flamco

Logotherm LogoEco Dual G1.1 MPHM

that's excellence.

Heat Interface Unit (HIU) A2RXE: LogoEco Dual G1.1 MPHM
Instantaneous Hot Water & Space Heating

Type 3PB / 3PT : 10920.40OH41

Type 4PB / 2PT : M10920.40OH42
with optional top connections

ENG Installation and operating instructions

aalberts hydronic flow control

Symbols and abbreviations

Symbols

CAUTION, general safety remark

CAUTION, risk of shock

CAUTION, hot surfaces, risk of burns

CAUTION, hot water, risk of burns

Important note

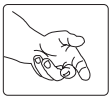
Requirement of 230 Volt Alternating Current

Dispose component

Recycle component if possible

Wrench, manual tool

Drill, power tool



Manual operation, no tools needed

Philips Screwdriver

Insulated flathead screwdriver

Abbreviations

H	District heating	N	230VAC Neutral	PN	Pressure class in Bar
SH	Space Heating	L	230VAC Live (phase)	“	Thread size in inch (ISO228/1)
DHW	Domestic Hot Water	PE	Protective Earth	HIU	Heat Interface Unit
DCW	Domestic Cold Water	ºC	Temperature in degrees Celsius	ABV	Automatic Bypass Valve
VAC	Volts Alternating Current	kPxa	Pressure KiloPascal		
VDC	Volts Direct Current	kg	Weight in Kilograms		
A	Current in Ampere	mm	Distance in millimetres		

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Table of content

Operation

1.1 Space heating (SH)

The heat exchanger physically separates the district heating network from the space heating circuit. The application minimizes the risk of contamination of district heating water as well as the risk and consequences of leakage in the space heating circuit. The electronic regulator in the unit, together with electronic control valves and temperature sensors regulates the temperature of the space heating.

CAUTION!

Components, pipes and radiators in, and connected to, the unit may be hot. The heat interface unit is designed for use with space heating systems up to 90ºC. The pipes and components in the unit as well as the pipes and radiators in the space heating installation can reach these temperatures. Contact may lead to burns.

1.2 Domestic hot water (DHW)

The HIU is equipped with single wall plate heat exchangers. The heat exchanger transfers the heat from the heat distribution system to the domestic hot water. The electronic controller in the unit, together with electronic control valves, temperature sensors and flow sensor regulates the temperature of the hot water to its set point (default 55ºC).

To prevent legionella from growing, the heat exchanger is heated to 60ºC every 24 hours for at least 9 minutes. When the unit is fitted with the optional DHW circulation pump, the unit must be set to comfort mode.

CAUTION! Hot water

The hot water temperature is regulated to 55ºC (default value). If there is a power outage during tapping conditions the unit will stop regulating the domestic hot water temperature. This may lead to a domestic hot water temperature that is higher or lower than its set point. Hot water can cause burns.

1.3 Priority switching

The HIU is fitted with priority switching. When hot water is drawn off, the HIU diverts all the DH flow to heat up the domestic water. If there is a power outage during tapping conditions or during a situation where there is no request for heat from the (connected) thermostat, the space heating valve will stay in closed position. This may lead to a decrease in temperature of the space heating installation/circuit.

2. General Plumbing Requirements

When installing a completely new SH system in a new build property or a first time installation in an existing property, then the heating system must conform to current building regulations Part L1a.

The appliance must be installed in accordance with, and comply to, the current: IEE Regulations, Building Regulations, Building Standards (Scotland) (Consolidation), Building Regulations (Northern Ireland), local water by-laws, Health & Safety Document 635 (The Electricity at Work Regulations 1989) and any other local requirements.

As far as possible, there should be no pump downtimes.
When using room thermostats and/or individual room controls, ensure that they have a pump or valve protection function.

2.1 British and Irish standards

Where no specific instruction is given, reference should be made to the relevant British and/or Irish Standard codes of Practice.

BS7074:1 Code of practice for domestic and hot water supply

EN12828 Space heating for domestic premises

BS7593 Treatment of water in domestic hot water space heating systems

ECTI National rules for electrical installations

Keep following conditions in mind during installation:

- The HIU can only be used with closed heating systems up to a temperature of 90ºC.
- The HIU must be stored and installed in a frost free area.
- The HIU must not be exposed to direct sunlight.
- Ambient temperature must be between +5ºC and +40ºC.
- Humidity must be between 20% and 80%.
- Temperatures of components in the HIU and connected to the HIU can reach high temperatures. Contact may lead to burns.

2.2 Fitting and modifications

Fitting the appliance and any controls to the appliance may only be carried out by a competent engineer. Any misuse or unauthorised modifications to the appliance or associated components and systems could invalidate the guarantee and may lead to serious injury or even death. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

The water that runs through the different systems connected to the interface unit needs to meet the water quality standards mentioned in document 53261 “Requirements on water quality for Heat Interface Units for District Heating systems”. The interface unit needs to suffice with the IWUN guidelines 06283 and 06285 and the NEN2768 standard.

2.3 District heating

CAUTION!

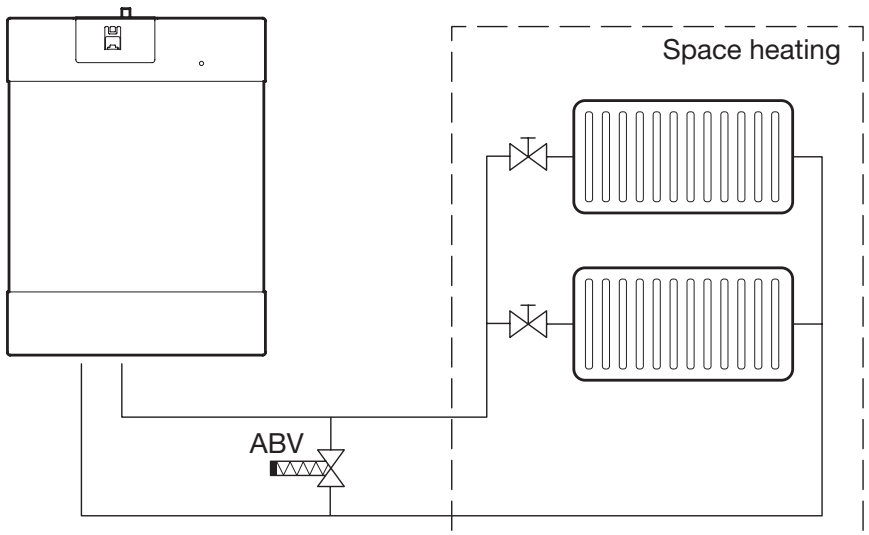
Components, pipes and radiators in, and connected to, the unit may be hot. The heat interface unit is designed for use with centralized heating systems up to 90ºC. The pipes and components in the HIU as well as the pipes and radiators in the space heating installation can reach these temperatures. Contact may lead to burns.

Keep following conditions in mind during installation:

- Maximum pressure supplied by the district heating network is PN16.
- Maximum differential pressure supplied by the district heating network is 600 kPa (due to the installed differential pressure control valve DPCV)
- Maximum supplied temperature by the district heating network is 90ºC.
- Minimal supply temperature is set-point DHW + 5ºC.
- An associated pre-fix bracket of the same make must be used to ensure the proper operation of the HIU

2.4 Space heating (SH)

Before the HIU is commissioned, the SH circuit must be fitted with an automatic by-pass valve to maintain a minimal flow rate over the HIU. The valve must be installed between the SH supply and return, noting the direction of flow.



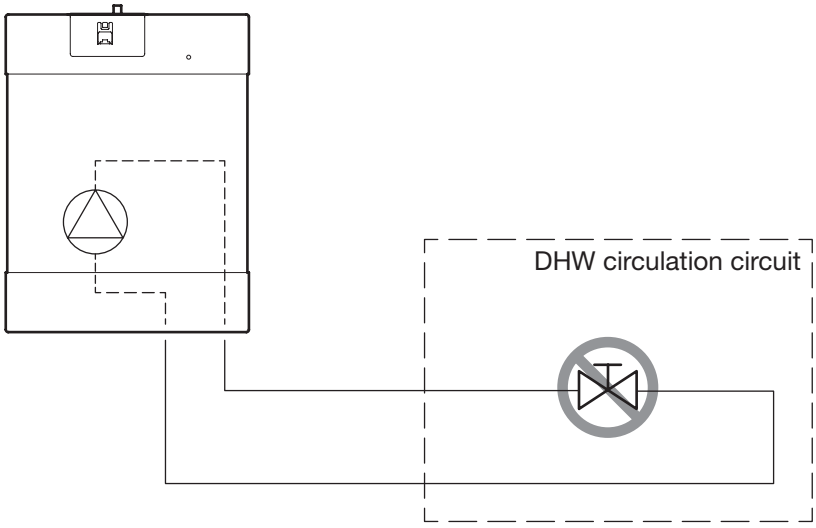
For optimal energy efficiency and comfort, it is of the utmost important to hydraulically balance the SH circuit correctly. For the same purpose it is advised to design the SH circuit in such a way, that the SH return temperatures are as low as possible.

Keep following condition in mind during installation:

- Artificially softened water must not be used to fill the space heating system
- No valves may be fitted in the SH circuit
- If used, the room thermostat must be connected to the HIU room thermostat cable

2.5 Domestic water (DHW)

The DHW circulation pump is an available option within the HIU. The circulation system, connected to the HIU, must not contain any closable valves or obstructions to ensure that a continuous flow will always be possible. Applying valves to the system can cause pump failure due to insufficient flow.



Keep following condition in mind during installation:

- All seals, joints and compounds (including flux and solder) and components used as part of the secondary domestic water system must be approved by WRAS.
- A boiler inlet combination (BIC) of 6 bar must be fitted ont he cold domestic water inlet side of the pre-fix bracket

2.6 Servicing

The end user should be advised to have the system serviced annually by a competent engineer. Contact your supplier for a list of approved engineers. Approved spares must be used to help maintain the economy, safety and reliability of the appliance. The service engineer must complete the Service Record after each service.

3. General Wiring Requirements

These instructions apply in the UK and Ireland only and must be followed except for any statutory obligations. Component specific electrical information may also be supplied in support of these instructions.

FAILURE TO INSTALL APPLIANCES CORRECTLY COULD LEAD TO PROSECUTION.

CAUTION!

Isolate the mains supply before starting any work and observe all relevant safety precautions. The HIU uses electrical components (230VAC and 24VDC). These components must stay dry at all times. Touching these components can result in an electrical shock, burn, or electrocution.

When the HIU is permanently connected to the 230VAC installation, a switch or circuit-breaker must be included in the installation as the means for disconnection. The switch of circuit-breaker must be suitably located next to the appliance and easily reached. The switch of circuit-breaker must be marked as the disconnecting device for the equipment.

CAUTION!

The HIU mains supply must always be connected to a residual current circuit breaker with overcurrent protection (RCBO) that combines the functionality of a RCD and MCB, breaking the circuit on either incorrect current or overcurrent. The circuit breaker must have a contact separation of at least 3mm in all poles and should isolate the appliance and all associated controls. The HIU must, at all times, be connected to the protective earth of the installation.

3.1 Danger of short circuit

When connecting the cables ensure that no cable pieces fall inside the control panel. Unless otherwise stated, all HIU's should be connected to a mains 230V 50Hz Supply fused at 3 Amps. All electrical connections with the HIU control panel are clearly marked as follows:

L = Live 230V

N = Neutral

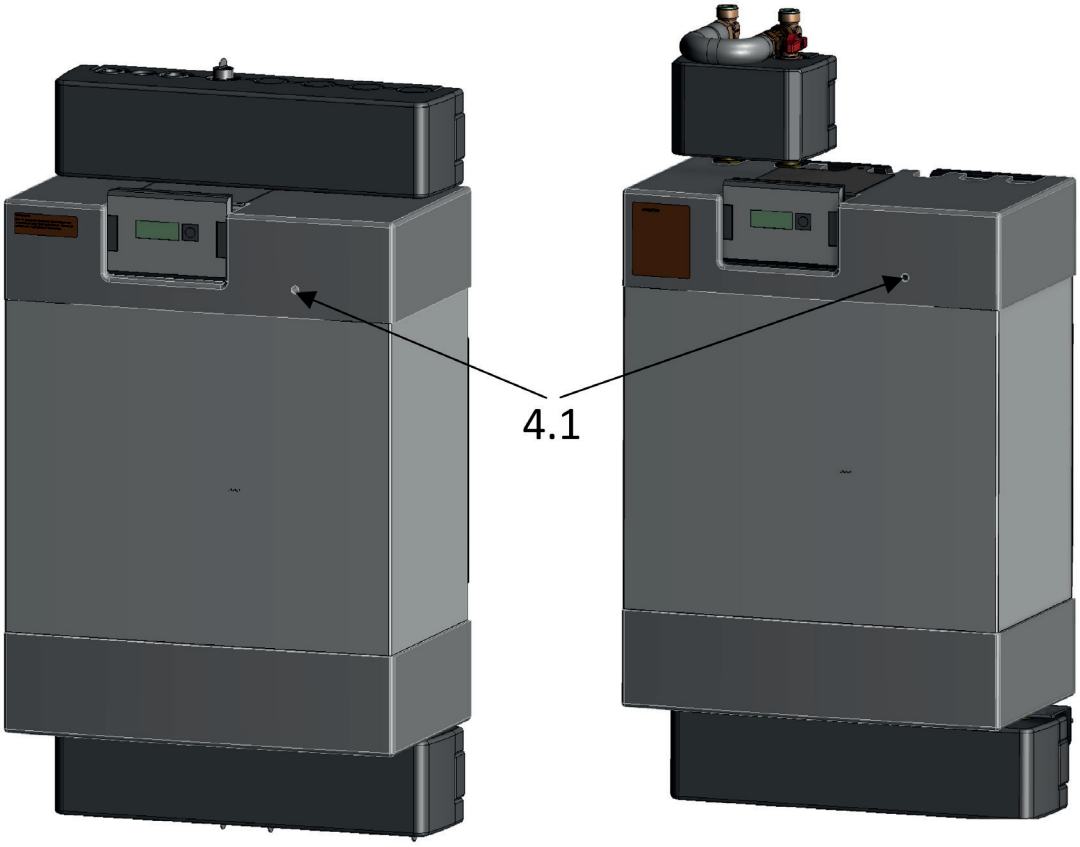
E = Earth ⏚

PE = Protective Earth

Any additional mains cable should comply fully with the current I.E.E. wiring regulations. It must have a minimum section of 1.5mm^2 and be capable of withstanding a minimum of 90ºC.

4. Application

The HIU A2RXE is used to provide domestic hot water and space heating in residences connected to a district heating system.



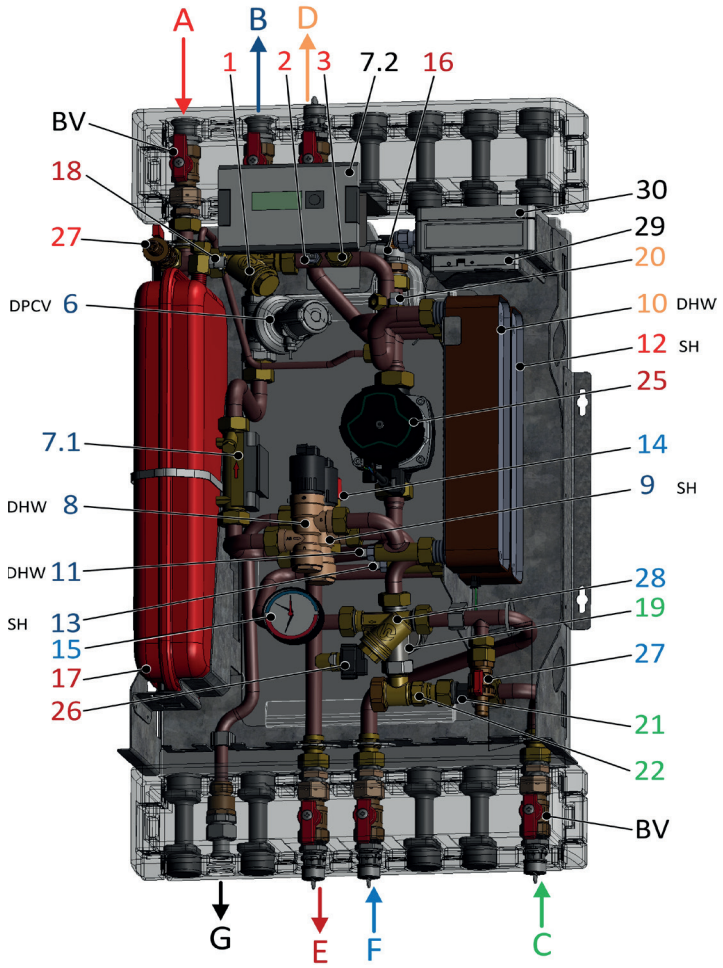
4.1 Status indicator LED

Green blinking slow (1x per second): Stand-by condition (no SH heat demand)

Green blinking fast (2x per second): Heating condition (CH heat demand)

Blue blinking:	Tapping condition
Red blinking:	Error mode
White continuous:	Service mode (installer only)
No LED:	No power / switched off

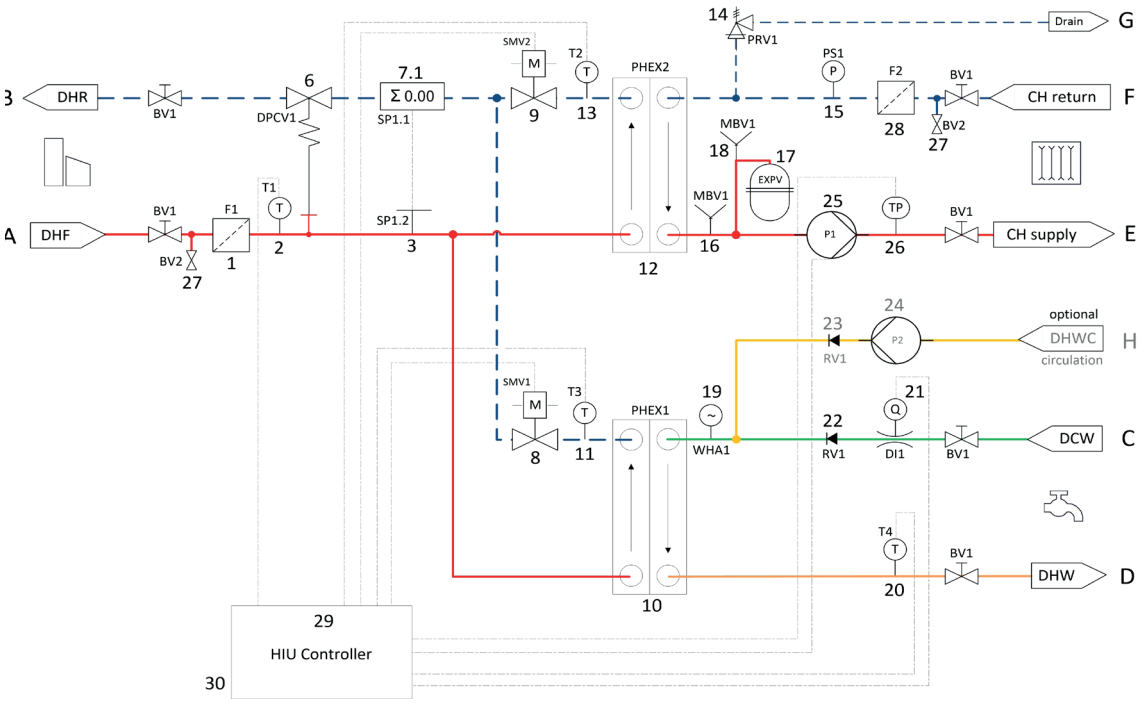
5. Specification



Type: 3 top / 3 bottom connections

Legend:

1 Strainer
2 Flow temperature Sensor (primary)
3 Flow temperature Sensor (heat meter)
6 DPCV
7.1 Heat meter
7.2 Heat meter display
8 Control valve (DHW) SMV1
9 Control valve (SH) SMV2
10 Plate heat exchanger (DHW)
11 Return Temperature Sensor (primary, DHW)
12 Plate heat exchanger (SH)
13 Return Temperature Sensor (primary, SH)
14 Over pressure relief valve (3 bar)
15 Temperature/Pressure gauge
16 Bleed point
17 Expansion vessel
18 Bleed point
19 Water hammer arrestor
20 Temperature sensor (DHW)
21 Flow sensor
22 Non return valve
23 Non return valve (hot water return, **optional**)
24 Circulation pump (DHW, **optional**)
25 Circulation pump (SH)
26 Temperature/Pressure sensor
27 Drain point
28 Strainer
29 Controller
30 Power supply (mains connection)
BV Ball valve



Hydraulic connections:
A Primary flow
B Primary return
C Cold water mains
D Domestic hot water (DHW)
E Secondary flow (SH)
F Secondary return (SH)
G Over pressure relief pipe
H Hot water return (optional)

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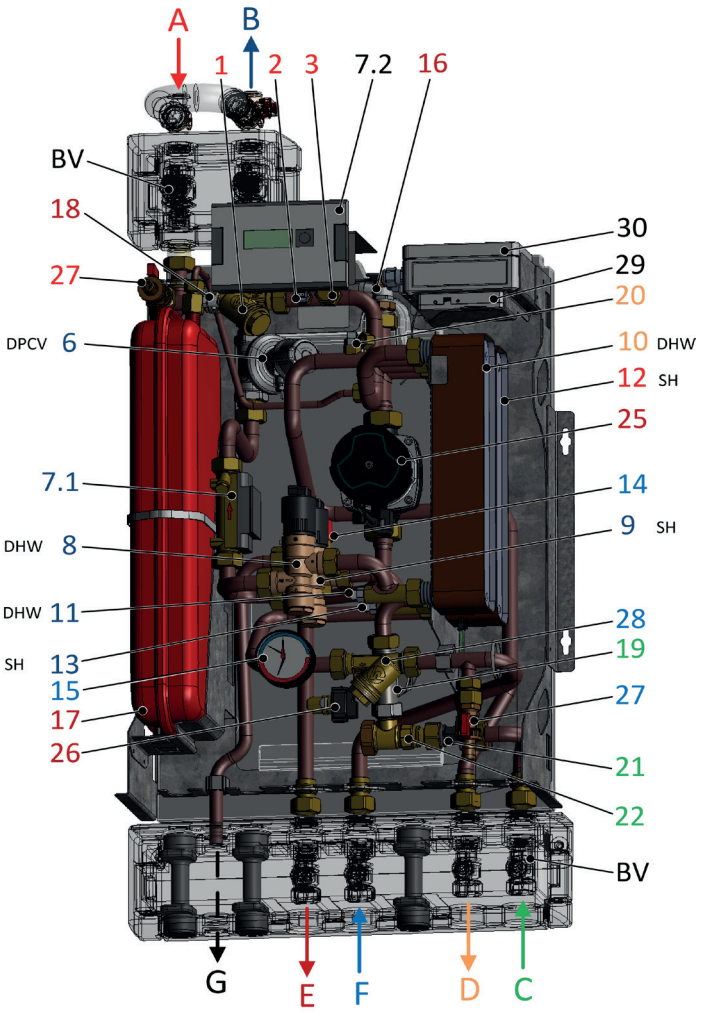
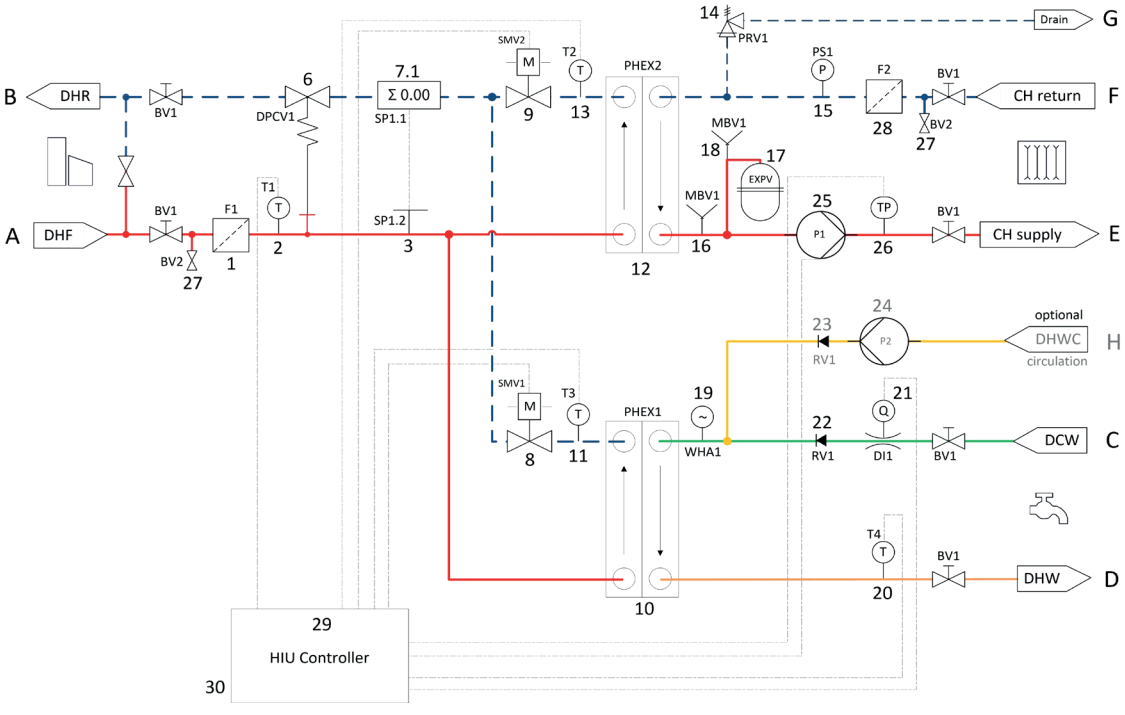
5. Specifications



Type: 2 top / 4 bottom connections

Legend:

1 Strainer
2 Flow temperature Sensor (primary)
3 Flow temperature Sensor (heat meter)
6 DPCV
7.1 Heat meter
7.2 Heat meter display
8 Control valve (DHW) SMV1
9 Control valve (SH) SMV2
10 Plate heat exchanger (DHW)
11 Return Temperature Sensor (primary, DHW)
12 Plate heat exchanger (SH)
13 Return Temperature Sensor (primary, SH)
14 Over pressure relief valve (3 bar)
15 Temperature/Pressure gauge
16 Bleed point
17 Expansion vessel
18 Bleed point
19 Water hammer arrestor
20 Temperature sensor (DHW)
21 Flow sensor
22 Non return valve
23 Non return valve (hot water return, **optional**)
24 Circulation pump (DHW, **optional**)
25 Circulation pump (SH)
26 Temperature/Pressure sensor
27 Drain point
28 Strainer
29 Controller
30 Power supply (mains connection)
BV Ball valve

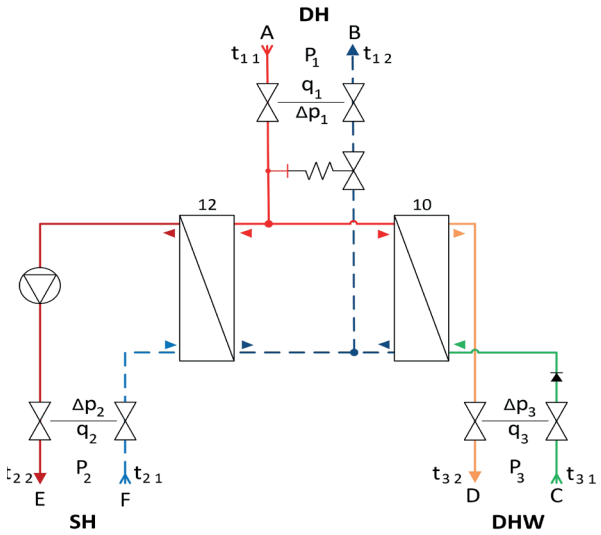


Hydraulic connections:

A Primary flow
B Primary return
C Cold water mains
D Domestic hot water (DHW)
E Secondary flow (SH)
F Secondary return (SH)
G Over pressure relief pipe
H Hot water return (optional)

5. Specifications

5.1 Facts And Figures



Description	Type	District heating station for indirect heating and instantaneous domestic hot water
	Mounting	Wall mounted
	Dimensions	490 x 275 x 640 mm (WxDxH, height of the case)
	Heating System	2 pipe flow
Construction	Pipework	Copper pipe with brass fittings
	Heat exchangers	Stainless steel, copper brazed
	Casing	Foam Arpro 50g / White painted metal sheet banding
	Primary Fluid	Low pressure hot water
	Secondary Fluid - Heating	Low pressure hot water
	Secondary Fluid - Domestic Hot Water	Potable hot water service
Primary Duty		
	Min. / Max. flow temperature (t11)	55ºC / 90ºC
	Nominal flow temperature (t11)	75ºC
	Pressure rating	PN 16
	Min. differential pressure (Δp1)	50 kPa (0.5 bar), at nominal primary flow temperature
	Max. differential pressure (Δp1)	600 kPa
Cold Water Mains	Min. (max.) pressure (Δp3)	1 bar (PN 10)
	Maximum working pressure (Δp3)	PN 10
Secondary Duty		
Domestic Hot Water	Nominal Heat Transfer Capacity (P3)	63 kW
	Max. flowrate (q3)	20 l/min (0.333 l/s)
	Fluid Temperature in (t31)	10ºC
	Fluid Temperature out (t32)	55ºC
Duty (secondary) Heating	Heat Transfer Capacity (P2)	(10 kW @ 20K ΔT), at nominal primary flow temperature
	Fluid Temperature flow (t22)	Selectable: 40ºC ... 70ºC (at nominal primary flow temperature)
	Fluid Temperature return (t21)	Depending on radiators and setup
	Maximum secondary pressure	PN3 (restricted to 3 bar by over pressure relief valve)
Connections	All external connections	¾"
Primary & Secondary Fittings	Primary control valves	PICV, with electronic stepper motor
	Strainer	In primary flow and secondary return
	Heat Meter	Prefitted - Rossweiner HeatSonic, battery powered, M-Bus interface (other versions of the HeatSonic are possible)
	Circulation Pump	Shinhoo GPA 20-6 III-130
	Expansion Vessel	8 litre fitted in secondary circuit
	Overpressure relief valve	3 bar, in secondary heating circuit
	DPCV	Differential pressure control valve (600 kPa max. dp)
	Hot water return (optional)	Hot water circulation (incl. pump, non return valve and ball valve)

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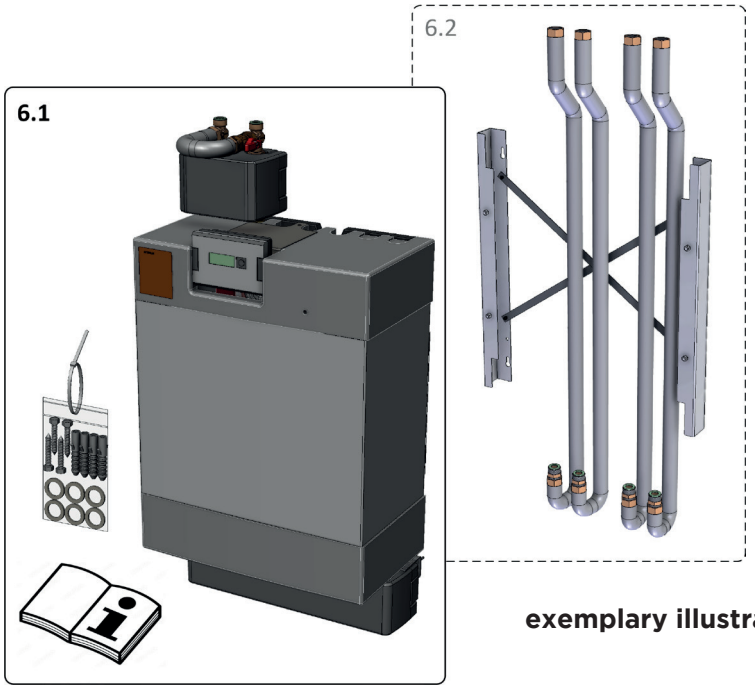
6. Installation

6.1 Scope of delivery

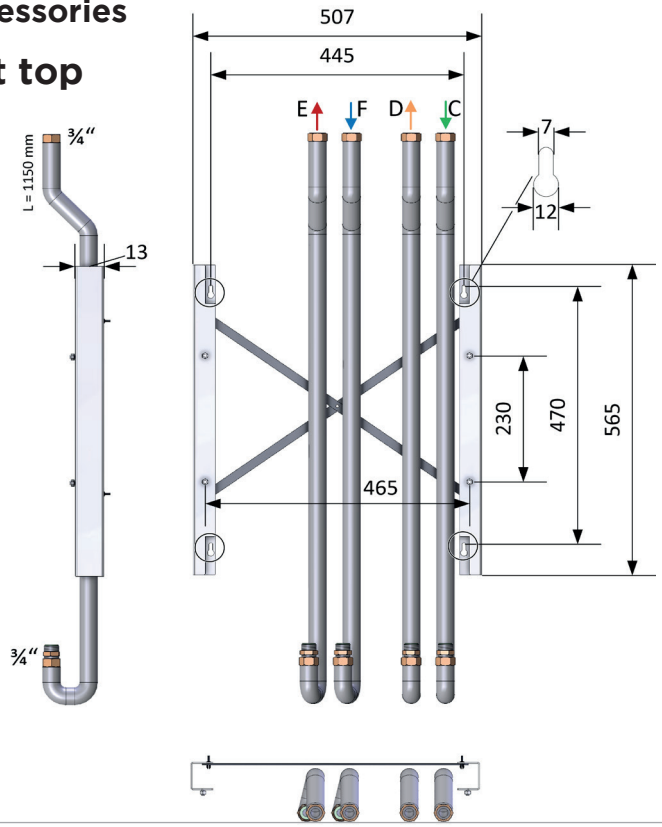


exemplary illustrations

6.2 Optional accessories

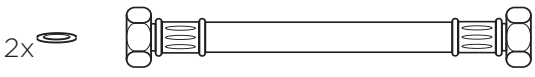
Connection kit top

M66200.114



C Cold water mains
D Domestic hot water (DHW)
E Secondary flow (Space heating)
F Secondary return (Space heating)

Additional Items (optional)

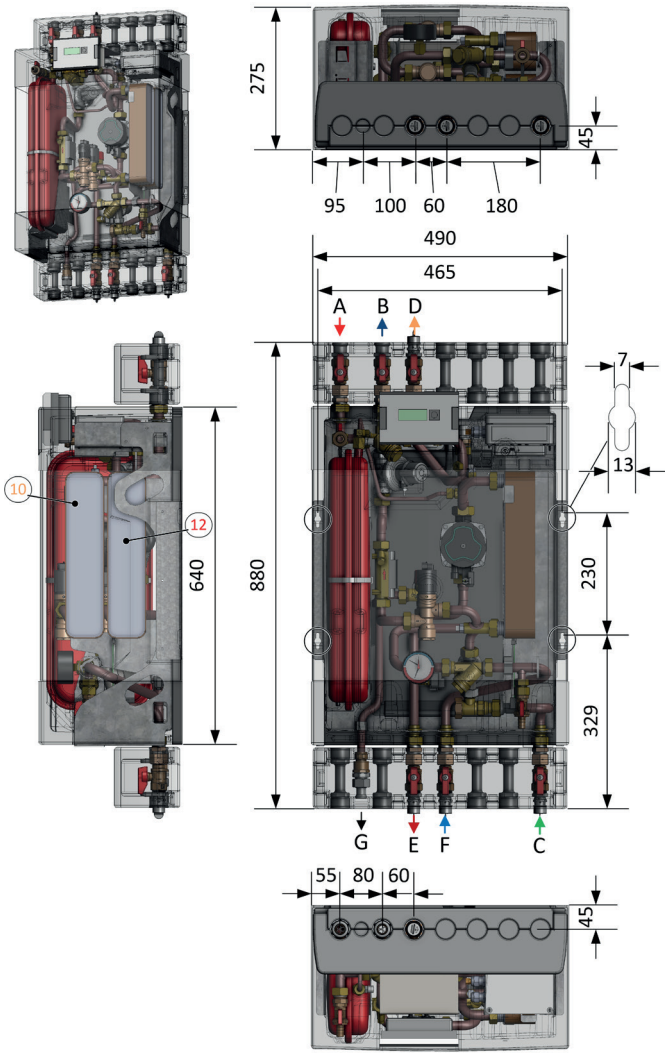


Flushing By-Pass 500 mm, 3/4”
10 bar max. 110ºC
16 bar, max. 100ºC

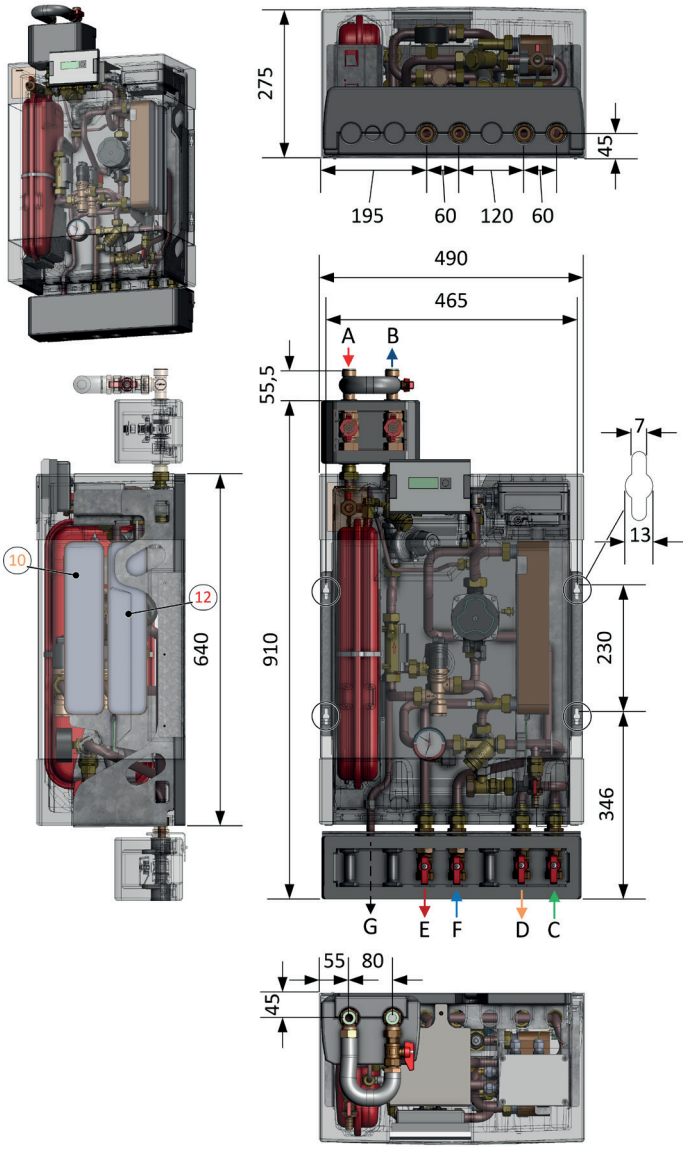
6. Installation

6.3 Positioning / Dimensions

Type: 3 top / 3 bottom connections



Type: 2 top / 4 bottom connections



(10) - Plate heat exchanger (DHW)
(12) - Plate heat exchanger (SH)

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6. Installation

6.4 Preparation

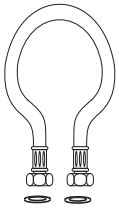
Mounting to the wall

The wall needs to be strong enough to support the HIU. If the wall is of drywall construction make sure that there is a board installed (e.g. plywood, min. 18 mm) to support the structure, which is strong enough to hold the HIU. Use a 4 mm drill bit (at least 40 mm depth for the wall plugs).

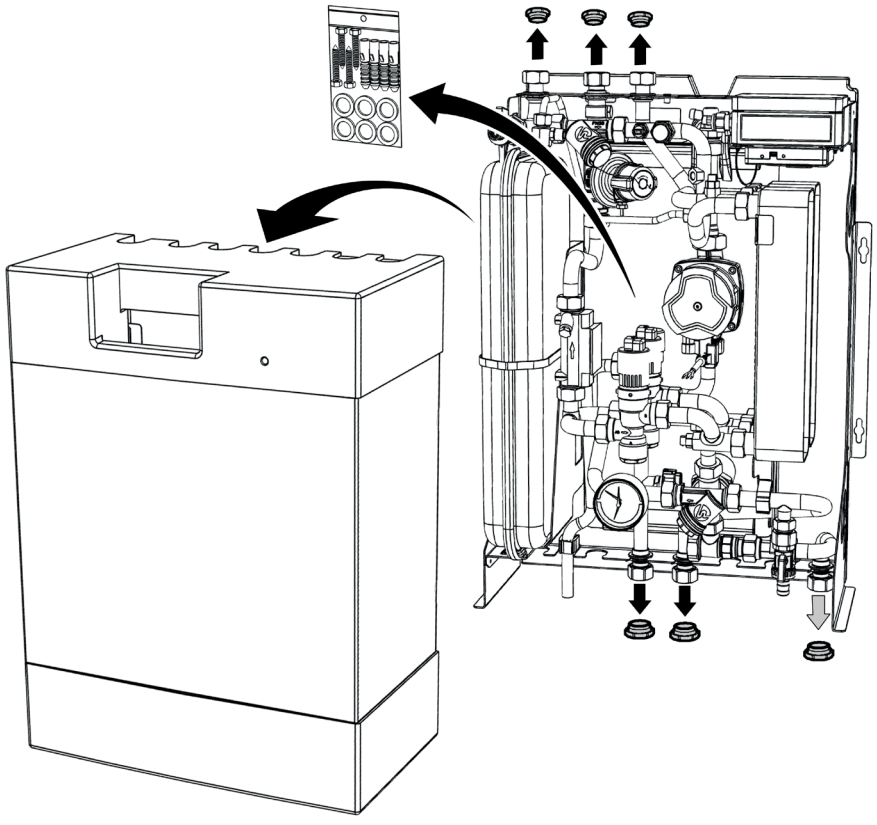
If the wall is of concrete or brick construction use a 10 mm drill bit (at least 60 mm depth for the wall plugs).
The HIU requires 4 fixing screws.

Flushing the system

Before mounting the HIU and connecting it to all pipework that is to be connected must be thoroughly cleaned and flushed out. Any debris or flux that could collect in the narrow channels of the heat exchangers will be difficult to remove once they are installed. Any remaining debris and flux may cause serious corrosion problems, as well as restricting flow and reducing the efficiency of the HIU. Use the flushing by-pass (optional accessory) and connect it to Connections **A-B**.



6.5 Installation

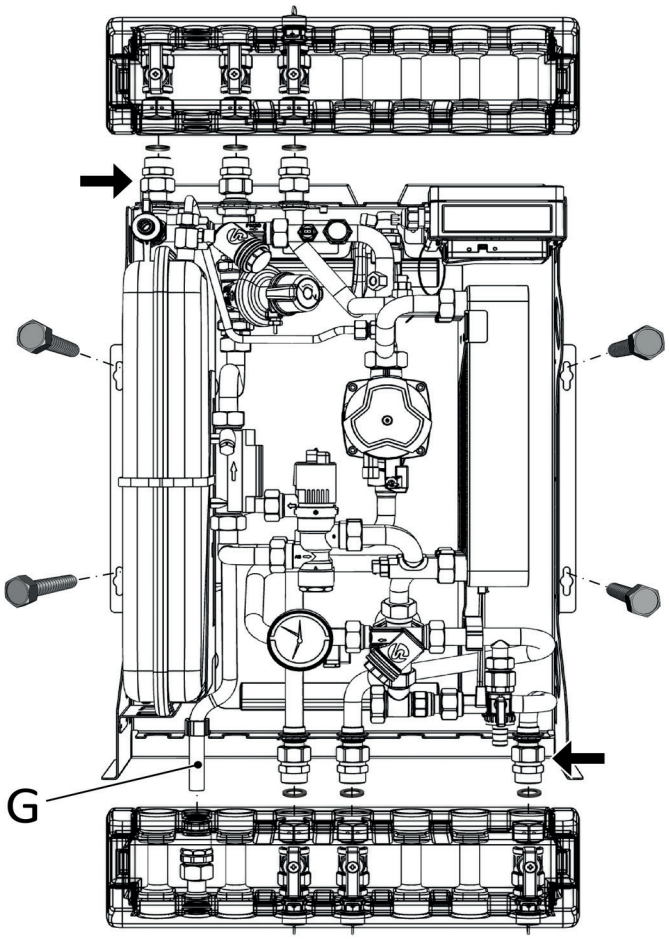


6. Installation

Remove the flushing by-pass before installing the HIU.

Over pressure relief pipe is a 15 mm copper pipe. Please use suitable fittings / systems to make the connection with the drain pipe.

(G) - Over pressure relief pipe



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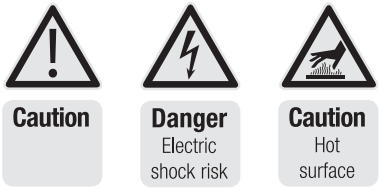
7. Service

7.1 Filling the space heating system (SH)

The HIU can be filled by connecting an external



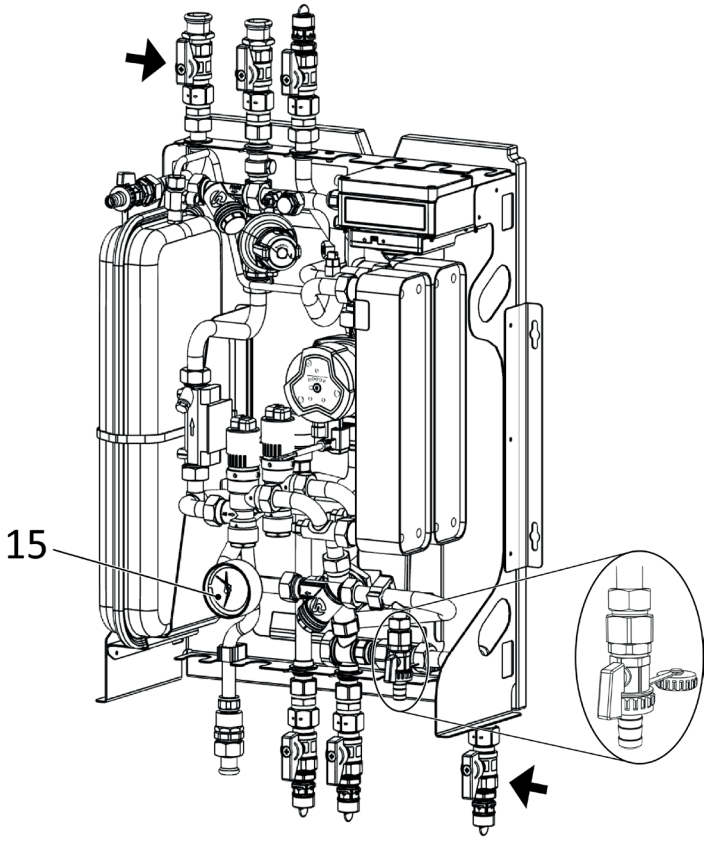
supply through the fill/drain valve in the unit.

CAUTION!

Please use caution when handling the HIU.
Parts and components may be hot or energized.
Contact may lead to shock, burn or electrocution.

1. Disconnect the HIU from the mains power.
2. Open all space heating circuits in the property. Turn the room thermostat and all radiator thermostats to their maximum setting. (or switch on all underfoor heating circuits).
3. Remove the case from the unit as described in chapter 7.6
4. Connect the filling hose/loop to the valve as shown.
5. Carefully open the valve and start filling the system. Observe for leaks during the process.
6. Shut the valve once the system is filled.
7. Bleed the air from the system (HIU and radiators). Please refer to chapter 7.2.
8. Repeat 6. and 7. until all air is removed and the system is pressurised according to the specifications.

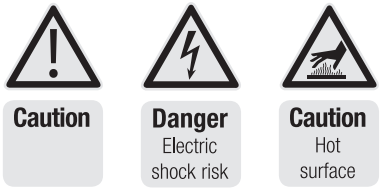
(15) - Pressure Gauge

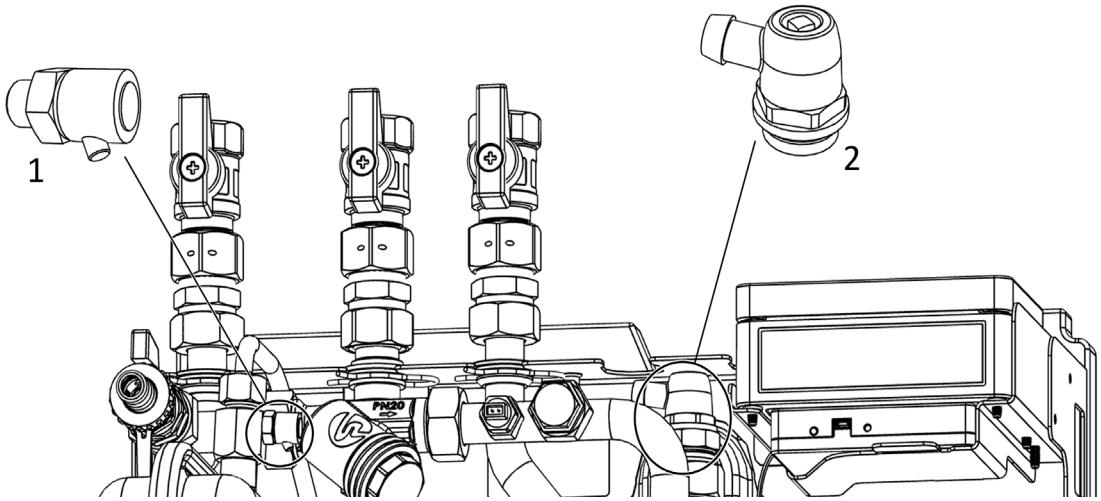


7. Service

7.2 Bleeding the air

All air has to be removed from the system to ensure full functionality of the SH. Bleeding the air can be manually (1) or (2). Also all SH circuits have to be bled to make sure all air is removed.





CAUTION!

Please use caution when handling the HIU. Parts and components may be hot or energized. Contact may lead to shock, burn or electrocution.

1. Disconnect the HIU from the mains power.
2. Make sure the isolating valves (E, F) are fully opened.
3. Start bleeding the SH circuits at the top floor and work the way down.
4. Set the pump to maximum speed. The pump should run quietly without any air noise.
5. When finished re-adjust the pump to its operating mode/setting.

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7. Service

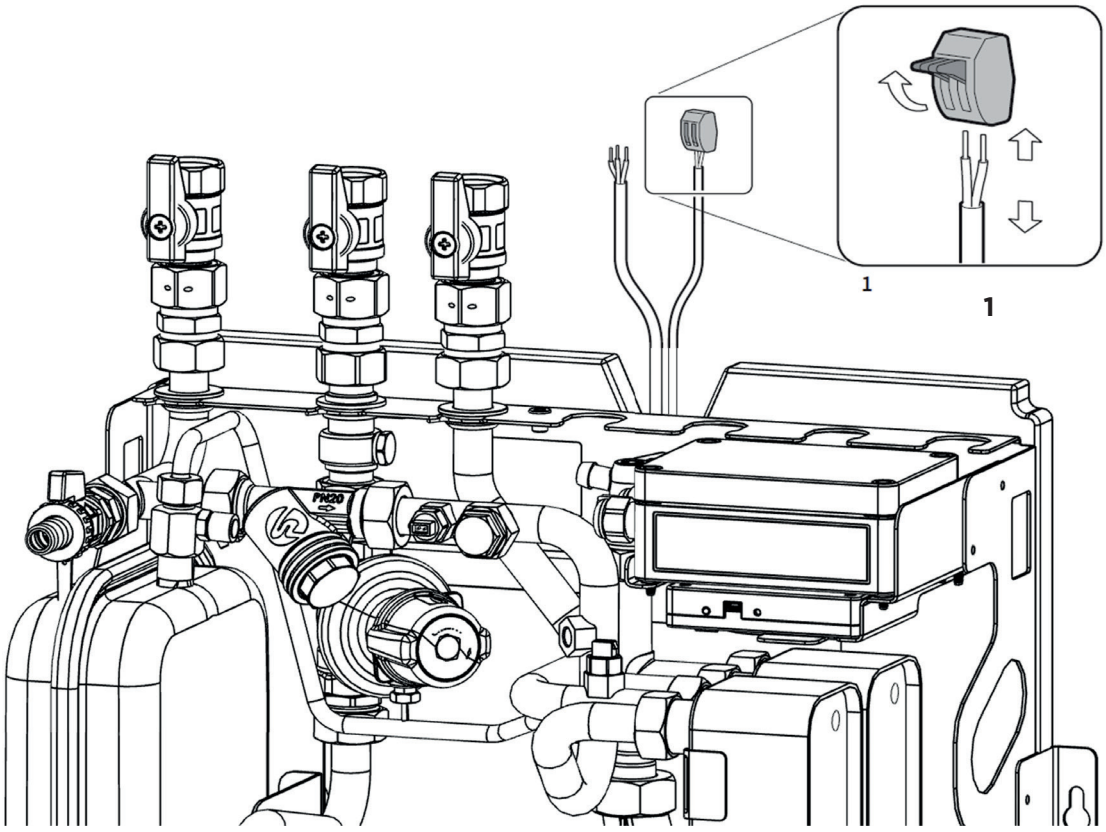
7.3 Call for Space Heating (SH)

The unit can be connected to a room thermostat or a timer/heating controller.

The output of either of the devices needs to be a voltage-free contact (open/close). Please refer to the manual of the manufacturer of the appliance to avoid damage of the HIU's electronics.

Connecting a room thermostat or controller/timer:

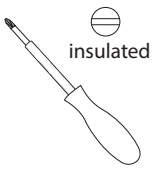
1. Remove the terminal block (1)
2. Connect the two wires to the voltage-free output of the thermostat/timer/controller.

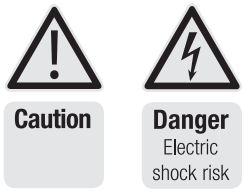


7. Service

7.4 Power supply

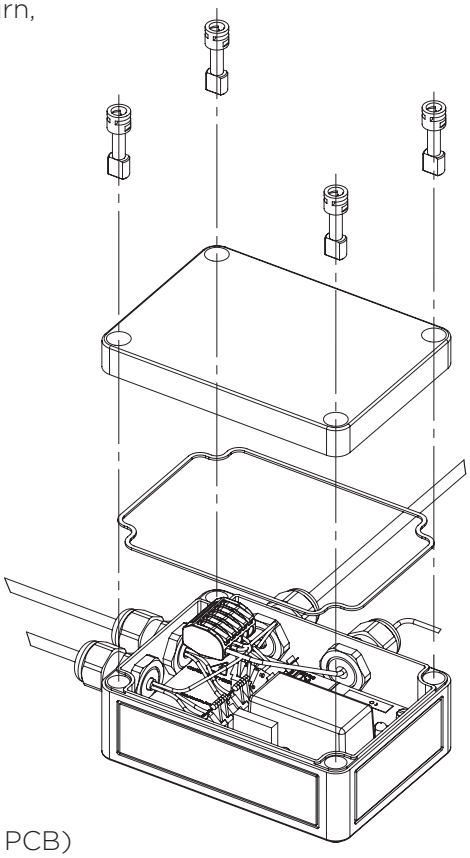
The HIU is equipped with an electric connection box that converts the 230VAC power supply to 24 VDC and powers the equipped SH pump and optional DHW pump. It also houses the fuse of the unit.

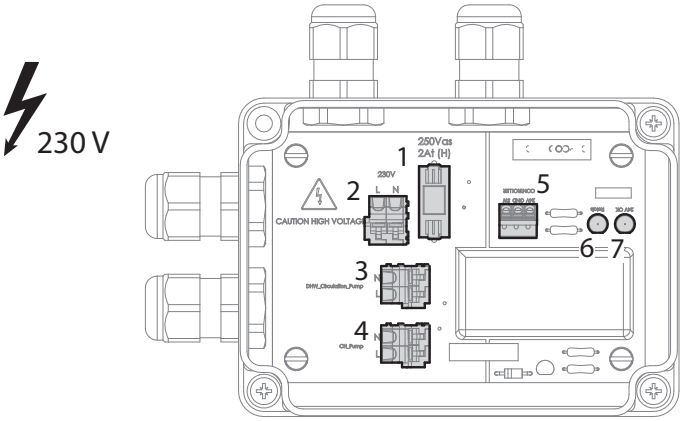




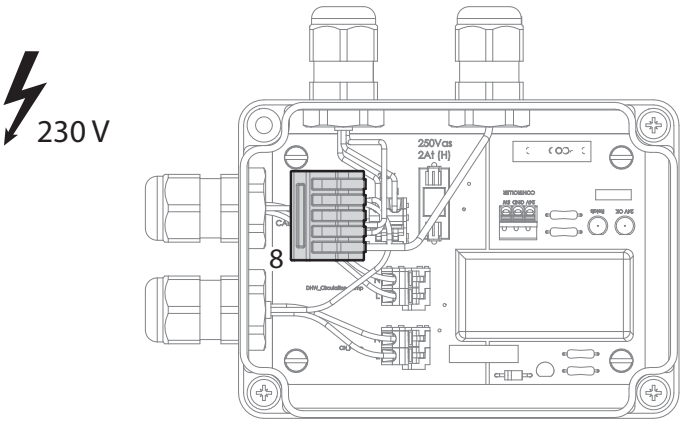
CAUTION!

The HIU uses electrical component (230VAC and 24VDC). Touching these components can result in an electrical shock, burn, or electrocution. The casing shall only be opened by authorised personnel when the power supply is cut off.





1. 230VAC fuse (3A)
2. 230VAC connection to circuit breaker or power switch
3. 230VAC DHW circulation pump connection
4. 230VAC SH pump connection
5. 24VDC connection to electronic regulator PCB
6. LED status indicator pump relay (ON = SH pump active)
7. LED status indicator 24V (ON = 24V directed to regulator PCB)
8. WAGO connector, connecting all protective earth cables

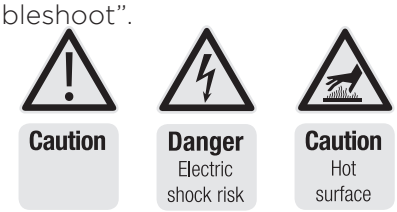


ENG

7. Service

7.5 Commissioning

Follow the steps shown below to commission the HIU. If leakage or other faults should occur, go to chapter “Troubleshoot”.

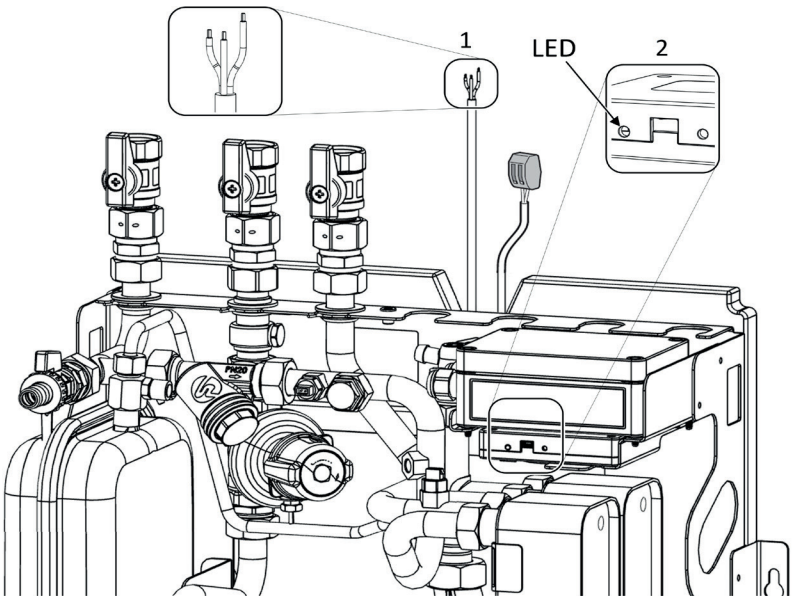


CAUTION!

Parts and components may be hot or energized. Contact may lead to shock, burn or electrocution.

1. Close all valves
2. Check all nuts for leakage. (nuts may become loose during transport)
3. Make sure the electronics are securely mounted to the frame and avoid cables from blocking the casing.
4. Make sure that the power supply is switched off. Connect the unit’s power cables (1) to the power switch. **Keep the power switch off, until further notice below.** The power switch must be permanently connected, suitably located and easily reached. Also see chapter “Installation requirements”
   Blue cable: N (neutral)
   Brown cable: L (Live 230VAC)
   Green/yellow: PE (protective earth)
5. Open the domestic potable water valves (D&C) to pressurise the unit and check for leakage.
6. Switch on the power to the unit. The LED should show a green blinking light (2).
7. Open the DH valve (A) and check for leakage.
8. Open the DH return valve (B) and check for leakage.
9. Open the valve (E).
10. Open the SH return valve (F).
11. Start bleeding the SH circuits at the top floor and work the way down. (see also chapter “Bleeding the air”)
12. Check to see if the heating warms up.
13. It is possible to set the pump setting to optimise the SH system. See current pump manufacturer’s manual.
14. Completely open a DHW outlet (tap or shower). Check to see if the unit’s LED shows a blue blinking light (2). Leave it running for approximately 5 minutes.
    Check if the DHW temperature has reached its set point (default 55ºC) between 3 and 5 minutes.
15. Close all DHW outlets. The LED will now show a green blinking light (2).

Status Indicator LED

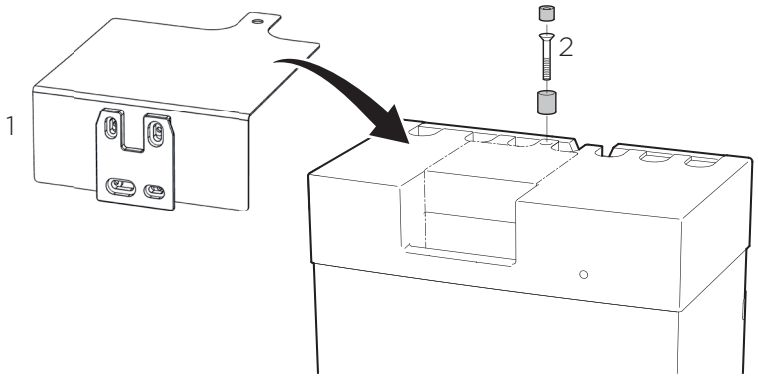


7. Service

7.6 Removing and securing the case

The case of the HIU is secured by the mounting bracket of the heat meter display and a screw through the top of the HIU.

1. Mount the display of the heat meter (if needed) to the bracket.
2. Position the bracket as shown (1) and make sure all cables are routed through the case and are tidy.
3. Make sure that bracket and case are in line to fit the securing screw (2).



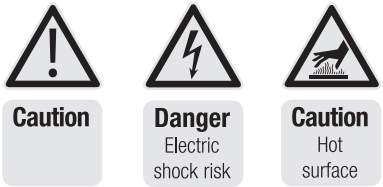
7.7 Shinhoo pump

See current pump manufacturer's manual.

7.8 Performance view

See current pump manufacturer's manual.

7.9 Hot Water Circulation (optional accessories)



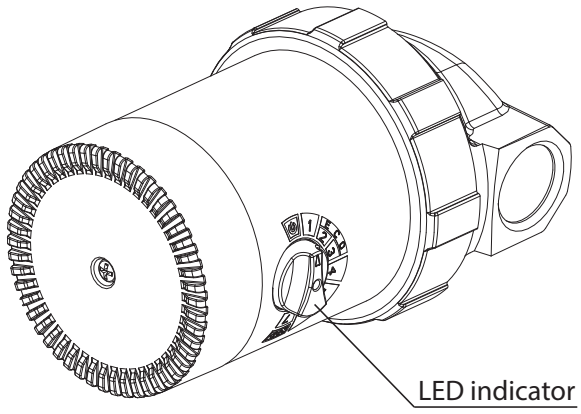
The domestic hot water circulation pump is an available option within the unit. The pump is added to minimize delay in the delivery of domestic hot water at the draw off point in a closed DHW circulation circuit. It is generally used in systems where the domestic hot water needs to travel greater distances to its draw off point.

Adjustments to the pump settings should be done by authorised personnel only. Please use caution when adjusting the unit. Parts can be hot or energized. Contact may lead to shock, burn or electrocution.

Article no.: HS1053092

Status indicator LED

LED on (continuously):	Normal operation (pump is running)
LED blinking short, long:	Error due to low voltage
LED blinking short (4x), long:	Error due to pump speed feedback
LED blinking short (3x), long:	Error due to high temperature
LED blinking short (5x), long:	Pump rotor is blocked
LED On 200 msec., Off 200 msec., On 200 msec.	Air venting
LED On 50 msec., Off 50 msec., On 50 msec.	Stand-by

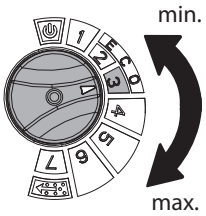


ENG

7. Service

Operations errors

Problem	Cause	Solution
Pump not running	- Not connected or connected correctly	- Connect correctly
	- Pump too hot, dry operation- or overheating protection active	- Allow pump to cool down, pump restarts automatically
	- Pump blocked	- Contact your supplier
Pump is noisy	- Air in the system	- Bleed the air
	- Debris in pump	- Contact your supplier
	- Worn bearing	- Replace pump



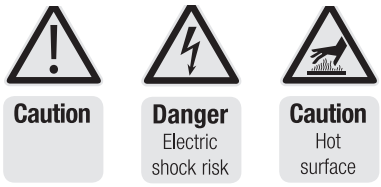
Air bleeding the pump

The pump has an air venting function that can be activated by turning the dial to position 7 for 5 seconds. Afterwards the desired position can be chosen. The procedure will take about 10 minutes. The procedure can be cancelled by switching to position 3 and then back to position 7. Audible flow noises indicate that there is still air in the pump. Should this be the case the air bleeding procedure needs to be repeated.

Pump settings

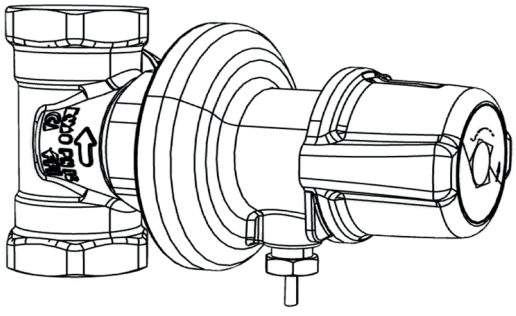
The circulation pump has 7 settings to choose from to accommodate different situations, position 1 being the lowest and 7 the highest setting.

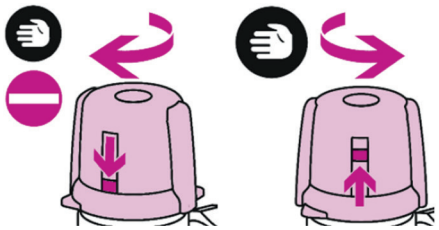
7.10 Differential Pressure Control Valve (DPCV)



For DH systems, an adjustable differential pressure valve (with max. 600 kPa) is fitted at the factory. The differential pressure control valve has a control range of 25 to 60 kPa and has DN20 bore. For optimal functioning of the HIU, the adjustable differential pressure control valve is set at of 50 kPa.

Adjustments to the valve settings should be done by authorised personnel only. Please use caution when adjusting the unit. Parts can be hot or energized. Contact may lead to shock, burn or electrocution.



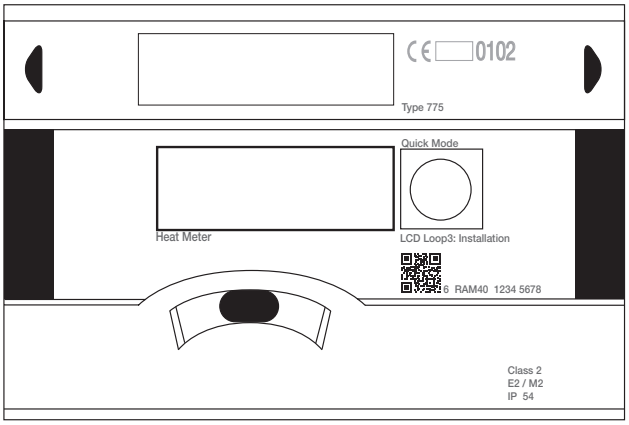


Using the Dp regulating valve knob, set the measured differential pressure to be maintained at the ends of the circuit. The DPCV manufacturer's manual is important for this.

7. Service

7.11 Heat Meter

The HIU's factory fitted heat meter is an MID class 2 (RHI certified), battery powered ultrasonic heat meter with M-Bus functionality. You can scroll through the menu by shortly pressing the black button next to the display. The serial number (8 digit number) can be found as shown in the picture.



Error code	Description
C -1	Basic parameter error in flash or RAM
E1	Temperature range exceeded [-19.9 °C ... 199.9 °C] e.g. sensor cable short circuit
E 3 **	Flow and return sensors inverted/confused
E4	Hardware fault in ultrasonic unit, e.g. transducer or trigger faulty or short circuit
E5	Reading interval too short. No communication possible.
E 6 **	Wrong flow direction (flow sensor)
E7	Undetermined flow sensor reading (air, debris)
E8	No (mains) power supply, running on the backup battery
E9	Battery discharged
E A*	Leakage, broken pipe
Eb *	Leakage, heat meter
EC *	Leakage, pulse input 1
Ed *	Leakage, pulse input 2
* optional, ** application dependent	

The Table shows the list of error codes which might be shown on the display. "E-7" is the general error that is shown when the HIU has not been filled (air in flow sensor).

For further information please refer to the leaflet of the heat meter (Installation Guide) supplied with the HIU or refer to the comprehensive manual for the heat meter.

7. Service

7.12 Troubleshoot (technician)

Complaint	LED indication light	Cause	Solution
Leakage			
Close all valves on the fix rail and close the main water supply valve.			
Coupling nut shows leakage		Coupling nut is loose	Fasten coupling nut
		Gasket is missing	Replace gasket
Temperature sensor shows leakage		O ring is missing	Fit original
		O ring is damaged	Replace original
The differential pressure pipe from the differential pressure regulator is leaking		Coupling is loose	Fasten the fitting
		Differential pressure pipe is damaged	Replace differential pressure pipe
Space heating does not warm up			
Radiator does not warm up	LED does not light up	No power at power source	Check power source
		Unit is not connected to power source	Connect the unit to the power supply
		Power cables not properly connected to electronic regulator	Connect the power cables to the electronic regulator
		Fuse is broken	Check for any short-circuit problems and replace fuse (3A)
		Failure in the electronics	Contact your supplier
	Blue flashing LED	Tap is opened, unit is in tapping operation	Close Tap
	Red flashing LED	Sensor(s) are not connected or bad contact	Check wire tree connections and connect the sensors properly, then restart electronics
		Sensor(s) defect	Replace broken sensor and restart electronics
		Possibly faulty electronic cables or electronics	Contact your supplier
	White flashing LED	Unit is in service mode	Remove USB cable
			Reset the unit by removing and then reconnecting the power supply
		No heating demand from the room thermostat	Set the room thermostat to a higher temperature than the actual room temperature
		Radiator valves are closed	Open radiator valves
		Valves in first fix rail are closed	Open valves on first fix rail
		Thermostat cable not properly connected to room thermostat	Make sure the room thermostat is connected properly
		Short circuit connector of the room thermostat is not connected or missing (when HIU is not connected to room thermostat)	Connect the wire ends of the room thermostat connection cable with a short circuit connector
		Air in the SH system	Air vent the HIU and the SH system
		Pressure in SH circuit is too low	Set SH pressure to 2 bar. This might indicate a leakage in the SH system or a broken expansion vessel. Check SH system for any leakages and expansion vessel
		Pressure or temperature of the DH system are not in accordance with specifications	Check temperature and pressure of the DH system
		The SH pump is not active (LED on pump does not light up)	Check if the pump cable is properly connected to the electronics
		The SH pump is jammed or broken	Contact your supplier
		Optional anti-fraud valve is closed	Anti-fraud valve is not electrically connected or powered
			Anti-fraud valve is jammed or broken. Replace this component
		Optional differential pressure valve is poorly adjusted	Adjust the differential pressure valve correctly
		Filters are blocked	Check and clean filters
		SH heat exchanger is blocked	Replace SH heat exchanger
		Cables of the control valves are mixed up	Connect cables properly. Orange/red connector must be connected to the SH control valve
		Possible defect in control valve	Replace control valve

7. Service

7.12 Troubleshoot (technician)

Complaint	LED indication light	Cause	Solution
No DHW			
No DHW		No water pressure	Check/open main water supply valve
			Check flow restrictor for correct and proper placement
			Flow restrictor is clogged or jammed. Replace flow restrictor
			Flow sensor is clogged. Replace flow sensor
			DHW heat exchanger is clogged. Replace DHW heat exchanger
			Check valve is jammed. Replace check valve housing including the check valve
DHW not at the right temperature			
DHW does not warm up	LED does not light up	HIU is not connected to power source	Connect the HIU to the power supply
		No power at power source	Check power source
		Power cables not properly connected to electronic regulator	Connect the power cables to the electronic regulator
		Fuse is broken	Check for any short-circuit problems and replace fuse (3A)
		Failure in electronics	Contact your supplier
	Green flashing LED	Tapping threshold is to low, minimal 1 L/min. has not been reached	Increase tapping to at least 2 L/min. by opening the tap further
		Flow sensor is not installed correctly	Check flow sensor, replace cable or replace flow sensor
	Red flashing LED	Sensor(s) are not connected or lose contact	Check loom connections and connect the sensors properly, then restart electronics
		Sensor(s) defect	Replace broken sensor and restart electronics
		Possible defect electronic cables or electronics	Contact your supplier
		Supply and return valves are closed	Open supply and return valves
		Pressure or temperature of the DH system are not in accordance with specifications	Check temperature and pressure of the DH system
		Filter is clogged	Check and clean filter
		DHW heat exchanger is clogged	Replace DHW heat exchanger
		Cables of the control valves are mixed up	Connect cables properly. Green connector must be connected to the DHW control valve
		Possible defect in control valve	Replace control valve
Option: DHW circulation circuit does not warm up	LED does not light up	Fuse is broken	Check for any short-circuit problems and replace fuse (3A)
		Power supply cable of the optional DHW circulation pump unit is not connected	Connect the power supply cable of the optional DHW circulation pump unit
		Optional DHW circulation pump unit is broken or jammed	Replace DHW circulation pump unit
		Failure in electronics	Contact your supplier
Casing will not close properly			
Casing does not close properly		Cables are caught in between unit and casing	Keep cables free of any obstructions
		Metal bracket holding the heat meter is not fitted correctly	Adjust / fit bracket and try again
		Heat meter is obstructing the casings path	Connect the heat meter properly
		Electronics are not properly placed	Check mounting of electronics
Other defects It is normal for the HIU to generate a light noise during tapping or heating operation. The regulator valves can also make a light humming sound			
Rattling sound	Red or green flashing LED	Flow sensor not installed correctly	Install flow sensor properly
Other defects			Contact your supplier

ENG

8. Appendix A

Guidelines for System Conditioning of Heating and Cooling Networks for Flamco Limited - Meibes Heat Interface Units (HIU)

Flamco Limited prides itself on bringing to the UK market a proven range of Heating and Cooling Interface Units. To ensure that our products deliver increased longevity and performance, these guidelines are specifically written to aid and ensure both the primary and secondary side of the heat network are designed, installed and commissioned to realise the desired heating comfort levels. **These guidelines are not offered for use on potable, domestic, and water draw off side of the system. Solely for the heating and cooling circuits ONLY. The Primary System must be maintained in accordance with either BSRIA BG 29/2012, BG 50/2021 or VDI 2035 failure to maintain the system water quailty to these standards will void warranty.** Whilst not exhaustive, we offer these guidelines from experience and a practical standpoint, in addition, as a check list to support design review. These guidelines are not intended as mandatory or fixed in their approach; moreover they are intended as supporting documentation to highlight good practise and methodology ensuring operation and maintenance activities are kept to a minimum post handover. We are not specialists in the design, installation and or cleaning and subsequent treatment of water systems but, nevertheless, contained in the sections below are importance aspects to consider.

8.1 System Design Considerations

- A review of the system should be undertaken post the design stage. The review should focus on the installation, location and capacity of strainers both fixed and temporary, air and gas removal devices, debris traps, isolation valves to ensure that removal of debris from the system which was not removed in the commissioning activity is managed and that sub sections can be economically isolated to permit maintenance.
- It should be considered at the design stage to include into the design a means ferrite removal. Poorly commissioned and maintained systems exhibit corrosion. As the majority of systems contain products manufactured from iron, it is the iron in the form of steel ferrite which creates the tell tale black sludge or blacked water which indicates corrosion is taking place of components of the system. This corrosion if remaining unchecked, fouls water ways and controls, erodes system components, reduces system performance and leads to the production of hydrogen in the system known as “Gassing”. This is also a tell tale sign of system corrosion.
- As over 90% of debris in systems is ferrous we recommend the installation of a rare earth, magnetic filter to both remove the ferrite but act as a means of identifying corrosion is taking place and a prompt for remedial action.
- The removal device ideally, should have a first pass rate of 75% debris removal or greater, have incorporated into it a static mixing function to open the system fluid to permit rapid removal of the debris, mounted in the common return, main return pipe work. The filter shall be of adequate size and capacity to allow sufficient flow rate and debris capture for the system size (line size is recommended). Any such filter should have the following magnetic field strength capacity as a minimum to ensure maximum ferrite removal.

Line Size	Magnetic Field Strength
DN15	7500 gauss
DN20	9000 gauss
DN25	10500 gauss
DN35	21000 gauss
DN40	21000 gauss
DN50	52500 gauss
DN80	73500 gauss
DN100	73500 gauss
DN150	94500 gauss

The filter should be added to the requirements of the “Operating and Maintenance” instructions handed over with the system. If an advisory sticker is provided with the filter it should be attached at a suitable location as to indicate the presence within the system of the filter to ensure periodic checking & servicing by any attending Service Engineer. We would also recommend that these filters incorporate a sight glass, particularly on the larger sizes to provide a visual means of assessing corrosion without the need to disrupt the operation of the system for checking.

8. Appendix A

8.2 Main Factors affecting corrosion and System performance

- "PH" or relative Acidity/ Alkalinity are of key importance in managing the production of system corrosion. It is recommended that PH Level of the system water be between 7 and 8.5 (ideally 7.4/7.5). A Lower PH level than recommended would be classed as acidic and corrode all metals. Alternatively, too high a PH level would be alkaline and will corrode aluminium components within the wetted part of the system.
- When considering a chemical treatment product to add to the system, we recommend products which incorporate a mix for buffering, in order to control the PH level more effectively.
- Oxygen Ingress should be minimised by the use of closed systems and barrier pipe within the system design.
- Aggressive ions (such as flux residues) promote corrosion and, continue to do so unless neutralised or flushed out completely. We would recommend a jointing approach that removes the need to use such compounds and adopt the use of heat free systems.
- If traditional solder fittings are used then we would recommend the use of a recognised chemical treatment to flush out and neutralise the system (see section 3.1 below). In addition, it is strongly advised to contact the manufacturer of the chemical treatment to gain early involvement prior to treatment as to the correct application and chemical to use.
- The accumulation of sludge & debris can cause deposit corrosion which leads to pitting. We recommend the use of a recognised chemical treatment to flush out and neutralise the system In addition, it is strongly advised to contact the manufacturer of the chemical treatment to gain early involvement prior to treatment as to the correct application and chemical to use.

8.3 Refurbishment and Improvement to existing systems

- It is vitally important that before commencing works on existing systems that a complete scan of the water quality of the system be taken. If it is found that the system contains products of corrosion and/or PH levels in excess of the required norms, it is recommended that the existing water is conditioned and treated PRIOR to the work commencing.

8.4 System commissioning (water quality) Water Treatment Chemicals

- We do not recommend the use of raw water for hydraulic testing due to the risk of corrosion of the water being left in the system and potentially, the internals of the system being exposed to the air due to partial draining.
- Chemically dosed water should be in all filling activities in accordance with the chemical manufacturers' recommendations and in accordance with BSRIA BG29 2012.
- After a suitable filling and flushing regime is used, relevant to the system material, all chemicals used to be suitable for HIU must comply with EU norms DIN EN 12828 and current guidelines for heating systems. In addition, they should also be non hazardous, non toxic and biodegradable.
- The use of correct cleaners and inhibitors is of primary, environmental concern. All chemicals used to treat the system should not contain phosphates, sulphuric acid, nitrites. See BS7593:2006 Code of Practice for treatment of water in domestic hot water space heating systems.
- Inhibitors should meet Buildcert as a minimum and preferably be recommended by the Energy Savings Trust (ESR).
- Acid based cleaners are unsuitable for older systems as there is a risk of "pinholing" on radiators. They will also require some form of neutralisation process before being discharged or require being taken away for disposal.

8. Appendix A

8.5 Recommendations for system conditioning - (Basic process)

- The system must be flushed and inhibited in accordance with BS7593 and the Domestic Building Services Compliance Guide.
- The chemicals used should contain the following aspects of their composition:
  - Surfactants to reduce surface tension allowing chelating agents to attach to the residues.
  - Chelating agents will then entrap the calcium carbonate within the solution.
  - Dispersant's are used to hold residues in suspension.
  - The inhibitor then prevents corrosive attacks on metals during cleaning.
  - PH Buffers to maintain a neutral PH.
  - Chemicals shall be of a type suitable for disposal through a conventional sewer or foul drain (i.e. no requirement for tankering or specialist disposal).
  - Neutralisation.
  - For cooling applications, specialist chemicals and advise should be sought.

8.6 Site installation conditions – Installation of the system

It is recommended that:

- Water soluble flux should be used (no Chloride – COSSH) therefore "heat free" systems are recommended.
- The area of installation should be free from gypsum dust, brick dust, screed or other possible contaminants.

8.7 Recommended aftercare (HIU) Network Primary side

- Any relevant details of the installed units and system conditioning to be documented in the O&M manual.
- There should be clear notification of any chemical products added, dates etc placed on the HIU.
- If there is a requirement for a partial drain down, the inhibitor should be topped up to the required level with full details.
- We highly recommend that all servicing/inspection etc as per manufacturer's instructions (HIU, filter, chemicals etc) is fully adhered to.
- Any checklist sticker placed within the casing by the manufacturer must be completed.

8. Appendix A

8.8 Recommended aftercare (Network)

It is recommended that a regime of periodic inspection of the system be undertaken. The inspection shall take the form of:

Visual inspection

System visual inspection, exterior corrosion, water stains on the pipe work and equipment, suggesting a slow leak and make up water entering the system thereby diluting the inhibitor concentrations.

Water Samples

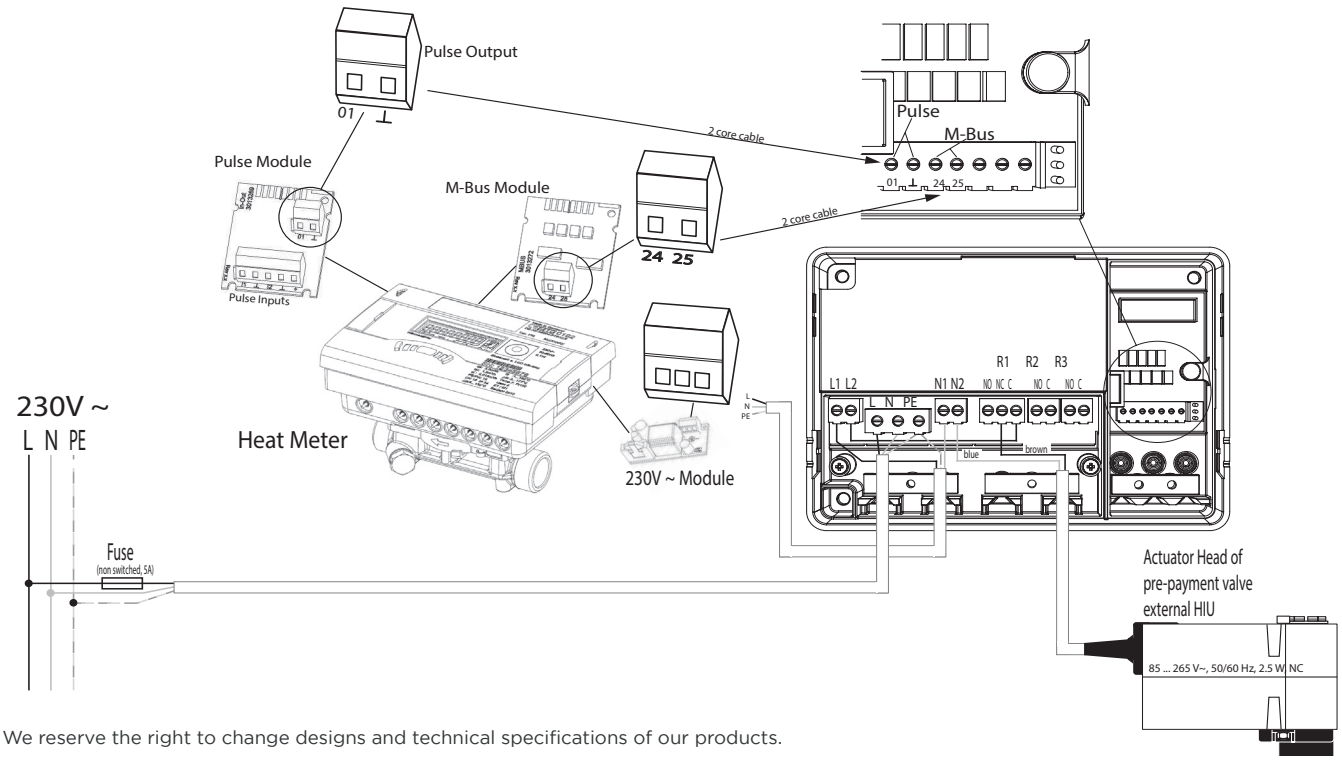
Water samples shall be drawn from a suitable draw off point to ascertain the condition of the network, on the primary side water.

The analysis of the water should include:

- Visual assessment – Note any discolouration away from clear as an indicator of possible corrosion
- Chemical assessment – PH value, hardness, precipitate composition and concentration of chemical treatment and type of treatment contained within the water (A UKAS registered lab is recommended to be used in the system water analysis).

8. Appendix B

Example wiring of a pre-payment system (GURU Systems), optional



8. Appendix C

Spare parts

Key*	Description	Detail	Article no.
1 & 28	Y Strainer	G3/4" BT x G3/4" BT L=82 PN20	ME-10101.0023
2 & 20	Temperature sensor	1/8"	ME-10576.121
6	DPCV	caleffi 140450, DN20, 250...600 mbar	ME-10574.14
8 & 9	Control valve	MUT VDE/ML SIN.ø9.5 24V 50Hz	ME-80590.83
10 & 12	Plate Heat Exchanger	E8LASHx40/1P-SC-S 4xG 3/4"BT	ME-10101.0036
11 & 13	Temperature sensor	1/8"	ME-10576.121
14	Over pressure relief valve	PRESCOR Rp 1/2" 3 bar	HS1053055
15	Temperatur / Pressure gauge	0...120°C / 0...4 bar	ME-10101.042
16	Bleed point	MS G3/8" BT	ME-10000.01
17	Expansion vessel	G 3/8" BT 8 LTR	HS1053057
18	Bleed point	G 1/8" BT	HS1053057
19	Water hammer arrester	G 3/4" WM x G 3/4" BT l=84,5	M10101.0052
21	Flow sensor	SIKA, Molex 4-Pol	ME-10101.0080
22	Non return valve		ME-10101.0043
24	circulation pump, DHW, optional, (incl. pos. 23)	Lowara Pro 15-1/65B	M10101.0045
25	circulation pump, space heating	Shinhoo GPA 20-6 III-130	ME-45101.087
26	Temperature/pressure sensor	RPS6 0-6 BAR	ME-10101.0032
27	Drain point	1/2"	ME-65051.3
29	Controller & Firmware		HS1054598
BV	Ball valve	3/4"	ME-61801.22

* for more information see chapter 5

8. Appendix D

Maintenance and service

Inspection, maintenance and service work on the interface station and heating system must be carried out and documented (in accordance with the relevant inspection guidelines) by a trained expert (installation company or Flamco customer service).
The condition of parts must be checked and these must be replaced if necessary. The interface stations must be checked regularly for leaks.
During maintenance work, the safety instructions and residual dangers must be observed!
For recommissioning, please also follow the relevant points.

When using nitrite-free anti-freeze and corrosion protection agents with an ethylene glycol base, please pay close attention to the manufacturer's documentation, particularly with respect to the concentration and specific additives.

Different water qualities and degrees of hardness can also influence the service life of individual components of devices. Therefore, regular inspection and maintenance (according to current technical rules) should be carried out annually to maintain the system's efficiency and functional safety.
If you have any questions, please contact your installation company or Flamco customer service.

Information regarding domestic water hardness

The propensity for natural water to form limescale deposits depends, among other things, on various factors such as the concentration of calcium and magnesium salts, the pH value and the temperature.

If what is known as the lime-carbonic acid balance has been disturbed by an increase in the pH value and/or the temperature, the calcium carbonate precipitates in the form of calcite crystals.

The applicable standards and corresponding technical regulations must therefore be observed.

Note:
Request a water analysis from the local utility companies for testing in the event of known regional risks or contested water quality.

8. Appendix D

Maintenance checklist

Work to be carried out during annual maintenance
(by the specialist installer or factory customer service)

1. Visual inspection *			**Completed and OK?**
1.	Screw connections and fittings	- Leak-tightness check	
2.	Heat exchanger	- Leak-tightness check	
3.	Safety trap	- Check whether water or water deposits are present in the trap.	
4.	Electrical wiring	- Check the electrical wiring for abnormalities (e.g. damaged cable sheathing, loose plug connections, etc.)	
5.	Equipotential bonding	- Check whether the equipotential bonding is connected.	
2. Functional check (mechanical)			
1.	Dirt trap	- Check and clean the sieve insert	
2.	Shut-off valves	- Check the functionality and operability; replace if defective	
3.	Zone valve	- Check the functionality of the valve tappet (lifter?); replace if defective	
4.	Flow line temperature for hot water preparation	- Temperature according to specifications (cf. commissioning protocol)	
5.	Flow rate for domestic hot water preparation	- Flow rate according to specifications (cf. commissioning protocol)	
6.	Circulation bridge	After the DHW draw-off is finished, the primary RL must remain cold	
		If the desired values under points 5 and 6 are not achieved despite the work carried out, the mains hydraulics must be checked. Please contact your responsible system operator regarding this.	
3. Functional check (electronic)			
1.	Status error codes	Check the status display of the error codes, document these, follow them up and initiate measures to remedy errors	
2.	Settings	Compare settings in the controller with the commissioning protocol and document any deviations	
3.	Software version	Document the current software version	
4.	Operating hours	Document the displayed operating hours	
4. op = optional (not integrated into all devices)			
1.	Heating circuit pump	Function check (cf. manufacturer's instructions)	
2.	Thermostatic valve with flow line temperature setting (op)	Function check and check of the correct setting (cf. commissioning protocol)	
3.	Differential pressure regulator	Function check and check of the correct setting (cf. commissioning protocol)	
4.	Return flow temperature limiter	Function check and check of the correct setting (cf. commissioning protocol)	

* Should the visual inspection reveal the presence of leaks or deposits on screwed or connecting parts or entire components, the component(s) or, in the case of screwed connections, the seal or seal set must be replaced immediately.

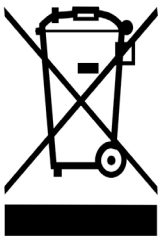
8. Appendix E

Decommissioning, dismantling, disposal and environmental protection

During dismantling, the safety instructions and residual dangers mentioned (see Section 1) must be observed!

Removal and disposal:
Removal and disposal of the device should only be carried out by suitable trained experts. When disposing of the auxiliary and operating materials, always observe the specifications in the safety data sheets, which must be provided by the suppliers of the auxiliary and operating materials. No environmental damage must be caused during disposal. If the device is intended for scrapping, care must be taken to ensure that the individual components are of the correct type when disposing of them. It is necessary to check which way the materials can be recycled properly.

Information according to the Electrical and Electronic Equipment Act (ElektroG)*:



Disposal of electrical and electronic equipment

The “crossed-out wheeled bin” symbol means that you are legally obliged to dispose of these devices separately from unsorted municipal waste. Disposal via household waste, such as the residual waste bin or the yellow bin, is prohibited. Avoid misdirected waste by disposing of it correctly at special collection and return points. As a matter of principle, waste prevention measures take priority over waste management measures. Waste prevention measures for electrical and electronic equipment include, in particular, extending their service life by repairing defective equipment and selling functioning used equipment instead of sending it for disposal.

Options for returning old devices

• Owners of old devices can return or collect them free of charge within the framework of the possibilities for returning or collecting old devices set up and provided by public waste management authorities. In addition, returns are also possible to distributors under certain conditions.
• The distributor must take back the device free of charge when a new device of the same type is purchased (1:1 take-back). There is also the possibility to return old devices to the distributor free of charge if the external dimensions do not exceed 25 centimetres and the return is limited to three old devices per type of device (0:1 take-back).
• Retail: Distributors who have a sales area for electrical and electronic equipment of at least 400 square metres are obliged to take back old electronic equipment. Food retailers who have a total sales area of at least 800 square metres and who also offer electrical and electronic equipment several times a calendar year or on a permanent basis and make it available on the market are also obliged to take it back.
• Distance selling market: Distributors who sell their products using means of distance communication are obliged to take back old devices if the storage and dispatch areas for electrical and electronic equipment are at least 400 m^2.

Removal of batteries and lamps
If the products contain batteries and rechargeable batteries or lamps that can be removed from the old device without destroying it, these must be removed before disposal and disposed of separately as batteries or lamps.

Data privacy
We would like to point out to all end users of electrical and electronic equipment that you are responsible for deleting personal data on the electrical and electronic equipment to be disposed of.

*Please observe the country-specific national implementation of the European WEEE Directive 2012/19/EU on waste electrical and electronic equipment that is currently in force.

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