildings - Hot-water heating systems (2002)
- EN 12831 Heating systems in buildings. Method for calculation of the design heat load
- EN 14597 Temperature control devices and temperature limiters for heat generating systems
- DIN 4753 Water heating systems for drinking and process water
- DIN 4109 Sound insulation in buildings, supplementary sheets and permissions
- DIN 1988 Technical rules for drinking water installations (TRWI)
- DIN EN ISO 4126 or TRD 721 - Safety devices for protection against excessive pressure - Safety valves
- DIN VDE 0100 Part 540 2007-06 DIN VDE 0100-540 Setting up low voltage installations
- DIN VDE 0100 Part 701 2008-10 DIN VDE 0100-710 Low voltage installations
- DVGW worksheets W551 and W552 Technical measures to reduce the growth of Legionellae
- VDI 2035 Prevention of damage in hot-water heating systems (limestone formation, corrosion) (2009)
- VDI 4708 - Heating equipment (pressure maintenance, venting, degassing) (2012).

1.6.4 Conformity



Hereby we declare as the manufacturer that this product - BRUNNER Heating Center 3.0 (BHZ 3.0) - complies with the basic guidelines for sale in the EU.

1.6.5 Obligations of our Natural Power Partners

To ensure the proper functioning of the BHZ 3.0, observe the following guidelines:

- Perform works only if you have the necessary expertise.
- Perform only such activities, which are indicated or described in this manual.
- Please ask an expert for instructions on the operation and maintenance of the system and potential hazards that may arise during operation.

2 Product description

The BRUNNER Heating Center (BHZ) 3.0 consists always of a Hydraulic Box and a dedicated System Storage. Together they form a functional unit.

The **Hydraulic Box** is capable of handling power ranges from 15 up to 50 kW. The external dimensions of the Hydraulic Box are identical for all variants.
The **System Storage** tank is available with capacities of 750, 1000, 1500 and 2000 liters.

The basic combination of the BHZ 3.0 includes a Hydraulic Box (shown right) and a System Storage; both are connected with each other. The necessary expansion tanks for the heating and solar circuits are not shown in the picture. They must be provided on-site. The connections for the System Storage are present on the side of the Hydraulic Box.

The connection ports can be on the left, as well as on the right side of the Hydraulic Box, depending on the local conditions on site.

All connections for the heating circuits, boiler supply and return lines, solar and hot water circuits are installed at the top of the Hydraulic Box. When additional heating is used, the supply and return lines are connected to the lateral headers 1 and 8. The components inside the Hydraulic Box are completely pre-assembled. Optionally, the Touch Display can be also installed in the living area for more comfortable control of the heating system. Up to 5 displays can be connected in total.

When the Hydraulic Box is connected to a storage tank which is provided by other manufacturers than Ulrich Brunner GmbH, it can lead to unwanted heat flows. The heating system will not work properly at some circumstances.

In this case, Ulrich Brunner GmbH cannot be held responsible for faulty operation.

The functional warranty of the BHZ 3.0 is valid only for the combination of a Hydraulic Box provided by Ulrich Brunner GmbH with the appropriate and dedicated System Storage.

2.1 Intended use

The BHZ 3.0 is designed and built according to generally accepted engineering standards.

The Hydraulic Box controls the coordination of all connected heat generating devices and all heat consumers.

The BRUNNER System Storage is optimized for use as buffer tank with renewable energy sources. The purpose of the System Storage is the collection, storage and supply (on demand) of all energy streams.

The following connections on the BHZ 3.0 are possible:

- as heat generating devices: e.g. a logwood boiler, a pellet boiler, a wood chips boiler, a solar heating system with/without system separation, oil or gas boiler, a heat pump.

- as heat consumers: e.g. one or two heating circuits, additional (up to 6) heating circuits are possible with external extension boards (EWPs). Heat consumers can include floor heating systems, radiators, wall heating systems or a swimming pool. Domestic hot water heating is possible either by installing a fresh water module, or by using a hot water storage tank.

- additional buffer tank as extension of the System Storage capacity.

Connecting of incompatible buffer tanks or other equipment may result in deviations of the intended application and all their unintended and undesirable consequences. Always seek advice from an expert craftsman; remember that all works should be carried out by authorized companies. All warranty claims are void, if the above requirements are not held.

Nevertheless, in case of incorrect or improper use, dangers to life and limb of operating personnel or third parties may arise. Such cases of incorrect or improper use can also lead to equipment damage and other property damage.

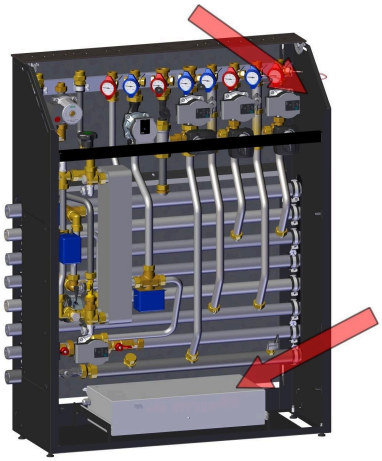
2.2 Identification plates

Illustration 1: BHZ 3.0 identification plate

The following information can be found on the Hydraulic Box identification plate:

1. Name of the manufacturer
2. CE - Certification, Marking according to Elektro-laws
3. Designation of equipment
4. Year built
5. Type
6. Address and contact data of the manufacturer

The rating plates can be found inside the housing of the hydraulic box. One plate is attached to the side panel, the second is on the cover of the electric box.



The identification plate is found on the System Storage upper part, under the insulating trim. This identification plate is valid for the System Storage, as well as the Standard Storage Tank from BRUNNER.

Illustration 2: Position of the identification plate

The following information can be found on the System Storage identification plate:

1. Name of the manufacturer
2. Address and contact data of the manufacturer
3. Type: Application range of the device and volume specifications
4. Manufacturing number
5. Approved operating pressure in bar
6. Maximum operating temperature in degrees Celsius
7. Vessel diameter without insulation in mm
8. Note

2.3 Overview of components and connections on the BHZ 3.0 Heating Center

The BHZ 3.0 Heating Center consists of:

A = Hydraulic Box

B = System Storage

The connections can be arranged on the left or right, depending on conditions on site.

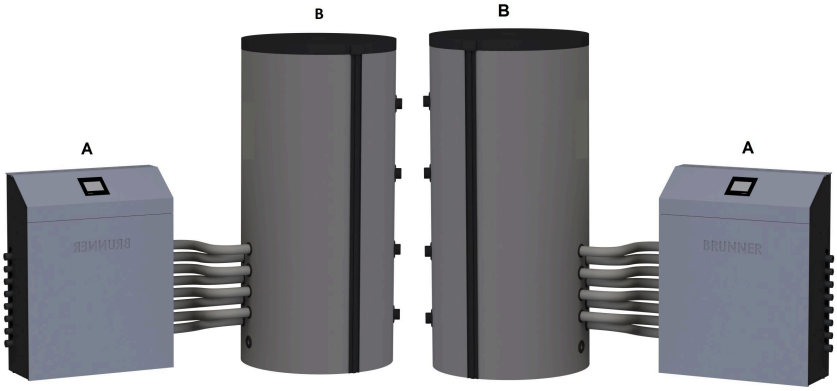


Illustration 3: right

Illustration 4: left

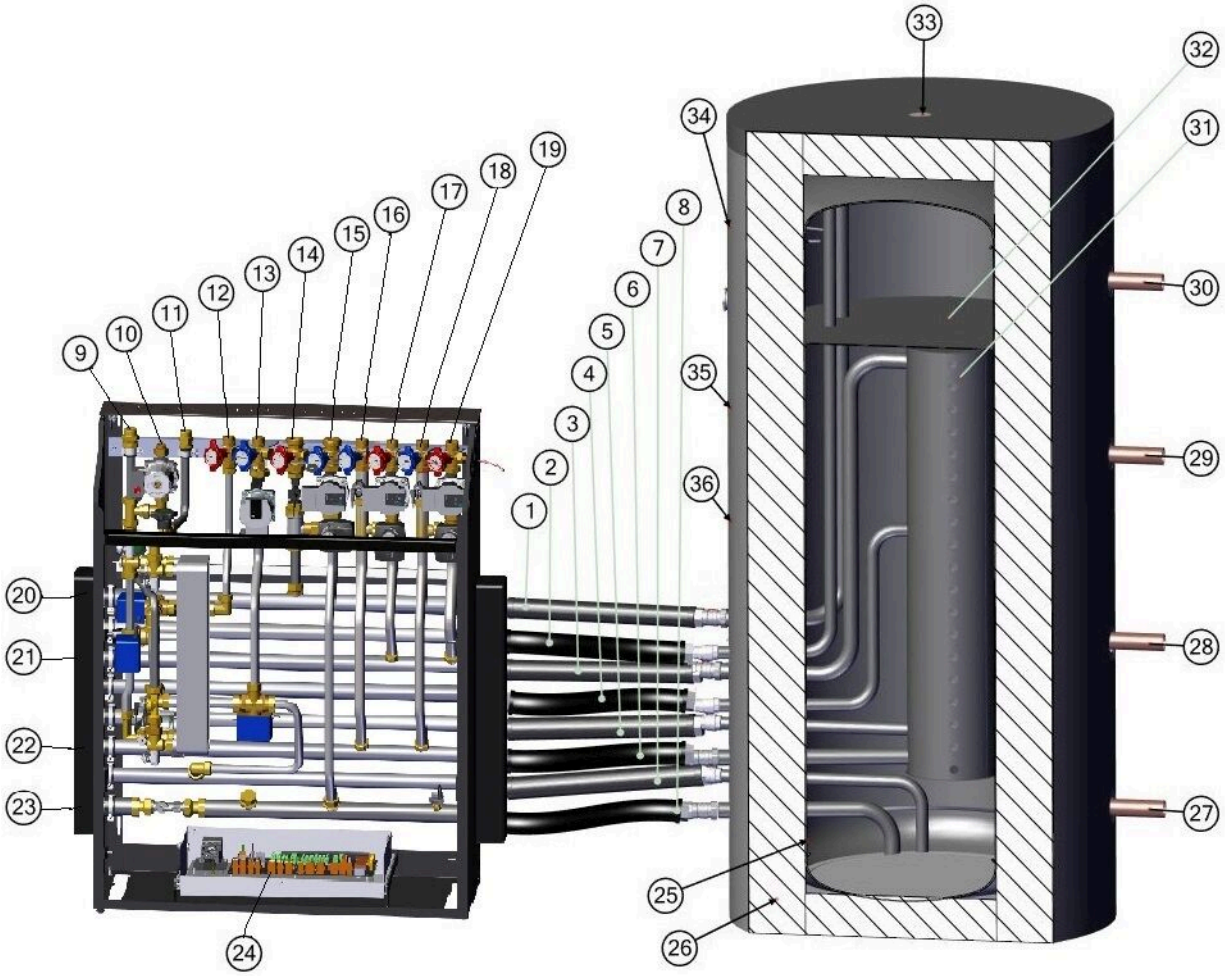


Illustration 5: setup example: Hydraulic Box with System Storage 1500 Liter

1	Supply, additional heating, solar, solid fuel boiler	19	Heating circuit 2, supply
2	Supply, hot water,	20	Supply for additional heating connection
3	Supply, heating circuit 3+4	21	Supply for the 3rd & 4th heating circuit connection
4	Supply, solar, mid of tank,	22	Return for the 3rd & 4th heating circuit connection
5	Return, hot water	23	Return for additional heating connection
6	Return, heating circuit	24	Heating Center controller board
7	Return, solar heating system	25	Bottom tank sensor (S5)
8	Return, connection for additional heating/solid fuel boiler	26	System Storage insulation
9	Cold water	27	Connection for additional tank (Standard Storage Tank type)
10	Circulation	28	Connection for additional tank (Standard Storage Tank type)
11	Hot water	29	Connection for additional tank (Standard Storage Tank type)
12	Heat pump (or. Solar heating system)	30	Connection for additional tank (Standard Storage Tank type)
13	Heat pump (or. Solar heating system)	31	Laminar loading cylinder
14	Solid fuel/biomass boiler or tiled stove	32	Baffle for separation of storage tank areas for drinking water and heating
15	Solid fuel/biomass boiler or tiled stove	33	Vent pipe
16	Heating circuit 1, return	34	Upper tank sensor (S3)
17	Heating circuit 1, supply	35	Mid of tank sensor (S4)
18	Heating circuit 2, return	36	Mid of tank sensor (S4.1)

For detailed views and descriptions: refer to chapter “Hydraulic Box” and “System Storage” - **Hint**: The numbering of parts in detailed drawings is the same as above.

2.4 Hydraulic Box

The Hydraulic Box is a dedicated, compact Basic Installation Unit. It contains all technical components that are necessary for a buffer-tank-based heating system

The front panel of the BHZ 3.0 is made of high of powder-coated steel. The lid of the panel can be opened and locked in the open position. The front panel can be easily detached, ensuring a perfect access to all parts of the Hydraulic Box. This is very important during replacement or installation of new functionalities inside the Hydraulic Box. The rear and side panels are made of powder-coated steel and are attached with screws directly to the register frame.

The connections can be arranged on the left and the right side of the Hydraulic Box. The connection ports are optimized for the components or options to be connected.

The components of a Hydraulic Box connected with a System Storage on the right are shown below. Depending on the components to be connected, these modules or connections can be used or not. Not used connections have to be professionally sealed.

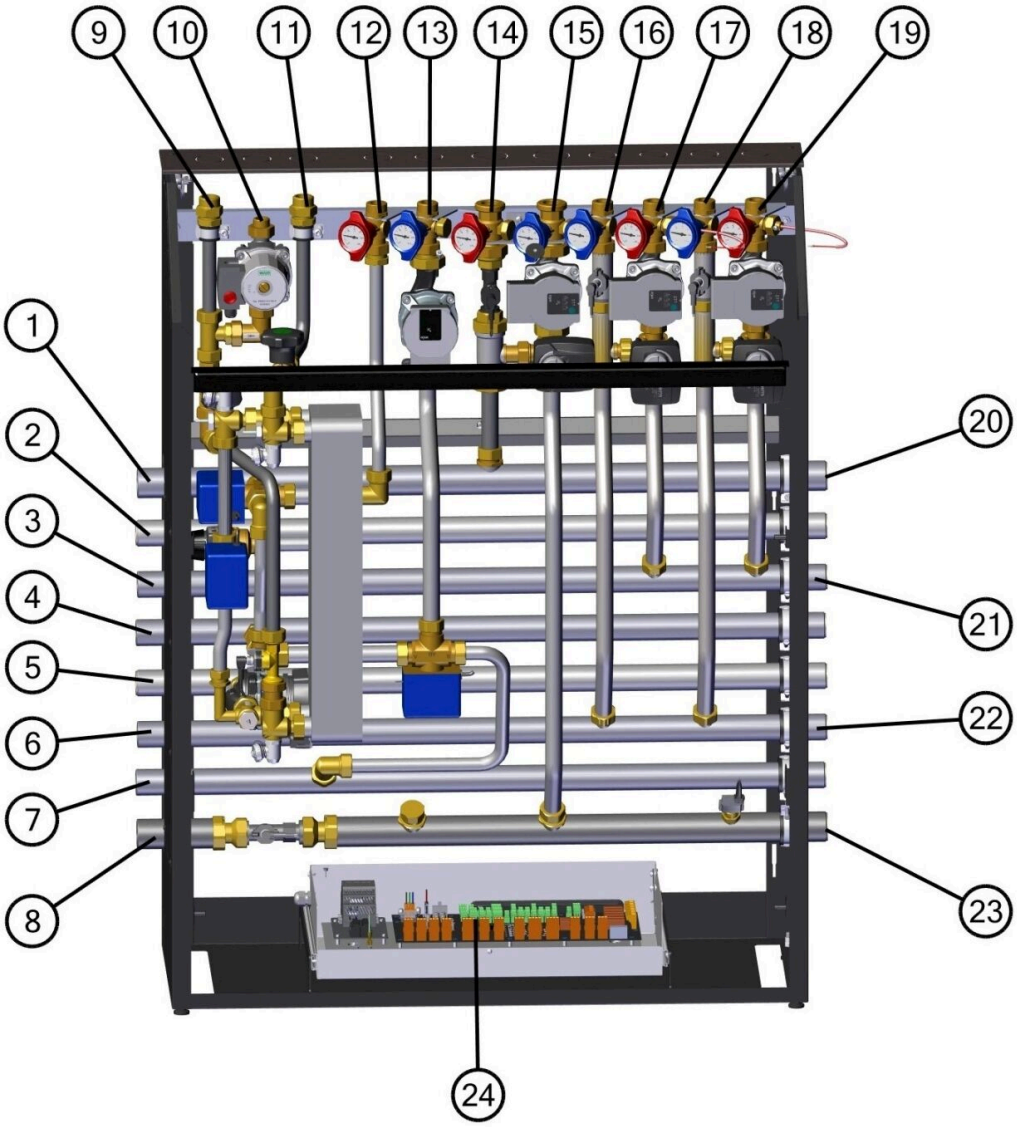


Illustration 6: Example: with heat pump and fresh water module with premix

1	Supply, solid fuel boiler or tiled stove, heat generator, (solar heating system)	1 1/2“ AG	13	Heat pump line (or. solar heating system)	1“ AG
2	Hot water supply	1 1/4“ AG	14	Solid fuel/biomass boiler or tiled stove	1 1/2“ AG
3	Heating circuits supply	1 1/4“ AG	15	Solid fuel/biomass boiler or tiled stove	1 1/2“ AG
4	Supply heat pump-heating (Solar mid) Return for heat pump - hot water	1 1/4“ AG	16	Heating circuit 1, return	1“ AG
5	Hot water return	1 1/4“ AG	17	Heating circuit 1, supply	1“ AG
6	Heating circuits return	1 1/4“ AG	18	Heating circuit 2, return	1“ AG
7	Return for heat pump-heating (Solar)	1 1/4“ AG	19	Heating circuit 2, supply	1“ AG
8	Return for solid fuel boiler or tiled stove, heat generator	1 1/2“ AG	20	Supply heat generator (additional heating)	1 1/2“ AG
9	Cold water	1“ AG	21	Supply for the 3rd & 4th heating circuit connection	1 1/4“ AG
10	Circulation	3/4“ AG	22	Return for the 3rd & 4th heating circuit connection	1 1/4“ AG

11	Hot water	1“ AG	23	Return for heat generator (additional heating)	1 1/2“ AG
12	Solar heating system	1“ AG	24	Controller board	-

2.4.1 Basic Module

The Basic Module is a ready-to-install Hydraulic Box to be combined with a System Storage. On a mounting frame with external casing, it contains a system controller with a Touch Display and a set of insulated hoses for connection with a System Storage.

Illustration 7: Hydraulic Box external casing

Illustration 8: Hydraulic Box with a Basic Module inside

Illustration 9: BRUNNER Touch Display

2.4.2 Solid fuel module

The module for **connection of a tiled stove or other solid fuel boiler type** depends on the output rating of the heating device.

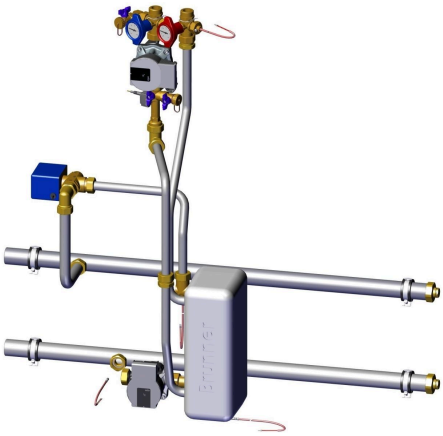
BPH integration incl. performance metering

Module for solid fuel boilers 12-20 kW or 20-30 kW

Module for solid fuel boilers 40-50 kW

Tiled stove circuit with motorized return flow increasing device and performance metering

2.4.3 Solar module



Solar module with separated systems

This solar module is foreseen for the connection of thermal solar systems (flat panel or vacuum pipe collectors) including separation of systems via plate heat exchanger, with integrated heat output metering.

The powerful plate heat exchanger ensures efficient transfer of heat.

The heat transfer fluid in solar circuit is enriched with antifreeze solution (e.g. Tyfocor).

2.4.4 Module additional heating (Heat generator)

Module for connection of oil/gas boiler, or for other boiler types as well.

Header for oil/gas boiler etc. without power measurement

Header for oil/gas boiler etc.
with power measurement (right)

Header for oil/gas boiler etc.
with power measurement (left)

2.4.5 Fresh water module

Fresh water modules for quick and hygienic domestic water heating by means of a plate heat exchanger are available in two material versions (copper or stainless steel). A performance metering function for estimating heat consumption is available.

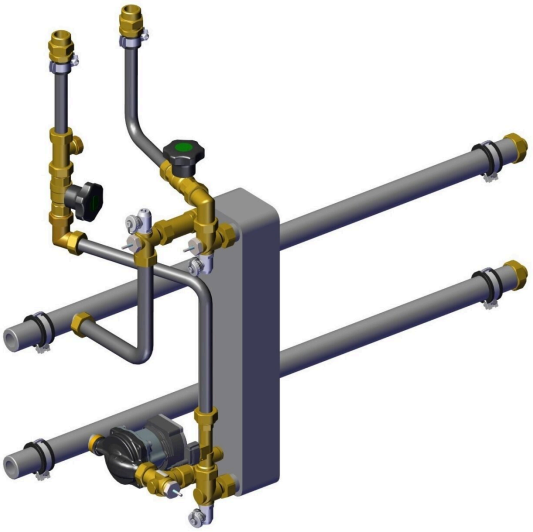


Illustration 10: Fresh water module 40l/ Min., without Photovoltaic connection

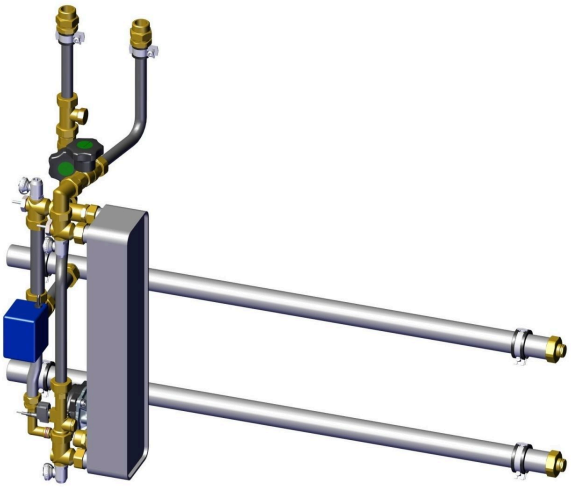


Illustration 11: Fresh water module 40l/Min. with Photovoltaic connection

Type	Tap water volume flow L/min	Temp. of hot water °C	Temp. of primary flow °C	Temp. of primary return °C	Primary volume flow L/min
40 L/min	10	50	65	15	8
		48	60	15	8.5
		47	55	15	10
	20	50	65	16	15
		48	60	16	16
		47	55	17	17
	30	49	65	16	24
		46	60	15	22
		46	55	16	24
	40	51	65	16	25
		48	60	15.5	26
		46	55	15.5	26

It is not recommended to use a fresh water module (copper-brazed plate heat exchanger) in combination with galvanized iron materials (in hot water system).
Copper and copper alloys can give off copper ions into the water which even in small concentrations are very likely to increase the risk of corrosion damage for galvanized iron materials.
Therefore, the components of the system must be arranged in such a way that the components from copper and copper alloys are not installed in the water flow direction before the components of galvanized iron materials.

ATTENTION

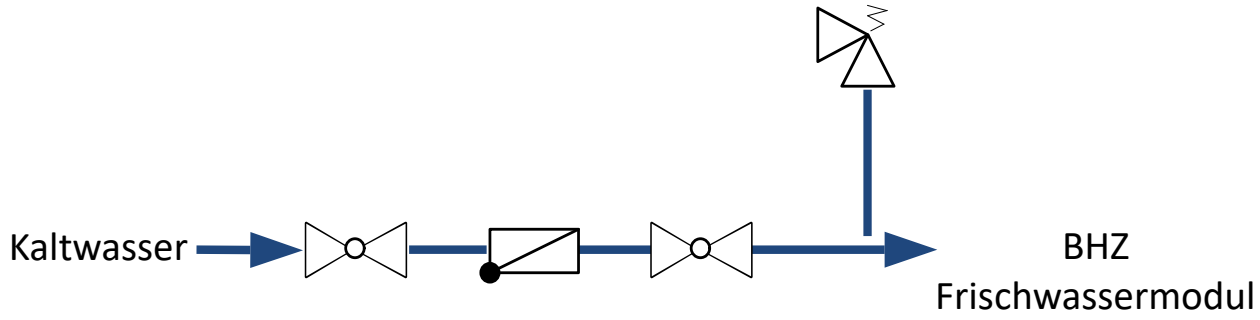
Equipment and system damage caused by improper installation

The copper-brazed plate heat exchanger of the fresh water module can be used only, when there are no galvanized pipelines in the domestic water system. In other case, this can lead to corrosion damage in certain conditions.
Alternatively, the nickel-brazed plate heat exchanger or the nickel-brazed fresh water module should be used.

ATTENTION

Equipment and system damage caused by improper installation

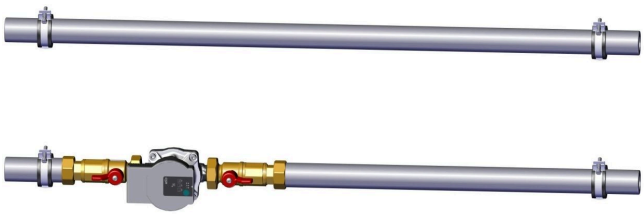
A safety valve in the cold water circuit must be installed by the customer.



Connection module for circulation

Circulation connection with pump for combination with the fresh water station.

2.4.6 Hot water storage loading module



Instead of using a fresh water station, hot water can be supplied from an external hot water storage. This module is used for hot water storage tank loading. It has an integrated hot water loading pump. Well suitable for very high hot water demands.

2.4.7 Heating Circuit Modules

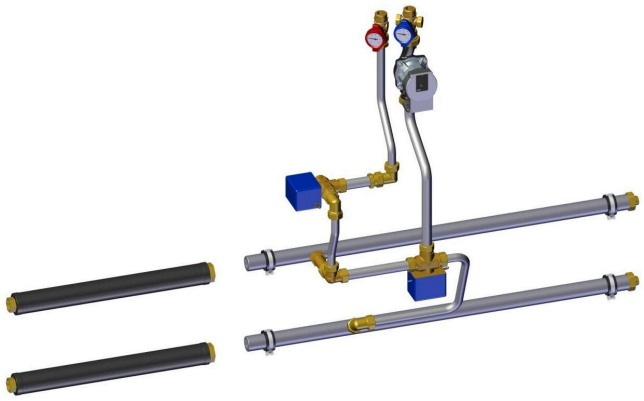
Illustration 12: MC with PM

The Heating Circuit Modules consist of an outdoor temperature controlled heating circuit with a high-efficiency pump, a mixer with actuator, shut-off valves and gravitational brakes.

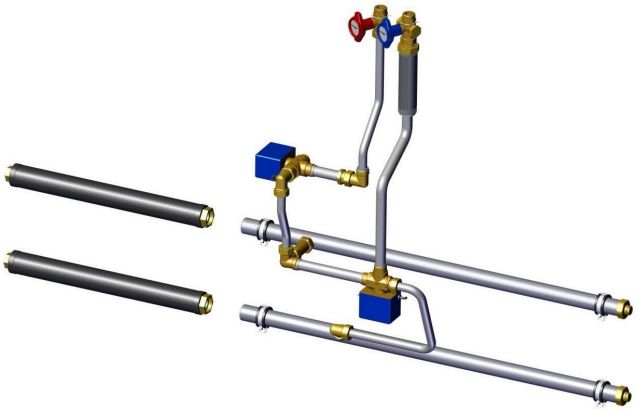
MC with PM = mixed heating circuit with power measurement
MC without PM = mixed heating circuit without power measurement

Illustration 13: MC without PM

2.4.8 Heat pump integration



The integration of heat pump in the hydraulic box of the BHZ 3.0 is possible by using the heat pump connection line with a manifold kit and 2 corrugated tubes. The heat pump integration is arranged only for the BRUNNER heat pump BWP 9 green or BWP 13 green. The BHZ 3.0 heating centre with heat pump integration is designed for the 750 and 1000 litre storage tanks.

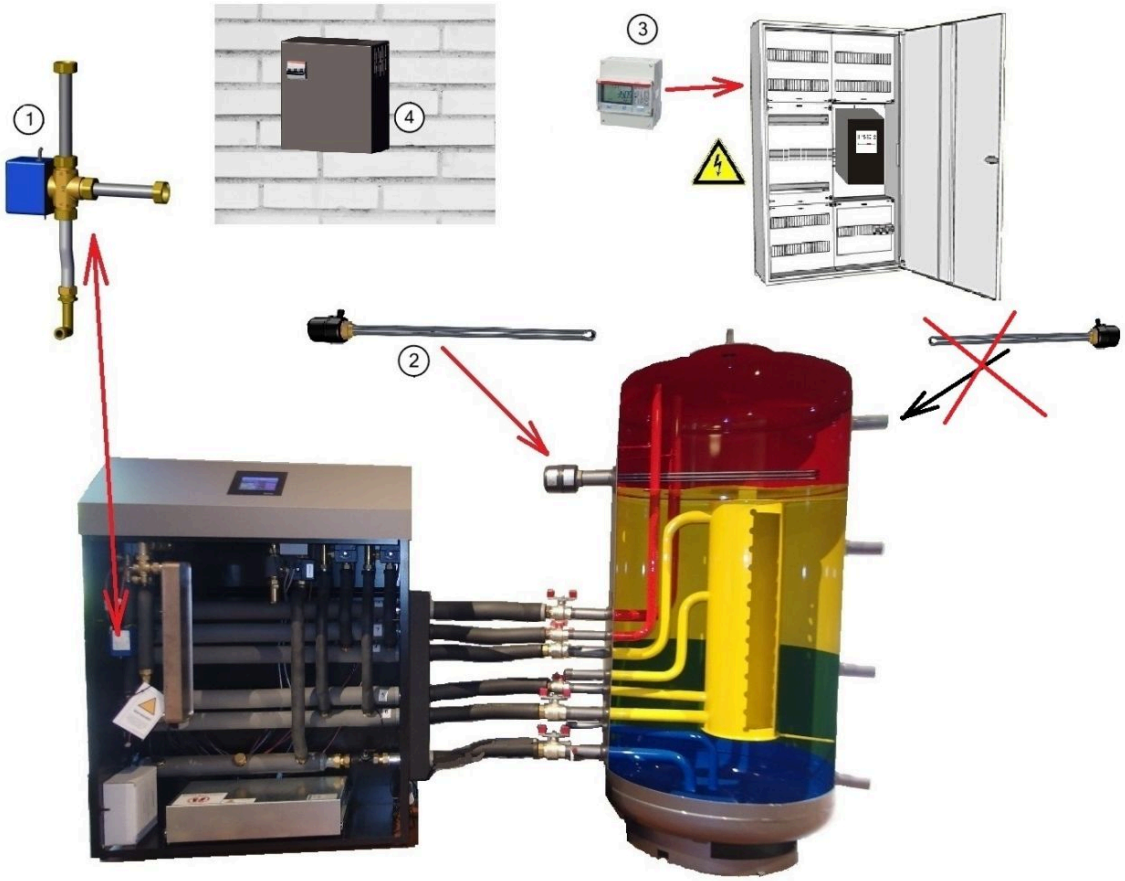


Integration of external heat pump up to 20 kW

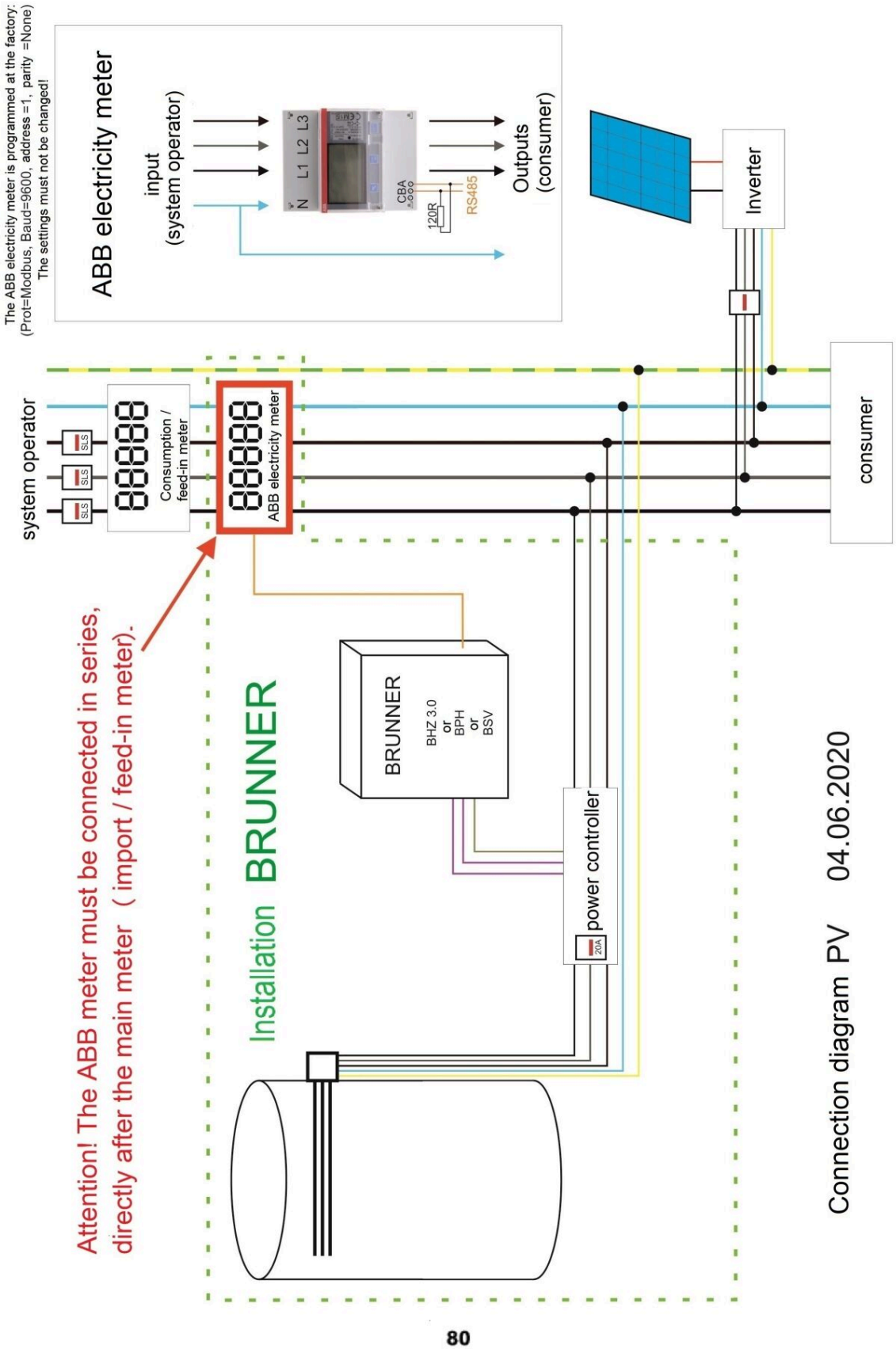
2.4.9 Photovoltaic integration

The BHZ 3.0 photovoltaic integration serves as a support for the domestic hot water & heating systems. It consists of:

1	PV connection (zone valve with tubing kit)
2	Electric heater 9 kW
3	Energy consumption meter
4	Electronic output controller



2.4.9.1 PV - Connection plan



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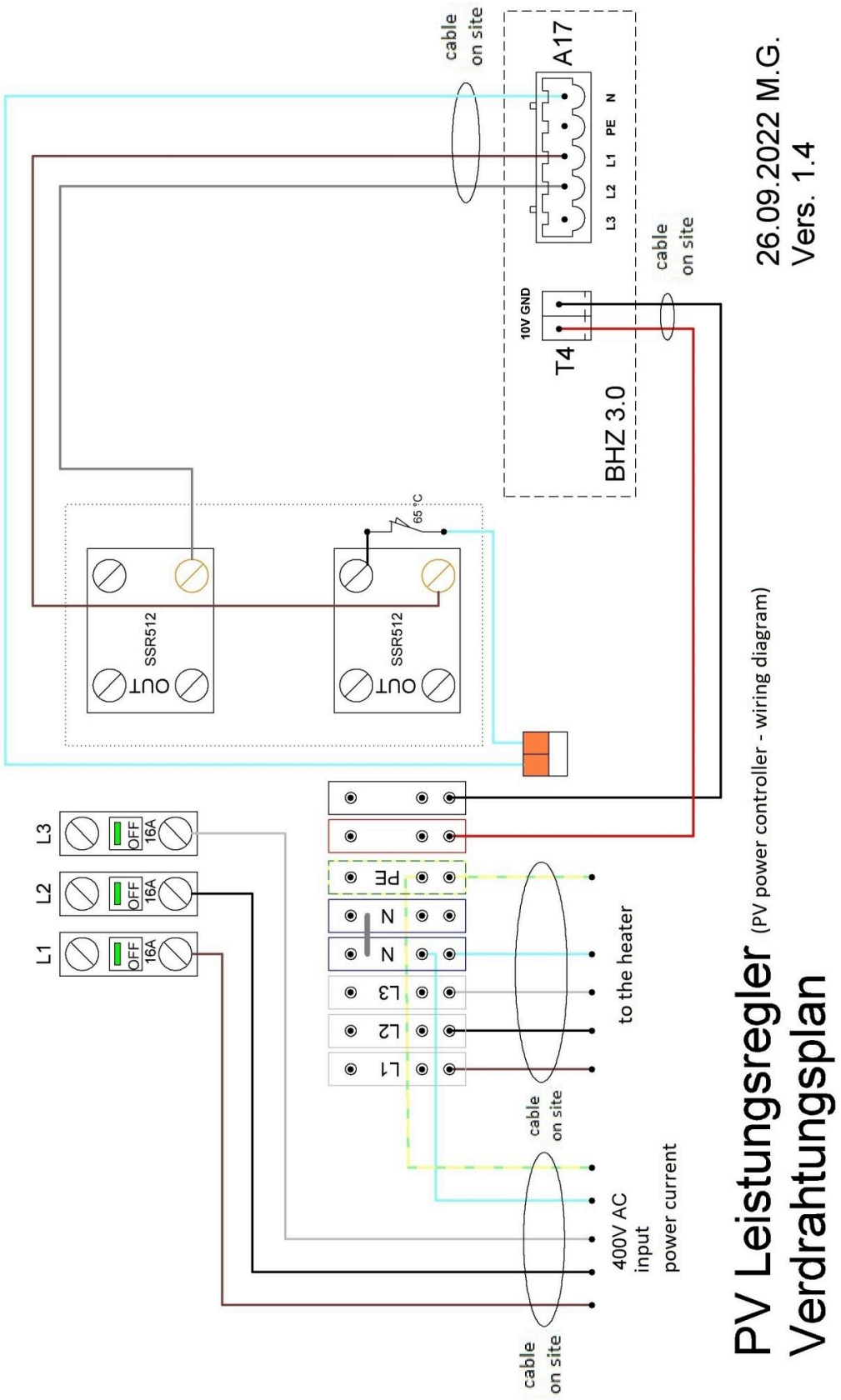
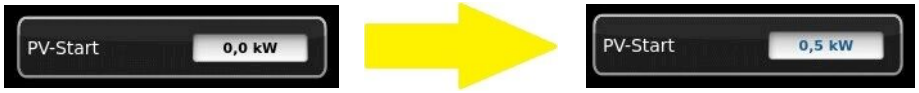
2.4.9.2 PV power controller BHZ



Legend:	
Kabel bauseits	cable on site
Eingang Kraftstrom	input power current
zum Heizstab	to the heater

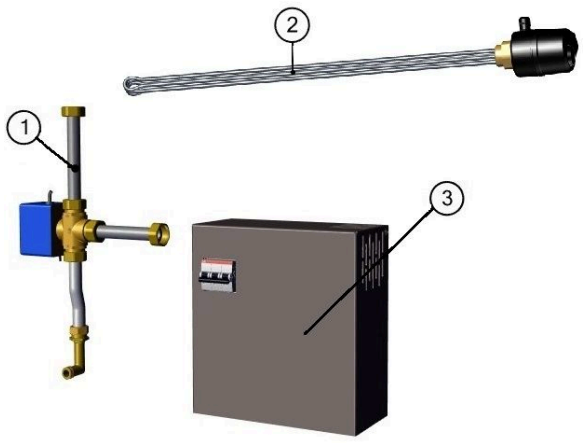
2.4.9.3 The connection of a power storage

If your system (PV + BHZ) is also connected to a power storage unit (battery), you can set under **Home** that the power storage unit is NOT discharged by the heating element:

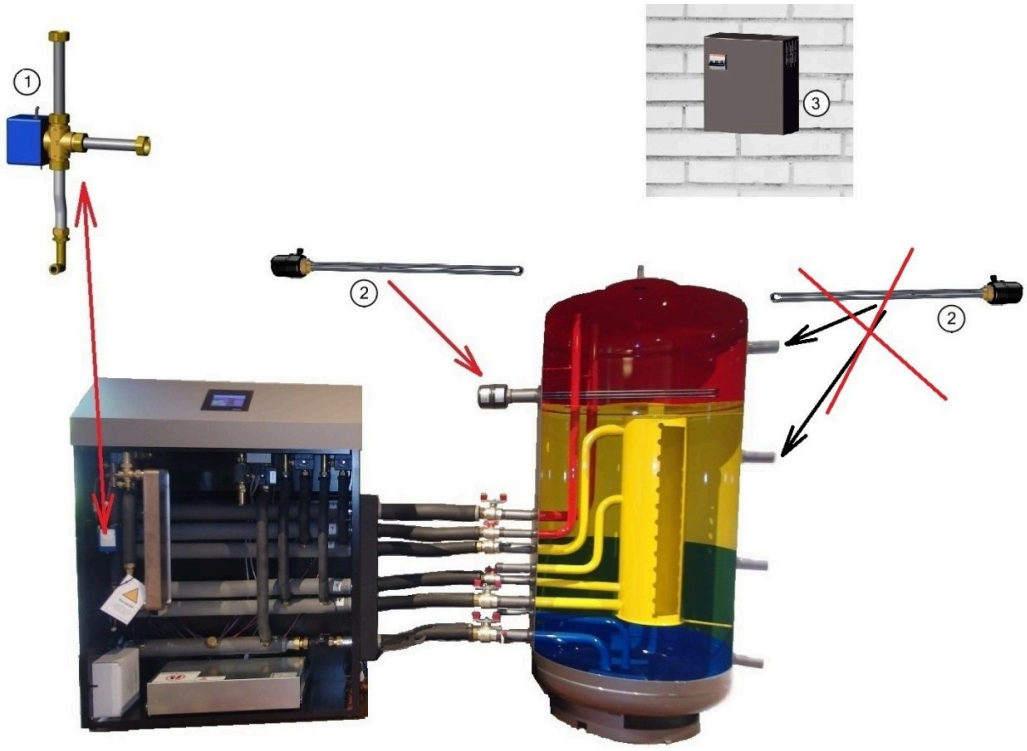


With a setting of PV-Start ≥ 0.0, the power storage is not discharged by the heating element.

2.4.10 Electro-central heating modules



1	Zone valve with tubing kit
2	Energy consumption meter
3	Electronic power switch



2.4.10.1 Assembley options for the electric immersion heater

Depending on how the hydraulic box is set up in relation to the system storage tank, the electric immersion heater can be attached to the right or left connection.

2.4.11 Installation examples

There are many possible installation examples. These can be adapted by contractors to the individual customer wishes and conditions on site.

Example 1:

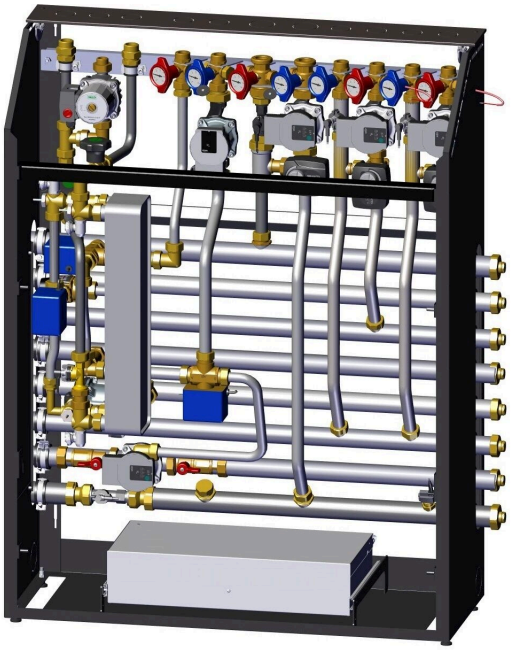
- connection of a tiled stove via tiled stove circuit module with motorized mixing valve

- two heating circuits (modules for heating circuits with performance metering)

- Heat pump-integration

- a module for fresh water station with a flow rate of 40 litres per minute.

- a circulation pump



Example 2:

Basic Module with:

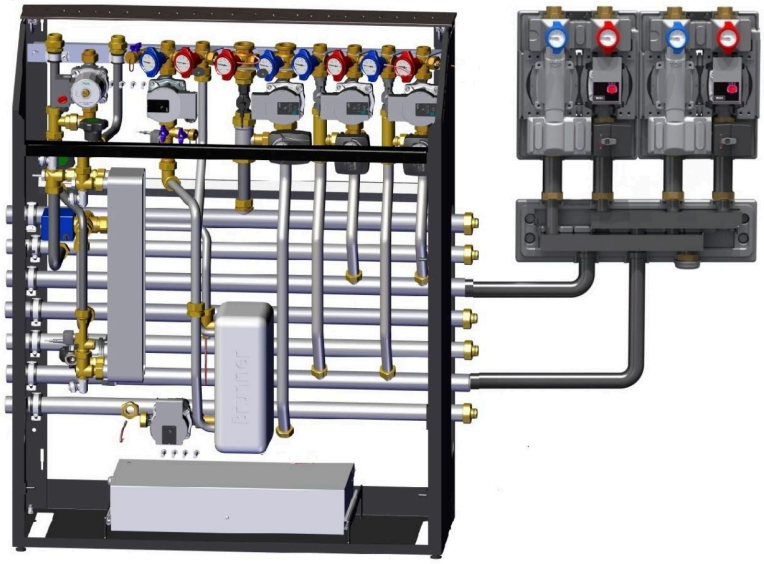
- connection of a tiled stove via tiled stove circuit module with motorized mixing valve

- two heating circuits (modules for heating circuits with performance metering)

-module for solar heating with separated systems

- a module for fresh water station with a flow rate of 40 litres per minute.

- a circulation pump

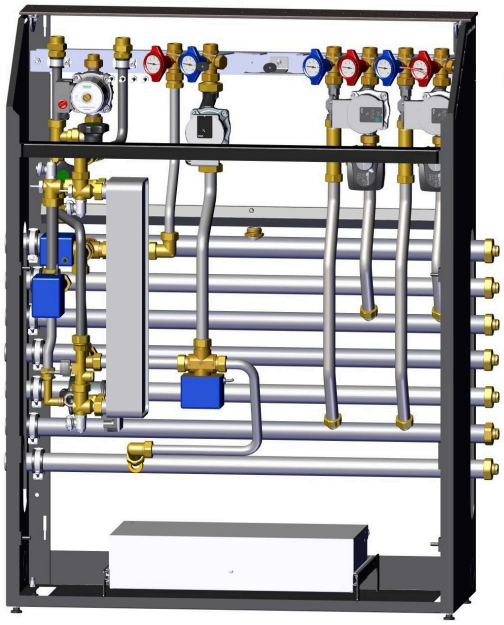


BHZ 3.0 with 3rd and 4th heating circuit. To upgrade the existing heating centre with a 3rd and 4th heating circuit, it is possible to connect a BRUNNER heating circuit pump unit with a manifold.

Example 3:

BHZ 3.0 Basic with:

- heat pump integration,
- heating circuit module with performance metering
- fresh water module with a 40-litre PHE;
- a circulation pump



These are only a few installation examples. The modular construction of the BHZ 3.0 allows for flexible, user adaptable heating centre set up - with only a small effort.
The BHZ 3.0 is equipped with energy-saving pumps (by Wilo), based on ErP Directives.
The integrated variable speed models are powerful. The pumps within the solid fuel boiler and drinking water circuits are directly controllable via pulse width modulation signals according to current needs.

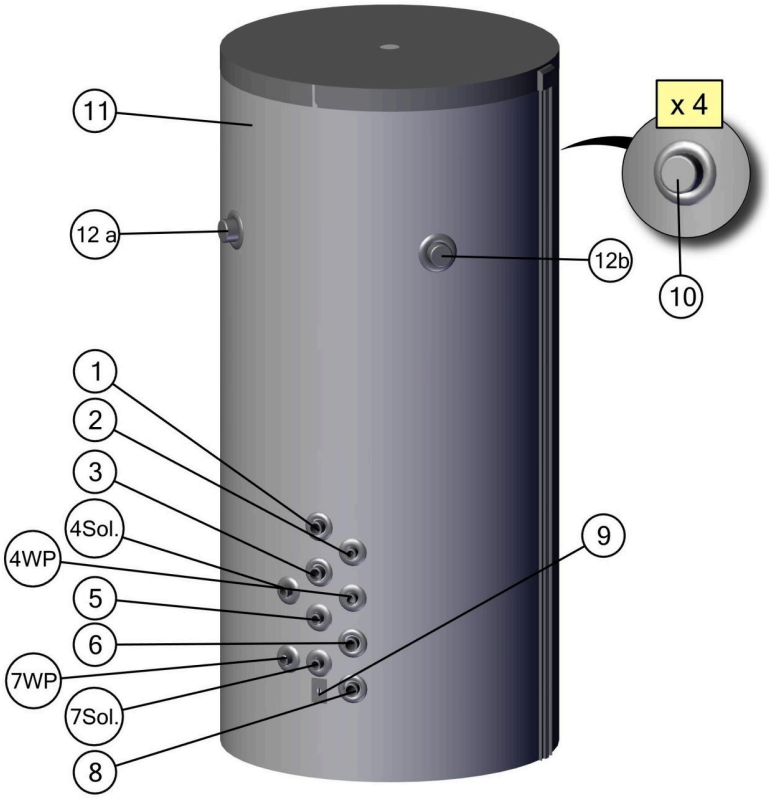
The modules can be installed inside the heating centre, and then ordered and supplied directly from factory, or they can be upgraded in the BHZ 3.0 heating centre on site.

2.5 Storage tank

The BRUNNER storage tank is a buffer tank which is optimized for use of regenerative energy supplies. It's designed to avoid mixing of water during loading and unloading of the storage tank. Hot water has a lower specific density as cold water, leading to a physical separation inside the tank. The hot water has a lower weight and rises up. The colder water gathers in the lower tank area. When all heating sources and heat consumers are adapted to each other, there are no high velocities when the water is streaming in and out. Thus, the supplies are introduced only in these storage tank areas, where they belong to according to their temperature, and the thermal lamination profile remains intact. The existing sheet metal baffle and the laminar loading tube mitigate the high volume flows, and lead to minimized mixing effects.

2.5.1 750 or 1000 litre storage tank

The laminar storage tank with a volume of 750 or 1000 litres has the following special features:



1	Collecting pipe 1: FL-heat pump-hot water, FL-solid fuel boiler or tiled stove, heat generator, Solar
2	Collecting pipe 2: hot water FL
3	Collecting pipe 3: heating circuit FL
4 Sol	Collecting pipe 4: FL-Solar, RL-heat generator part load
4 HP	Collecting pipe 4: RL-heat pump Warmwasser / FL-heat pump heat generator
5	Collecting pipe 5: hot water RL
6	Collecting pipe 6: heating circuit RL
7 Sol	Collecting pipe 7: solar circuit RL
7 HP	Collecting pipe 7: heat pump/heating RL
8	Collecting pipe 8: FL-solid fuel boiler or tiled stove, heat generator- full load
9	Passage for all sensor cables
10	Connections for additional tank
11	PVC external cladding
12 a	Electric immersion heater left
12 b	Electric immersion heater right
FL=flow (feed) line; RL=return line	

2.5.2 1500 or 2000 litre storage tank

The laminar storage tank with a volume of 1500 or 2000 litres has the following special features:

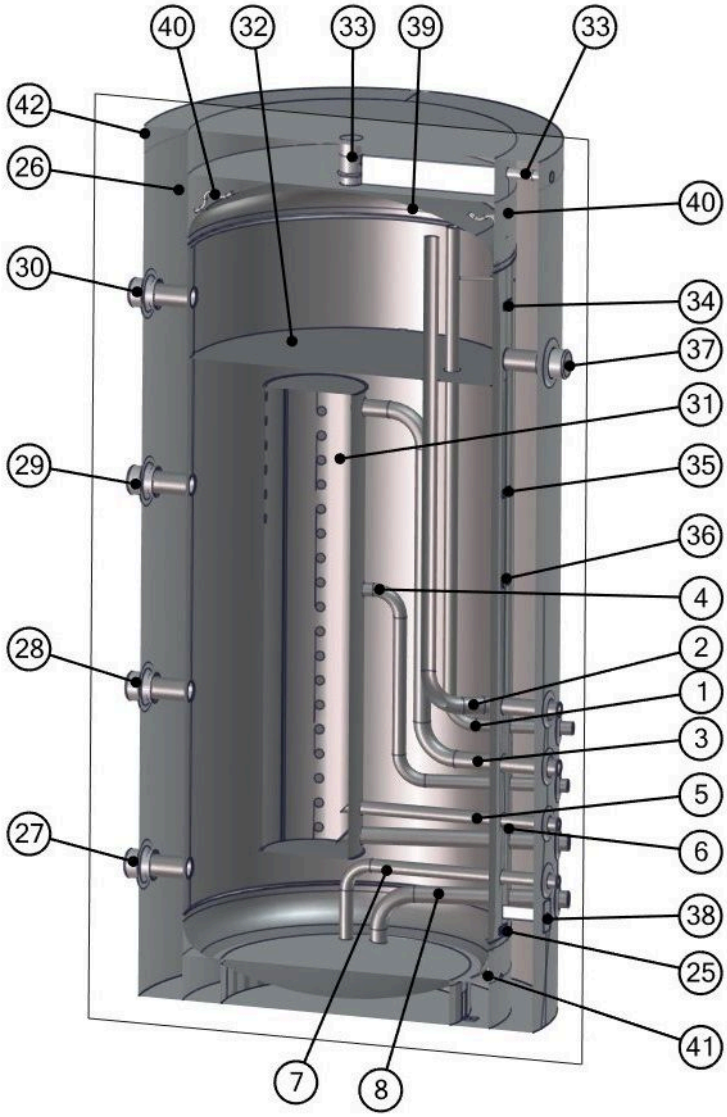
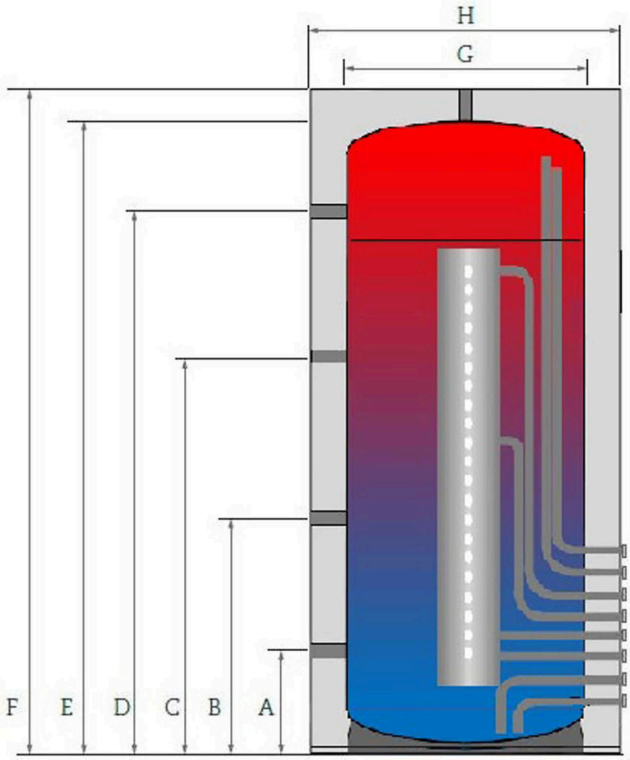


Illustration 14: Cross-section of System Storage

1	Supply for solid fuel boiler or tiled stove, heat generator, Solar
2	Hot water supply
3	Heating circuits supply
4	Supply Solar center, Return-heat generator-part load
5	Hot water return
6	Heating circuits return
7	Solar system return
8	Return for solid fuel boiler or tiled stove, heat generator full charge
25	Clamp for bottom sensor (S 5)
26	Insulation*
27	Connection for additional tank
28	Connection for additional tank
29	Connection for additional tank
30	Connection for additional tank
31	Laminar loading cylinder
32	Baffle
33	Vent (two variants: see chapter “Venting”)
34	Clamp for upper sensor (S 3)
35	Clamp for mid sensor (S 4)
36	Clamp for mid sensor (S 4.1)
37	Electric heater
39	Storage tank body
40	Lifting eye (for crane)
41	Drain connection
42	PVC external cladding
Storage tank insulation class according to DIN EN 13501-1 / DIN 4102-1: E / B2	



Dimensions	Unit	750 l	1000 l	1500 l	2000 l
A	mm	260	310	380	320
B	mm	630	745	825	900
C	mm	1030	1250	1350	1490
D	mm	1430	1710	1760	2020
E	mm	1700	2050	2150	2380
F	mm	1785	2135	2235	2465
G	mm	790	790	1000	1100
H	mm	1015	1015	1225	1338
Tilted height	mm	1750	2090	2270	2460

2.6 Optional components

2.6.1 Standard storage tank

To enlarge the storage volume, the System Storage can be extended with a Standard storage tank.

The parallel loading and unloading was proven to be functional in practice. The additional tank must have the same size as the main storage tank. Additional buffer tank volume is recommended for use with big solar heating systems, logwood boilers or heat pumps above 15 kW.

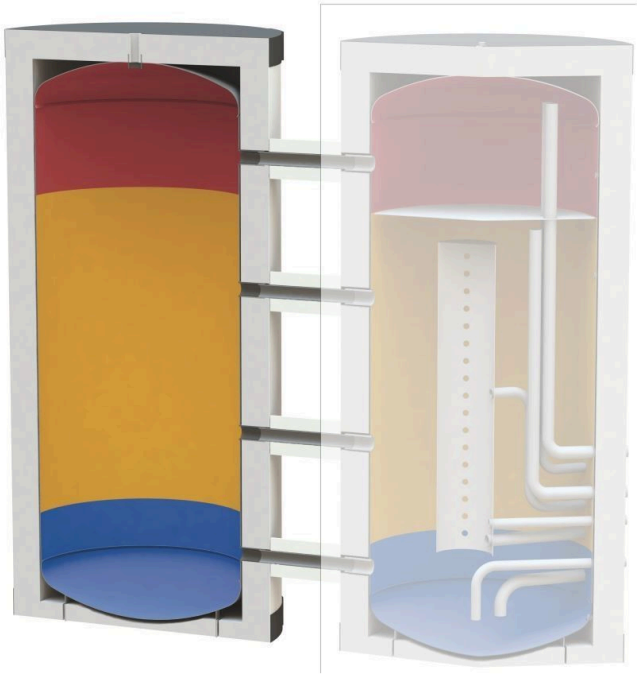


Illustration 15: Connection between Standard and System Storage tanks

The Standard storage tank is connected to the System Storage tank. The 4 available nozzles (1 1/2“ connections) on the System and Standard Storage tanks can be used for this.

See chapter **Dimension drawings** : BHZ 3.0 with 750 Liter System Storage and 750 l additional storage tank
BHZ 3.0 with 1000 Liter System Storage and 1000 l additional storage tank
BHZ 3.0 with 1500 Liter System Storage and 1500 l additional storage tank
BHZ 3.0 with 2000 Liter System Storage and 2000 l additional storage tank

Detailed data and application notes for the particular optional components can be found in the specific dimension drawings and relevant documentations.

3 Operation basics

The images shown in the installation and operating instructions (including display views) do not claim to be an exact representation of the displays on your system. These depend on the installed system components, their measurement functions, control variants and set parameters. In some cases, these system parts are not part of the standard versions, but are provided as optional accessories.

3.1 Licenses

For the visualization of our user interface we use an open source operating system, which is subject to different license models.

You can see the licenses used in the software under the menu:
„**Settings**“ → “**Display**“ → “**Licenses/Contact**“

Written Offer
(open source software)

Our product contains software and sourcecode whose rightholders license it under the terms of the GNU General Public License, version 2 (GPLv2), version 3 (GPLv3), the GNU Lesser General Public License, version 2.1 (LGPLv2.1), version 3 (LGPLv3) and other open source software licenses.

If you send us a request for oversending the licensed source code of the software, please use the following address:

Ulrich Brunner GmbH
Zellhuber Ring 17-18
84307 Eggenfelden
info@brunner.de

Upon request, we will send you a CD-ROM with the provided source codes. You have to pay the costs for material, packaging and delivery.

The offer is valid for at least three years from the date of delivery of the product on which the software is installed, and as long as we can offer spare parts and customer service for this product, or from the time of downloading the software from our homepage.
Please include the type of product for which you want to receive the source code in your request.

3.2 Data protection declaration of Ulrich Brunner GmbH

Notes on protecting your personal data

Ulrich Brunner GmbH always endeavors to save and process only the personal data that are necessary and indispensable or that are required to be stored and processed by law.

We strictly adhere to the requirements of the General Data Protection Regulation (GDPR) and the Federal Data Protection Act (BDSG and BDSG new).

We do not pass on personal data to third parties; unless we are required to do so by law or by court order.

Persons under the age of 18 should only transfer personal data to us with the consent of their legal guardians. If there is reason for a complaint, it can be addressed to the responsible state authority.

The required contact details can be found on the website: https://www.lda.bayern.de. If other sources of information or services (websites, apps, etc.) from Ulrich Brunner GmbH are used, the data protection declarations listed also apply.

Purpose of data processing

We only collect, store and process personal data for the express or implicitly agreed purpose. These are e.g. Address data for processing an information request, or for making offers, invoicing etc. or bank data for processing payment transactions. Without an independent declaration of consent, this data is not e.g. used to send as newsletter or similar purpose.

Saving and deleting

We only store personal data for as long as is necessary to fulfill the agreed purpose or as required by law. If the agreed purpose is fulfilled or there is no longer a legal basis for storage, this data will be deleted as far as possible. If deletion is not technically possible, the data will be marked in such a way that further processing is impossible.

Deletion requests, requests for information, requests for changes or revocation of a declaration of consent can be directed at any time to the data protection officer of Ulrich Brunner GmbH.

Responsible for data processing

Ulrich Brunner GmbH
Zellhuber Ring 17-18
D-84307Eggenfelden
E-Mail: info@brunner.de
Tel.: 08721/771-0

You can contact the data protection officer under: datenschutzbeauftragter@brunner.de.

3.3 Touch Display

The BHZ 3.0 is equipped with a touch-sensitive display to make operation simple and easy to understand. The touch-sensitive display is a combination of input and output device, which enables direct control of regulatory functions by touching the screen itself, or certain parts of the displayed screen.
The controls are activated directly by tapping or touching. You can do it with your finger, or using a special stylus.

Illustration 16: Display operation by tapping or touching

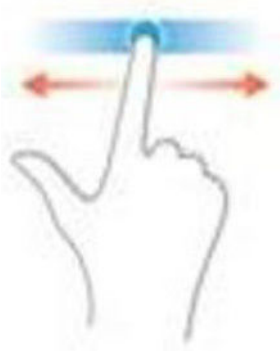


Illustration 17: Display operation with sliding bars

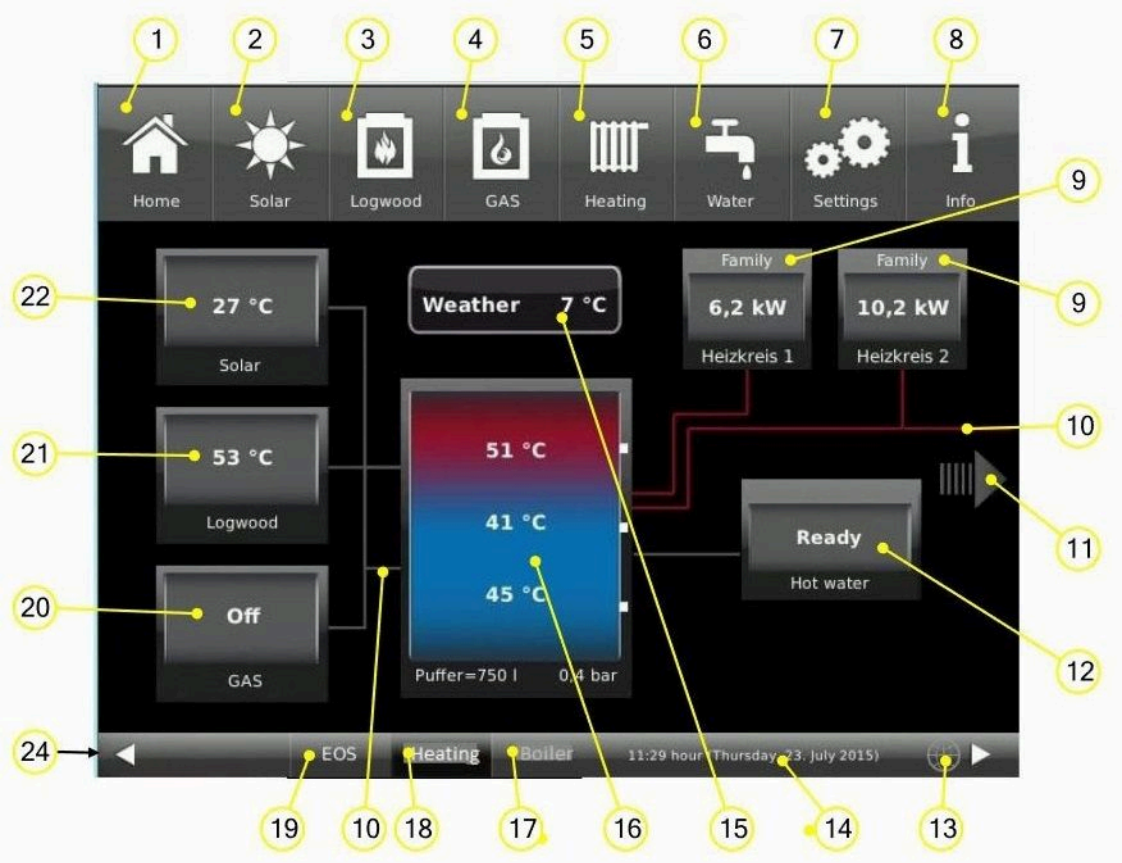
To indicate the selected option, the corresponding softkey will turn orange for a short time when pressed (touched), and then it will become dark again.
Available softkeys are represented by: symbols (e.g. Home, Sensors, Menu, etc.), sliding bars, check boxes, text or number fields, or key pads.

3.4 Overview of softkeys

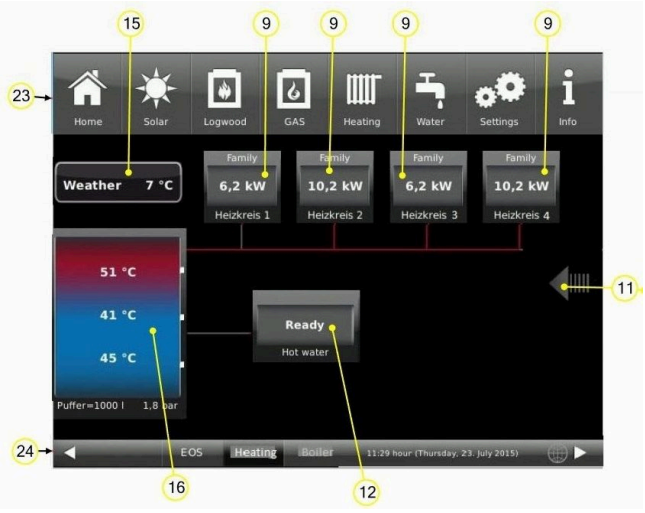
General view of display screen

Depending on installed components, there are small differences in actual view of display screen.

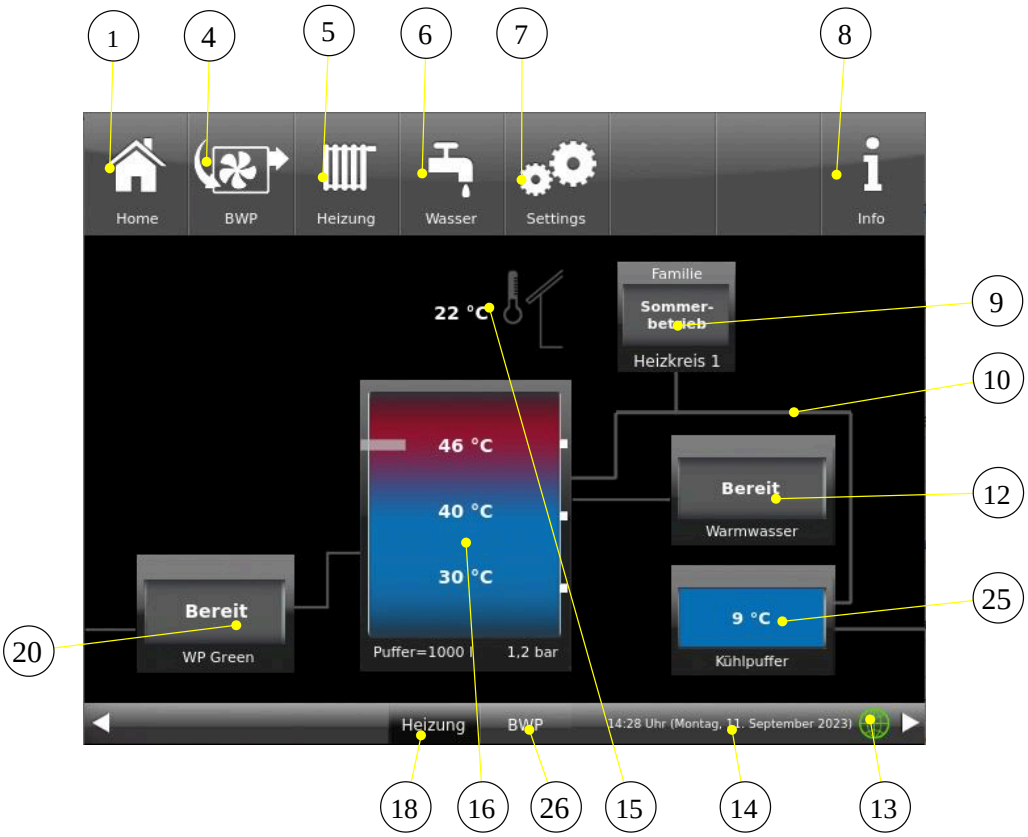
In example 1: a BHZ 3.0 with logwood boiler as main energy source and additional heating system with solar heating and gas boiler. Energy receivers are represented by 4 heating circuits (for heating) (connected with EWP-HK) and a hot water station.

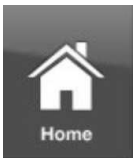


When all connected systems cannot be shown in a single Home view (as in our example, which includes the 3rd and 4th heating circuits), the view can be expanded. Just click the right arrow (11):



In example 2: a BHZ 3.0, which has a BRUNNER heat pump green as an energy supplier. The energy consumer is 1 heating circuit and the hot water station. In addition, the cooling function of the heat pump is active.



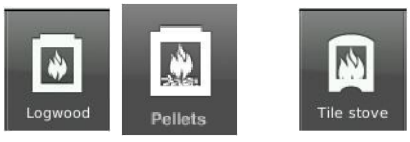
1 

Home view
= Start page, starting point for all applications
= graphic overview of system

2 

Solar system additional heating = heat generator 2)
= softkey for the existing solar heating system
- several parameters of the solar heating system can be shown by tapping this softkey.

the main heating device = Biomass boiler (HT) or Fireplace (OT)

3 

BRUNNER-Logwood boiler
or Logwood boiler by customer

BRUNNER Pellet boilerl
or pellet boiler by customer

Tiled stove
Kitchen stove

Additional heating

4

- Gas boiler
- Oil boiler
- Heat pump
- Electric heating

- Wood boiler
- Pellet boiler etc. from other suppliers.

BRUNNER-Heat Pump

5

Heating
= softkey for Settings of the existing heating circuits

6

Hot water
= softkey for drinking water heating menu

7

Settings
= softkey for Settings of different parameters
= softkey for system configuration
- accessible only with PIN code (two different codes for the User and the Contractor);

8

Info
= a Help function
- additional help messages are displayed for the active view;
- if there are recent error messages available, the softkey **Info** is highlighted in orange.

Heating circuits

9 - for each heating circuit there is a separate display field/softkey. Meaning of displays: see chapter “Heating circuits display”.

Piping sections

10 The color of the pipelines changes according to the status of the corresponding pump or additional heating. When the pump or additional heating is not active, the pipelines turn gray. When the pump or additional heating is active, the pipelines turn red.

11 Arrow for expanded view of the installed system, if it is not completely visible in Home view.

12 **Hot water** = plate heat exchanger
red color = drinking water heating is active + energy retrieved from the buffer tank (kW)
- gray color = currently no drinking water heating
- in the *upper part of the field*: **Circulation** only when it is active.
- in the *lower part of the field* - displays permanently **Hot water**

12		Is a **Hot water storage tank** (Boiler) is installed, a specific symbol is displayed here. - see also chapter “Hot water storage display”
13		**myBRUNNER** - Status display myBRUNNER (online / offline) Gray world globe = in the network, no matter ov WLAN or LAN Green world globe = with myBRUNNER-Local-connexion Blue world globe = online with myBRUNNER
14		**Current time, day of week, date**
15		**Weather** Outdoor temperature display
16		**System storage (buffer tank)** It appears: three current buffer temperatures as a numeric value. Additionally existsa coloring: blue = cold to red = warm.In the footer line: Information on the buffer content and number of buffer tanks,, this also includes the actual system pressure of the heating system. When the heat quantity measurement is configured, the buffer is the switch area for heat setting in the form of a pie diagram.
17		**Boiler** = softkey applied with a Brunner boiler = softkey for Home view of the existing boiler.
18		**Heating** = softkey for Heating system application (BHZ 3.0)
19		**EOS** = Electronic Stove Control = softkey for the optionally available EOS application
17+18+19		depending on the installed applications, this display can vary.
20		**Additional heating--**in the middle of the field, the short name of the additional heating is shown, and in the lower part of the field, the type of energy source (e.g. Gas, Oil etc.)
21		Brunner Natural Power Boiler as heat generator: logwood boiler of pellet boiler - in the middle of the field, the current operational status of the biomass boiler is shown, and in the lower part of the field, the type of energy source (e.g. Logwood or Pellets)
22		**Solar system** - the operational status of the solar heating system is shown -in the lower part of the field there is a description of the configured additional heating
23		upper menu bar
24		lower menu bar (task bar) you can scroll forward and backward using arrows
25		cooling buffer - necessary for the active cooling function
26		Button as direct access to the home view of the BRUNNER heat pump (current view)

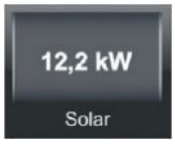
If some of the possible system components are missing, then these fields remain empty and they are arranged in line from left to right in the upper menu bar.

3.5 Solar system

3.5.1 Solar system display

when Pump 1 of the Solar system is not active, the collector temperature S 7 is shown. If another collector field is present (Sensor 7 and Sensor 17), then the hottest sensor is shown only.

when Pump 1 is active, but no energy is supplied yet, then the collector temperature display is shown



Solar energy is supplied and the relevant value is shown.

The last two displays change in certain intervals - according to the Display mode parameter (30 seconds) - between temperature and power measurement values.

Error indicator: errors are indicated, when there is a sensor fault, or when the pump is running, but no volume flow is present.

3.5.2 Solar system Home view

By clicking the Solar system symbol or the corresponding symbol on the upper menu bar, you can get access to the following information about the Solar system:

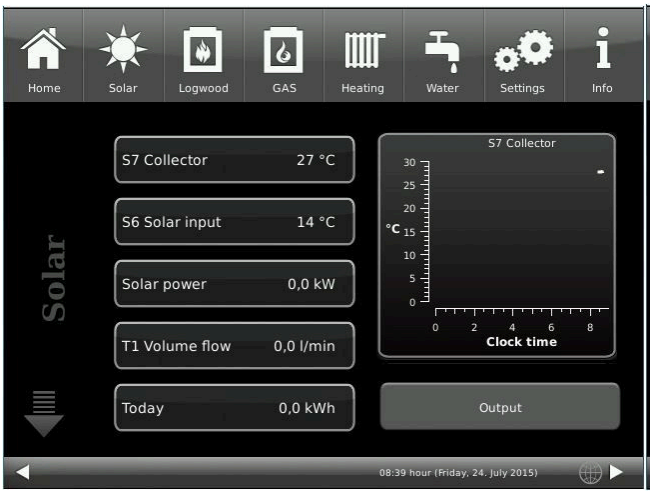
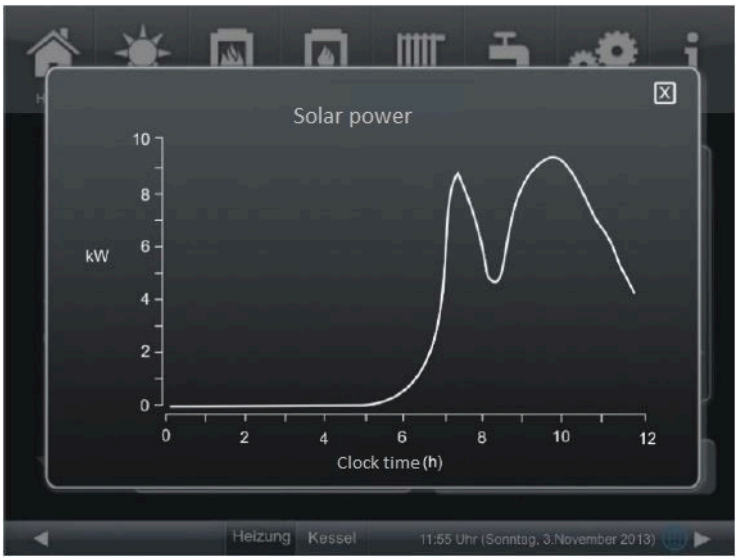


Illustration 18: Solar: Page 1

Illustration 19: Solar: Page 2

Short name	Unit	Explanations
S7 Collector	°C	Collector temperature
S6 Solar input	°C	Temperature sensor for solar input
Solar power	kW	Solar heating power
T1 Volume flow	L/min	Volume flow of solar heating

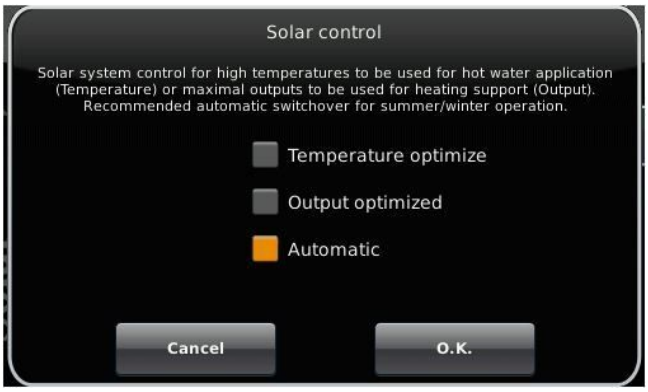
Short name	Unit	Explanations
Today	kWh	shows the solar heating power reached today
By clicking the graphic chart you can display the graph screen in full view. The temperature fluctuations in a certain period are visible. The scale of the x and y axis is adjusted dynamically according to the current values.		

Output

By tapping the softkey **Output** you can get information about the solar heating output in relation to time in which it was supplied:

Today	= the output of the solar heating in kWh in relation to clock time (h)
Yesterday	= the output of the solar heating in kWh in relation to clock time (h)
Last 5 days	= the output of the solar heating in kWh in relation to the last 5 days
Last 4 weeks	= the output of the solar heating in kWh in relation to the last 4 weeks
Last 6 months	= the output of the solar heating in kWh in relation to the last 6 months
2014	= the output of the solar heating in kWh in relation to this year
2013	= the output of the solar heating in kWh in relation to the previous year
2012	= the output of the solar heating in kWh in relation to the given year

Regulation

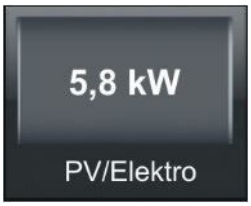


Short name	Unit	Explanations	
Regulation	Selection box	Temperature optimized (Summer mode)	The solar heating starts at a temperature difference between collector and buffer top. The pump adjusts the flow to a constant deltaT between collector and buffer top. Optimal choice for Summer mode, to supply hot water from solar energy.
		Output optimized (Winter mode)	The solar heating starts at a temperature difference between collector and buffer bottom. The pump adjusts the flow to a constant deltaT between collector and buffer bottom. Optimal choice for Winter mode, to supply the heating circuits with solar energy.
		Automatic	Automatic switching between Temperature optimized (Summer mode) and Output optimized (Winter mode), depending on whether the heating circuits are in operation.
A04 V. load Solar		= A04 Valve for Solar loading - Top/Middle; feeding from solar system, depending on relation of collector temperature to buffer temperature. At high collector temperatures, the loading takes place in buffer top area. At low collector temperatures, the loading takes place in buffer mid area.	
A 01 P. Solar Prim.	%	= A01 Solar primary circuit pump; variable speed pump with PWM control	
S8 Solar return	°C	= S8 Solar return sensor for heat metering	
A 02 P. Solar Sec.		= A02 Solar secondary circuit pump; variable speed pump with PWM control	
S16 Coll. extern	°C	S16 is a second outdoor/collector sensor for the solar system.	

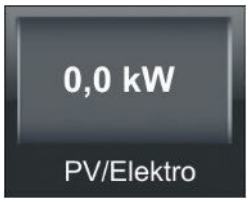
3.6 Photovoltaic connection

3.6.1 PV connection displays

The displays for the PV connection in the Home view have the following meanings:

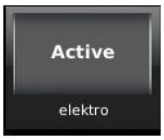


The electric energy from the photovoltaic system is transferred to the buffer tank. The current value of transmitted energy is shown in kW units.

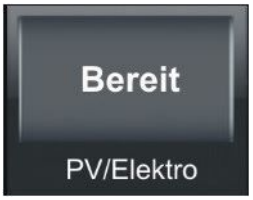


Activation is set to **Offer** and there is no excess energy available; this is why the energy supplied to the buffer tank is equal to 0 kW.

The sun is not shining or the home need exceeds the PV production: No electric energy is produced by the photovoltaic system, therefore, no excess energy is available for transfer to the buffer tank.

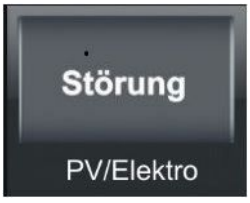


The electric heater is on (the setting of **Activation** is set to **Need** and **Power max.** = power taken from the electric heater) and it is not supplied with energy from photovoltaic system,
or the PV energy value is unknown.



The setting of **Activation** is set to **Need**, but there is no demand for energy.

The electric heater is off (**Offer** or **Need**).



There is a fault in the interface for the PV system.

3.6.2 PV connection in Home view

By clicking the PV connection symbol or the corresponding symbol on the upper menu bar, you can get access to the following information about the PV connection:

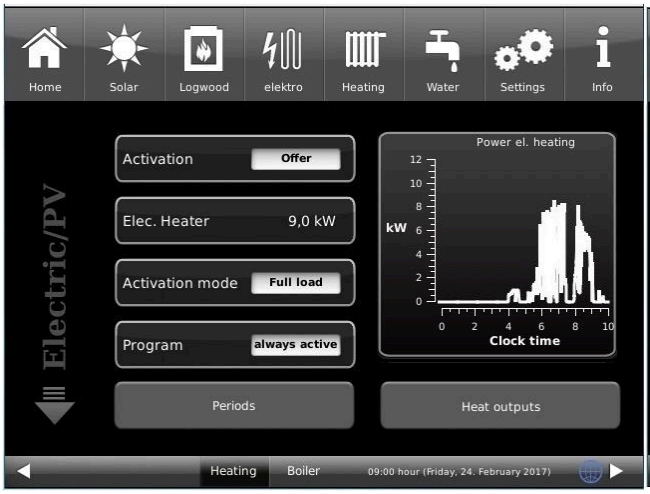


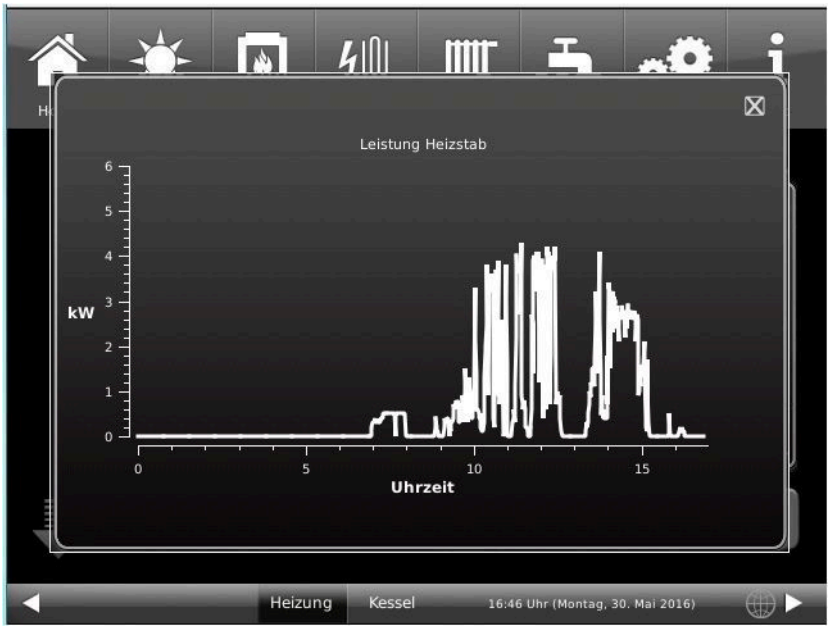
Illustration 20: PV: page 1

*Illustration 21: PV: page 2**

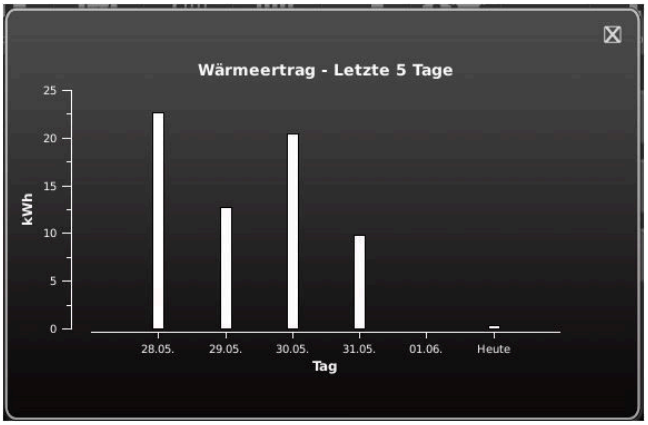
*see also: chapter “The connection of a power storage”

Short name	Unit	Explanations
Activation	Select the operation mode for the electric heater:	
	Need	The client can switch the heating on at demand (as additional heating only). The electric heater is supplied with energy from the public grid
	Offer	The additional heating function is based on the energy supplied by the photo-voltaic system. The electric heater is supplied only with energy produced by the PV system.
	Off	The electric heater (**Need** and **Offer**) is turned off.
Elec. Heater	kW	the energy which is transferred to the buffer tank

<table>
<tr><th>Short name</th><th>Unit</th><th>Explanations</th></tr>
<tr><td>Activation mode</td><td colspan="2">Heat storage in the boiler for:
<table>
<tr><td></td><td>Heating acc. to Need</td><td>Heating acc. to Offer</td></tr>
<tr><td>Off</td><td>Electric heater off, A3 pump is off</td><td>Electric heater off, A3 pump is off</td></tr>
<tr><td>Frost protection</td><td>Electric heater on: S11≤ Frost prot. from AND S4<Tmin
Electric heater off: S11≥ Frost prot. from + dT Frost prot. OR S4 > Tmin Buffer + dT S4
Pump A3 on: S3 ≥ Tmin Buffer + dT S4 AND Electric heater on
Pump A3 off: S3 ≤ (Tmin Buffer + dT-pump-start) OR Electric heater off</td><td>Electric heater on: S11 ≤ Frost prot. from AND S4<Tmin Buffer
Electric heater off: S11≥ Frost prot. from + dT Frost prot. OR S4 > Tmin Buffer + dT PV
Pump A3 on: S3 ≥ Tmin Buffer + dT PV AND Electric heater on
Pump A3 off: S3 ≤ (Tmin Buffer + dT-PV-dT-pump-start) OR Electric heater off</td></tr>
<tr><td>Hot water</td><td>Electric heater on: S3< set temperature
Electric heater off: S3 ≥ set temperature + dT S3</td><td>Electric heater on: at electric energy excess AND S3 ≤ T-set-HW-PV
Electric heater off: at no electric energy excess OR S3 ≥ T-set-HW-PV + dT PV</td></tr>
<tr><td>Heating/HW</td><td>Summer:
On, when: S3 < Set temperature
Off, when: S3 ≥ Set temperature + dTS3
Winter:
On, when S3 < Set temperature OR S4 < T set HCn + dT set-act for more than dt-set-act
Pump A3 on: S3 ≥ Set temp. + dTS3 AND Electric heater on
Pump A3 off: S3 ≤ Set temp. + dTS3 - dT-pump-start OR Electric heater off</td><td>Electric heater on: at electric energy excess AND S4 ≤ T-set-HT-PV OR S3 ≤ T-set-HW-PV
Electric heater off: at no electric energy excess OR S4 ≥ T-set-HT-PV + dT PV AND S3 ≥ T-set-HW-PV + dT PV
Pump A3 on: S3 ≥ T-set-HW-PV AND S4 < T-set-HT-PV AND Electric heater on
Pump A3 off: S3 ≤ T-set-HW-PV + dT-pump-start OR Electric heater off</td></tr>
<tr><td>Full load</td><td>-</td><td>Electric heater on: at electric energy excess AND S4 ≤ T-set-full-load OR S3 ≤ T-set-full-load
Electric heater off : With no excess electricity OR S4 ≥ T-set-full-load + dT PV AND S3 ≥ T-set-full-load + dT PV
Pump A3 on: S3 ≥ T-set-full-load AND Electric heater on
Pump A3 off: S3 ≤ T-set-full-load - dT-pump-start, OR Electric heater off</td></tr>
</table></td></tr>
<tr><td>Program</td><td colspan="2">as set in Periods for the operational status of the system: for switching the electric heater On or Off (Need or Offer) (see also: “Heating program settings/ Creating a new program”)</td></tr>
</table>

Short name	Unit	Explanations
By clicking the graphic chart you can display the graph screen in full view. You can see the changes in PV system power (transfer of excess power from the PV system into the buffer tank - depending on the sun, clouds and home demand) in a given time. The scale of the x and y axis is adjusted dynamically according to the current values.		 *Illustration 22: Energy from the PV system*

By tapping the softkey **Heat outputs** you can get informationabout the heating output generated from excessive PVsystem power in relation to time in which it was supplied.
The energy is registered only when it was transferred tothe electric heater, independent of the **Offer** or **Need** setting.If there is a change between these two settings, theheat outputs are shown as added.



Today	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, in relation to time (h)
Yesterday	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, within the last 24 hours (h)
Last 5 days	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, within the last 5 days
Last 4 weeks	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, within the last 4 weeks
Last 6 months	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, within the last 6 months
2014	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, in the current year
2013	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, in the previous year

2012	= the output energy of the photovoltaic system, which was transferred to the buffer tank (Offer) or/and consumed by the energy consumers (Need) in kWh units, in the indicated year

3.7 Biomass heat generators

NOTE
As main heat generators for the BHZ 3.0 can be applied alternatively
a solid fuel boiler (logwood or pellet boiler)
or
tiled stoves / fireplaces.

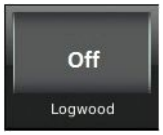
Both options are described in this manual. Please refer to data, which correspond to your heating system.

3.7.1 Natural Power boiler (HT) as heat generator

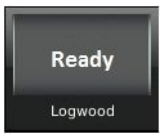
NOTE
A distinction is made here **between BRUNNER boilers (existing boiler control board) and other boilers provided on site.**
In the case of BRUNNER boilers, data exchange is performed via CAN bus, which includes also feedback information on combustion status.
Depending on the boiler variant (logwood, pellets, wood chips), a corresponding description of the configured heat generator is displayed on the screens. The connected boiler type is defined during configuration of the Heating Center.

3.7.1.1 Display with Brunner Logwood Boiler

The display of heat generator as a Natural Power boiler (a logwood boiler) in Home view has the following meanings:

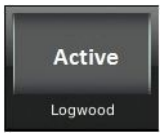


Off corresponds to the operational status of the Natural Power boiler, as well as *PowerOn*, *StandBy*
and *Relay test, Manual cleaning, Rust protection, Lambda calibration* and *Frost protection* too.

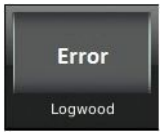


Ready corresponds (as above) to the operational status of the Natural Power boiler, as well as *PowerOn*, *StandBy*
and *Relay test, Manual cleaning, Rust protection, Lambda calibration* and *Frost protection* too.
However, the EWP Basic (Basic extension board) is switched on too.

this is an indicator of the current boiler power,
The boiler remains in the operational status *Light-up, Combustion* or *Glow keeping*.

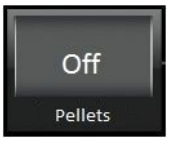


Active or the power indication corresponds to the operational status of the Natural Power boiler, as well as *Light-up, Combustion,* or *Glow keeping*, but there is no power measurement value.

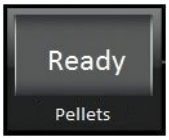


Trouble corresponds to the operational status of the Natural Power boiler, such as *Alarm* or *Not connected*

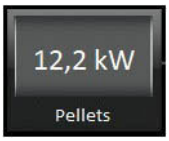
3.7.1.2 Display with Brunner Pellet Boiler



- corresponds to the following operational status of the pellet boiler: *PowerOn, StandBy and Relay test*, *Ash removal, Pellet feeding, Manual cleaning, Lambda calibration, Rust protection.*



- corresponds to the following operational status of the pellet boiler: *PowerOn, StandBy and Relay test*, *Ash removal, Pellet feeding, Manual cleaning, Lambda calibration, Rust protection.*
At the same time, the EWP Basic is switched on.



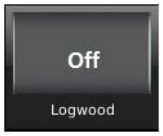
- corresponds to the following operational status of the pellet boiler: *Light-up, Combustion, Burn-out* or *Frost protection..*

- corresponds to the following operational status of the pellet boiler: *Light-up, Combustion, Burn-out* or *Frost protection.*
At the same time, the EWP Basic is set to ON.
However, no power is delivered.

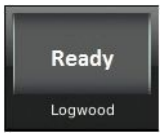
- corresponds to the following operational status of the pellet boiler: *Not connected* or *Alarm.*

3.7.1.3 Display with third-party biomass boiler

The display of a third-party heat generator (in this example, a logwood boiler), provided by other manufacturers than BRUNNER, has the following meanings in Home view:

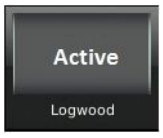


The heat generator is set to Off. It is not ready for operation.

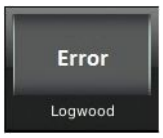


Ready corresponds to the operating mode setting **On**, but there is no demand for heat;

this is the indication of the current boiler power,
if there is any.



The heat generator is Ready for operation (On), but it does not supply heat yet (boiler power=0).



This error message indicates a malfunction: e.g. when no heat is supplied, if a sensor is faulty, or emergency mode is active.

3.7.1.4 Brunner wood boiler Home view

By clicking the softkey for Biomass heat generator (e.g. Brunner Logwood Boiler or Pellet Boiler = a boiler control board is present), you can retrieve or set the following data:

Illustration 23: Menu Page 1 Logwood boiler

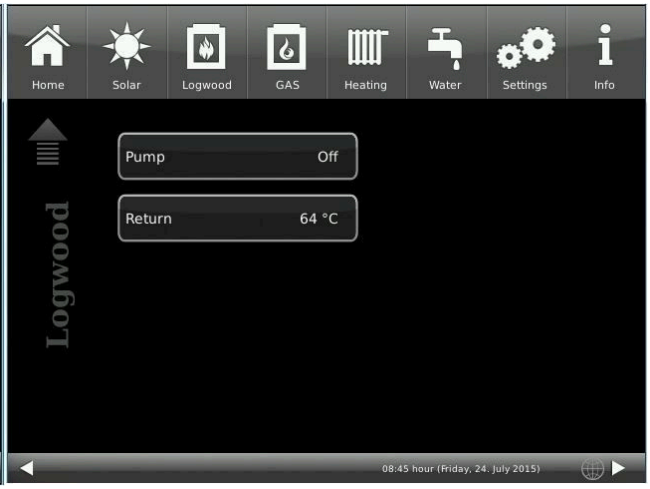


Illustration 24: Menu Page 2 Logwood boiler

Text	Unit	Explanations
Boiler	Select	to change the operating status from **On** to **Off** immediately.
Status		Indication of the active operating mode: Choose between: *Off*, *Ready*, *Ignition*, *Active*, *Combustion*
Boiler	°C	Boiler temperature
Power	kWh	indicates the current power supplied by boiler
Resid.heat	On/Off	Choice of residual heat usage: **On** or **Off**
Start for (only with Brunner Logwood Boiler)	The BRUNNER Logwood Boiler is started, when the buffer tank temperature falls below a certain value. The “Start at” status depends on this.	

Start at:	Condition:
Frost protection	S11 (outdoor temperature) ≤ “Frost protection from” and S4 (Buffer mid sensor) < “Tmin Buffer”
Hot water	S3 (Buffer top temperature) < “Set temperature”
Heating	S4 (Buffer mid temperature) < “T Set HC”: activated when the supply temperature on S4 falls below a calculated value;
Part load	***Summer mode***: S3 (Buffer top temperature) < “Set temperature” ***Winter mode:*** S3 (Buffer top temperature) < “Set temperature” or: S4 < highest calculated HC supply temp.

<table>
<tr><th>Text</th><th>Unit</th><th>Explanations</th></tr>
<tr><td>Activated for

(only with Brunner Pellet Boiler)</td><td colspan="2">the combustion process in a pellet boiler starts and ends, when buffer tank temperature is beyond defined thresholds (i.e. lower or higher than set).

<table>
<tr><td colspan="2">Selection for automatic reheating:</td></tr>
<tr><td>Full load</td><td>Summer mode:
On: S3 (Buffer top temperature) < “Set temperature”
Off: S5 (Buffer bottom temperature) ≥ “Set temperature” + “dT S5”
Winter mode:
On: S3 (Buffer top temperature) < “Set temperature”
or S4 (Buffer mid temperature) < highest calculated HC supply temp.
Off: S5 (Buffer bottom temperature) ≥ “Set temperature” + “dT S5”
and S4 (Buffer mid temperature) ≥ highest calculated HC supply temp. + “dT S4”</td></tr>
<tr><td>Part load</td><td>Summer mode:
On: S3 (Buffer top temperature) < „Set temperature“
Off: S4 (Buffer mid temperatur) ≥ „Set temperature“+ „dT S4“
Winter mode:
On: S3 (Buffer top temperature) < „Set temperature“
or S4 (Puffertemperatur mitte) < largest calculated HC supply temp.
Off: S4 (Buffer mid temperatur) ≥ „Set temperature“ + „dT S4“
and S4 (Buffer mid temperatur) ≥ largest calculated HC supply temp. + „dT S4“</td></tr>
<tr><td>Frost protection</td><td>On: S11 (outdoor temperature) ≤ “Frost protection from”
and S4 (Buffer mid temperature) < “Tmin Buffer”
Off: S11 (outdoor temperature) ≥ “Frost protection from” + “dT Frost protection”
or S4 > “Tmin Buffer” + “dTS4”</td></tr>
<tr><td>Hot water</td><td>On: S3 (Buffer top temperature) < “Set temperature”
Off: S3 (Buffer top temperature) ≥ “Set temperature” + “dT S3”</td></tr>
<tr><td>Heating</td><td>On: S4 (Buffer mid temperature) < “T Set HC”
Off: S4 (Buffer mid temperature) ≥ “highest calculated HC supply temp.” + “dTS4”</td></tr>
</table>
</td></tr>
<tr><td>Program</td><td></td><td>Selection of a pre-defined program for automatic reheating; within these periods, the selected variant for automatic reheating is active:

<table>
<tr><td>always active</td><td>= the automatic reheating is permanently active</td></tr>
<tr><td>Day</td><td>= the automatic reheating runs according to “Day” program</td></tr>
<tr><td>Night</td><td>= the automatic reheating runs according to “Night” program</td></tr>
<tr><td>New 1</td><td>individually defined programs</td></tr>
<tr><td>New 2</td><td>individually defined programs</td></tr>
<tr><td>New 3</td><td>individually defined programs</td></tr>
</table>
</td></tr>
<tr><td>Output</td><td colspan="2">Softkey</td></tr>
<tr><td>Periods</td><td colspan="2">Softkey</td></tr>
<tr><td colspan="3">Menu - Page 2: Importand parameter - Wood boiler.</td></tr>
</table>

Output

= presentation of energy output in kWh within the given periods:
- today;
- yesterday;
- last 5 days;
- last 4 weeks;
- last 6 months;
- this year;
- previous year;
- the year before;

Periods

- overview of periods in which a logwood or pellet boiler is in Ready mode and can be activated automatically. The periods of readiness are shown in the form of an hourly schedule.

The orange highlighted squares mark the periods of readiness.

In the selection window **Program** you can open other factory-defined or individually created programs.

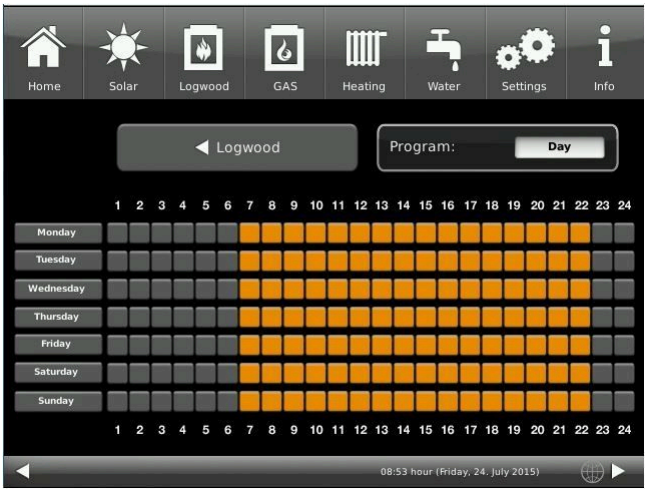


Illustration 25: Hourly schedule

By tapping the overview / hourly schedule, you can open the Settings page for a particular day:

By selecting the periods 0-6, 6-12, 12-18 and 18-24 you can mark the whole row in orange or gray color. The single squares can be marked orange or gray by touching too.

Factory-defined programs cannot be overwritten.

If you wish to change the program name, a keypad is displayed automatically after tapping the **Program** softkey on the Settings page in lower left corner.
New programs can be always overwritten or renamed.

Refer to chapter “Individual settings” / “Defining periods”

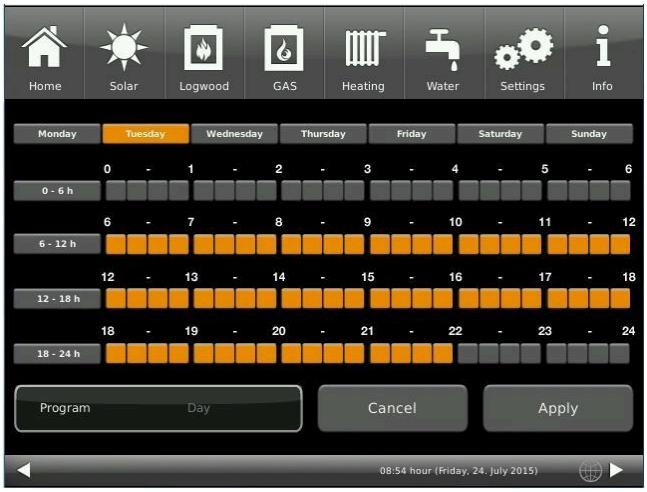


Illustration 26: Settings page for Programs

3.7.2 Heat generator Tiled stove / Fireplace (OT)

3.7.2.1 Tiled stove / Fireplace display

The tiled stove is in operation and the current temperature and power are displayed alternately.

this indication is displayed in case of error

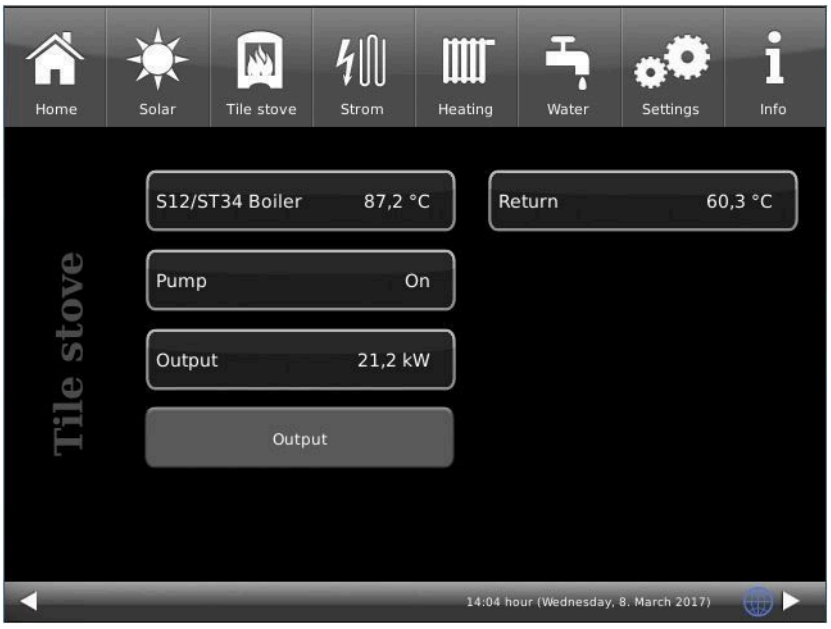
3.7.2.2 Brunner Pellet module display

Heating operation is possible only in combination EOS (electronic stove control) with Pellet module. It is not supported for a combination with tiled stove, kitchen stove or fireplace boiler (automatic start of heating operation is not possible).

Status messages for Pellet module are shown in Additional heating window, when no Additional heating 1 is present. The status of tiled stove is always shown in the Tiled stove field.

3.7.2.3 Tiled stove / Fireplace Home view

By clicking the tiled stove symbol on the upper menu bar in the Heating Home view, or by clicking the “Tiled stove” symbol in Home view, you can access the following screens:

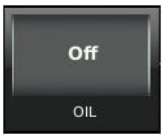


Text	Unit	Explanations
Boiler	°C	Boiler temperature
Power	kW	Tiled stove heating power
Output	kWh	Softkey - the energy output of the tiled stove in given time intervals is shown
Pump		Status of the boiler pump: **Off** or **On** status
Return	°C	Temperature of return line

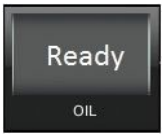
3.8 Additional heating systems

3.8.1 Additional heating display

The following example refers to an Oil boiler as 1st additional heating. The same or similar display content applies also for a Gas boiler or Electric heating, and a second installed additional heating.



the additional heating is set to **Off** permanently.



- the heat generator is ready for operation, it is switched On, but there is no heat demand at the moment;

- the heat generator (additional heating) is ready for operation (switched **On**), but it delivers no heat yet (boiler power = 0);
- when a power output is present, the measured value can be displayed for some boilers, or the indication **Active**is shown only;

- an error is present, e.g. when no heat is supplied, if a sensor is faulty, or emergency mode is active.

3.8.2 Additional heating Home view

Depending on the installed and configured additional heating systems, you can access the operational data of the relevant systems (Ex. with 2 Additional heating).

Illustration 27: 1. Additional heating Gas

Illustration 28: 2. Additional heating Electric

Additional heating

Short description	Unit	Explanations
GAS	Selection	**On** /**Off**
Status		the current operational status of Gas heating
Power	kW	the current power output of the Gas heating
Emission test	Select	**Off** / **On**

<table>
<tr><th>Short description</th><th>Unit</th><th>Explanations</th></tr>
<tr><td>Activated for</td><td colspan="2"><table>
<tr><td>Full load</td><td>Summer mode:
On: S3 (Buffer top temperature) < “Set temperature”
Off: S5 (Buffer bottom temperature) ≥ “Set temperature” + “dT S5”
Winter mode:
On: S3 (Buffer top temperature) < “Set temperature” or S4 (Buffer mid temperature) < highest calculated HC supply temp.
Off: S5 (Buffer bottom temperature) ≥ “Set temperature” + “dT S5” and S4 (Buffer mid temperature) ≥ highest calculated HC supply temp. + “dT S4”</td></tr>
<tr><td>Part load</td><td>Summer mode:
On: S3 (Buffer top temperature) < “Set temperature”
Off: S4 (Buffer mid temperature) ≥ “Set temperature” + “dT S4”
Winter mode:
On: S3 (Buffer mid temperature) < “Set temperature” or S4 (Buffer mid temperature) < highest calculated HC supply temp.
Off: S4 (Buffer mid temperature) ≥ “Set temperature” + “dT S4” and S4 (Buffer mid temperature) ≥ highest calculated HC supply temp. + “dT S4”</td></tr>
<tr><td>Frost protection</td><td>On: S11 (outdoor temperature) ≤ “Frost protection from” and S4 (Buffer mid temperature) < “Tmin Buffer”
Off: S11 (outdoor temperature) ≥ “Frost protection from” + “dT Frost protection” or S4 > “Tmin Buffer” + “dTS4”</td></tr>
<tr><td>Hot water</td><td>On: S3 (Buffer top temperature) < “Set temperature”
Off: S3 (Buffer top temperature) ≥ “Set temperature” + “dT S3”</td></tr>
<tr><td>Heating</td><td>On: S4 (Buffer mid temperature) < “T Set HC”
Off: S4 (Buffer mid temperature) ≥ “highest calculated HC supply temp.” + “dTS4”</td></tr>
</table></td></tr>
<tr><td>Program</td><td></td><td>as set in Periods, the program for the existing additional GAS heating to be ready for operation in automatic reheating mode.</td></tr>
<tr><td>Output</td><td>kWh</td><td>By tapping the softkey Output you can access information about the energy output for a given period:- Today; - Yesterday; - last 5 days; last 4 weeks; - last 6 months; - this year; - previous year; - 2 years ago (the year is shown)</td></tr>
<tr><td>Periods</td><td>Plan</td><td>Possible setting of periods, when the additional heating Gas should be activated (see chapter “Defining periods”)</td></tr>
</table>

3.9 Heating

3.9.1 Heating circuits display

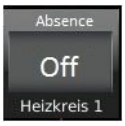
For every connected heating circuit the same following items are displayed:

Text displayed ***in the upper part of the field***: the active program

Family or **Single** or **Seniors**
= factory-defined programs, where the operating times of the heating circuits are set.
The operating times are shown in form of hourly schedule. Orange fields = the heating circuits are active with the calculated supply temperatures, depending on outdoor temperature; Gray fields = the temperature lowering mode is active.
Details: see chapter “Heating programs setting or modification”.

New 1 or **New 2** or **New 3**
Up to three “new” heating programs can be selected. After selecting a “new” heating program, the user can design its time frame individually and give the program a name. In the orange fields, the heating circuits are active with the calculated supply temperatures, depending on outdoor temperature. In the gray fields, the temperature lowering mode is active.

Heat abduction
If the temperature on S5 (buffer bottom) sensor exceeds **Heat_ab** and the heat abduction for the given heating system is set to **Yes** - it is attempted to lower the buffer tank temperature through the heating circuits. This avoids overheating of the buffer tank, and therefore, overheating of the heat generator (e.g. wood boiler, solar heating system).



Absence
With the Absence program it is possible to keep the selected heating circuit in frost protection mode for a defined period of absence (number of days), e.g. during holidays (this means, heating circuit 1 or 2 **Off**, and only **Frost protection** activated, if necessary).
The Absence mode is activated immediately and will be deactivated automatically after a defined time; then it will turn into automatic heating mode. The Absence program can be interrupted or canceled, or activated again and continued. Absence program activation is shown on display. The days of absence are displayed/counted down. (see also chapter “Absence period”)

Permanent
Period in which the heating stays in operation. After this period the selected heating program will be switched on again

Text displayed in the *middle*:

= Depending on parameter **Display mode** (factory setting 30 sec.) (can be found in menu **Heating circuit** / (2nd page) **Display mode**) the display changes automatically between temperature and power values.

The heating circuit was switched off by the User.
The heating circuit is activated only, if the value of **Frost protection from** is higher than actual outdoor temperature. The parameter **Frost protection from** (factory setting 4°C) can be found in Settings/ Heating circuit / **Frost protection from** (second page).

The program **Frost protection** is active.

The program **Frost protection** was activated automatically, to protect the heating system against freezing.

The Summer mode is active.
The outdoor temperature exceeded the **Summer from** parameter value.
The parameter **Summer from** (factory setting 17°C) can be found under **Heating circuit** / on the first page.

If the buffer temperature defined by the parameter **T buffer H away** is exceeded and the heating circuit is configured for heat abduction, Heat abduction is shown for the corresponding heating circuit, when activated

= the screed drying program is active;
used only with floor heating connected to the corresponding heating circuit; (see chapter “Screed/ Wall drying”)

Text displayed in the *lower part of the field*:

Radiator, Floor, Heating circuit 1, 2, 3 etc.	Selection of heating system. The user can choose among different heating systems for each heating circuit. See also “Heating Settings”

3.9.2 Heating Home view

By clicking the Heating softkey or the Heating symbol on the upper menu bar, and selecting the heating circuit, you can reach the following levels of settings (example for Heating circuit 1, other heating circuits have the same options):

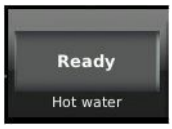
<table>
<tr><th>Short name</th><th>Unit</th><th>Explanations</th><th>Default</th></tr>
<tr><td colspan="4">Page 1</td></tr>
<tr><td>Heating circuit 1</td><td></td><td>Softkey for switching On or Off - for the particular heating circuits;</td><td>ON</td></tr>
<tr><td>Power</td><td>kW</td><td>Power measurement display</td><td></td></tr>
<tr><td>Lowering mode</td><td></td><td>After selecting the Lowering modes described below, the heating circuits will run in the corresponding lowering mode (gray fields in heating program)
<table>
<tr><td>Off</td><td>= no Lowering mode is desired</td></tr>
<tr><td>Standard</td><td>The supply temperature is lowered in Night mode (gray fields in heating program). Heating circuit pumps are still running. Parameter: Lowering (5 K)</td></tr>
<tr><td>Cooldown protection</td><td>Until the outdoor temperature reaches the threshold value T_outdoor - the pump of the heating circuit remains switched off. If the threshold value T_outdoor is not reached, the pump switches on again and the supply temperature is lowered. It means, the lowering mode Standard is activated.</td></tr>
<tr><td>Frost protection</td><td>In lowering mode (gray fields in heating program) the heating circuit is deactivated in general.
The heating circuit pumps are deactivated. If the value of parameterFrost protection from (factory setting 4 K) is not reached, the heating circuit goes into frost protection mode.</td></tr>
</table></td><td>Off</td></tr>
<tr><td>Summer from</td><td>°C</td><td>Possible selection of outdoor temperature threshold for a change from Heating operation into Summer mode. Range of sliding bar setting (min-max): 1-40.
If the outdoor temperature exceeds the threshold value Summer from - the relevant heating circuit pumps are deactivated. For every heating circuit you can select an individual value for Summer/Winter switching.</td><td>17</td></tr>
</table>

<table>
<tr><td>Program</td><td></td><td>Selection of heating program according to stored operation times for the given programs. There are 3 factory-defined programs (Family, Single, Seniors) and three customizable heating programs (New1, New2, New3). Tap to select:<table><tr><td>Family</td><td>New 1</td></tr><tr><td>Single</td><td>New 2</td></tr><tr><td>Seniors</td><td>New 3</td></tr></table>Details: Chapter “Heating programs setting or modification”</td><td>Family</td></tr>
<tr><td>Warmer/Colder</td><td>°C</td><td>Additional possibility to raise or reduce the defined supply temperature; setting with sliding bar: available range (min-max): (-10) to 10;</td><td>0</td></tr>
<tr><td>Absence period</td><td>Days</td><td colspan="2">Number of days for absence period; setting with sliding bar (min-max/step): 0-42/1. Only Frost protection is not affected. The Absence mode is activated immediately and will be deactivated automatically after a defined time; then it will turn into automatic heating mode.
The corresponding heating circuit is shown as Off in Home view. The remaining days of absence period are shown on the Absence softkey (countdown display).
Details: Chapter “Absence period”</td></tr>
<tr><td>Permanent</td><td>Hrs</td><td>The number of hours for permanent operation of the heating circuit. Range of sliding bar setting (min/max): 0-48. The remaining time of permanent operation is shown in menu of the relevant heating circuit (countdown display). After this period the selected heating program will be switched on again.</td><td>17</td></tr>
<tr><td>Consumption</td><td>kWh</td><td colspan="2">Presentation of consumption values (kWh) for the selected heating circuit in given time intervals:<table><tr><td>Today</td><td>this year (example - 2014)</td></tr><tr><td>Yesterday</td><td>previous year (example - 2013)</td></tr><tr><td>Last 5 days</td><td>2 years ago (example - 2012)</td></tr><tr><td>Last 4 weeks</td><td></td></tr><tr><td>Last 6 months</td><td></td></tr></table></td></tr>
<tr><td>Heating programs</td><td></td><td colspan="2">By selecting a program you can retrieve or create other programs (refer to chapter “Individual settings” / “Heating programs setting or modification”)</td></tr>
<tr><td colspan="4">Page 2:</td></tr>
<tr><td>Heating circuit</td><td></td><td colspan="2">The type of heating circuit, which is defined in the heating system; select from: Radiator, Convector, Wall heating, Floor heating, Constant, Heat abduction, No;</td></tr>
<tr><td>HC1 pump</td><td></td><td>The status of the corresponding heating pump (here for heating circuit 1): Off or On</td><td>On</td></tr>
<tr><td>Display mode</td><td>sec.</td><td>Time for changing between power and temperature display in the heating circuit display field; setting with sliding bar (min-max/step): 1-60/1;</td><td>30</td></tr>
</table>

3.10 Hot water station

The hot water station consists alternatively: of a plate heat exchanger, i.e. a fresh water module, or a hot water storage tank (boiler). The display in Home view and the available parameters depend on this alternative.

3.10.1 Plate heat exchanger display



= no hot water faucet is opened;

= domestic hot water is required, a hot water faucet is opened;

= drinking water heating is active (Relay A3 **On**);
= the power display corresponds to the power (in kW) retrieved from buffer;

= domestic hot water is used
= circulation is active.

3.10.2 Hot water storage tank (boiler) display

In the *upper part* of the graphic, the stored program for hot water storage tank (boiler) loading is shown. During absence, the status “Off” is shown.

In the *middle* of display appears the current temperature in hot water tank; at the same time, the color will change according to current temperature values.

In the *lower part*, the boiler capacity in liters is shown.

3.10.3 Hot water Home view

3.10.3.1 with plate heat exchanger (fresh water module)

After clicking the graphic symbol of hot water storage (boiler) or the “Water” softkey from the upper menu bar, the following data and/or softkeys become visible:

Short name	Unit	Explanation	De-fault
HW pump		Hot water pump	0
Power	kW	Power of domestic water supply	
Consumption	Softkey - see below		
Circulation programs	Softkey - Details in chapter “Circulation programs”		

Consumption

In combination with a fresh water module it is possible to show the consumption values for hot water use.

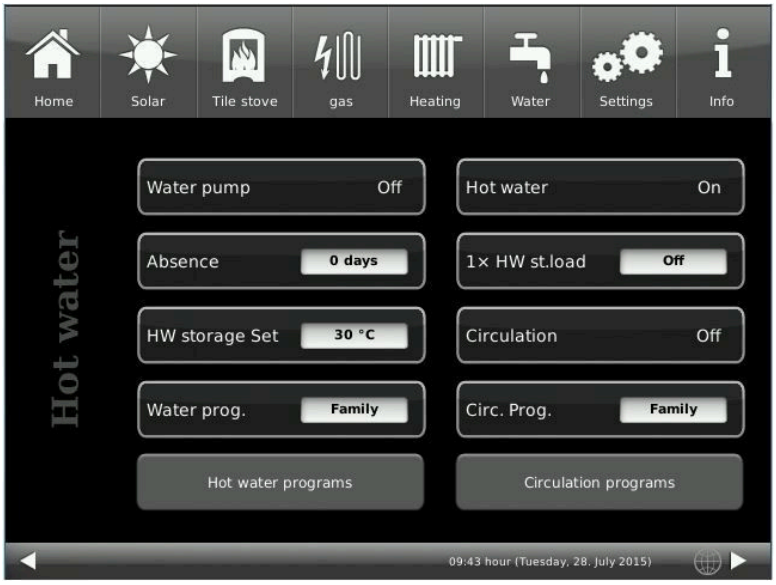
Energy consumption for hot water supply in kWh.

Circulation programs

See details in chapter “Circulation programs”.

3.10.3.2 with hot water storage tank (boiler)

After clicking the domestic **water** symbol or the hot water storage symbol, the following display appears:



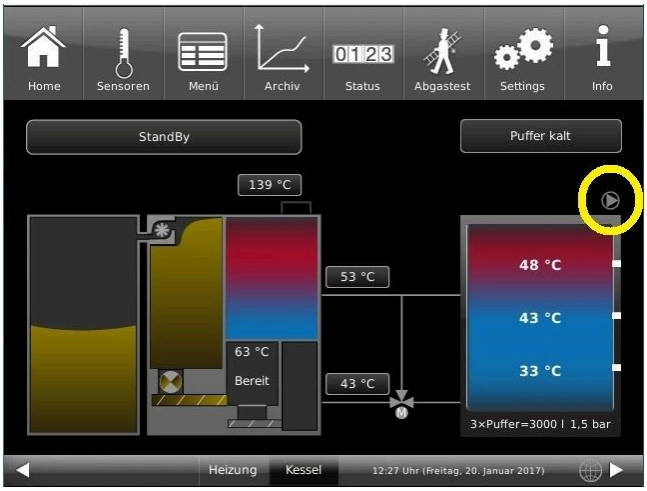
Short name	Unit	Explanations	Settings range Min-Max	Default
Water pump		**Off** = hot water tank loading is deactivated **On**= hot water tank loading is activated		
Absence	Days	Sliding bar setting for number of absence days (chapter “Absence period”)		
HW storage Set	°C	Temperature setting of hot water storage tank;	10-80/10	55
Prog. water		Allows for setting or modification of circulation programs (see chapter “Circulation programs”)		

Hot water		**Off** = Hot water program is not active **On** = Hot water program is active		
1x boiler assign	Select	Select between: **Off** /**On** = the hot water tank will be brought to maximum temperature at once		
Circulation		**On** / **Off** = Status of circulation On or Off.		
Circ. Prog.	Select	shows the currently selected circulation program		
Hot water programs	Softkey: see chapter “Hot water programs”			
Circulation programs*	Softkey: see chapter “Circulation”			
When circulation is configured for activation in certain periods, or by flow pressure or push button, the relevant circulation variant is shown. For circulation activated by flow pressure or push button, the softkey **Circ.Prog.** and the **Circulation programs** are not shown.				

3.11 Trunk line

The trunk line has as target the energy balance between two buffer tanks. The first buffer tank is controlled by a BHZ or EWP basic control and the 2nd buffer tank is connected to the firewood or pellet boiler.The pump control runs over the temperature difference of the two buffer memories.

The symbol of the trunk line is located on the home page of the concerned boiler, in the upper half of the display on the right:



3.11.1 Trunk line under Home

The current status of the trunk line pump is distinguished by its changing colour in the Home view. Red = pump is active; Grey =pump is not active
The symbol of the trunk line pump is a button.

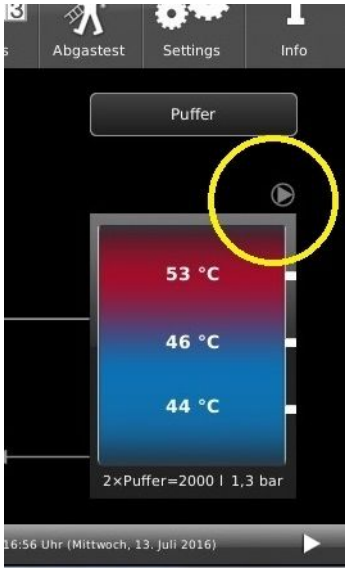


Illustration 29: trunk line pump is not active

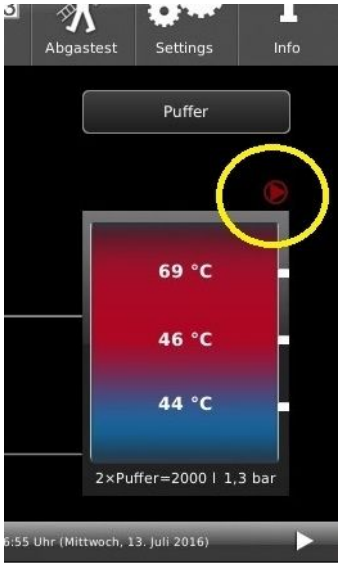


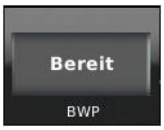
Illustration 30: trunk line pump is active

3.12 Heat pump

3.12.1 Displayed items in the Heating Home view

Heat pump:

= Link to Applications (Home view) of the BRUNNER Heat Pump



- the current operating status is displayed

When the BWP encounters errors, a specific error message is displayed, accompanied by a description of error with error code and the information field turns orange.

The BWP was switched off by the control system

When the heat pump is running, the current output of the BRUNNER Heat Pump is displayed with exact value and current efficiency:

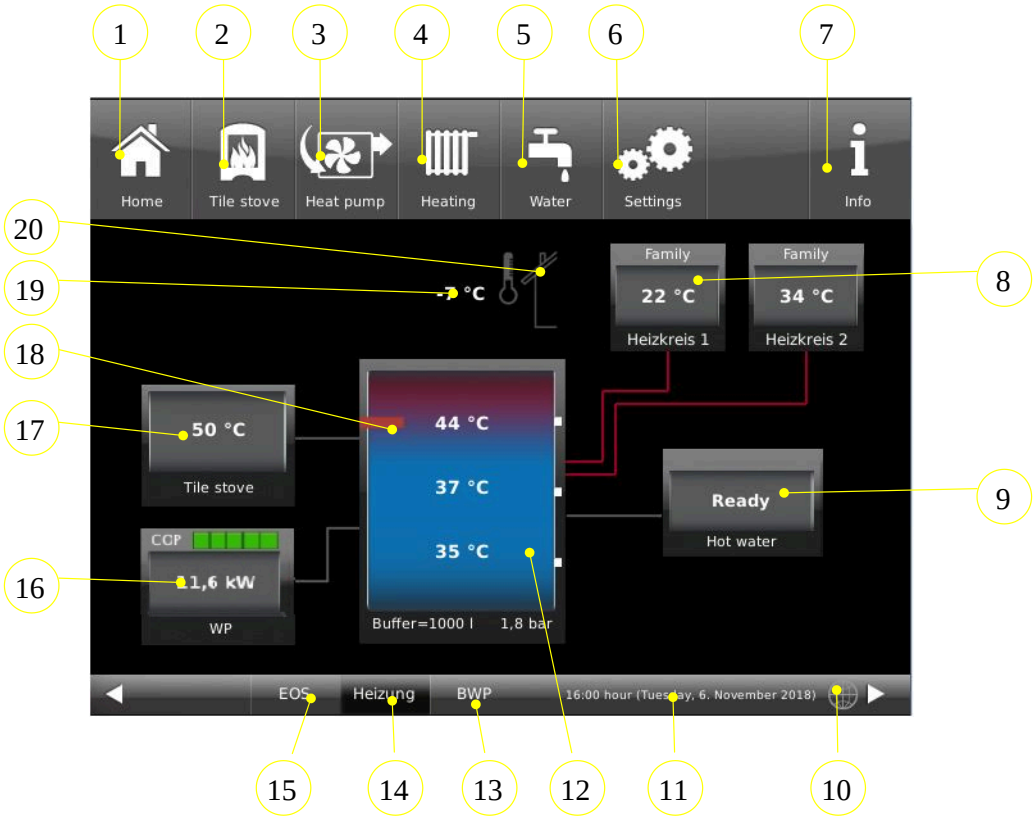
Illustration 31: Efficiency in starting phase

Illustration 32: Efficiency is sufficient

Illustration 33: Efficiency is good

Illustration 34: Efficiency is very good

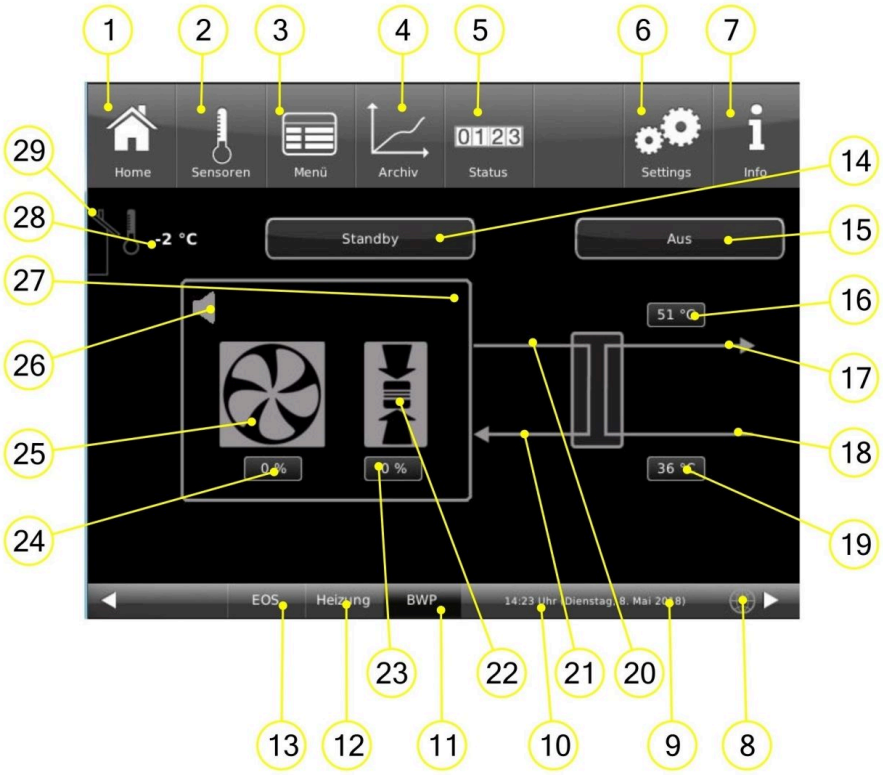
3.12.2 BHZ 3.0 with BWP

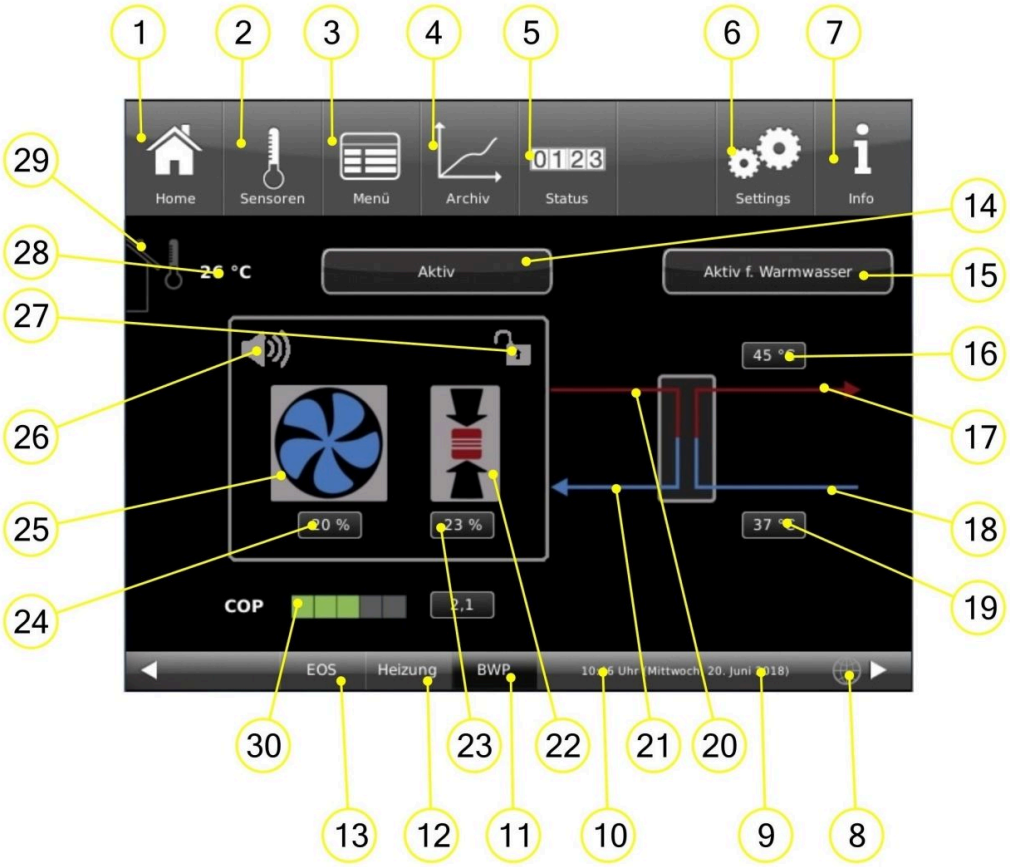


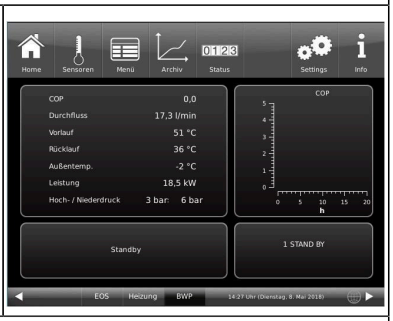
Item	Explanations
1	**Home view** = Start page, the starting point for all applications = graphical overview of the system
2	Button for direct access to **Tiled stove** (i.e. water-bearing stove)
3	Button for Home view of the **BRUNNER Heat Pump** for direct access to different levels of user settings
4	**Heating** button = for different levels of settings for the existing heating circuits
5	**Hot water** button = link to the drinking water heating menu 7
6	**Settings** button = for different levels of settings for various parameters = button for system configuration - access only with a valid PIN code (different codes for the user and the service technician);
7	**Info** = Help function - additional help messages for the current view are displayed; - if there are any error messages, the Info button will be highlighted in orange.
8	**Heating circuits** button - for each heating circuit there is one such button/display field.
9	**Hot water storage** button/display field with temperatures
10	**myBRUNNER** - Status for myBRUNNER (online / offline):grey globe = network available, but offline with myBRUNNER; blue globe = online with myBRUNNER; green globe = with myBRUNNER-Local-connection
11	current display of time, day of week, date

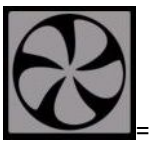
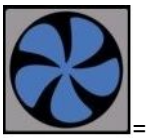
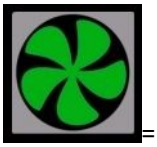
Item	Explanations
12	**Storage tank** (buffer tank): three current buffer temperatures are displayed as numerical values. In addition, the colours mean: blue=cold; red=hot. At the bottom of the screen: Information about buffer tank capacity and the number of buffer tanks, the actual pressure of heating system is displayed too. When heat output metering is configured, the buffer graphic acts as a button for displaying a pie chart as heat output presentation.
13	**Heating** = link to Heating System application (BHZ 3.0)
14	**EOS** = Electronic Stove Control = link to available EOS application
16	**BRUNNER Heat Pump** button/display field with current COP (coefficient of performance) values 
17	Button/display field for the heating source **Tiled stove** with current temperature value
18	**Electric heater** acting as frost protection for the storage tank
19	**Outdoor temperature** display
20	the operating (combustion) status of a tiled stove is indicated by the chimney colour. The chimney is red = tiled stove is burning, the chimney is grey = no fire in stove.
The indicated measurement values can be slightly different from actual value.	

3.12.3 Heat pump under Home





Buttons at the top of the screen:	
1	Home view = Start page, the starting point for all applications = graphical overview of the system
2	In the **Sensors** view, the values of all sensors (measured or calculated values) are displayed in a list. In addition, the corresponding sensor value is presented in a graphic view. 
3	**Menu** = the current values and set values of parameters are shown here. Some operating mode settings can be enabled here (e.g. Silent mode).
4	The **Archive** view allows for access to archived data from a selected year, month and day.
5	The **Status** view shows an overview of operating data
6	In the **Settings** view you can access the system parameters, the basic settings for the heating contractor as well as functions and detailed information for maintenance and service (error analysis). This level is secured by a Setup PIN number, which allows the control system to validate the user permissions. Different users have access only to specific settings of the heating control system. The PIN number guarantees safety of operation, where each house resident can select his/her own heating program, but cannot change the fundamental settings.
7	By tapping the **Info** button you can display additional help messages for each active view. In addition, the Info button turns orange, when there are any notes or error messages available.

8	Network + myBRUNNER Status (see also sections on *Remote access via myBRUNNER*)
9	Current day of week, date
10	Current time
11	Button for direct access to heat pump Home view (current view)
12	Button for direct access to BHZ 3.0 Home view
13	Button for direct access to Home view or settings for the integrated **EOS** control system
14	Info field = display of current **heat pump** operating status (ready; active; off, error)
15	Info field for displaying the currently set requirements for the heat pump (*Active for hot water* or *Active for heating* purposes)
16	Current display of heating circuit flow temperature
17	Line* for heating flow
18	Line* for heating return
19	Current display of return temperature
20	Cooling circuit flow line
21	Cooling circuit return line
22	Compressor (the display colour indicates the current operating status: red=active; black=inactive)
23	Compressor output power in %
24	Current fan speed (this value can be negative - e.g. to blow out debris)
25	Fan; the displayed colour of fan informs about its current operating status  = Stand-by or  = in operation  = natural defrosting
26	Reduced mode = by selecting this button you can turn the Silent mode on or off
27	The optional Smart-Grid functionality is displayed together with its operating status:  = the heat pump power supply was shut down by the electricity provider due to overload  = the heat pump power supply was enabled by the electricity provider in his network.
28	Current outdoor temperature display
29	The tiled stove operating status is indicated by the chimney colour.  = the chimney is red, i.e. the tiled stove is burning.  = the chimney is grey = no fire (the EOS fire-box sensor was triggered)

30	The current COP value is displayed with the exact value (field right); in addition, the displayed colour indicates the current heat pump efficiency:  *Illustration 35: Efficiency in starting phase*  *Illustration 36: Efficiency is sufficient*  *Illustration 37: Efficiency is good*  *Illustration 38: Efficiency is very good*
	* (different display colours of the specific lines indicate the current operating status) red / blue = active (hot / cold); grey = inactive
The indicated measurement values can be slightly different from actual value.	

3.13 Individual settings

3.13.1 Display customization

The touch display of the BRUNNER systems can be customized with various display options.

This chapter describes all the setting options for the display presentation.

Touch the **Settings** button and enter your PIN code.

Follow the path: **Settings** (PIN code 9999) / **Control panel** / **Settings** and the following window will appear:

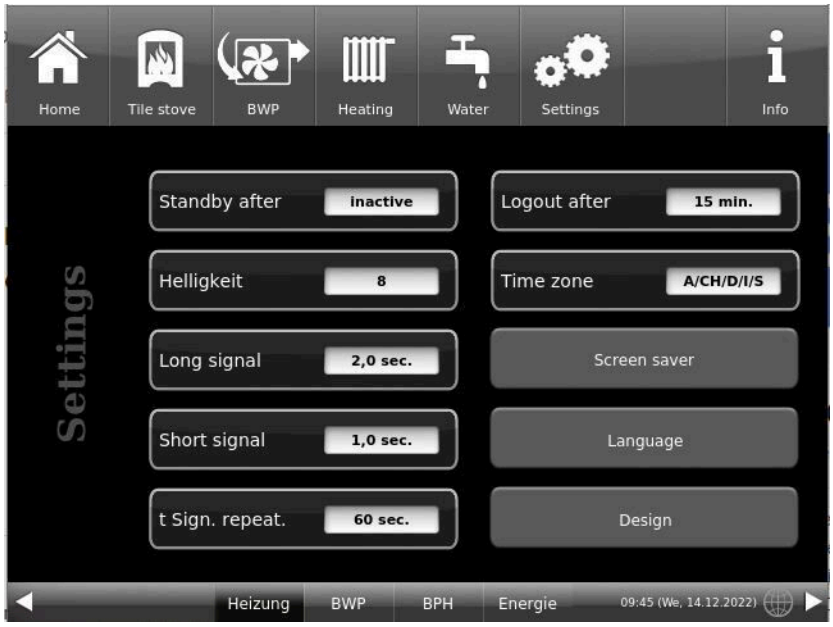


Illustration 39: Display-> Example: Setting options

Your settings window for setting the time period for the screen saver to appear appears:

Screensaver appears automatically after .... minutes

1. follow the path in the display:

Settings / Control panel / Settings / Standby to

2. a new window appears when you press the white area next to **Standby after**....:

3. set the desired time - in minutes: a) by tapping **+** or **-**
or
b) by sliding the slider to the right or left

4. press **O.K.** to confirm;
→ The setting is accepted.

Illustration 40: Display customization - screen saver

This setting activates the screen saver after the desired time.

The brightness dof the display

You can adjust the brightness of the touch display to adapt it to the local conditions.

To set the brightness, proceed as follows:
1. Follow the path: Settings / Control panel / Settings / **Brightness**
2. A new window appears by pressing on the white highlighted area under **Brightness**. 3:

3. set the desired brightness:
a) by tapping **+ or -**
or
b) by sliding the slider to the right or left

4. press **O.K.** to confirm.
→ The setting is accepted.

Illustration 41: Display customization - Brightness

You can set **the length of the long signal tone** that sounds in the event of a fault (error message) or information message.

To set the duration of the long tone,
1. Follow the path in the control structure:

Settings / Control panel / Settings / **Long tone**

2. a new window appears when you press the white area next to **Long tone**:

3. set the desired time - in seconds:
a) by tapping + or -
or
b) by sliding the slider to the right or left;

4. press **O.K.** to confirm.
→ The setting is accepted.

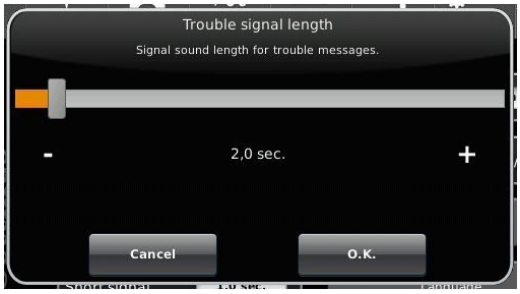


Illustration 42: Display customization - Long tone

You can set **the duration of the short signal tone** that sounds in the event of a fault (error message) or information message.
To set the duration of the short tone,
1. Follow the path in the control structure:

Settings / Control panel / Settings / **Short tone**

2. a new window appears when you press the white area next to **Short tone**:

3. set the desired time - in seconds:
a) by tapping + or -
or
b) by sliding the slider to the right or left

4. press **O.K.** to confirm.
→ The setting is accepted.

You can set **the time interval for the repetition of the signal tone** that sounds in the event of a fault (error message) or information message.
To set the duration of the long tone,
1. Follow the path in the control structure:

Settings / Control panel / Settings / **t Sound repetition**

2. a new window opens by pressing on the white area next to**"t Tone repetition"**:

3. set the desired time - in seconds:
a) by tapping + or -
or b) by sliding the slider to the right or left

4. press **O.K.** to confirm.
→ The setting is accepted.

Log out after function

You can set the waiting time after which the touch display should automatically exit the Settings function area if no input is made (Settings log-out).
To set the waiting time, proceed as follows:
1. Follow the path:

Settings / Settings / Control panel / Log out **to**

2. a dialog window appears with the bar display; by tapping **+** or **-** you can navigate through the area

3. tap **O.K.** to confirm the selection.
→ The setting is accepted.

Automatic changeover between summer and winter time

For an automatic changeover between summer and winter time, you can set the time zone in which the installation location of the boiler is located.

To set the **time zone**:
1. Follow the path:

Settings (with PIN code) / Control panel / Settings / **Time zone**

2. a window for selecting the desired time zone appears

3. select the time zone;
4. select **O.K.** to confirm;
→ The setting is accepted.

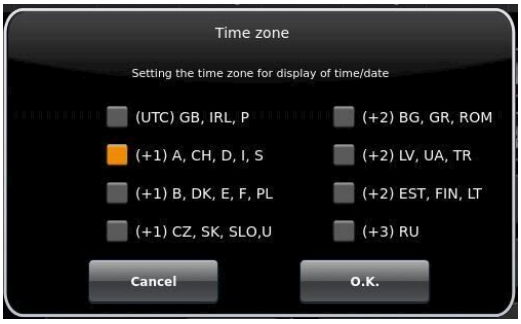


Illustration 43: Display Individualizing time zones

Screensaver

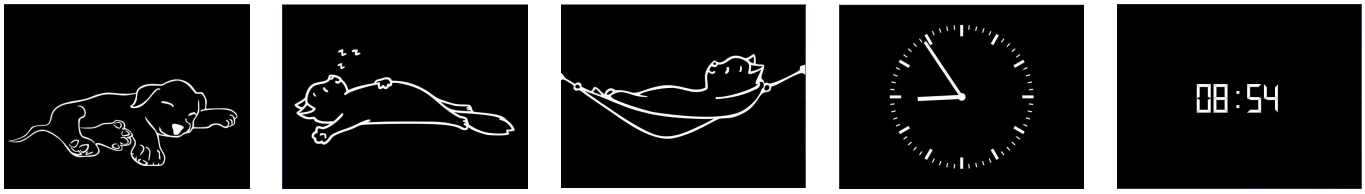
You can change the appearance of the screensaver. You have several options.
To change the screensaver, proceed as follows:
1. Follow the path:

Settings / Control panel / Settings / **Screensaver**

2. a dialog window appears with the options listed. Touch the desired screen saver.

3. press **O.K.** to confirm;
→ The setting is accepted and the desired screen appears.

Examples of screensavers:



Language

You can also change the desired boiler control language after the boiler has been configured. The languages that are not available are displayed darkened.

To change the language setting, proceed as follows:
1. Follow the path:
Settings / Control panel / Settings / Language
2. A dialog window appears with the flags of the respective countries;
3. Press the flag of the desired language;
→ The language setting is applied

4. if the language setting has been changed, the control panel is automatically restarted;

5. press **O.K.** to confirm the restart of the control panel;
→ The control panel is restarted and the language is adopted after the restart.

Illustration 44: Display Customization Language

Design

You can change the appearance of the touch display to adapt it to the local conditions. You can select the background color of the display: white / black.

This process takes approx. 1 minute.

To change the appearance, proceed as follows:
1. Follow the path:
Settings / Control panel / Settings / **Design**
2. A selection window appears in which you can select the desired setting**(white** or **black**) by touching it.
3. Tap **O.K.** to confirm

4. please wait until the control unit switches off automatically and then switches on again (approx. 1 minute)
→ The setting is accepted.

Illustration 45: Display design selection

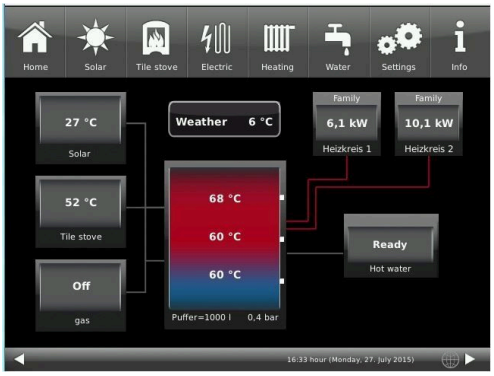


Illustration 46: Black display design

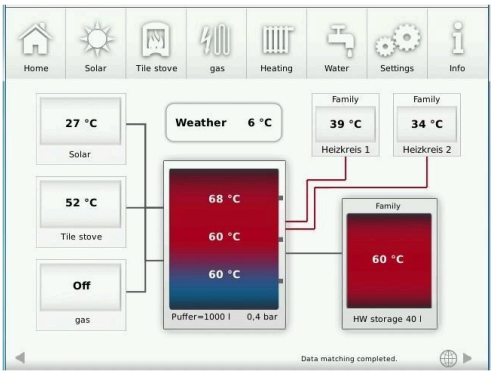


Illustration 47: White display design

3.13.2 Select or create heating programs

		Daytime 1		Daytime 2		Daytime 3	
Program name	Day	On	Off	On	Off	On	Off
Family	Mo-Th	5:30	22:00				
	Fr	5:30	23:00				
	Sa	6:30	23:00				
	Su	7:00	22:00				
Single	Mo-Th	6:00	8:00				
	Fr	6:00	8:00				
	Sa	7:00	23:30				

		Daytime 1		Daytime 2		Daytime 3	
	Su	8:00	22:30				
Seniors	Mo-Su	5:30	23:00				
New 1							
New 2							
New 3							
off	The selected heating circuit is deactivated! Frost protection is active.						

Individual program settings:
For each heating circuit and every hot water program it is possible to enter your desired times and program names.

Define heating program

On the display you can enter your own programs for existing heating circuits.

1. Open the **Heating circuit** menu:
either by clicking the graphic element of the specific heating circuit from the Home view
or by clicking the “Heating” symbol on the upper menu bar, and then the button for the specific heating circuit;

Page 1 for the heating circuit will appear:

Illustration 48: Displayed view on example for heating circuit 1

2. Tap the field **Heating programs**;

A window with days of week will apear:

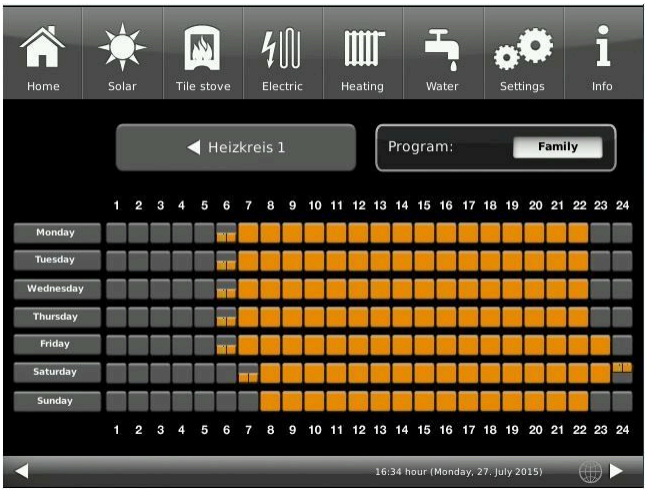


Illustration 49: Displayed view on example for heating circuit 1

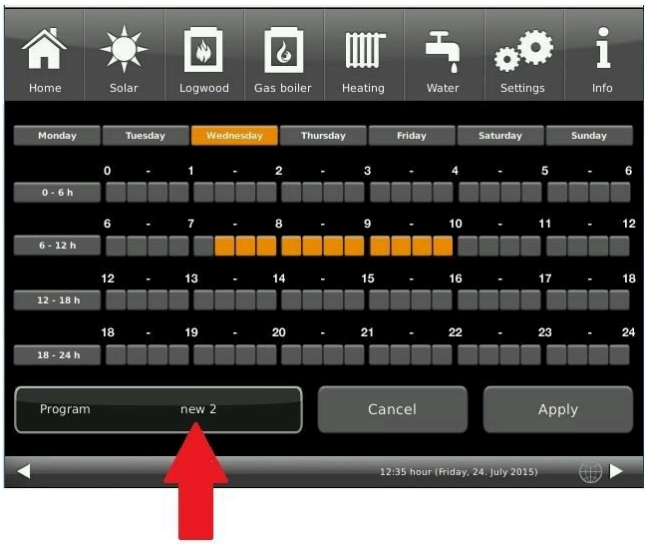
3. Tap the box for a desired day of week;

4. Another window will appear for the selected day of week. The selected day of week is highlighted in orange in the line above.

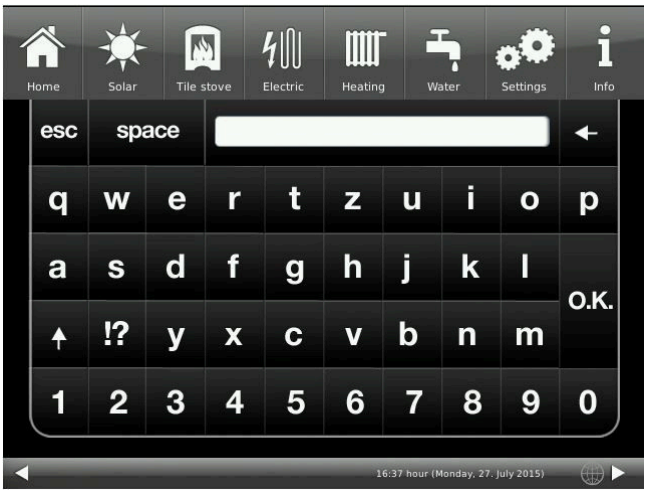
By selecting the days of week you can change the days individually. It is not possible to select multiple days of week at once.

By tapping the periods 0-6, 6-12, 12-18 and 18-24 it is possible to highlight the whole line in orange (= heating is active) or grey (= heating not active). By tapping the individual checkboxes you can highlight them in orange or grey.

The factory programs cannot be overwritten.



If you want to change the name of a defined program, tap the **Program** button.
A new window with keypad will appear:



Using the displayed keypad, enter a new name for the program.

To confirm and apply the new program, tap on **OK**.

→ The new program for heating circuit 1 was saved under a new name.

3.13.3 Hot water program settings

Hot water program

When a hot water storage tank is installed, it is possible to select a program for hot water supply: Please select the following path:

Tap the softkey **Water** / Hot water programs / and a window will show up:

You can select from already defined programs or create your own program (as described in chapter “Heating programs setting or modification”)

3.13.4 Absence periods

Absence setting for Heating

Illustration 50: Display for absence period setting

Entering of absence period:
If you are not at home for a longer time, i.e. you do not need heating or hot water supply, you can select the settings for this period to save energy.
In this period, the selected heating circuits or hot water storage will be operated in frost protection mode only. You can save some energy and protect your heating system from freezing at the same time.

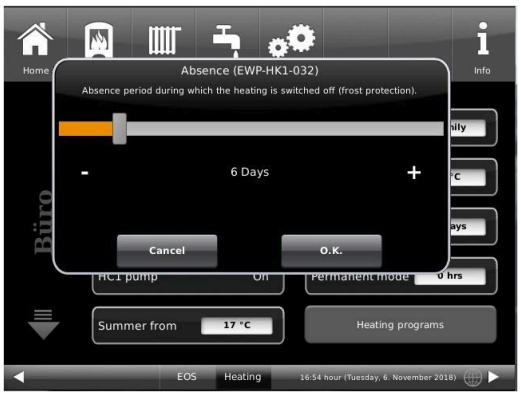
The absence program can be interrupted or canceled, or activated again and continued.

Holiday program is shown in display. Holidays are indicated and counted down at the same time.
After the absence period has passed, the system will return automatically to your program.

1. For this setting, please select the following: softkeys Heating / **Heating circuit 1** (or the corresponding circuit) / **Absence**

2. Tap the field **Absencet**, and enter the number of days, when you are not at home.

→ The absence period is stored and it is activated and later deactivated at given times.



Absence setting for Hot water

If you have a storage tank for hot water supply installed, it is possible to set the absence period for this function only.
For this enter the path: in Home view, click on the Boiler softkey or the **Water**-symbol from the upper menu bar / softkey**Absence**. A sliding bar will show up, which is used to select the number of absence days.
In consequence, during the absence period, the upper line of the hot water storage field shows the status **Off**. The yet remaining absence period is shown in menu **Water** on the **Absence** softkey (countdown).

3.13.5 Circulation programs

NOTE

The **Circulation programs** button is displayed only, when a hot water storage tank or plate heat exchanger is installed, and the **Periods** circulation type was set.
For this, go to: Settings / Configuration / Circulation / Periods.

Follow the path: Home menu **Water** / **Circulation programs** button

A window with timetable will appear (as in the case of heating circuit). Through the selection window you can access more factory programs (Family, Single, Seniors), or create new programs (New 1, New 2, New 3).

Creating or changing a program is possible via Settings page, by clicking the appropriate checkbox (orange=active, grey=inactive). To rename the program, click the **Program** button on the left at the bottom of the Settings page; a keypad for entering the individual program name will appear.

3.13.6 Disinfection

NOTE: The disinfection refers to the connected hot water storage tank.

Disinfection setting

To perform automatic actions for the thermal disinfection, please make the following settings::

T Disinfection (Temperature of disinfection.)
Day Disinfection
Time Disinfection.
Duration Disinfection

This is possible in a window, which can be accessed on the following path:
Settings / Hot water

3.13.7 Screed drying

If a new floor heating was installed, a drying program can be defined and activated. Please select:
Settings / **Heating circuit 1** (or a specified circuit) / **Screed drying** /

Short name	Unit	Explanations	Setting range	Default
Drying	%	Start or end of drying program;	0-100	Off
T Start drying	°C	Start temperature for drying program;	10-50	20
T increase dry	°C	Temperature increase during drying program;	1-50	2
t increase dry	Days	Time for temperature increase;	0-10	1
Tmax Drying	°C	Target temperature for drying program;	20-70	40
t Hold drying	Days	Holding time for target temperature in drying program;	0-21	3
T lowering dry	°C	Temperature lowering during drying program;	1-50	2
t lowering dry	Days	Time for temperature decrease	0-10	1
Status	%	Percentage rate of drying	0-100	

When the drying program is started, in the Home view for the relevant heating circuit appears **Screed drying**.

3.13.8 Selection of lowering mode

Selection of lowering mode - Reduced mode/Night lowering

For each heating circuit you can choose individual lowering types for reduced mode or night lowering mode:

Cooldown protection	Selection of 'T_outdoor' limit for outdoor temperature, where the mode will change between “Disabled” and “Reduced”. This is some kind of Winter/Summer mode switching during night! If this limit is exceeded, the heating circuit will be disabled. Below this limit, the flow temperature is reduced to Night mode level.
Standard	Flow temperature is reduced for Night mode operation. Heating circuit pumps are still running. Parameter: Lowering
Frost protection	The heating circuit is generally disabled at night. Heating circuit pumps are deactivated (Pump 3 (A9) or 4 (A12) off).
Off	No temperature lowering in Night mode

When in Home view, tap on the heating circuit graphic or select the softkey **Heating** and then select the softkey of the relevant heating circuit.

Lowering type is used to determine the behavior of heating circuits during defined “inactive” periods. *Standard* lowering type is used to decrease the normal supply temperature of heating circuits during defined “inactive” periods by 'T_lowering' parameter value.

If ***Frost protection*** is selected, the heating circuit pumps are switched off during “inactive” periods. Just when **Frost protection from** value is exceeded, the pumps are activated again. Heating circuit flow temperature is now controlled without individual heating characteristics. If the temperature exceeds **Frost protection from + dT frost prot.** value, the pumps are switched off

Die Absenkart Auskühlschutz verhält sich eigentlich wie der Frostschutz, mit dem Unterschied, dass hier als Temperaturschwelle 5°C gilt und die Heizkreisvorlauftemperaturen entsprechend der Heizkennlinien geregelt werden.

Parameter	Value (min, max, default)	Description
Lowering mode	Cooldown protection, Frost protection, Standard	Determines the type of flow temperature reduction.
Heating system		Determines the choice of heating curve.
T_lowering	0°C, 100°C, 5°C	FL temperature is reduced by this value during “inactive” periods.
T_outdoor	-20°C, 50°C, 5°C	Threshold value to change between “reduced” mode and “disabled” mode.

3.13.9 Heating circuit frost protection

To set the frost protection function, follow the path: Settings (+ PIN entry) / relevant button for heating circuit and / or domestic water / parameter settings for frost protection (... frost ...)

The heating circuit frost protection has priority over all selected settings. As soon as the predefined outdoor temperature threshold in parameter *Frost protection from* (basic setting: 1°C) is reached, the inactive circulation pumps of heating circuits (e.g. HC pump off, because minimal or maximal flow temperatures are exceeded; heating circuit configuration is “OFF”) will be automatically activated with a flow temperature value of Tmin Buffer. If the circulation pumps are already active, this function has no effect.

3.13.10 Summer/Winter switching

The user can adapt the settings for switching between the Winter and Summer operation modes. For this, tap the **Heating** button from the upper menu bar or the graphic of a specific heating circuit. Then tap the **Summer from** button. Using the sliding bar, set the desired switching temperature.

If the outdoor temperature exceeds the 'Summer from' switching threshold, the relevant heating circuit pumps (A9 or A12) are deactivated. For every heating circuit you can select an individual value for Summer/ Winter switching. There is also an option: to select permanent Summer or permanent Winter operation mode for heating circuits (Parameter, range: *permanent Summer*, 10, ...40, *permanent Winter*).

If the outdoor temperature is lower than selected by more than 1°C, Winter mode will be switched on again.

3.13.11 Permanent

If you want to switch the heating circuit to permanent operation for a desired time:
1. In Home view, tap on the graphic of a **Heating circuit (= Heizkreis)**;
2. A window with settings for **Permanent (= Dauerbetrieb)** operation will appear. Using the sliding bar, you can set the hours.

In this time the heating will be active.

After these hours will pass, the heating returns to the existing heating program.

3.13.12 Defining periods

To define the availability of heat sources (boiler types and additional heatings), you can use the softkey **Periods**. You can use it to select the time program for automatic reheating.

After clicking the **Periods** softkey you have the possibility to select a factory defined program or to create a program on your own.

Program name	Hours of automatic reheating activity:
always active (= immer aktiv)	active at all times
Day (=Tag)	from 7am to 10pm
Night (=Nacht)	from 0am to 6am and from 11pm to 0am
New 1 (=Neu 1) New 2 (=Neu 2) New 3 (=Neu 3)	These slots are available for your own program settings. The entered programs can be renamed. These programs can be overwritten.

To enter a program, please follow the path for the given heat generator (see relevant chapter).

To create a new individual program

Illustration 51: Periods Pop-up

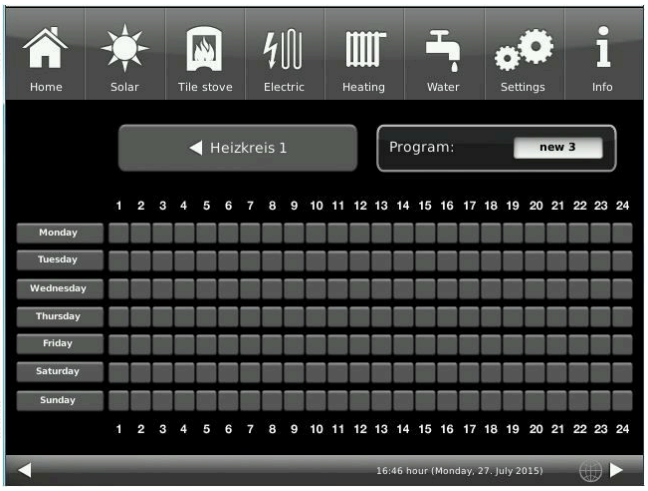


Illustration 52: Periods setup page

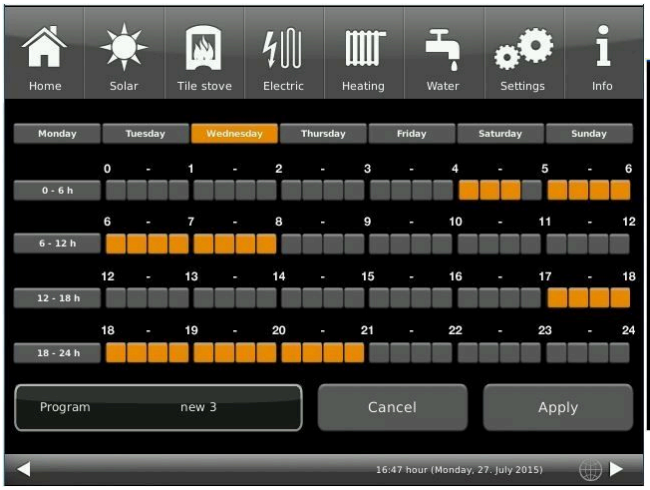


Illustration 53: Hourly schedule

Illustration 54: Keyboard

Tap to select the periods. Tap the softkey **Program** and a pop-up will show up. Tap **New 1** (=**Neu** 1) and the setup page appears. By clicking the days of week, you can view the schedule for the particular day. By clicking the periods 0-6, 6-12, 12-18 and 18-24 you can highlight the whole section, but there is also an option to mark only individual squares.

NOTES

Orange square = active, automatic time; gray square = inactive time.

It is not possible to select more than one day of week at a time.

Factory-defined programs cannot be overwritten. The new entered programs can be overwritten.

To rename a new program, click on the setup page on Program in the lower left corner and a keyboard will show up to enter the desired name for the new program.

3.13.13 Communication of the system

The control can send you the information and messages of the system at the current time by e-mail. Therefore: **Settings** / Pin entry (9999) / System (**Anlage**) and switch by arrow to site 2 (Anlage 2). The E-Mail Notification (**E-Mail Benachrichtigung**) button is located here.

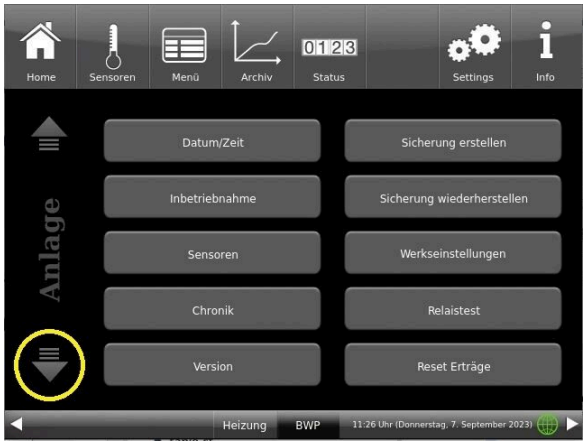


Illustration 55: System/Anlage site 1

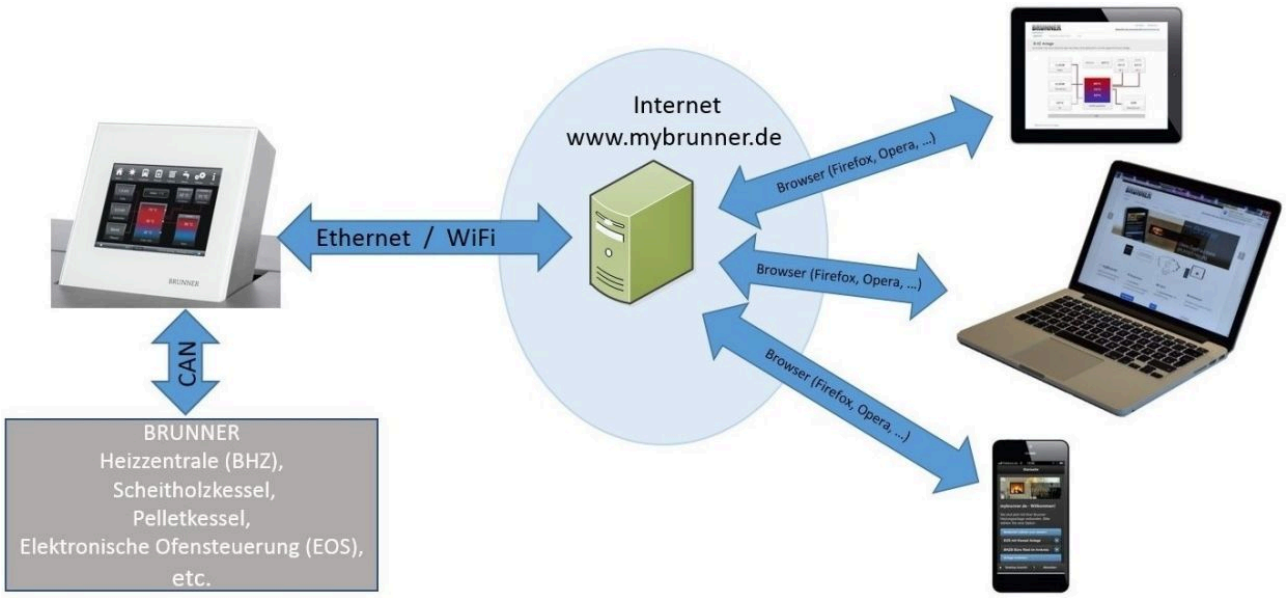
Illustration 56: System/Anlage site 2

If you are the operator (end customer) of the BRUNNER system click on the gray button next to“Kunde”.

The highlighted field turns orange. When clicked the Subject button or Max@mustermann. de a keyboard field appears, using where you can enter your email address.

3.14 Remote access via myBRUNNER

3.14.1 Preconditions and instructions



Preconditions for on-line access to your BRUNNER heating
1. You have a BRUNNER heating system with Touch Display;
2. The Touch Display software update status must be Release 4.0 (from December 2013) or higher;
3. A connection between Touch Display and Internet access point (a router) in the building is required. A flat rate (broadband) Internet connection is recommended for reasonable operation.
4. PC/Tablet/Smartphone with access to your personal e-mail account.
5. PC/Tablet/Smartphone with Internet access via web browser to **www.mybrunner.de**

Instructions for registration
Each control panel (Touch Display) can be registered once. You can assign only one e-mail address for a control panel. If the user wants to use a different e-mail address, he/she must delete the registration entry and perform the complete registration process once again (for this, use the **Delete registration** button). The same process, as in the case of changing user.

If a user has many Touch Displays for a heating system, every Touch Display can be connected with myBRUNNER. Every control panel can have a different e-mail address assigned.

With mobile devices such as tablets or smartphones, the embedded browser cannot be used with older Android variants; therefore you should load a current browser like Firefox, Opera, Chrome.

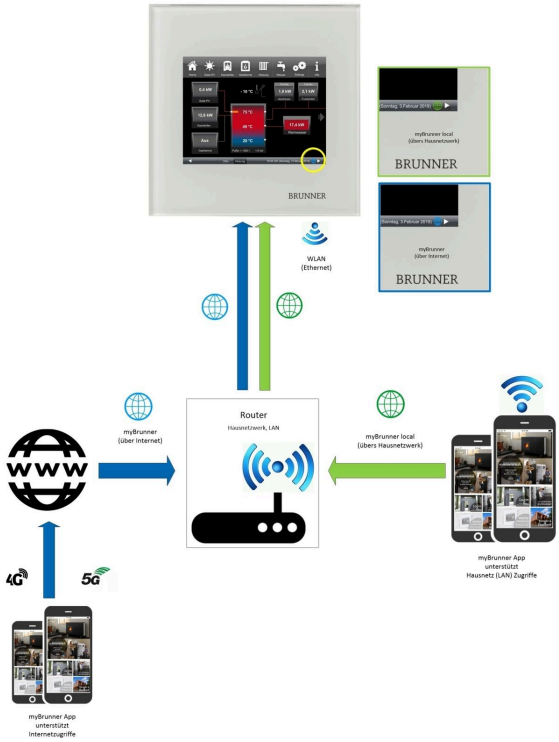
If it is not possible to log in, please check:
1. if the control panel is in Setup mode (Login active)? Before you log in, perform Settings logout function. (Softkeys: **Settings** / **Control panel** / **Settings logout**).
2. if the system clock of the control panel is set? The setting must be exact as possible. The same applies to days of week, time zones and year (see: User Guide / sect. “Individual settings” / sect. “Display customization”)
3. if the system or control panel is now running an update sequence? Please wait until finished and try again.

Instructions for enabling Service access
The access to service functions can be enabled exclusively for heating contractors or BRUNNER service technicians. Mutual access for both categories of servicemen is not possible.

3.14.2 Connect keypads to the Internet

Operating principle myBRUNNER:

For remote access to the personal heating system via the internet (myBRUNNER), the BRUNNER touch display must be connected to the internet access of the building. There are different options and a wide range of peripheral devices for this purpose.



Network cable (Touch 2.0 and 3.0)

The easiest and most safe solution. A connection between the touch display and internet access in the building (router) via a network cable (terms: patch cable, Ethernet, LAN).

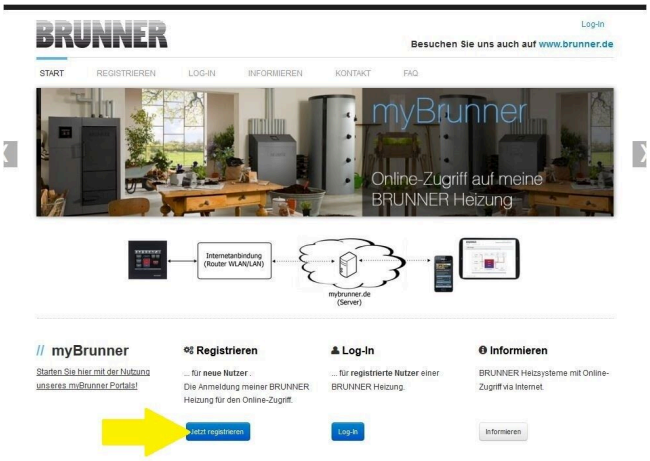
3.14.3 Set up myBRUNNER

3.14.3.1 Registration

1. Start the first registration

1.1. Go to **www.mybrunner.de**;

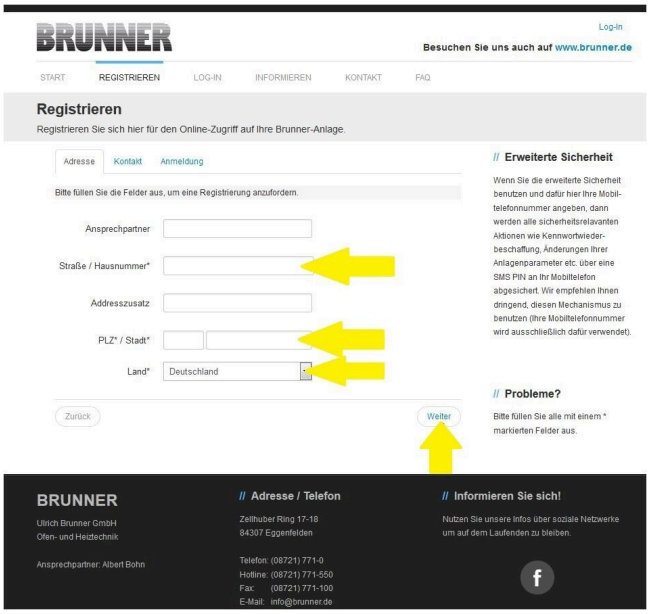
1.2 Click the button **Register now**;



This window/box appears:

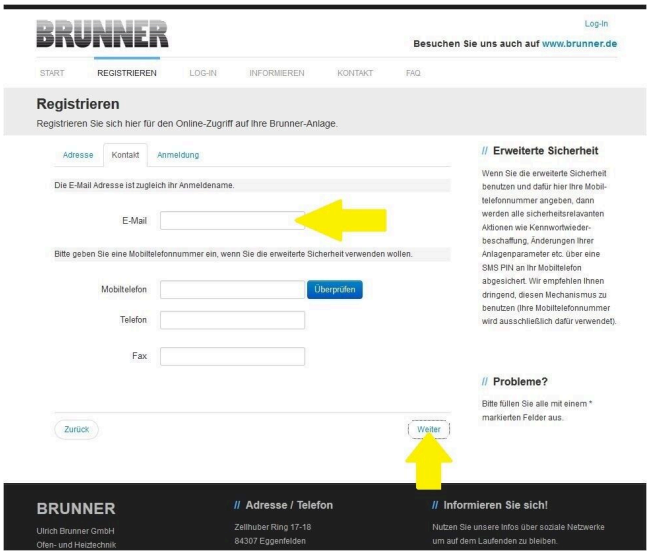
1.3 Enter your contact details (Name, Address); the fields with * are mandatory fields;

1.4 When finished, click **next**;



1.5 Enter a valid e-mail address;

The e-mail address is at the same time your login name!!!

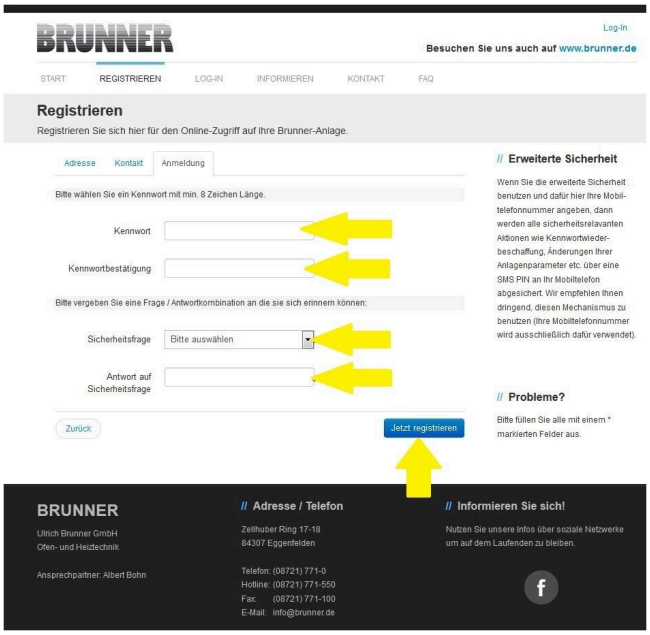


1.6 Optionally - for increased security - you can enter your mobile phone number.

1.7. Click **next** to complete your entries on this page.

1.8 Enter a password;

The password must be at least 8 characters long!!
Please remember this password, as it is used to access your system.
All fields are mandatory!

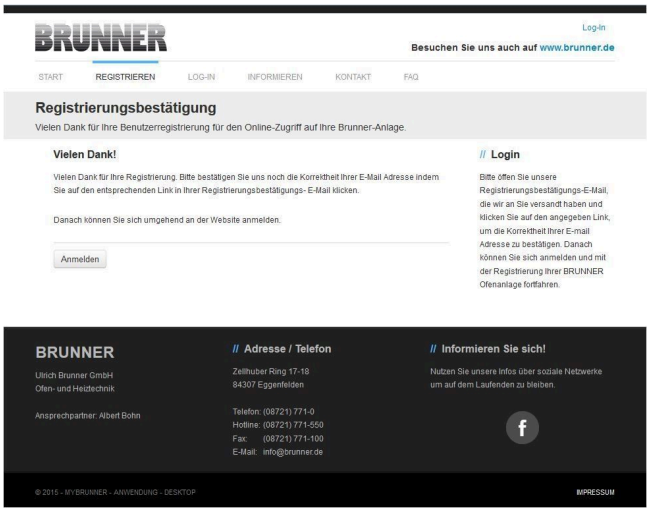


1.9 Select a security question. You can choose between: Your favorite football team? Your favorite travel destination? Your Mother's maiden name? Your favorite movie? Your favorite book? Your favorite pet? Name of your first girlfriend (or boyfriend)? Name of your first pet? Your meaningful year number? Your favorite restaurant?

Please enter a valid answer, which will be used later for confirmation.

1.10 Click the button **Register now** when finished.

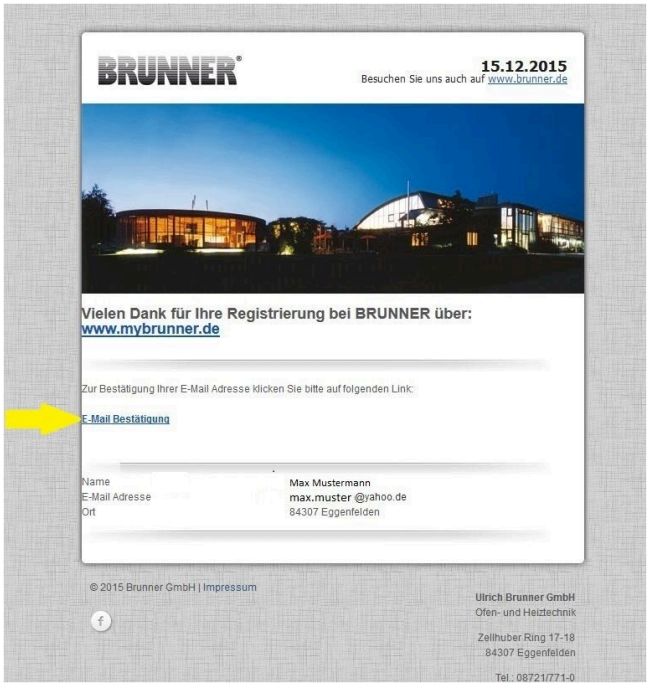
1.11 The details of your registration will be shown:



2. E-mail box - Confirmation of registration

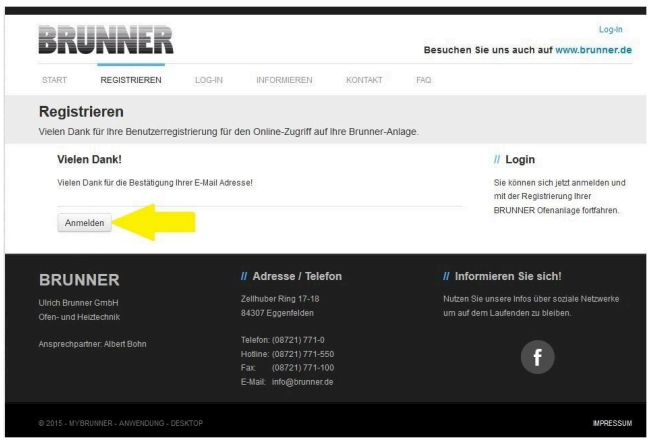
2.1 Open the e-mail from "***websystem***" and subject line: "***Brunner Zentrale Benutzerverwaltung: Registrierungsbestätigung***" (Brunner Central User Administration: Confirmation of registration)

2.2 Click on the link;



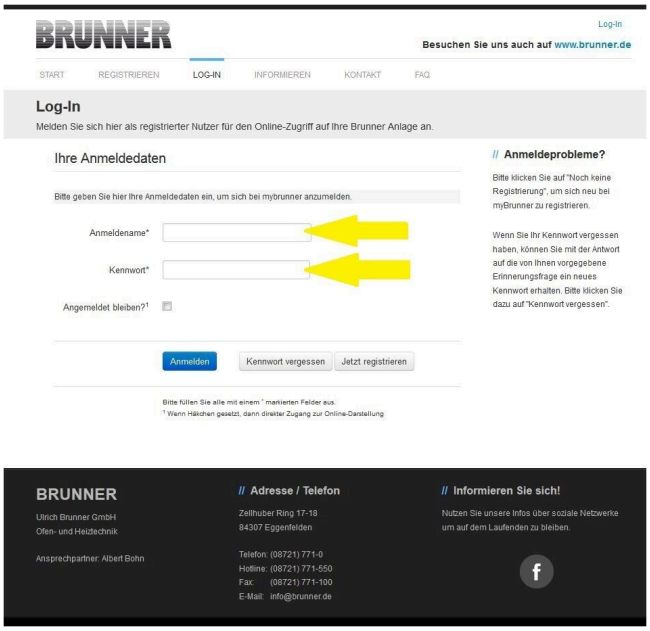
3. Login

3.1 Click **Login**

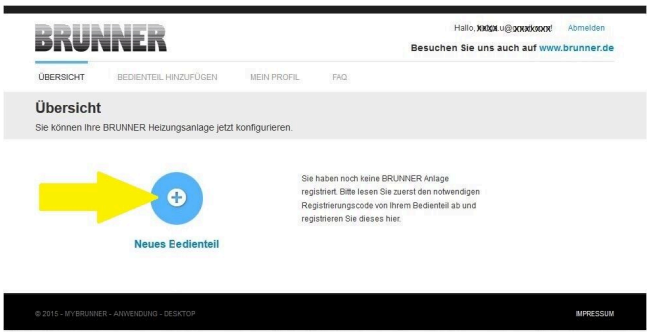


3.2. At Login name enter your email address

3.3 Enter your **password** (entered beforehand and repeat - see 1.8)



3.4 The control unit (touch display) of the Brunner system must be registered. To do this, click the New Control **Neues Bedienteil**.



NOTE:
If you had previously registered a different control unit, click the Add another control unit button **Weiteres Bedienteil hinzufügen**.

4. Activate the network

4.A. Connected via network cable (Touchdisplay 2.0 and/or Touchdisplay 3.0)

To see if the Internet connection is available on the Touch Display, look at the icon (globe) in the lower right corner of the Touch Display. If the Internet connection is available (network active), the globe color is gray.

Illustration 57: Internet connection available (gray globe)

4.1 Click in the upper menu bar on **Settings**

4.2 Enter the PIN Code **9999**

4.3 Click on the control display button **Bedienteil**

4.4 Click on the **myBrunner** button

4.5 Navigate down with the arrow key:

4.B. Connected via WLAN (Touchdisplay 3.0)

To see whether you have an internet connection on the touch display, look at the graphic (globe) at the bottom right of the touch display. If there is an internet connection (network active) the globe is gray.

Illustration 58: Internet connection (gray earth globe)

4.1 Click in the upper menu bar on **Settings**

4.2 Enter the PIN-Code **9999**

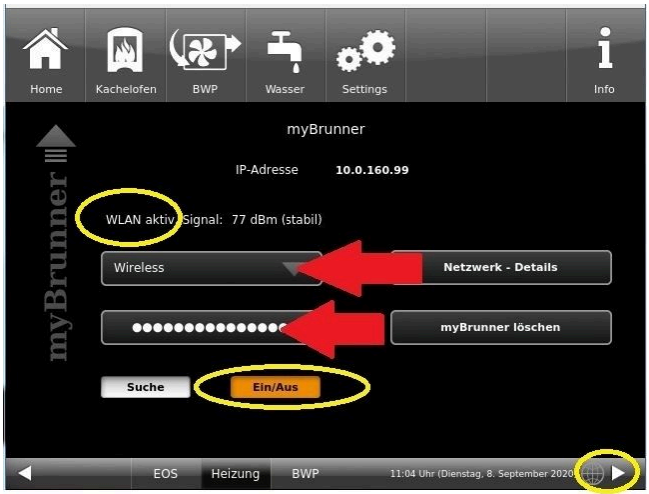
4.3 Click on the display button **Bedienteil**

4.4 Click on the display button **myBrunner**

4.5 Navigate down with the arrow key:

4.6 Set up WLAN:
- Select WLAN name.

if the name you are looking for is not available for the WLAN name, click on search **Suche**



4.7 Enter WLAN-Password and click O.K.

4.8 Navigate up with the arrow key

4.9 Click:

5. Set up mybrunner on Touch Display

5.1 Click:

5.2 Terms and conditions appear.

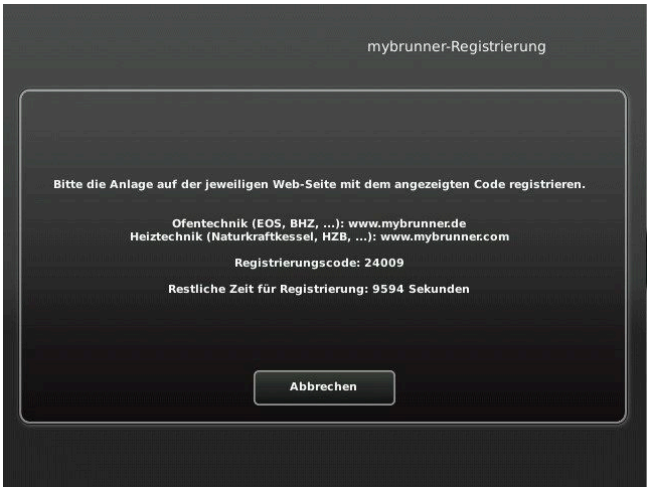
5.3 Read the terms and conditions. Please keep the arrow pressed to scroll. When the arrow is pressed, it turns orange.

5.4 Accept the terms and conditions at the end of the text by accepting **Akzeptieren**. (To do this, scroll the entire text to the end. Only then is the Accept button active).

6. Establish registration code

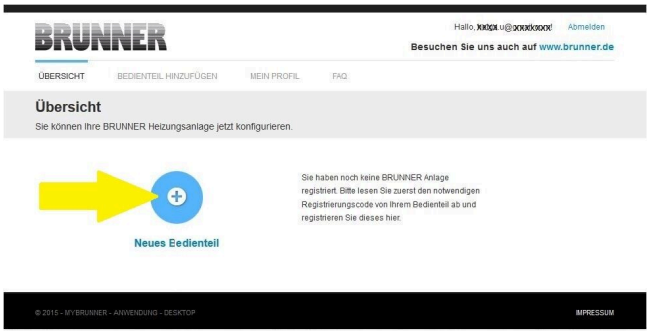
6. The following screen will appear automatically to establish the registration code of the Touch Display (control panel). This number is displayed for 2 hours.

You should use this registration code for your control unit to continue the registration on the PC.

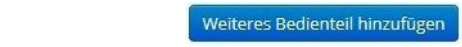


7. Registration of your Brunner system

7.1 The control unit (touch display) of the Brunner system must be registered. To do this, click the New Control Unit button **Neues Bedienteil**.



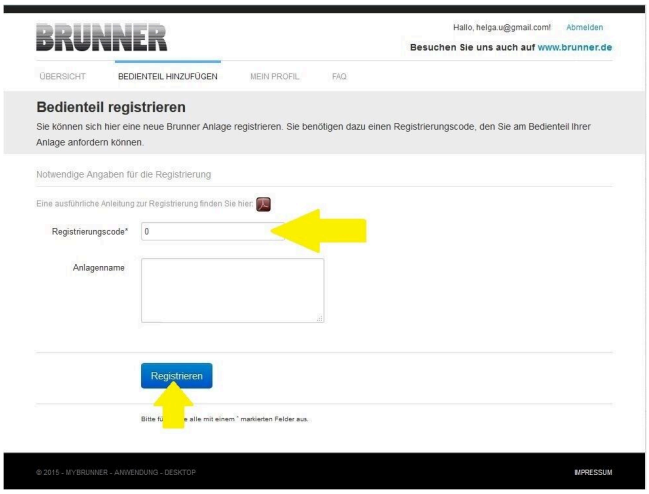
NOTE:
If you had previously registered a different control unit, click the Add another control unit button here. **Weiteres Bedienteil hinzufügen**.



7.2 Im Feld ***Registrierungscode*** die Registrierungsnummer vom Touchdisplay eingeben

7.3 In the system name field ***Anlagenname***, enter your preferred designation for the system.

7.4 Finally click on registration**Registrieren**.



8. Complete registration on Touch Display

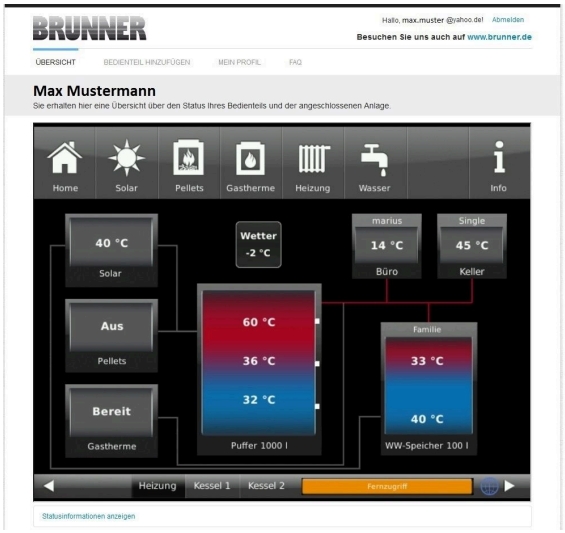
8.1 Confirm the message about successful registration with **O.K.**

8.2 Exit settings (with OK)

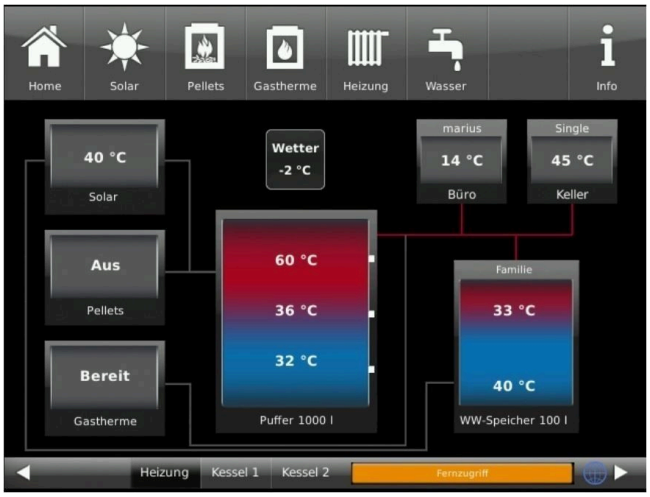
9. On-line access to the control panel from your PC, tablet or smartphone

On your mobile device (notebook, tablet, smartphone etc.) you will see the system overview:

Now you can control all the functions of your system from your mobile device via mybrunner.de. The Parameter sections under Settings are excluded.



During remote access you will see the following identical screen on the Touch Display:



→ The registration process is complete.

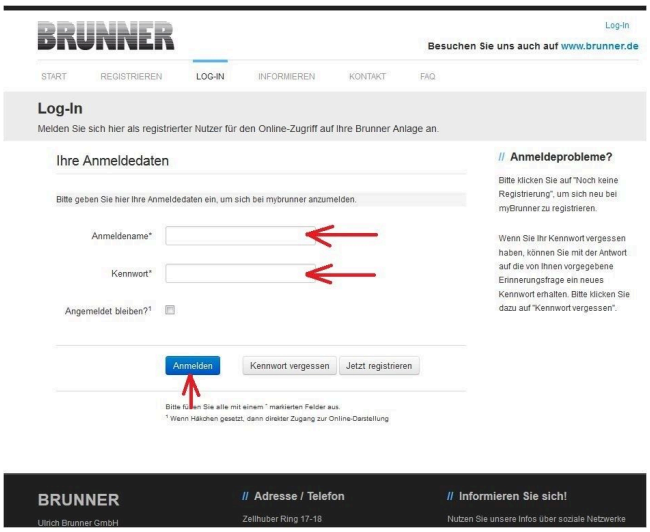
3.14.3.2 Logging in

On your PC, tablet or smartphone:

1.1 Open **www.mybrunner.de** in your browser

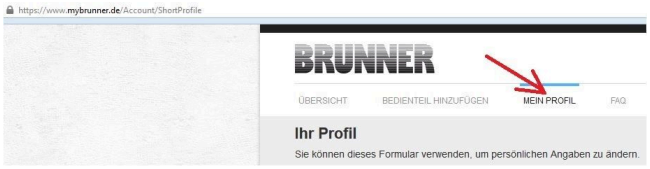
1.2 Enter your valid login name (= your e-mail address entered during registration)

1.3 Enter your password/**Kennwort** (as entered during registration)

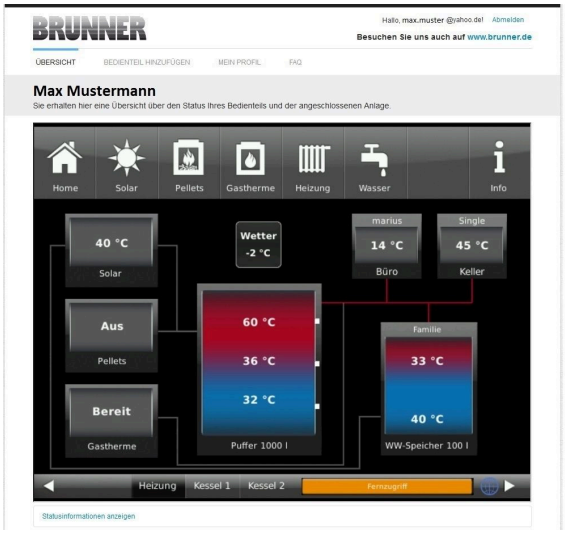


If you have forgotten your password, you can use the **Kennwort vergessen** (forgotten password) button. Here you will be asked to enter your e-mail address and the answer to your selected security question (as displayed above the answer field); Click on **Kennwort anfordern (**request new password**)** and you will receive an e-mail with a new password, which must be entered on the Login page at mybrunner.de, in the “Kennwort” field.

If you want to change your password again, or change your contact data, or apply extended security settings, please go to **Mein Profil (**My Profile).

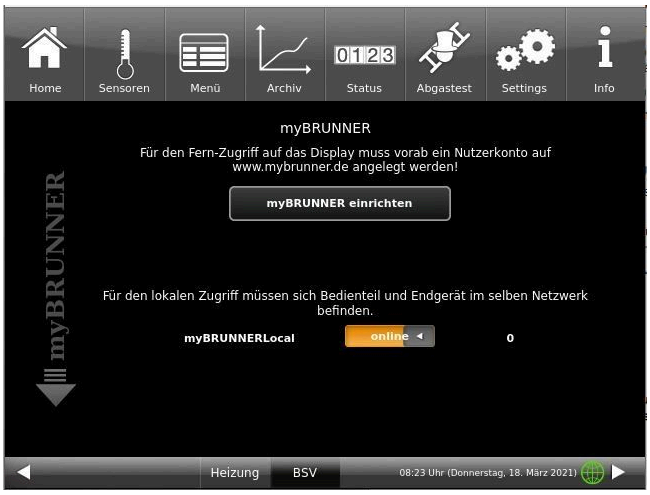


The current overview of your system will appear on the screen of your PC, notebook, tablet or smartphone.

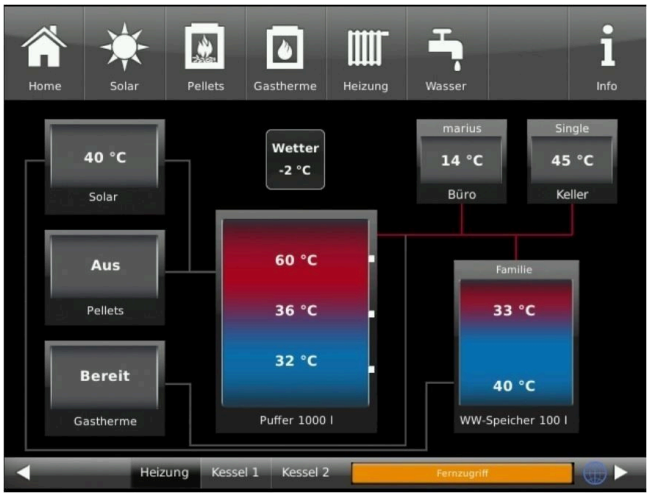


On the Touch Display of your BRUNNER system

To see the myBRUNNER status click: **Settings** + PIN-Code (9999) / **Bedienteil**(=control panel)/ **my-BRUNNER**



When the control panel is in remote control mode, the following will be shown on the Touch Display of your system: orange bar with text **Fernzugriff** *(Remote access*).



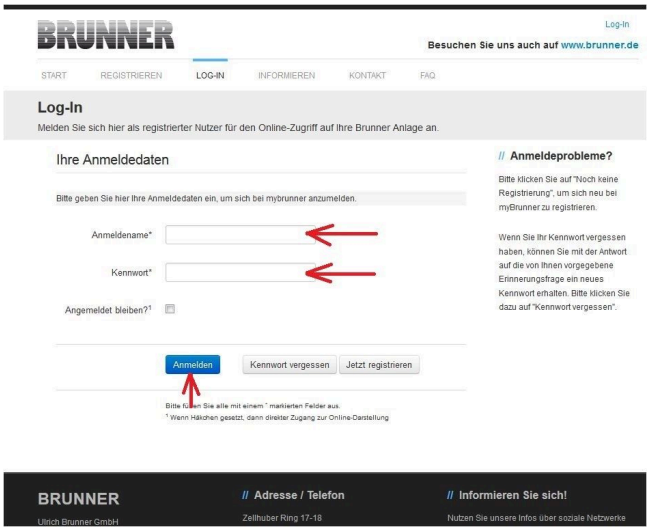
NOTE
The heating system can be controlled only from one device! You can use alternatively: the Touch Display on the system or the overview on your mobile device.

NOTE:
Setting or modification of parameters under **Settings** is not possible via remote access. Exception from this rule is the enabled access for the heating contractor or BRUNNER technicians.

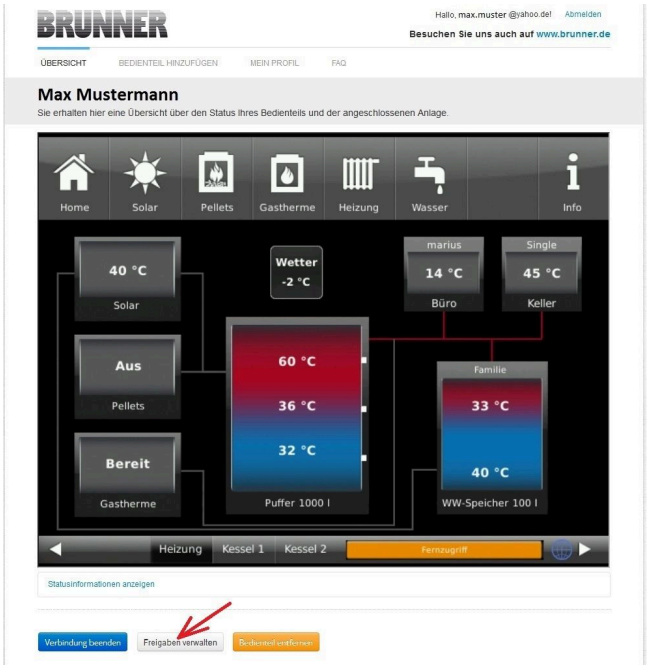
3.14.3.3 Enabling for Service access

To enable Service access for BRUNNER technicians or a heating contractor, the owner of the system must approve it first. This is done using a fixed Service PIN Code, which is defined in the User account.

1. Log in at **www.mybrunner.de** (see Logging in section above)

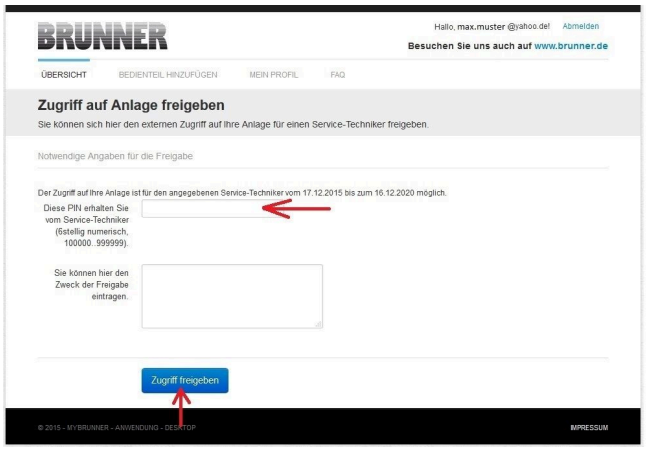


2. Click onto **Grant access to control panel**



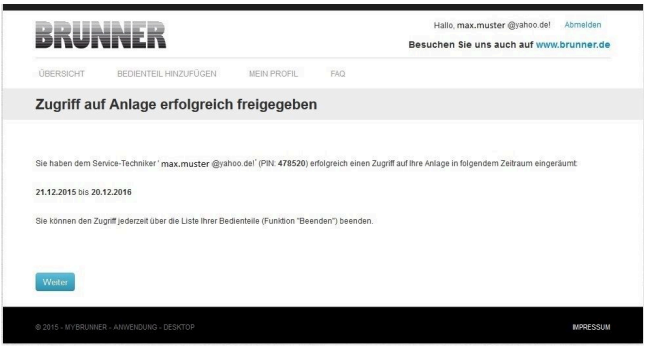
3. You can enter the BRUNNER service code or the code of your tradesman.
The BRUNNER service code = 293068.

Enter this 6-digit numeric PIN code in the first field (PIN) and in the second field (purpose of release) please write your family name and location of the system.

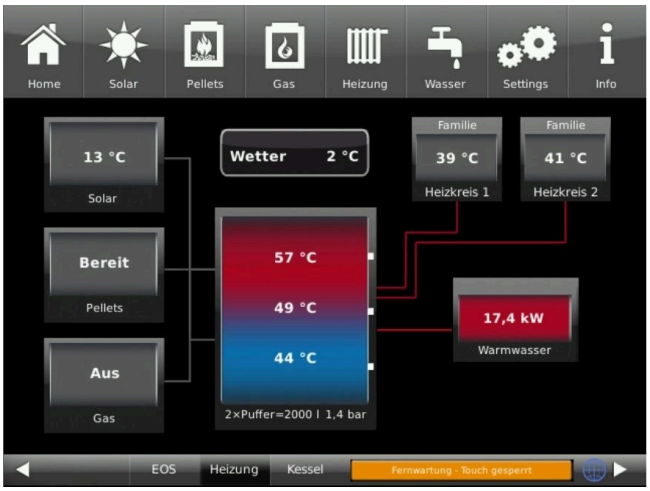


The system operator can revoke the tradesman or BRUNNER service's access to the system at any time.

When access is granted, the following message is displayed:



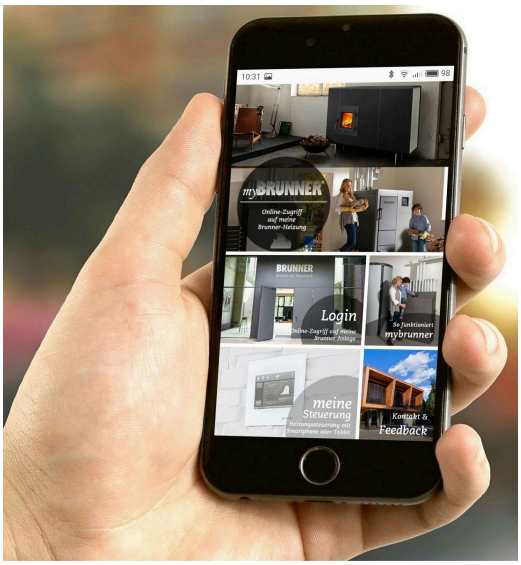
When a contractor has access to your system via myBRUNNER link, you'll see the following on the Touch Display:



3.14.3.4 Brunner App

The myBRUNNER App makes it easier to access the heating system with smartphones or tablets.

Operation is very easy and self-explanatory. The orientation on the home screen is vertical. The presentation does not go along - but that is set intentionally.



The user can choose from three buttons
-“Login” for login and logout,
- a brief introduction to the functionality of the application software and a contact,
- support- interface for all questions and suggestions about the app.
The fourth button is initially gray when you start the software. Only after entering the user name and the password, it is activated and allows access to the heating control. The customer selects the registered operating unit and makes the desired settings. To leave the view, just click on the “back” button on the mobile device or on the “operating control unit ” on the top left.

Account settings or registration of control panels can not be done with the app. Account settings or registration of control panels can not be done with the app. Both activities are only possible via a browser via mybrunner.de.

3.14.3.5 Synchronisation with network

Wenn myBRUNNER eingerichtet ist, wird die Uhrzeit mit dem Netzwerk automatisch abgeglichen.

If you do not want to have the time synchronization with the network, deactivation is possible. For this:

1. Click on the time in the lower bar
2. A dialog box appears where you click **Network time- synchronization**;

3. the network time synchronization is deactivated;
4. You can now enter the desired time;
5. then click on **Time / Date;**
→ the time and date are displayed in the lower bar according to your setting or on the clock (digital or analog clock) selected as the screen saver.

The disabled time alignment is displayed with a gray box.

The adjustment of the time or date with the BRUNNER network can be activated at any time.

3.14.4 Set up WLAN

3.14.4.1 Set up WLAN - during commissioning

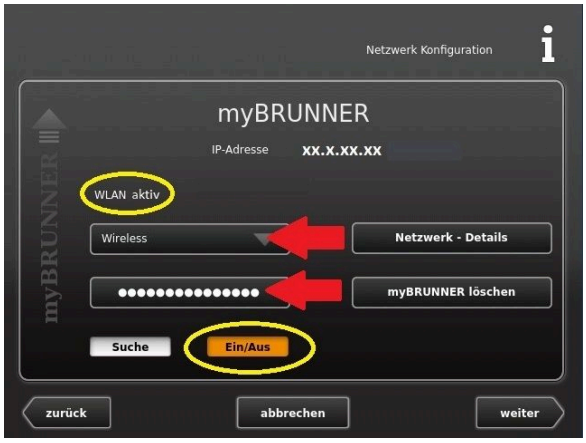
Commissioning is user-defined. This initial process includes the entire BRUNNER network environment and all control boards of the connected devices.

Automatically starting commissioning

1. Initialization
2. Set language
3. Check BRUNNER network connections
4. Set time and date
5. Set myBRUNNER
6. Specify heat generator
7. Specify heat consumer
8. Enter craftsman data
9. End of commissioning

Set up WLAN

During the work steps for phase 5 of commissioning “Set up myBRUNNER”, the following steps are necessary to set up the WLAN:



1. Choose WLAN-Name*
2. Enter WLAN-Password

Attention:

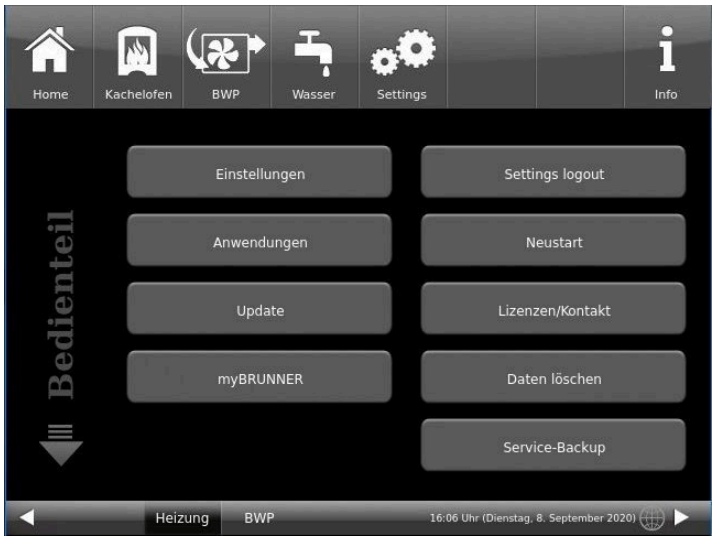
- **Ein/Aus** must be orange
- Check upper left side display indication:

“WLAN aktiv”

*if the name you are looking for is not available for the WLAN name, click on search **Suche**

3.14.4.2 Activate WLAN

1. Click in the upper menu bar on **Settings**
2. Enter the PIN-Code **9999**
3. Click on the display button **Bedienteil**
4. Click on the display button **myBRUNNER**



5. A dialog window/box appears:

6. Set up WLAN :
6.1. Choose WLAN-Name *

Attention:
- **Ein/Aus** On/Off must be orange
- Check display indication ***"WLAN aktiv***"
- Earth globe: gray

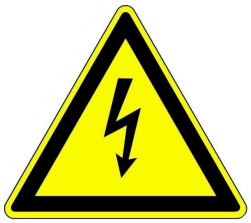
*if the name you are looking for is not available for the WLAN name, click on search **Suche**

6.2. Enter WLAN-pasword

4 Cleaning, maintenance, troubleshooting

CAUTION
Hot water can cause serious burns.

→ If you notice a leak or droplets, do not touch!



CAUTION
Risk of electric shock

Parts of the system are under high voltage.

→ Before touching please make sure that the power supply is switched off.

ATTENTION: Electric parts cannot have contact with water.

CAUTION
Improper actions or works on the system can lead to personal injury and damage to the system.

→ Working on systems is allowed only for trained service personnel.

The parts of the BHZ 3.0 should be periodically cleaned and checked. Apart from occasional visual inspection there are no special maintenance works necessary. After a long operation, some components of heating system can tend to cause malfunctions. Let your heating expert replace these parts.
Recommendation: Use only original replacement parts!

Observe the maintenance instructions of each heat generator and heat consumer installed in your system.

INFO

To order the required spare part please contact the company Brunner.

We offer you on request or on our website also the right spare parts book.

https://www.brunner.de/de/Service/Produktdownloads

4.1 Acknowledge error messages

To **acknowledge an error message or a note**, proceed as follows:
1. tap the **Info** button;
2. In the lower half of the display press **Error Reset** = **Fehler Reset**

→ The error message was acknowledged.

If the error still exists, the error message appears again. The info button can also be highlighted in orange.

Error messages can only be acknowledged in the top menu bar of the home view in the Info submenu.

4.2 Spare part BHZ 3.0

The detailed list of spare parts can be found via QR code:

The spare parts booklet is also available on our website:
in the partner area (access data required) under
https://www.brunner.de/partner/ .

4.3 Cleaning and maintenance

Cleaning of external surfaces

The external surfaces of Hydraulic Box and System Storage tank of the BHZ 3.0 should be cleaned by the User:
Clean or wipe the external panels with a damp cloth.
Do not use any aggressive or corrosive cleaning agents.
Attention! To much humidity can lead to damage of electronic parts.

4.4 Update of the control unit

With the Software Update function it is possible to update the control unit.

INFO

During an update, the parameter settings from configuration and the later modified values are not getting lost.

ATTENTION

- **Only carry out the update when the fireplace is cold (stand by)!**
- **Updates must be carried out on every control display on the system!**

The update is made available as a zip file (* bin files).

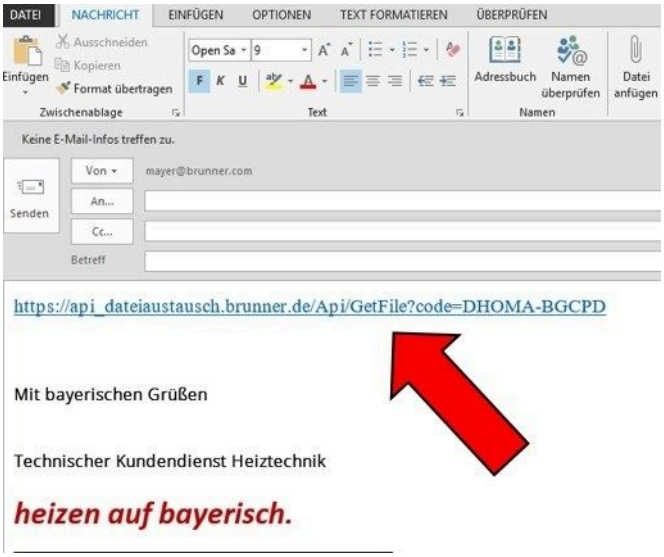
During an update, both the values set during configuration and those set subsequently are adopted.

NOTE
The entire update process takes a few minutes (but can take up to 45 minutes with older display versions, so allow enough time).

The update process should not be interrupted. **DO NOT** touch the display (touch field) during the entire update process.

4.4.1 Software from PC on the USB-Stick

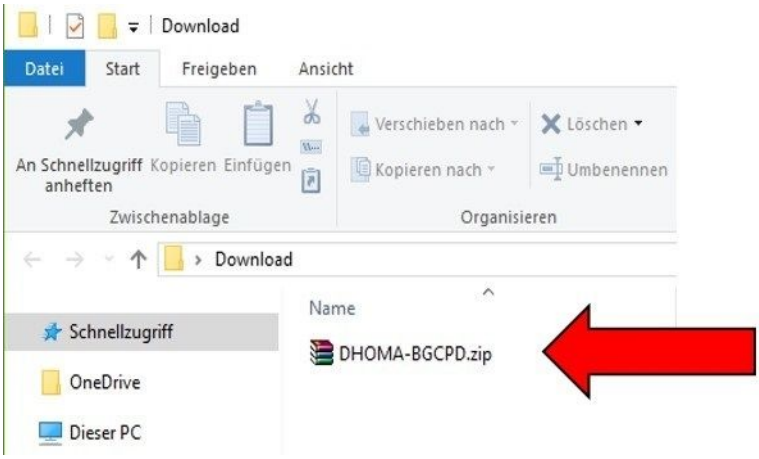
1. You will receive an email with a link -> click on the link:



2. A dialog window opens in which you should click on **Datei speichern** (Save file)

3. Confirm with **OK**

4.The zip file is saved in the download area. Another storage location can possibly also be specified.

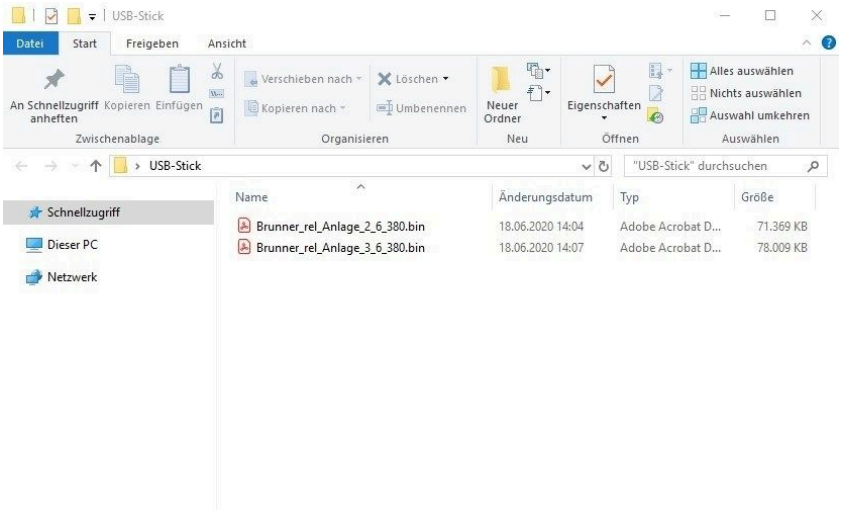


5. Copy the zip file to the USB stick

6. Now select the zip file with a right click and click on **Hier entpacken**

7. The unzipped files for updating the control are displayed:

8. Remove the USB stick from the PC (**Auswerfen**)



-> The USB-Stick is ready for Update

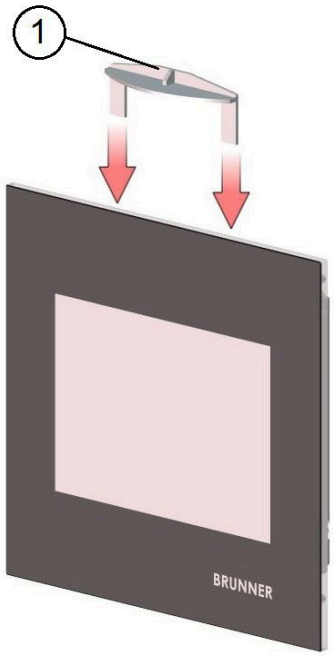
4.4.2 Software from USB-Stick on the control unit

This process can be carried out in two different ways:

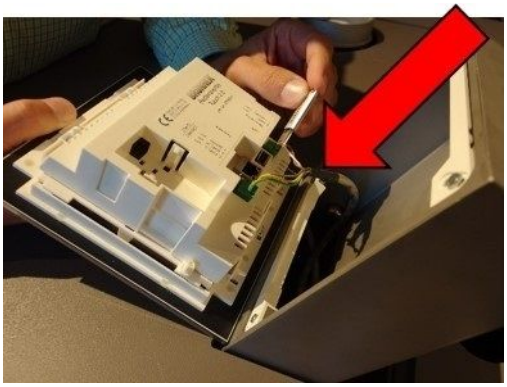
Variant 1 = During the entire update and the subsequent update process the control **is not** disconnected from the power supply

Variant 2 = The control is disconnected from the power supply

4.4.2.1 Variant 1



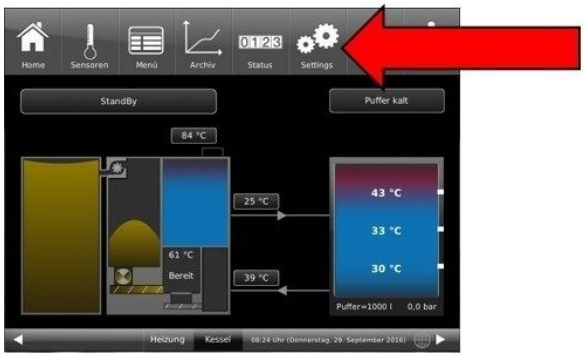
1.To remove the display unit, insert the supplied tool (1) at the top between the wall and the glass front and release the lock with light pressure.



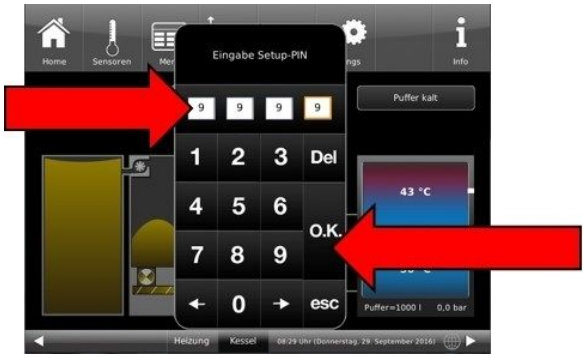
2. Tilt the display forward out of the housing;

CAUTION: **Do not** pull out the cables

Insert the USB stick into the USB port of the display
IMPORTANT:
Check that the USB stick is correctly inserted and seated!



Press the **Settings** button on the home screen



Enter the PIN code **9999**

confirm with **OK**

Press the button **Bedienteil** (control unit) under **Settings**

Press the **Update** button under **Bedienteil**

=> The control board and operating unit (display “red wave”) starts automatically with a restart. The text **Update fond...**appears => the Update loads the data.
Wait a few minutes until the text **Bitte USB-Stick entfernen** (Please remove USB stick) appears on the displayt.
Then follow the indications on the display.

4.4.2.2 Variant 2

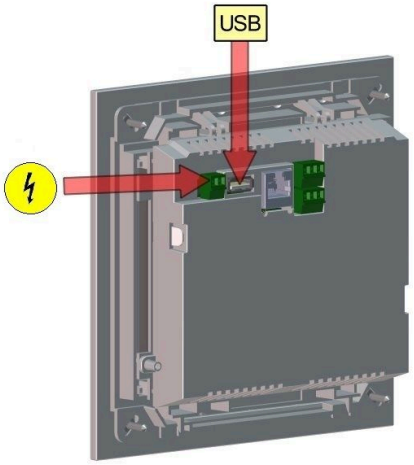
The main steps of update process are following:

1. The display must be removed from the mounting panel ;

2. Disconnect the power supply from display (2-pin connector);;

3. Install the USB key **correctly** in the control unit (it must be recognized as storage media: please observe the correct USB key orientation, or check, if the LED on the USB key is lit);

4. Reconnect the power supply cable;



5. The update will run automatically (for new displays, this process will take around 4 minutes, but with older versions it can take even 45 minutes);

6. After the update is completed, a window will show up with the text **Entfernen Sie den USB-Stick (USB key can be removed)**;

7. Disconnect the power supply from the complete system (control board of BHZ 3.0);

8. Remove the USB key from display unit;

9. Switch on the power supply for the complete system;

→ As part of the update process, the system will reboot and the update is finished.

5 Technical and commercial data

5.1 Declaration of Conformity

CE

EG-Konformitätserklärung

Die:

Ulrich Brunner GmbH
Zellhuber Ring 17-18
D-84307 Eggenfelden

erklärt hiermit, dass nachfolgend aufgeführtes Gerät zum Zeitpunkt der Auslieferung, in der gelieferten Ausführung:

BHZ 3.0

den Anforderungen der Richtlinien:

2004/108/EG
2011/65/EU

entsprechen.

Diese EG-Konformitätserklärung verliert ihre Gültigkeit, wenn das Produkt ohne Zustimmung umgebaut oder verändert wird.

Eggenfelden, den 14.12.2015

Ulrich Brunner GmbH
Dr.-Ing. Jürgen Vorwerk

5.2 Dimension drawings

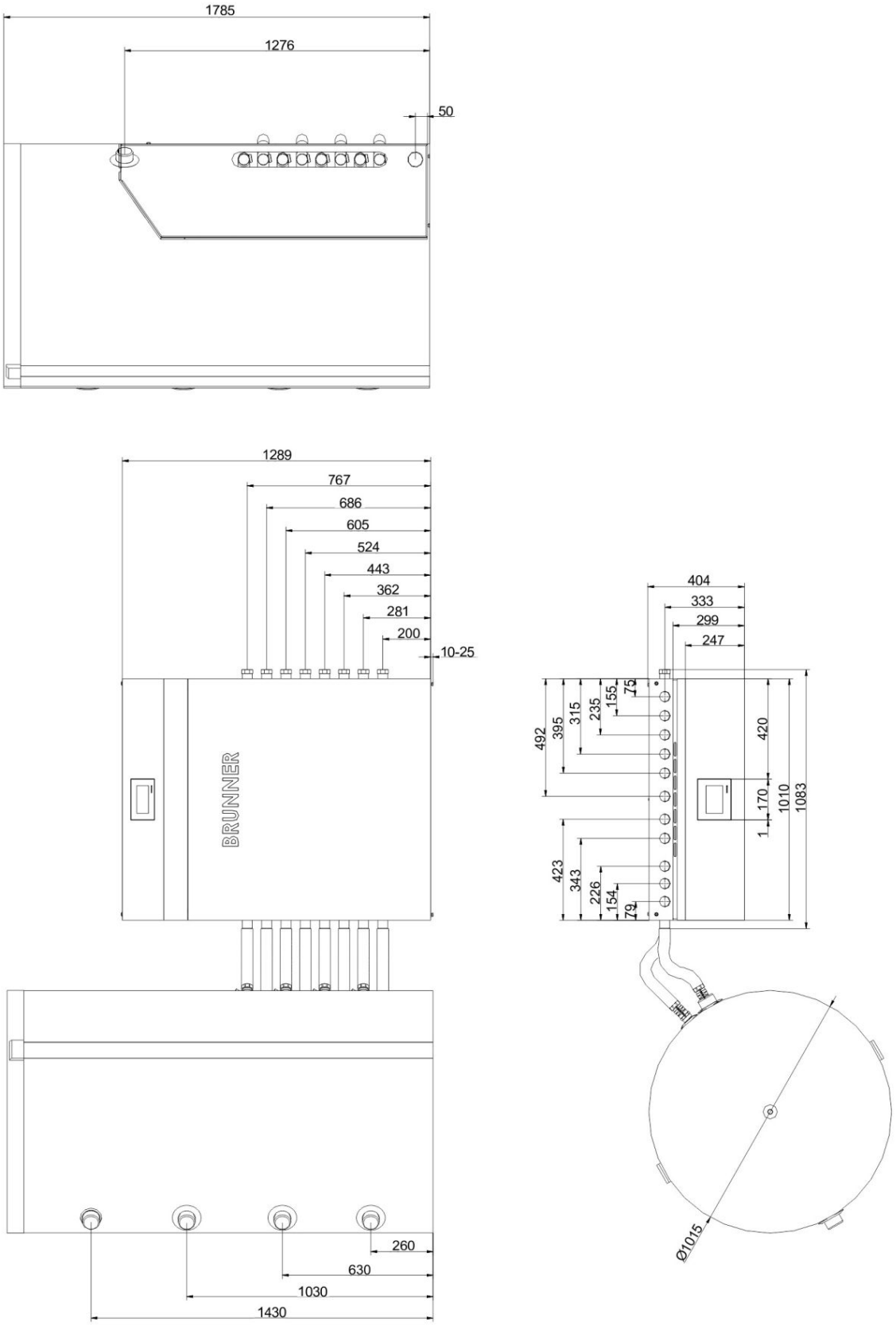


Illustration 59: BHZ 3.0 with 750 Liter System Storage

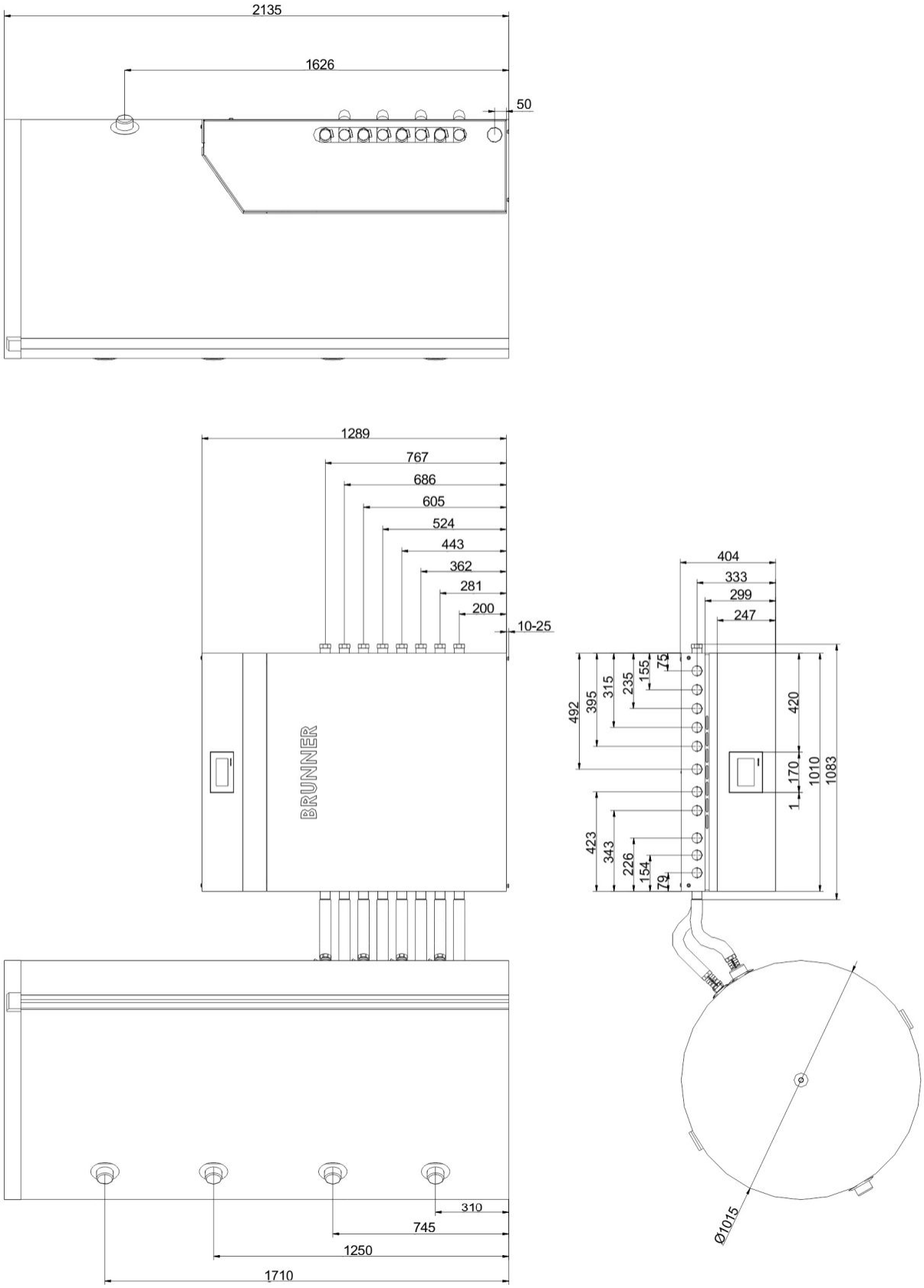


Illustration 60: BHZ 3.0 with 1000 Liter System Storage

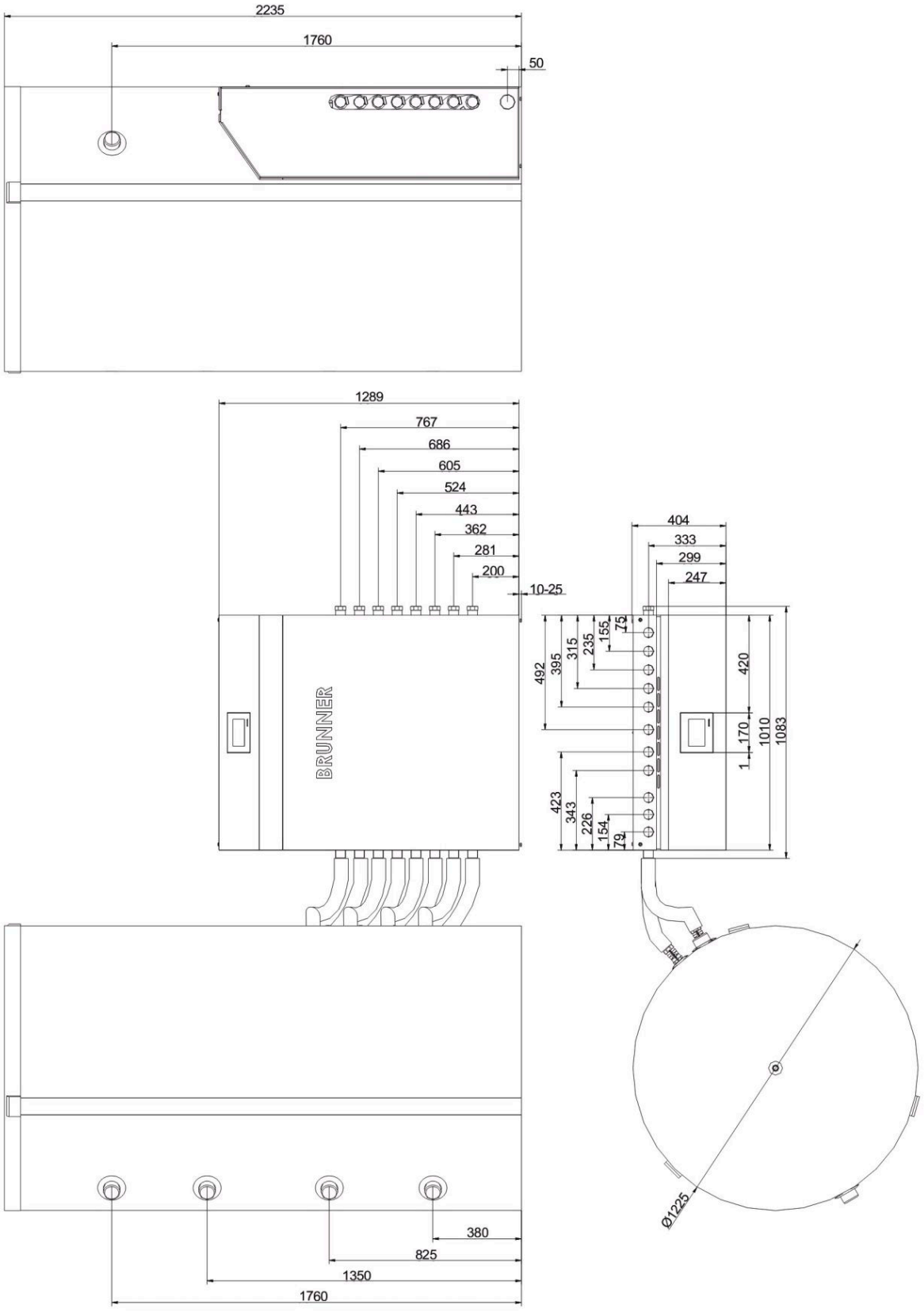


Illustration 61: BHZ 3.0 with 1500 Liter System Storage

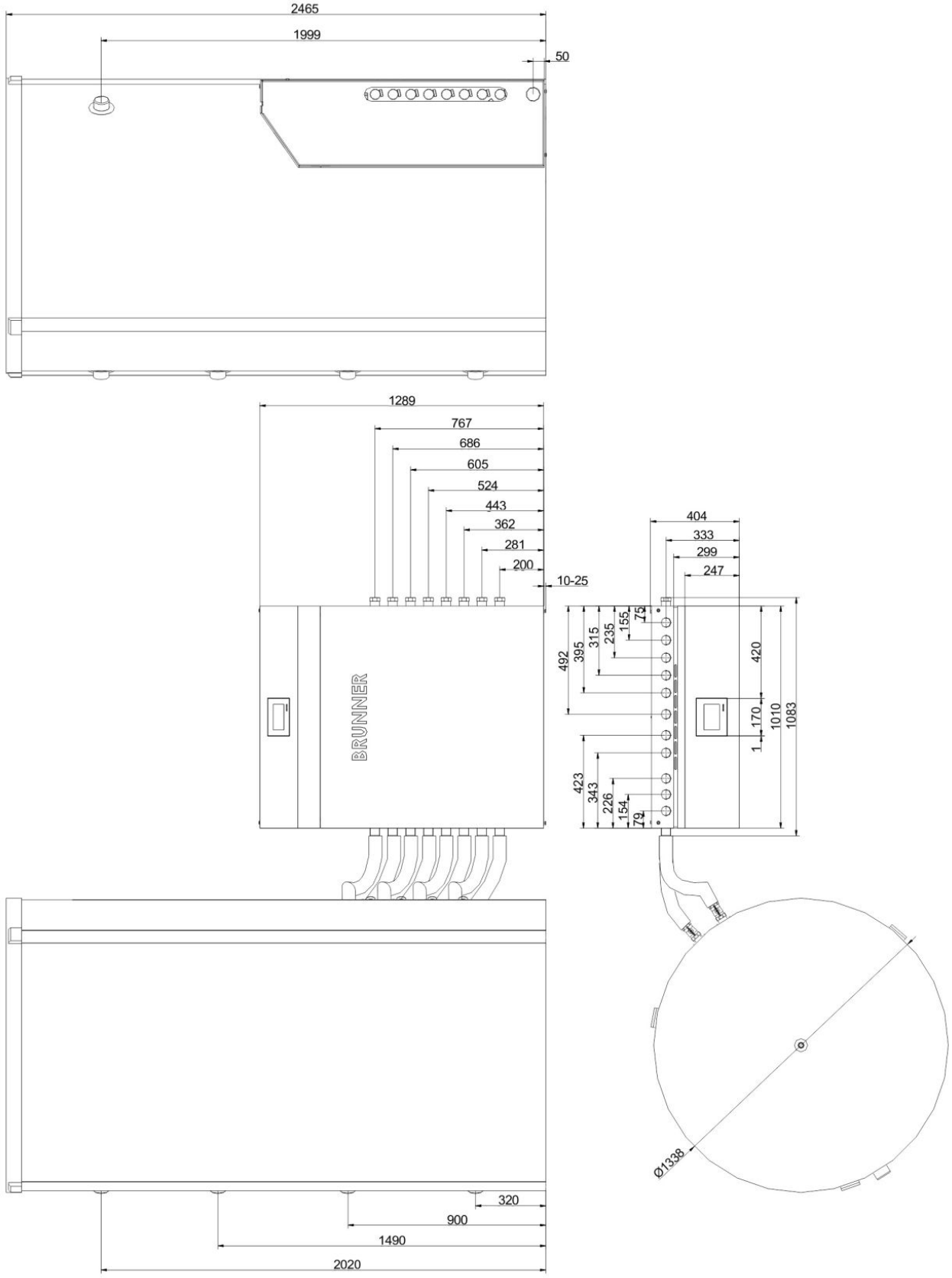


Illustration 62: BHZ 3.0 with 2000 Liter System Storage

BHZ 3.0 with additional storage tank

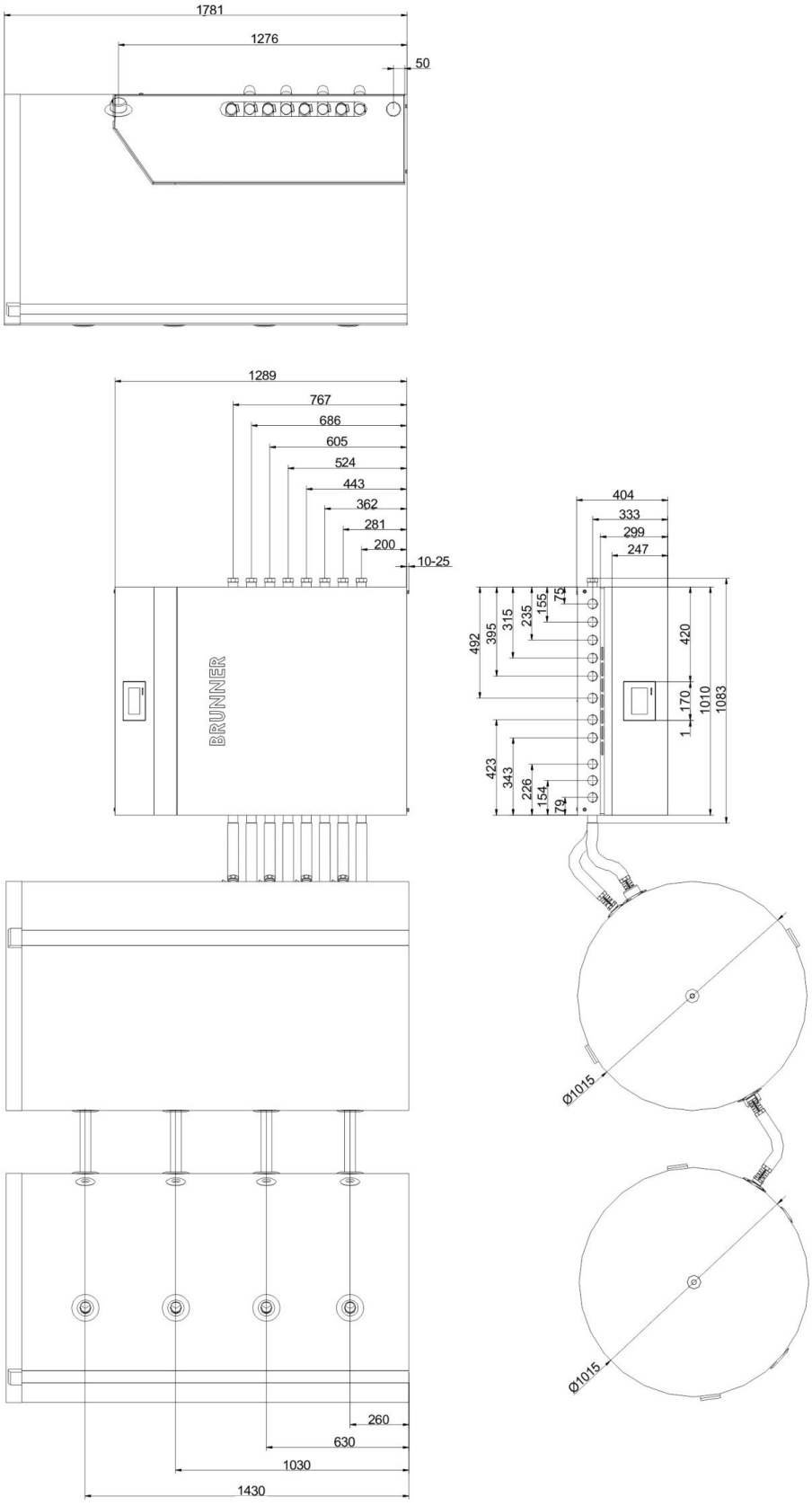


Illustration 63: BHZ 3.0 with 750 Liter System Storage and 750 l additional storage tank

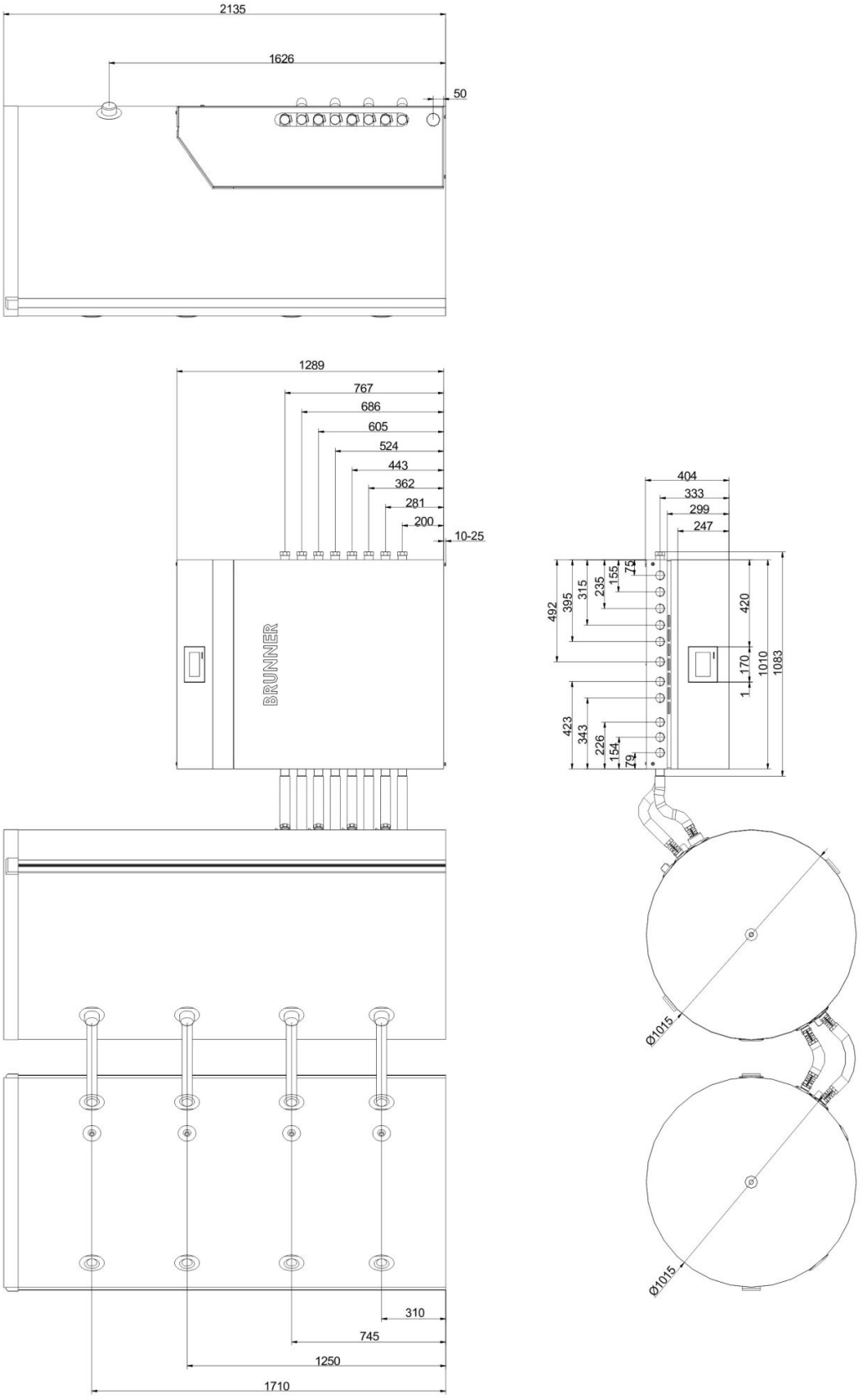


Illustration 64: BHZ 3.0 with 1000 Liter System Storage and 1000 l additional storage tank

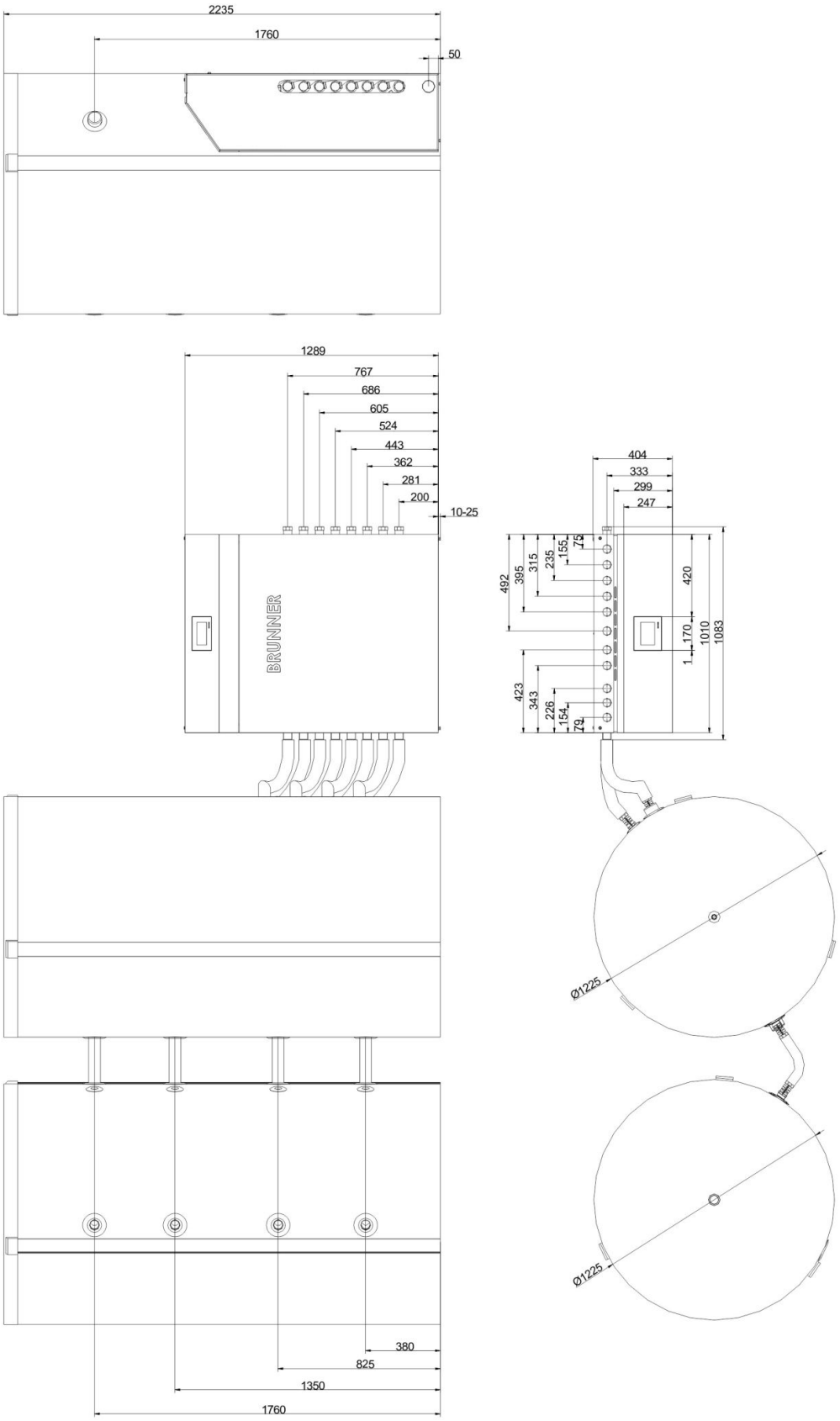


Illustration 65: BHZ 3.0 with 1500 Liter System Storage and 1500 l additional storage tank

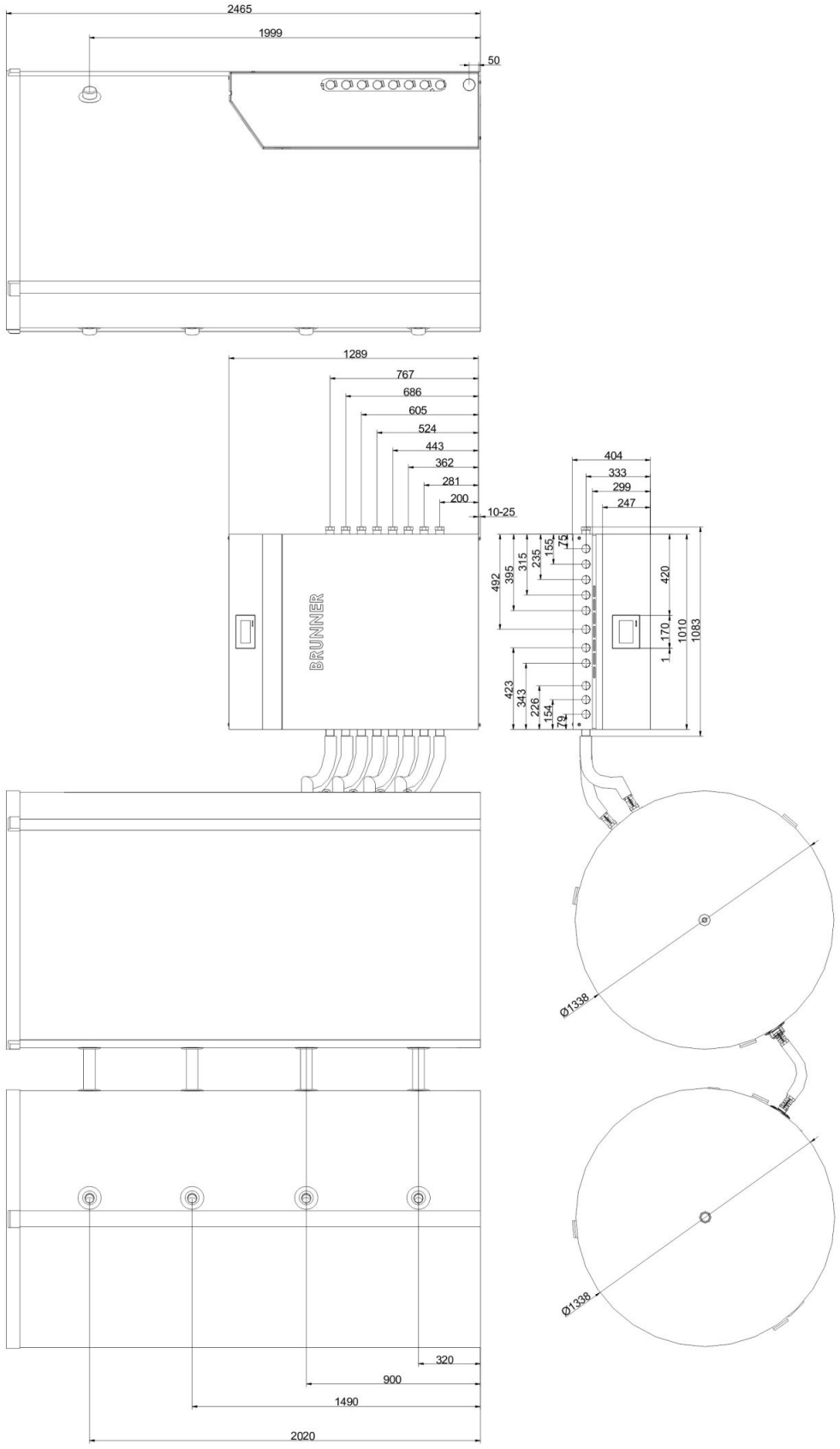


Illustration 66: BHZ 3.0 with 2000 Liter System Storage and 2000 l additional storage tank

5.3 Technical Data

Hydraulic box parameters		
Height x width x depth	mm	1289 x 1083 x 404
Cladding		Front cover panel made of powdered steel. Foldable and lockable lid; rear and side panels from steel; gray front, 6 mm thick; detachable rear panel; black, 2 mm thick; side panels attached to frame with screws, black; 2 mm thick;
Insulation		13 mm insulating material-HT around all duct segments;
Main board		Protected against temperature and humidity, central connection point for all sensors and electrical components. Bus connection for remote touch-sensitive display;
Average power consumption Winter/Summer	W	30-90 / 20-40
Stand-by	W	9
Max. weight	kg	95

Height x Width x Depth **Touch-sensitive display**	mm	170 x 170 x 58
Touch-Display colored	mm	5,7“ VGA (16 bit)
Connections		CAN bus, Ethernet port, USB
Flush-mount box for remote display: height x width x depth	mm	160 x 160 x 70
Connection cable for remote display	m	10 m, 15 m, max. 50 m
Software updates		Update through USB port; current software on request www.brunner.de

Eco-Design-directive 2010/30/EU	
Temperature regulator class	II
Energy efficiency contribution	2 %

Storage tank Parameters / Nominal volume	**Unit**	**750 liters**	**1000 liters**	**1500 liters**	**2000 liters**
Storage volume Heating	l	560	810	1250	1785
Storage volume Hot water	l	190	190	265	265
Storage tank weight / Insulation weight	kg / kg	102 / 20	129 / 24	219 / 31	268 / 37
Polyester fleece insulation with clamp lock, (WLG 035)	mm	100	100	100	100
Standing loss (directive 2010/30/EU)	W	108	126	153	180
Storage tank insulation class according to DIN EN 13501-1 / DIN 4102-1		E / B2	E / B2	E / B2	E / B2

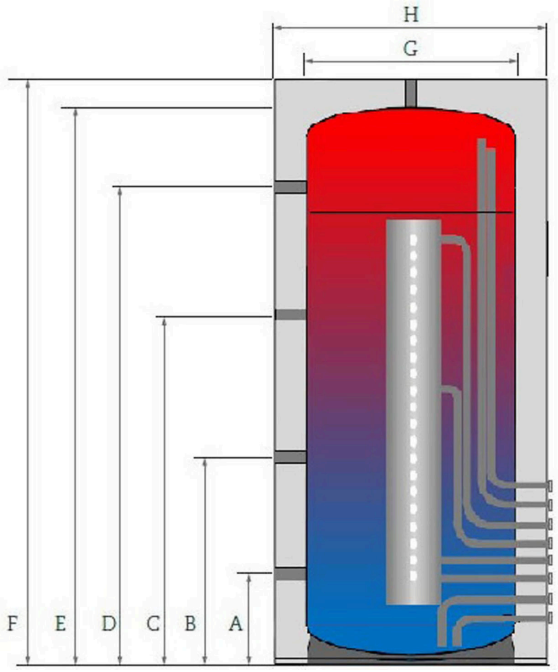


Illustration 67: Storage tank - dimensions

Dimensions	Unit	750 l	1000 l	1500 l	2000 l
A	mm	260	310	380	320
B	mm	630	745	825	900
C	mm	1030	1250	1350	1490
D	mm	1430	1710	1760	2020
E	mm	1700	2050	2150	2380
F	mm	1785	2135	2235	2465
G	mm	790	790	1000	1100
H	mm	1015	1015	1225	1338
Tilted height	mm	1750	2090	2270	2460

Technical data of installed components - *Heat generator:*

Water heating tiled stove / fireplace / kitchen stove	
Max. boiler power	30 kW
Return flow increase	Motorized 3-way mixer (make Belimo), Boiler pump by Wilo (Para 15-130/6-43/ SC-12).
Natural Power boiler(solid fuel boiler)	
Max. boiler power	till 50 kW
Return flow increase	Motorized 3-way mixer (different pump: 15 kW - Para 25-180/7-50/iPWM1-12; 30 kW - Wilo Stratos Para 30/1-9 PWM1, 180 mm or 50 kW - Wilo Stratos Para 30/1-8 PWM1, 180mm.
Switching	via 230 VAC switch contact or potential-free relay in combination with BRUNNER-Natural Power boiler.
Switching	with differential temperature control and minimum temperature limitation, or when temperatures are lower than set for the system in corresponding standby times.

BRUNNER heating pump 9 green

max. Power	10 kW
Triggering	via internal bus wiring; pump: Para 25-180/9-87/iPWM1-12
Flow control	Control systems integrated with heat demand of heating centre

Solar circuit with system separation (plate heat exchanger)

Collector field size, absorber area	Absorber area up to 25 m^2; heat transfer fluid with antifreeze;
Control	Primary circuit with variable speed pump (Para ST 15-130/13-75/iPWM2-12, and secondary circuit (Wilo Para 15-130/6-43/iPVVM1-12) with volume flow limiting device
Switching	via temperature sensor in collector field, with differential temperature control and maximum temperature limit.
Regulation	Energy yield optimization through different storage tank feeding levels (zone valve); This regulation can be performed based on temperature, energy yield or automatically optimized.

Heat pump (other manufacturers) (with switching input for heat demand - hot water/heating)

Max. power	till 20 kW
Connection	4 x 1 1/4“ on System Storage, 1 1/2“ on Hydraulic Box;

Control	via 230 VAC switch contact or potential-free relay, switching output for “Hot water/ Heating” demand and for switching valve “Tank loading top/middle”;

Other heat generators (oil/gas boiler)

Max. boiler power	till 30 kW
Control	via 230 VAC switch contact or potential-free relay;
Switching	when temperatures are below set temperatures for the system in corresponding standby times. Available settings: partial loading, full loading, hot water, heating, frost protection.

Photovoltaic integration (only in connection with domestic water module)

Zone valve	MOD. SF25 E, 230V,50/60 Hz, SW0,04A, Max. Temp. 60 °C, max. operating temperature110°C, path AB/A currentless, path AB/B current; Manual operation AB/A/B
Electric heater	9 kW; mmersion depth: 800mm, therefrom 100mm unheated. Thermal cut-out 135°C, AG 1 1/2 Zoll.
Energy consumption meter	3x230V, 50Hz, 3x35A, Modbus
Electronic power controller	3x230V, permanent running: 3x16A, 50 Hz, automatic circuit breaker: 3x20A

Electrical additional heating module (only in connection with domestic water module)

Zone valve	MOD. SF25 E, 230V,50/60 Hz, SW0,04A, max. temp. 60 °C, max. operating temp.110°C, way AB/A no current, way AB/B under current; manual operation way AB/A/B.
Electric immersion heater	9 kW; immersion depth: 800mm, including unheated part 100mm. Safety temperature limiter 135°C, ext. thread 1 1/2 inch
Power switch	3x230V, continuous operation: 3x16A, 50 Hz, automatic breaker: 3x20A

Technical data of installed components *Heat consumers:*

Drinking water heating with domestic water module (plate heat exchanger)

Tapping rate	selectable according to demand: 20 resp. 40 liters per minute at 10°C / 55°C,
Hot water volume	190 l - 265 l of reserved volume in System Storage at average storage temperature of 60°C (primary side)
Control	Demand-coupled drinking water heating. The tank feeding pump (Wilo Yonos PARA 15/6 PWM1, 130 mm for 20 l/min or Para 15-130/8-75/iPWM1-12 at 40 l/min) is controlled via volume flow meter to ensure lowest return flow temperatures.

Drinking water - heating with hot water storage tank

Control	Integrated feeding pump by Wilo (Para 25-130/6-43/SC-12); temperature sensor connection on;
Loading	Differential temperature control with maximum temperature limit; when hot water temperatures are lower than set temperatures in corresponding standby times. Programs for absence, permanent activation mode and disinfection program.

Circulation

Control	Integrated circulation pump by Wilo (ZRS 15/4-3); 230 VAC triggered via flow pressure signal, push button activation or during standby times.
Control system	The circulation interval ends automatically when set temperatures are reached. The circulation periods are available for individual setting.

Heating circuit 1 / Heating circuit 2 (via extension board to additional **3./4. Heating circuit**)

Regulation	Outdoor temperature controlled heating circuits with energy-saving pump by Wilo (Para 25-180/6-43/SC-12). - Operation periods can be set individually. - Reduced mode (Standard, Frost protection, Cooldown protection). - Programs for absence, continuous operation as well as screed drying.

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