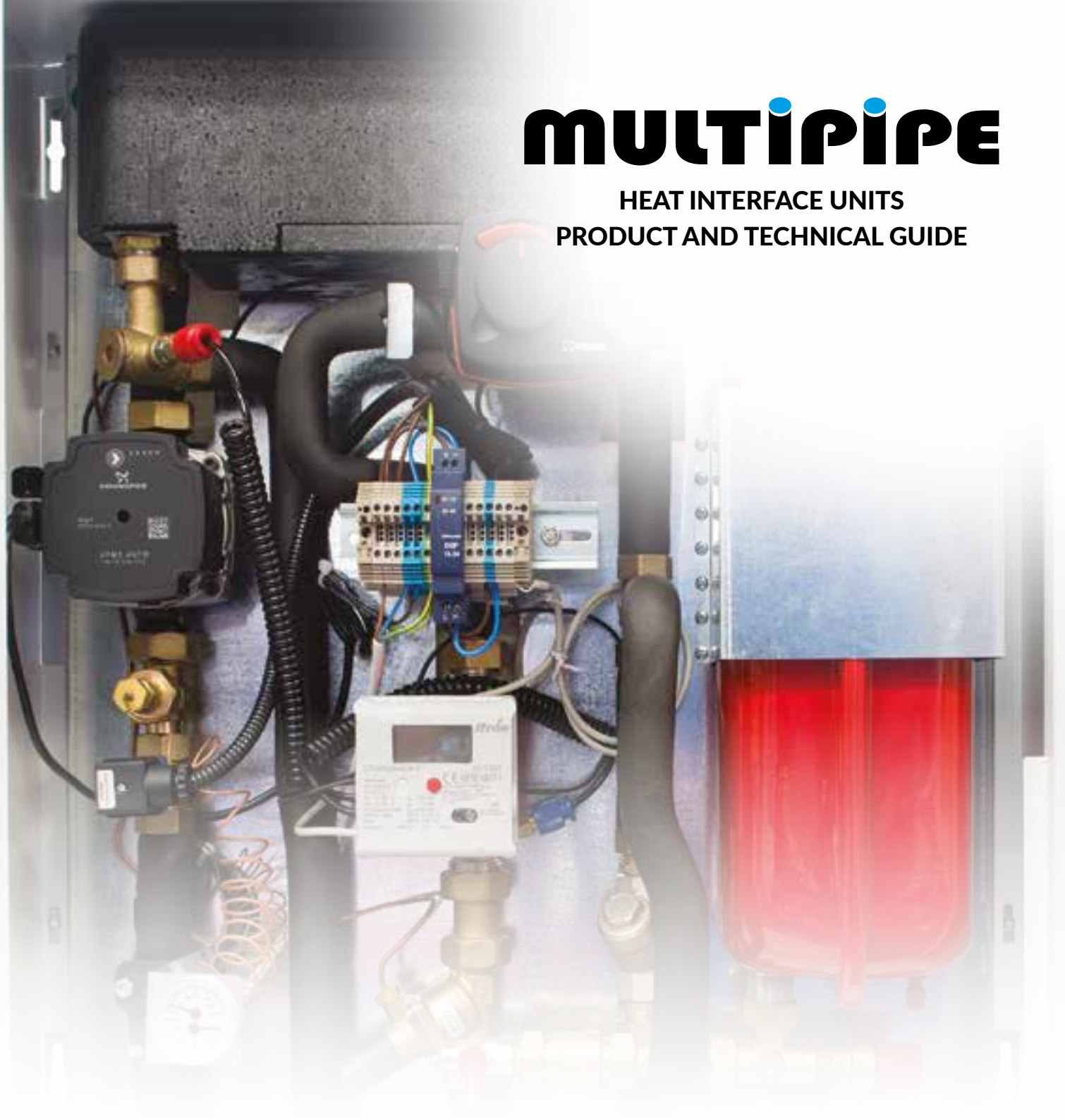


MULTIPIPE

HEAT INTERFACE UNITS
PRODUCT AND TECHNICAL GUIDE

HIU

Heat Interface Units

WWW.MULTIPIPE.CO.UK

INTRODUCTION & BENEFITS

About Multipipe

We are an independently owned UK business, with a combined management experience within the UK construction industry in excess of 50 years. Our business focus is on product, support, service and quality. We have numerous UK & European partner manufacturers providing high quality, cost effective plastic pipe, fittings and heating products.

Our Multipipe product offer and team have been assembled to provide the UK construction industry a sound, well rounded and cost effective selection of solutions in the fields of plumbing, heating and water distribution.

We provide a wide range of solutions to suit all budgets and project specifications, which in turn are supported by large stock levels, technical support and competitive pricing. Furthermore, our aim is to provide the kind of products and service that ensures long-term sustainable partnerships with our clients.

We have a nationwide sales team, supported by office based internal sales and customer services departments, so you can always get in contact with someone who knows about your project in detail. In addition our 'Samurai' customer service programme ensures that our business operations are slick and robust, and everything we do is designed to support our customers' requirements.

Why Choose Multipipe?

As an Installer:

- Comprehensive plumbing and heating solutions
- Expert know how and onsite support
- The most cost effective solutions in our field
- Product readily available

As a Merchant or Distributer:

- Excellent customer service and support
- Large stocks
- On time in-full deliveries
- Nationwide coverage
- Fast turnaround on quotations

As a Specifier or Designer:

- A range of up to date solutions that integrate with your project
- Quality European manufactured products
- Specification and design support within our in-house team
- Full CAD design facility
- Continuous innovation

Approvals and Certification

MLCP

Multilayer Pipe & Fittings

Founded in 2004, our partner Multitubo now operates in over 40 countries around the world.

Focused on listening to the installers, Multitubo now has produced 5 different types of fittings, all perfectly married to their excellent multilayer pipe offering. High grade raw materials, constant design improvement, cutting edge technology and outstanding logistics, Multitubo now stands as one of the leaders in the German and international pipe and fittings market.

Our long term exclusive partnership agreement with Multitubo, means we now hold very significant levels of product in stock that is immediately available from our own facility in the UK.

WRAS

multitubo systems

UFH

Underfloor Heating

With over 25 years experience in the commercial underfloor heating market, and in partnership with key industry manufacturers, we have the product, technical knowledge, support and pricing to provide the best in commercial and domestic underfloor heating. We offer both water-based and electric underfloor heating systems; each with different advantages depending on the application and size of the project. Our external technical sales team working in conjunction with our in-house technical and design team can provide whichever solution is required for your specific project, working with you from inception to completion and beyond.

MULTIPIPE

HIU

Heat Interface Units

A primary consideration in modern construction is increased energy efficiency, user comfort and energy costs – particularly in multi-dwelling buildings.

As a result Centralised District Heating schemes, supplied by a combination of traditional and renewable energy sources, are becoming widely accepted as the industry norm for new build developments. Heat Interface Units (HIUs) give Consultants and Engineers a reliable solution which provide eco-friendly, efficient temperature control whilst achieving high energy efficiency and user comfort.

In combination with leading UK manufacturers, we have developed a brand new HIU product range including metering options all backed by the required technical support required.

MULTIPIPE

PRE-INS

Pre-Insulated Pipe Systems

We are delighted to present our newest and incredibly exciting partnership with Terrendis.

Founded in 2012 as a subsidiary of the French RYB Group, Terrendis has fast developed a comprehensive range of pre-insulated plastic pipe systems.

We now acts as sole UK distributor for Terrendis systems and products. Our high levels of stock across the range of heating, sanitary and cooling pipe systems and a vast technical experience within our Multipipe team, enables us to both aid in design & specification, whilst also reacting quickly and efficiently to our customers' needs.

WRAS

terrendis

HEAT INTERFACE UNITS

What is a Heat Interface Unit?

Heat Interface Units (HIUs) provide the complete solution for your heating and hot water on a heat network.

Multipipe Ltd offer Heat Interface Units (HIUs) for a variety of applications – whether for single or multi-dwelling houses, apartments, industrial, commercial or within district heating systems.

The HIU unit provides a single point of control which delivers improved efficiency and reduced effective running costs. These compact units are designed to fit in very small spaces, with minimal installation and running costs. Systems can be fitted with wireless control and weather compensating modulation providing additional control.

Cost efficient solutions for multi-dwelling developments

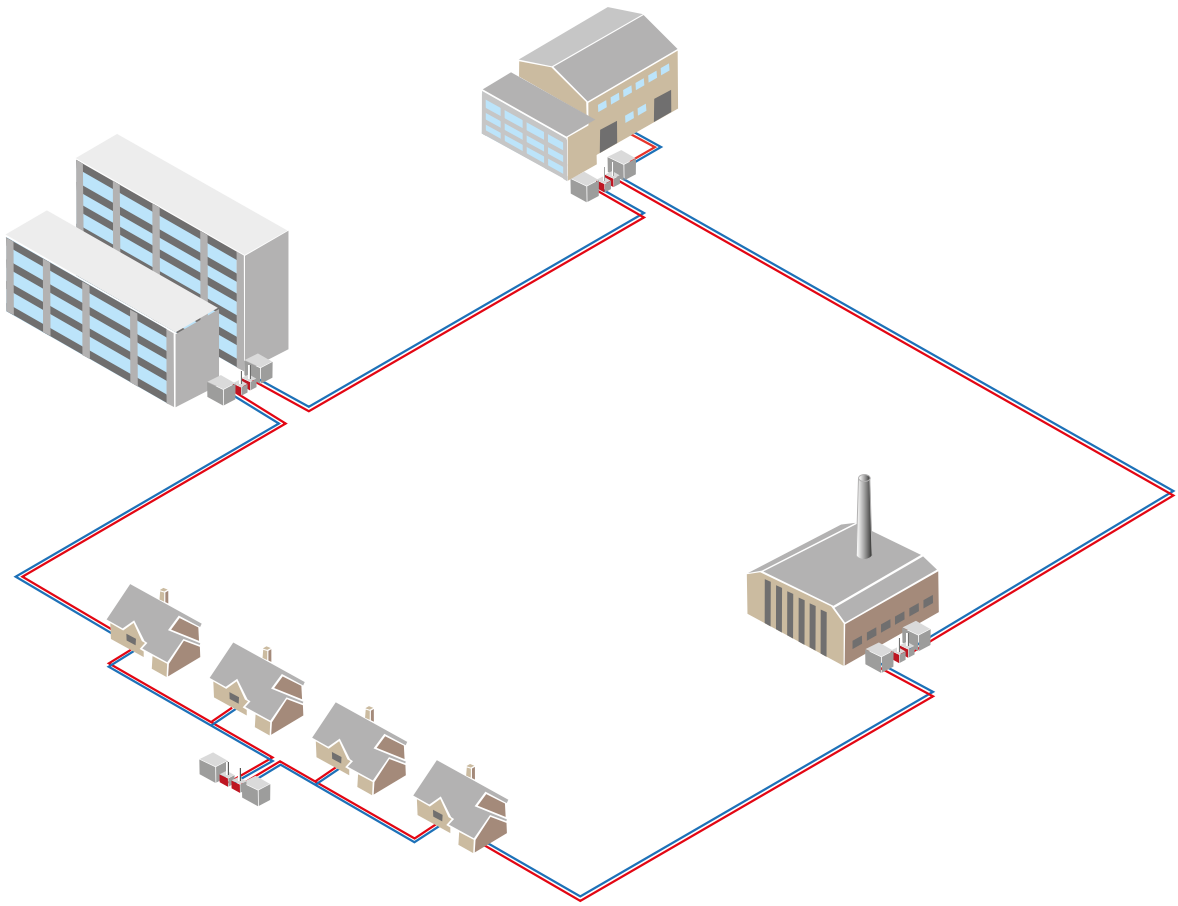
A primary consideration in modern construction is increased energy efficiency, user comfort and energy billing – particularly in multi-dwelling buildings.

As a result Centralised District Heating schemes, supplied by a combination of traditional and renewable energy sources, are becoming widely accepted as the industry norm for new build developments.

ESBE Controlled Heat Interface Units give Consultants and Engineers a reliable solution which provide eco-friendly, efficient temperature control whilst achieving high energy efficiency and user comfort.

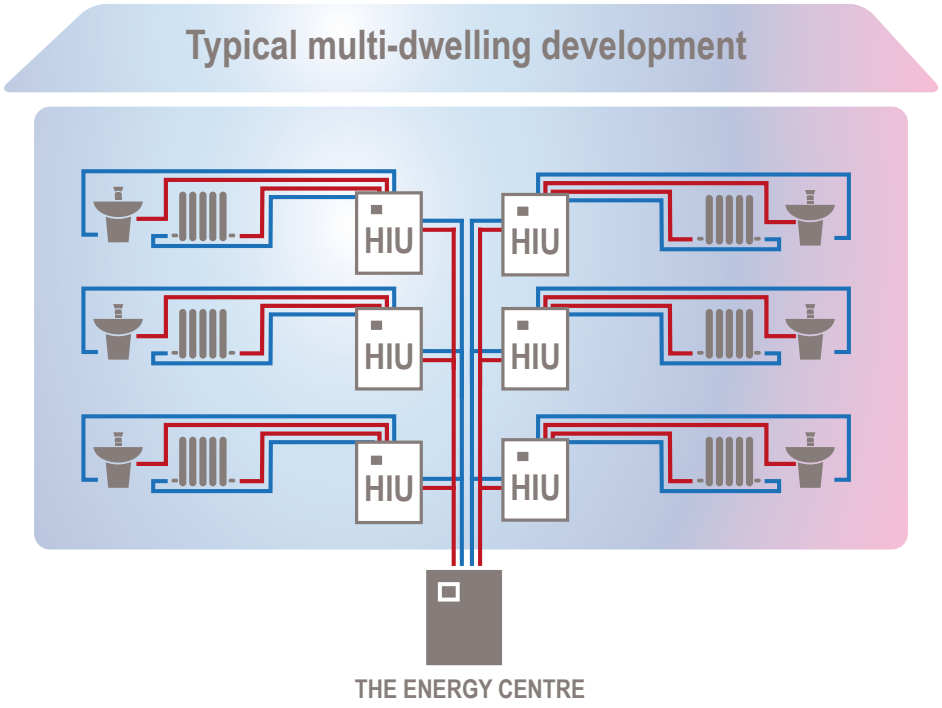
Benefits of ESBE Controlled HIUs include:

- One HIU fits all (5-70kW) – using specialized control valves
- Upgrade facilities with simple interchangeable units
- Intelligent controllers give efficient primary control and plate pre-heat for faster response.
- Esbe TMV for enhanced DHW user comfort
- Quality brands – Grundfos, ESBE, SWEP
- Designed for easy maintenance
- Fully insulated
- No gas supply required to individual apartments
- Reduced installation and life cycle costs
- Lower maintenance
- Greater energy efficiency



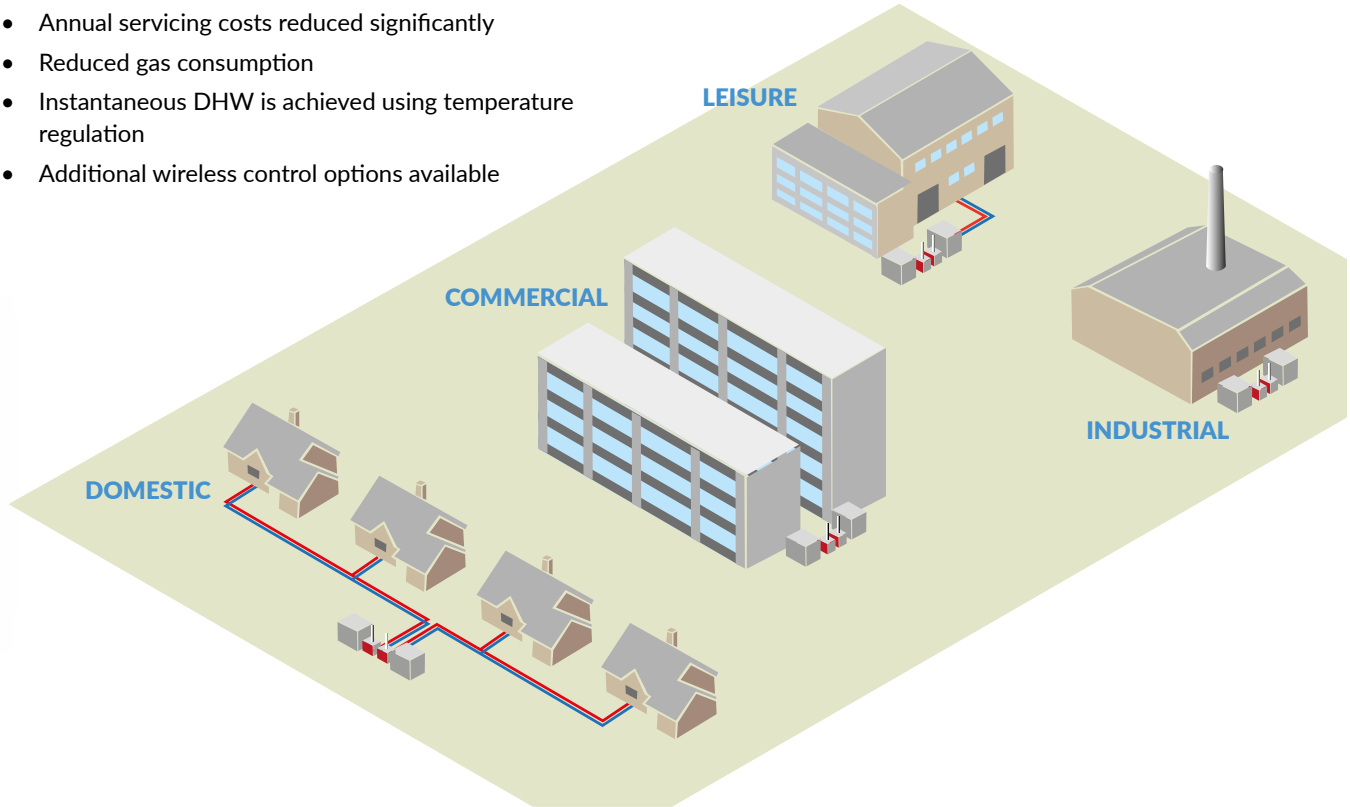
HEAT INTERFACE UNITS

What is a Heat Interface Unit?



The energy centre provides one heat source for all individual apartments and flats which reduces energy costs and the carbon footprint.

- Accurate consumption and running costs are provided
- Annual servicing costs reduced significantly
- Reduced gas consumption
- Instantaneous DHW is achieved using temperature regulation
- Additional wireless control options available



HEAT INTERFACE UNITS

HEAT INTERFACE UNITS

ESS-TWIN - Indirect Twin HIU

- Hydronic separation between primary and secondary system
- Instantaneous Heating and DHW from plate heat exchangers
- 12l expansion vessel
- Electronic and thermostatic control of DHW –High Flow rates
- Differential pressure control as standard
- Copper brazed AISI 316 stainless steel plate heat exchanger does not require maintenance.
- AISI 316 stainless steel piping prevents any corrosion.
- Easy to install and operate.
- Unique combination of fast acting high flow electronic control of DHW with secondary TMV to give stable temperature output

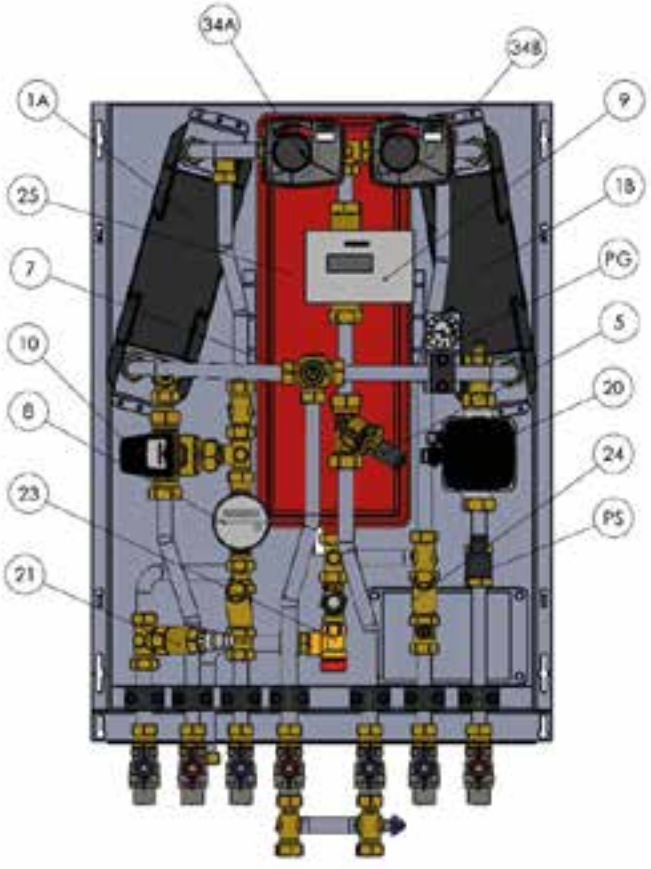
Specification

Heat transfer capacity	5-70kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Min working pressure DHW	2 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

Options

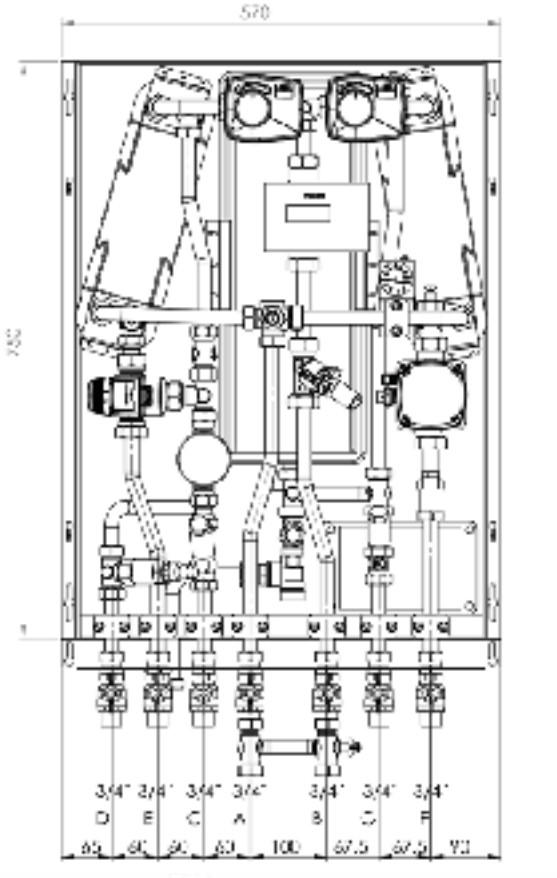
- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

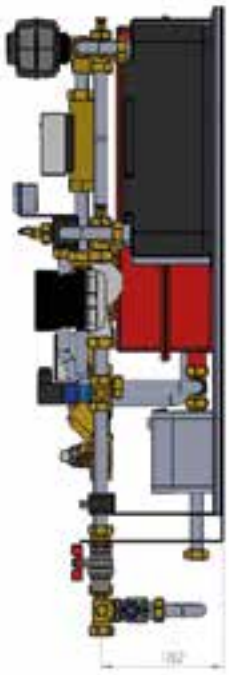
No	Components
1A	Heat Exhanger (DHW)
1B	Heat Exchanger (Heating)
5	Differential Pressure Controller
7	5 Way Distributor + Strainer
8	Water Meter
9	Heat Meter
20	Heating Circulation Pump
21	Check Valve
23	Safety Valve
24	Strainer
25	Expansion Tank
34A	CRS Controller
34B	CRA Controller
PG	Pressure Gauge
PS	Pressure Switch
10	Mixing Valve

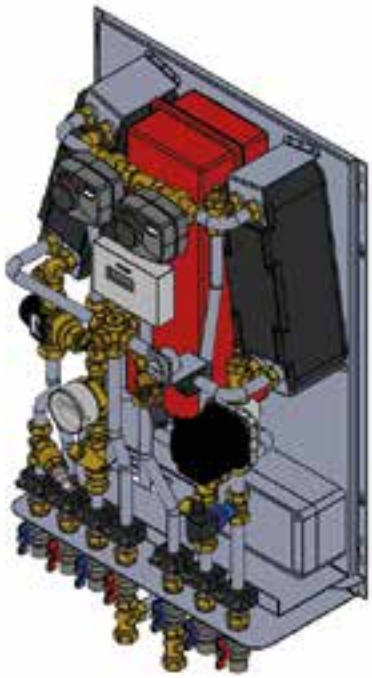


HEAT INTERFACE UNITS

ESS-TWIN - Indirect Twin HIU

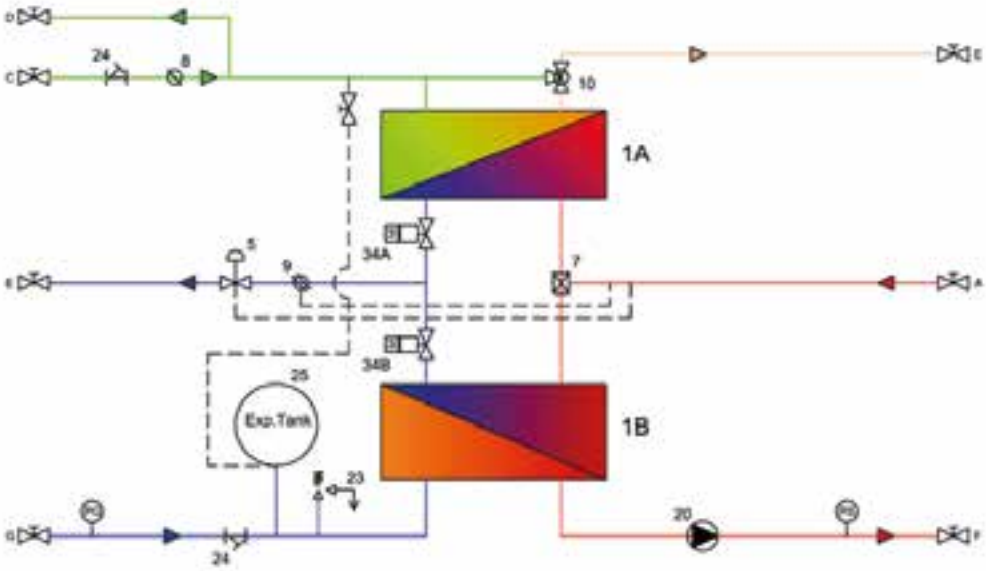






Hydronic Scheme

A	Central Heating Supply
B	Central Heating Return
C	Domestic Cold Water Inlet
D	Domestic Cold Water Outlet
E	Domestic Hot Water
F	Space Heating Supply
G	Space Heating Return



HEAT INTERFACE UNITS

ECO-TWIN - Indirect Twin HIU

- Cost effective solution whilst still giving increased functionality on Heating circuit - i.e. optional preheat, weather compensation and prepayment
- Hydronic separation between primary and secondary system
- Instantaneous Heating and DHW from plate heat exchangers
- 12l expansion vessel
- Electronic control of Heating with full modulation and thermostatic control of DHW
- Differential pressure control as standard
- Copper brazed AISI 316 stainless steel plate heat exchanger does not require maintenance.
- AISI 316 stainless steel piping prevents any corrosion.
- Easy to install and operate.
- High Flow secondary TMV gives stable temperature output and fail safe action.

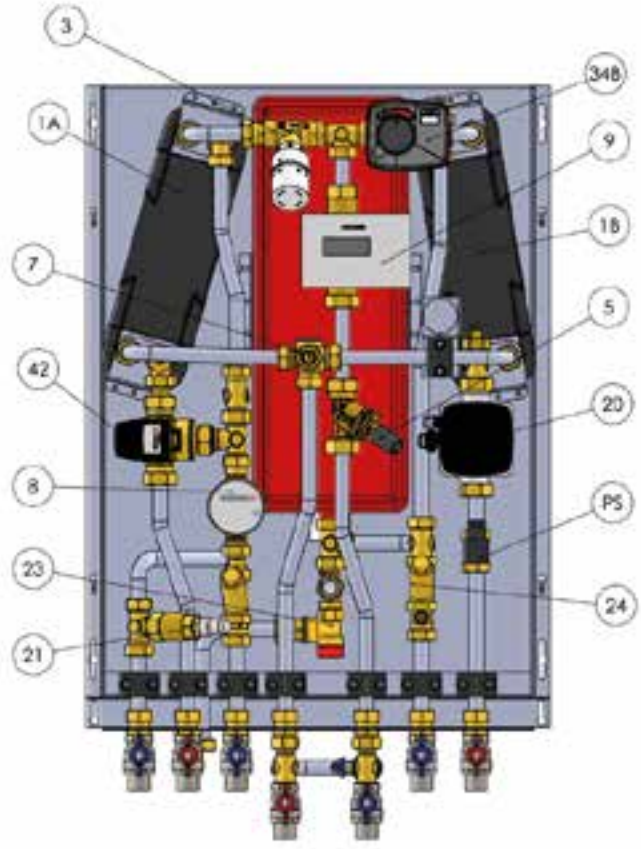
Specification

Heat transfer capacity	5-60kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Min working pressure DHW	2 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

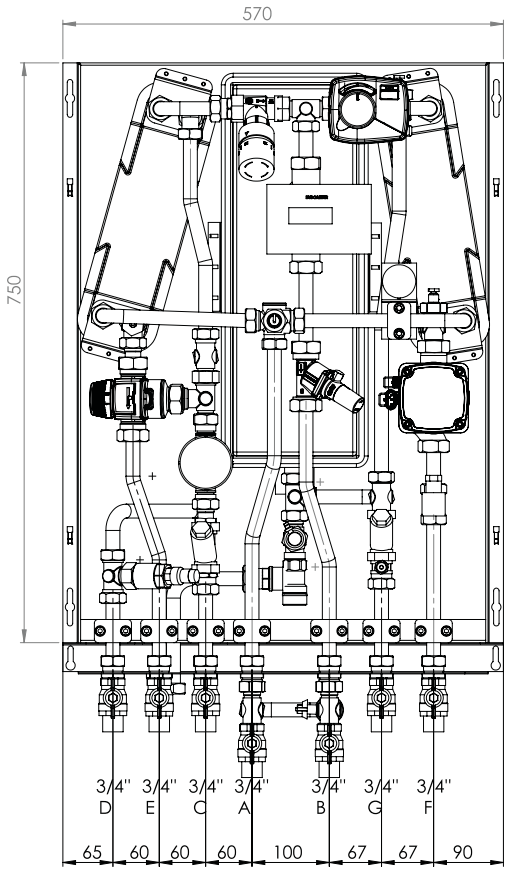
Options

- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

No	Components
1A	Heat Exhanger (DHW)
1B	Heat Exchanger (Heating)
3	Thermostatic Controller
5	Differential Pressure Controller
7	5 Way Distributor + Strainer
8	Water Meter
9	Heat Meter
20	Heating Circulation Pump
21	Check Valve
23	Safety Valve
24	Strainer
25	Expansion Tank
34B	CRA Controller
42	3 Way Mixing Valve
PG	Pressure Switch

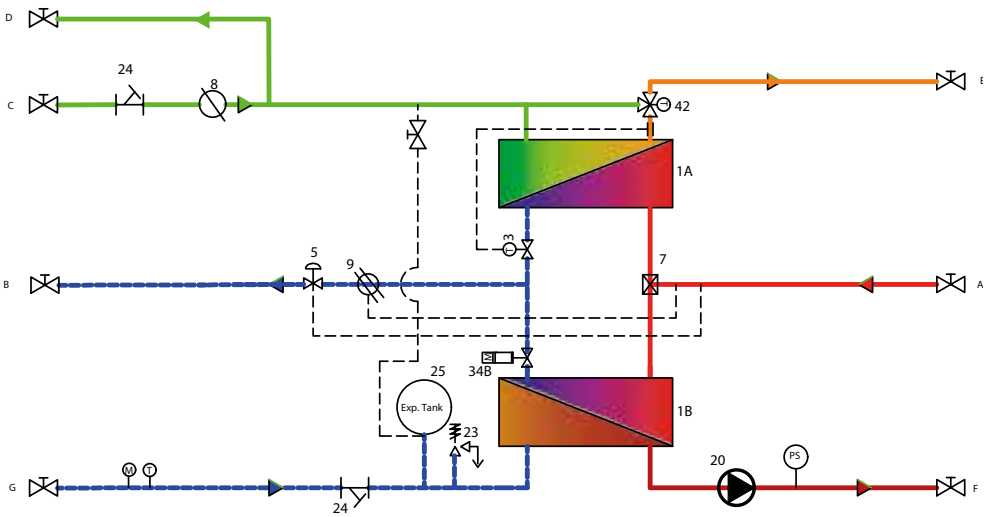


ESS-TWIN - Indirect Twin HIU



Hydronic Scheme

A	Central Heating Supply
B	Central Heating Return
C	Domestic Cold Water Inlet
D	Domestic Cold Water Outlet
E	Domestic Hot Water
F	Space Heating Supply
G	Space Heating Return



HEAT INTERFACE UNITS

ESS-Single - Indirect Single HIU

- Hydronic separation between primary and secondary system
- Instantaneous Heating from plate heat exchangers
- 12l expansion vessel
- Electronic control –High Flow rates
- Differential pressure control as standard
- Copper brazed AISI 316 stainless steel heat exchanger does not require maintenance.
- AISI 316 stainless steel piping prevents any corrosion.
- Easy to install and operate.

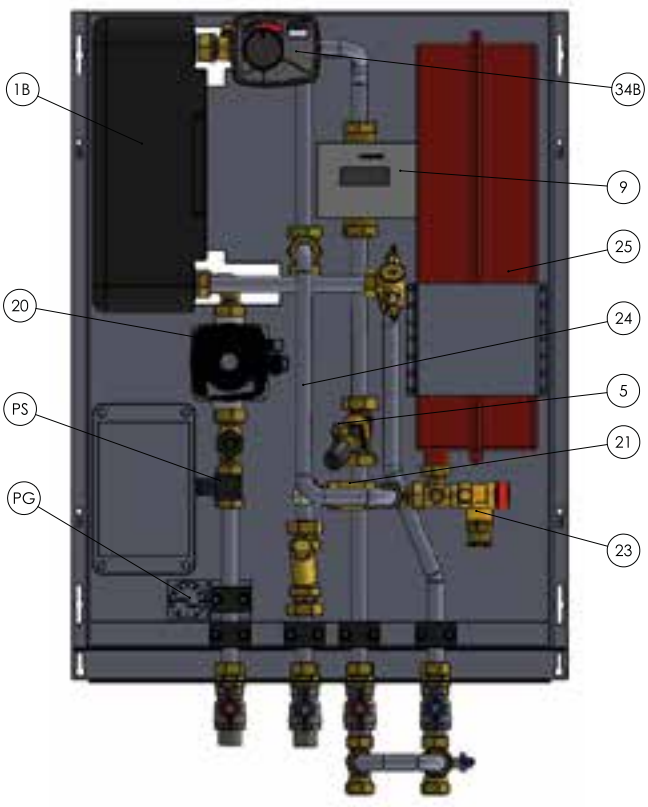
Specification

Heat transfer capacity	60kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

Options

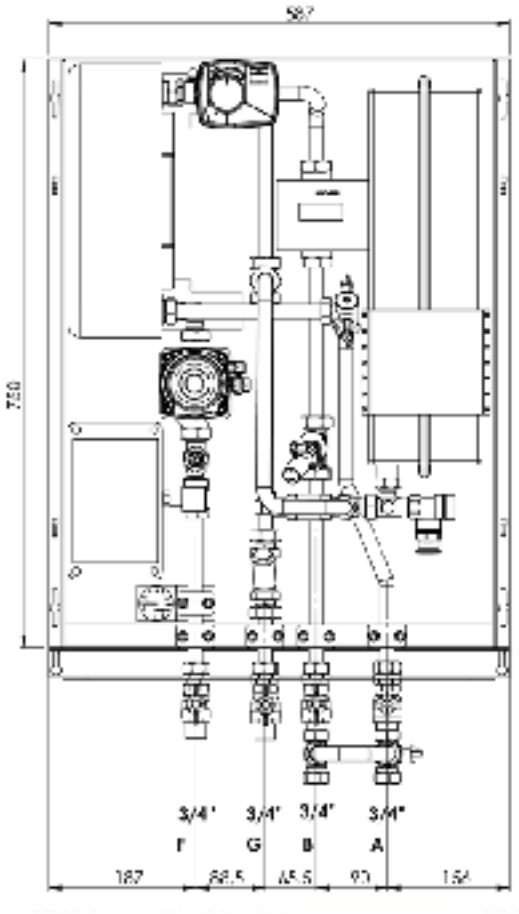
- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

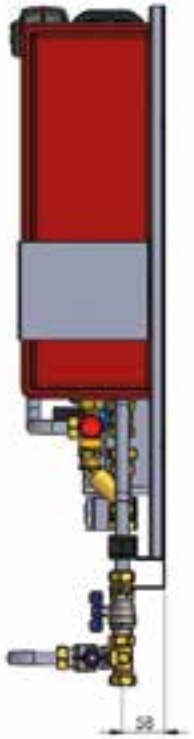
No	Components
1B	Heat Exhanger (Heating)
5	Differential Pressure Control Valve
9	Heat Meter
20	Heating Circulation Pump
21	Check Valve
23	Safety Valve
24	Strainer
25	Expansion Tank
34B	CRA Controller
PG	Pressure Gauge
PS	Pressure Switch

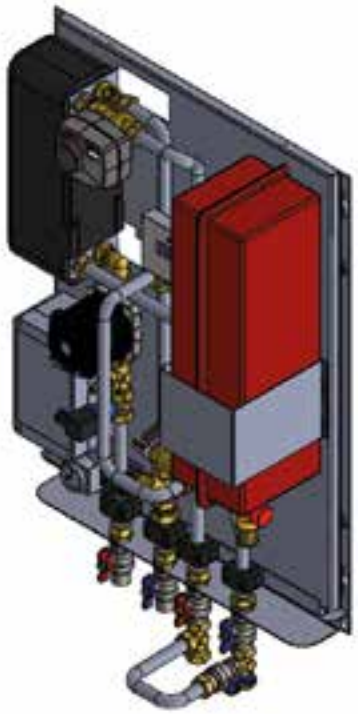


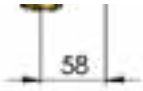
HEAT INTERFACE UNITS

ESS-Single - Indirect Single HIU



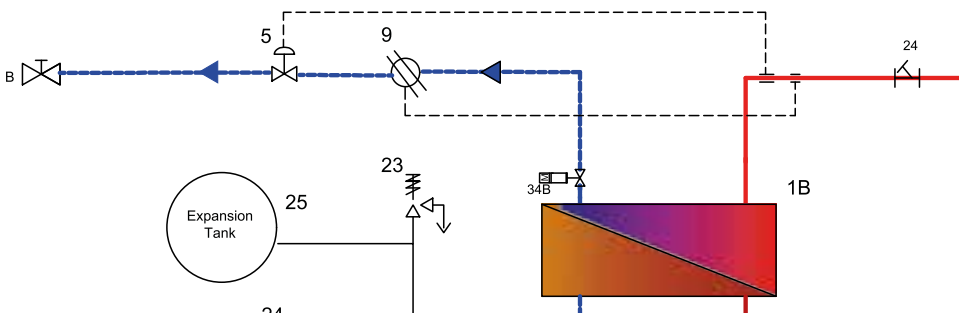






Hydronic Scheme

A	Central Heating Supply
B	Central Heating Return
F	Space Heating Supply
G	Space Heating Return



HEAT INTERFACE UNITS

ESS-Cylinder - Indirect Heating with DHW Cylinder

- Hydronic separation between primary and secondary system
- Instantaneous Heating
- Cylinder tee off after heat meter allowing accurate billing of DHW in retrofit applications or when buffer tanks are installed
- 12l expansion vessel
- Range of interchangeable Controllers for Heating
- Differential pressure control as standard
- Copper brazed AISI 316 stainless steel plate heat exchanger does not require maintenance.
- AISI 316 stainless steel piping prevents any corrosion.
- Easy to install and operate

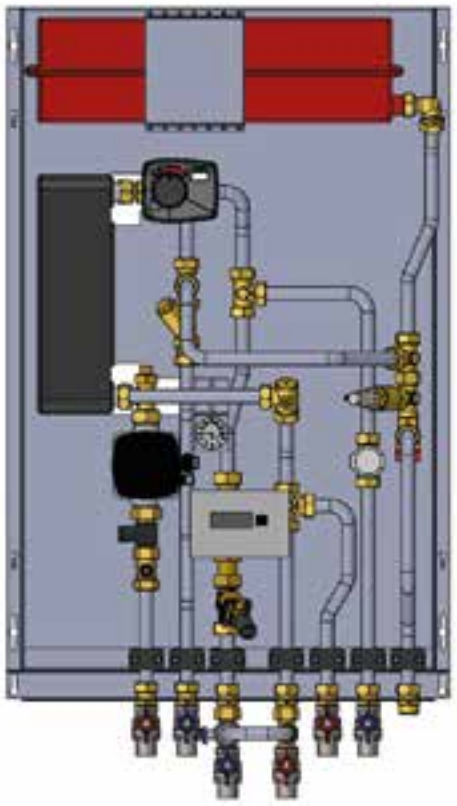
Specification

Heat transfer capacity	60kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Min working pressure DHW	2 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

Options

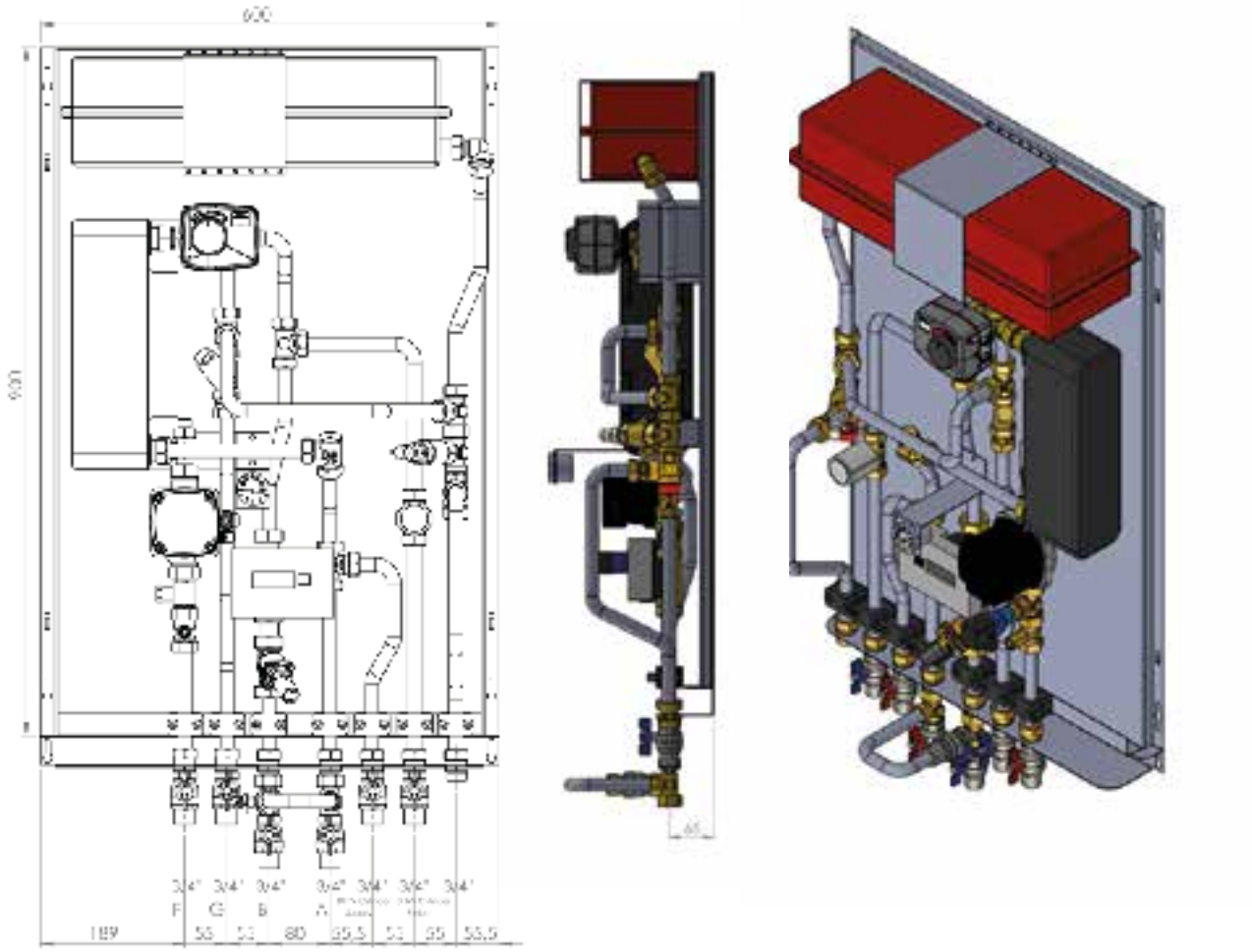
- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

No	Components
1B	Heat Exhanger (Heating)
4	Zone Valve
9	Heat Meter
20	Heating Circulation Pump
21	Check Valve
23	Safety Valve
24	Strainer
25	Expansion Tank
34B	CRA Controller
PG	Pressure Gauge
PS	Pressure Sensor



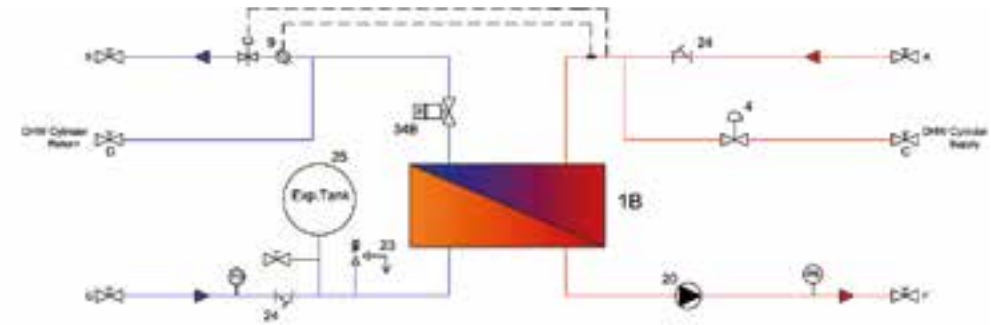
HEAT INTERFACE UNITS

ESS-Cylinder - Indirect Heating with DHW Cylinder



Hydronic Scheme

A	Central Heating Supply
B	Central Heating Return
C	DHW Cylinder Supply
D	DHW Cylinder Return
F	Space Heating Supply
G	Space Heating Return



HEAT INTERFACE UNITS

ESS-Direct - Indirect DHW with Direct Heating

- Hydronic separation between primary and secondary system
- Instantaneous Heating directly from the primary supply allowing greater energy savings and efficiency
- Ideal for new build applications
- Range of interchangeable Controllers for Heating
- Differential pressure control as standard
- Copper brazed ISI 316 stainless steel plate heat exchanger does not require maintenance.
- AISI 316 stainless steel piping prevents any corrosion.
- Easy to install and operate

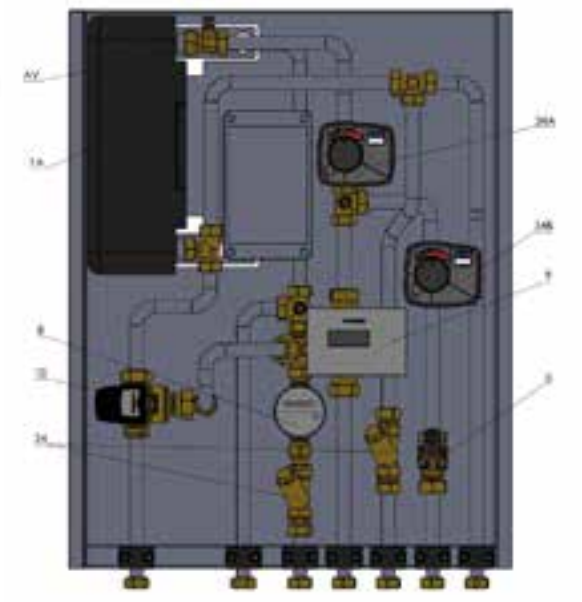
Specification

Heat transfer capacity	5-70kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Min working pressure DHW	2 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

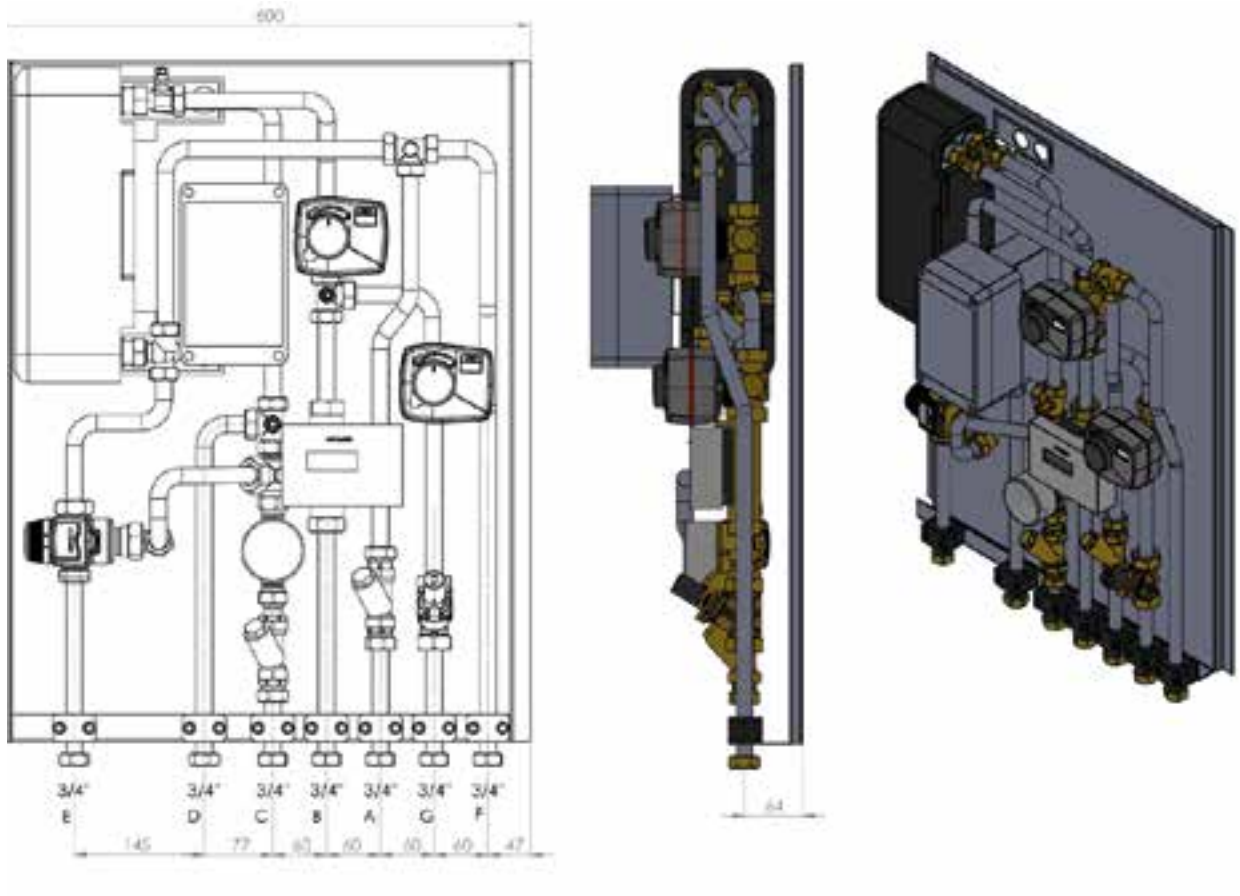
Options

- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

No	Components
1A	Heat Exchanger (DHW)
8	Water Meter-Optional
9	Heat Meter
5	Differential Pressure
24	Strainer
34A	CRS Controller
34B	CRA Controller
AV	Air Vent
10	Mixing Valve

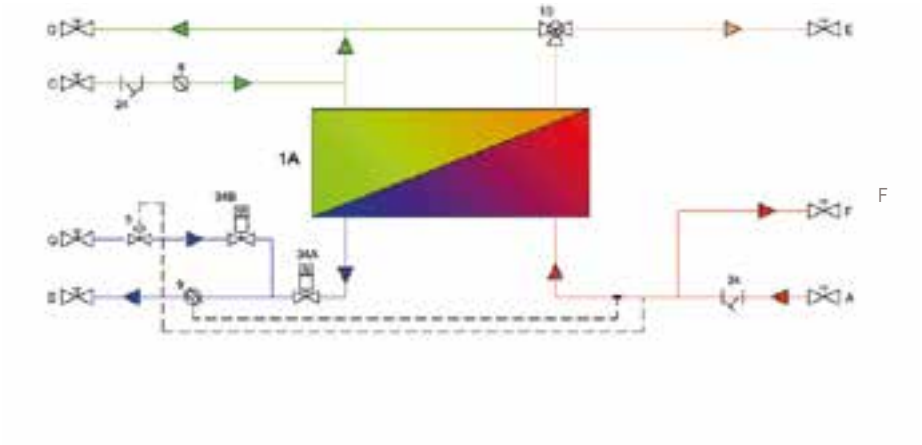


ESS-Direct - Indirect DHW with Direct Heating



Hydronic Scheme

A	Central Heating Supply
B	Central Heating Return
C	Domestic Cold Water Inlet
D	Domestic Cold Water Outlet
E	Domestic Hot Water
F	Space Heating Supply
G	Space Heating Return



HEAT INTERFACE UNITS

HIU Options - Underfloor Heating

- All versions available with integrated UFH manifolds
- Reduces overall install time and cost
- Eliminates requirement for additional pump and Area Control Pack – Integrated Esbe CRA controls the UFH circuit.
- Weather compensation easily added for total control

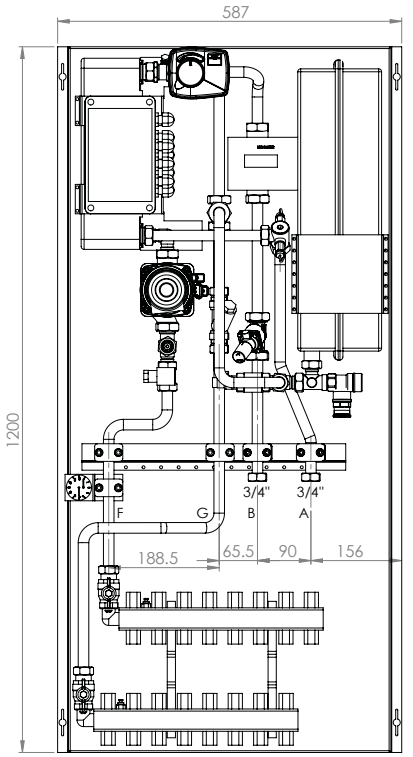
Specification

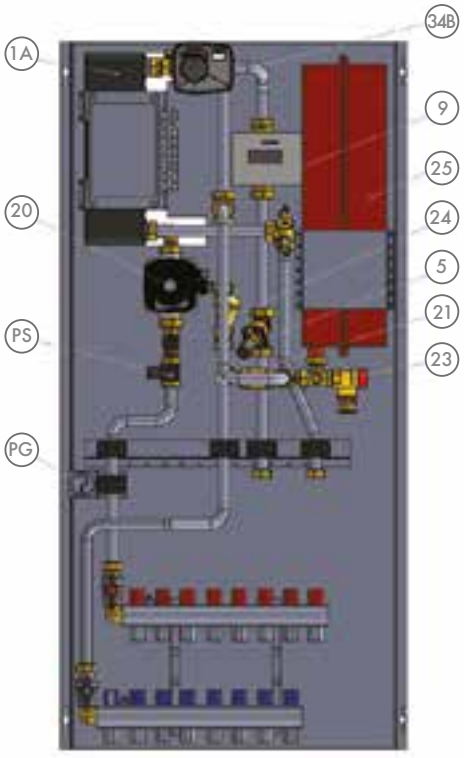
Heat transfer capacity	60kW
Max working pressure primary	10 Bar
Max working pressure secondary(heating)	3 Bar
Max working temperature	95°C
Connections	¾" BSP Insulated Pipe

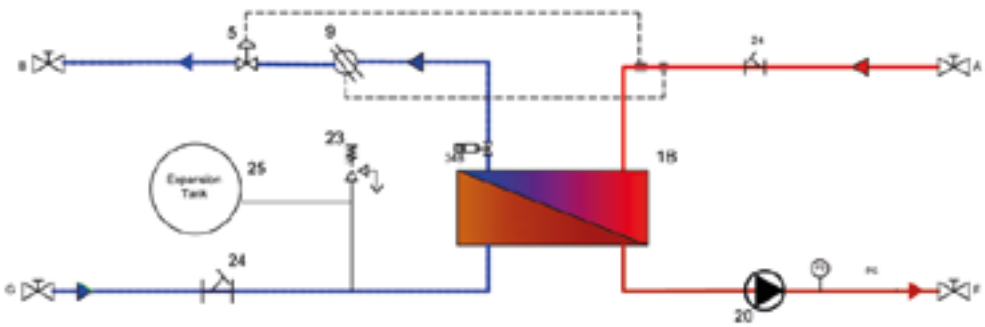
Options

- First Fix Rail complete with Bypass
- MBUS Heat Meter
- MBUS Water Meter
- Range of Heating controllers allowing Weather Compensation, Wireless Room stat and Indoor sensors.

No	Components
1B	Heat Exhanger (Heating)
5	Differential Pressure Control Valve
9	Heat Meter
20	Heating Circulation Pump
21	Check Valve
23	Safety Valve
24	Strainer
25	Expansion Tank
34B	CRA Controller
PG	Pressure Gauge
PS	Pressure Switch





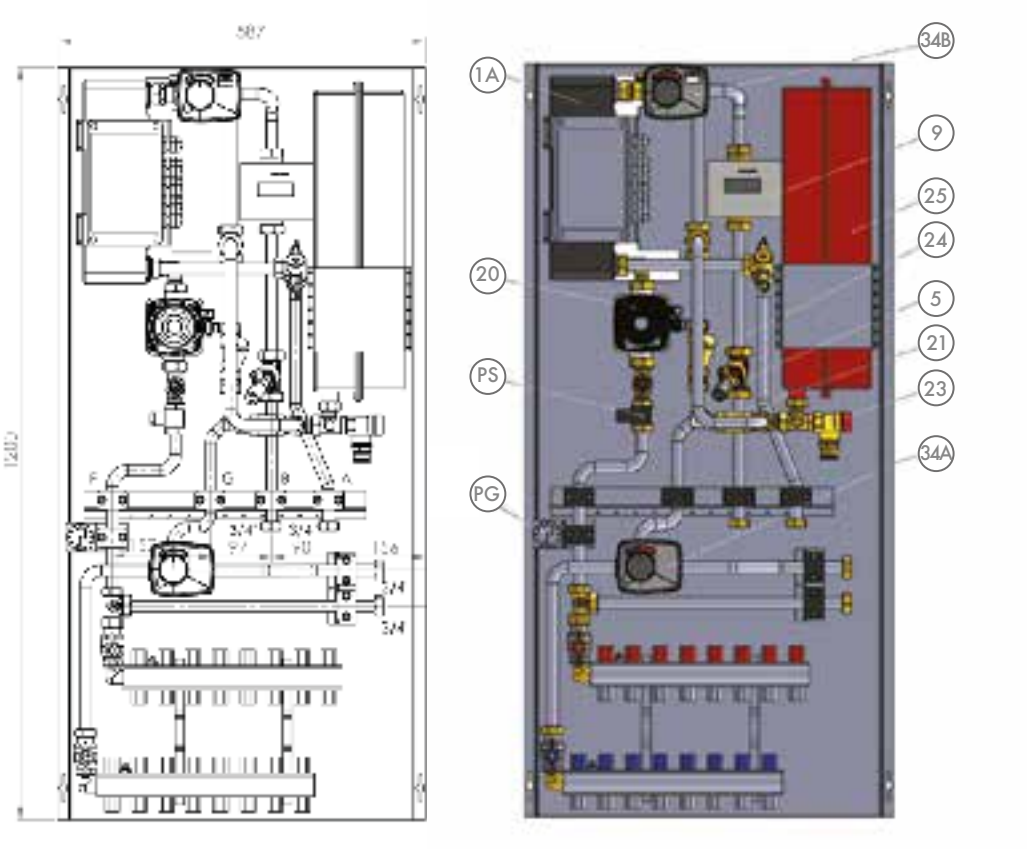


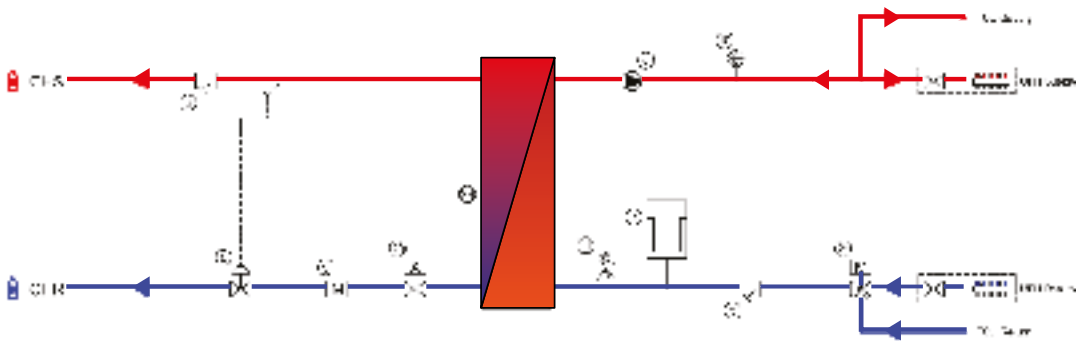
HIU Options - Underfloor Heating with Fancoil

- Option to integrate and operate fan-coil circuit whilst still allowing simultaneous flow to the UFH.

  All versions available with integrated UFH manifolds and Fancoil control
- Reduces overall install time and cost
- Eliminates requirement for additional pump and Area Control Pack – Integrated Esbe CRA controls the UFH circuit.
- Weather compensation easily added for total control

No	Components
2H	Heat Exchanger (Heating)
3	Strainer
5	Heating Circulation Pump
6	Differantial Pressure Controller
7	Expansion Vessel
9	Heat Meter
10	Thermomanometers
11	Safety valve
20	CRA Controller
21	ARA 600

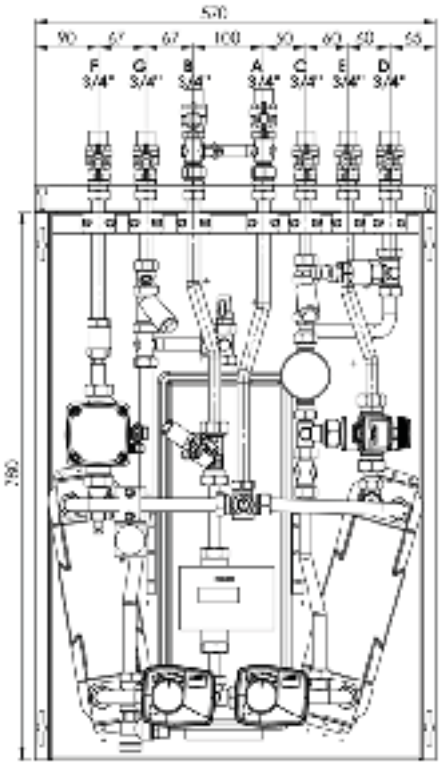


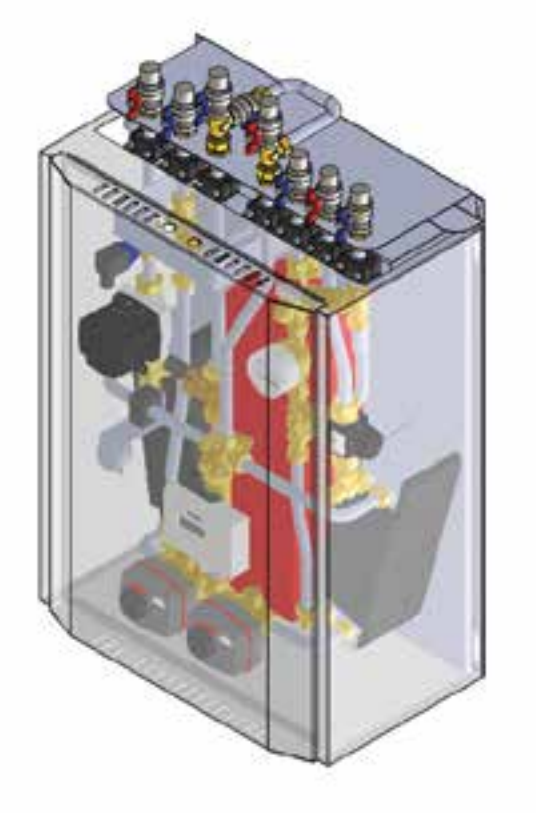


HEAT INTERFACE UNITS

HIU Options - Top Entry

- All versions available as top inlet connections if required (twin version shown)
- Gives flexibility of installation for pipework





HIU Options - First Fix Jig

- First fit jigs allow pipe installation and positioning before installing HIU
- Integrated by-pass and flushing valve –full bore and fully insulated
- Full bore isolation valves
- Available for all HIU variants

Prepayment Options

- Esbe CRA and CRS controllers allow full integration of prepayment options
- HIU can be turned on/off without the need for additional 2-Port control valves – reducing cost and simplifying installation
- In addition the HIU can be set to allow reduced temperatures or frost setting until payment is received.
- Control is Open Protocol so HIU is compatible with all Billing Providers.

HEAT INTERFACE UNITS

Smart Systems Components

VRG122 2 way Rotary shoe valve

Manufactured from DZR Brass for long lasting and high durability. Lowest internal leakage rate on the market (<0.05%). Progressive regulating characteristic to give full control throughout opening stroke. Customized coated sleeve for high endurance. Close coupling with Esbe actuator for accurate proportional control

CRA115 – Temperature Controller

Series CRA110 is a constant flow temperature controller for applications where a constant water temperature is required. Temperature settings is done by an easy-to-use joystick and display interface. The compact controller is designed for operating rotary valves DN 15-50 and has an operating range of 90°. The series can easily be manually operated by the pulland-turn knob on the front of the cover.

CRC115 – Temperature Controller with Weather compensation

Series CRC110 is an outdoor sensor based controller with integrated actuator for use on mixing valves like VRG122 and VRB140. The controller is designed to provide a high level of comfort thanks to the possibility to set a perfect characteristic heating curve and at the same time provide energy savings for the house owner. The regulation is based on outdoor sensor feedback and an adjustable characteristic heating curve. An offset / parallel adjustment of the characteristic heating curve may be activated by an external signal for example night settings. For applications with well insulated building and quick heating systems such as radiator circuits a temperature filter can be activated to delay an outdoor temperature change to avoid an imbalance between estimated and actual heating demand.

CRS115 – Temperature Controller with pocket sensor

Series CRS110 is a constant flow temperature controller for applications where a constant water temperature is required. Temperature setting is done by an easy-to-use joystick and display interface. The compact controller is designed for operating rotary valves DN 15-50 and has an operating range of 90°. The series can easily be manually operated by the pull-and-turn knob on the front of the cover. The CRS has a pocket with an inserted temperature sensor with a quick temperature response to suit potable water applications. The actuator programming can be altered to give faster response times for temperature variations.

Grundfos UPM 3 Pump

A speed-controlled, high-efficiency pump with internal controls in constant pressure, proportional pressure or constant speed modes defined by the means of a smart user interface. The UPM3 AUTO is for all applications in which an internally controlled pump is needed. It is designed to be used in appliances or cabinets with increased ambient temperatures and limited space options; either in standalone applications or in kit systems without PWM controller.

Heatmeter

Heat Meters are used to measure the distribution of heat energy in heating control systems by calculating the volume and temperature differential of circulated water and comply with requirements stipulated in OIML R 75, MID, EN 1434 standards. The Heat Meter used in our HIUs has MBUS feedback allowing remote recording of energy usage via Ethernet for billing purposes.

HIU

Technical

Calculation Guide - Heating

Output Rating	Primary Delta T	Secondary Delta T	Primary Pressure Drop	Secondary Pressure Drop	Primary Flow Rate	Secondary Flow Rate
Kw	°C	°C	kPa	kPa	l/m	l/m
5	15	10	0.463	0.546	4.77	7.15
10	15	10	1.86	2.18	9.53	14.3
15	20	15	2.35	2.18	10.72	14.3
20	20	15	4.2	3.9	14.3	19.0
20	20	20	3.9	2.2	14.3	14.3
30	20	15	9.4	8.8	21.5	28.6
30	20	20	9.4	4.9	21.5	21.5
40	20	20	16.6	8.8	28.6	28.6
40	30	20	7.4	8.8	19.1	28.6
40	30	30	7.4	3.9	19.1	19.1
50	30	30	11.6	6.1	23.8	23.8
60	30	30	16.7	8.8	28.6	28.6

Calculation Guide - Instantaneous Hot Water

"Output	Primary Delta T	Secondary Delta T	Primary Pressure Drop	Secondary Pressure Drop	Primary Flow Rate	DHW Secondary Flow Rate
Kw	°C	°C	kPa	kPa	l/m	l/m
30	33 (55/22)	35 (10/45)	3.8	2.7	13.0	12.3
40	38 (60/22)	35 (10/45)	5.1	4.7	15.0	16.3
50	48 (70/22)	35 (10/45)	5.0	7.8	14.9	20.4
60	48 (70/22)	35 (10/45)	7.1	10.7	17.9	24.5
70	53 (75/22)	35 (10/45)	8.0	14.5	18.9	28.6

Diversity Factor

The degree of diversity for multiple dwellings is expressed as a "coincidence factor" and is defined as: F = DFR / MFR

Where: F = coincidence or diversity factor

DFR = design flow rate for hot water outlets (l/s)

MFR = maximum possible flow rate for hot water outlets (l/s)

Number of HIUs	Diversity	Number of HIUs	Diversity	Number of HIUs	Diversity
1	1	34	0.1312	67	0.0998
2	0.6194	35	0.1296	68	0.0992
3	0.4765	36	0.1280	69	0.0987
4	0.3988	37	0.1265	70	0.0981
5	0.3490	38	0.1251	71	0.0976
6	0.3139	39	0.1238	72	0.0971
7	0.2876	40	0.1224	73	0.0966
8	0.2670	41	0.1212	74	0.0961
9	0.2504	42	0.1200	75	0.0956
10	0.2366	43	0.1188	76	0.0952
11	0.2250	44	0.1177	77	0.0946
12	0.2151	45	0.1166	78	0.0942
13	0.2064	46	0.1156	79	0.0939
14	0.1988	47	0.1148	80	0.0934
15	0.1920	48	0.1136	81	0.0930
16	0.1860	49	0.1127	82	0.0926
17	0.1805	50	0.1118	83	0.0922
18	0.1756	51	0.1109	84	0.0918
19	0.1710	52	0.1100	85	0.0914
20	0.1670	53	0.1092	86	0.0910
21	0.1631	54	0.1084	87	0.0907
22	0.1596	55	0.1076	88	0.0903
23	0.1563	56	0.1069	89	0.0899
24	0.1533	57	0.1061	90	0.0896
25	0.1504	58	0.1054	91	0.0892
26	0.1478	59	0.1047	92	0.0889
27	0.1453	60	0.1040	93	0.0886
28	0.1429	61	0.1034	94	0.0882
29	0.1407	62	0.1027	95	0.0879
30	0.1386	63	0.1021	96	0.0876
31	0.1366	64	0.1015	97	0.0872
32	0.1347	65	0.1009	98	0.0870
33	0.1329	66	0.1003	99	0.0867

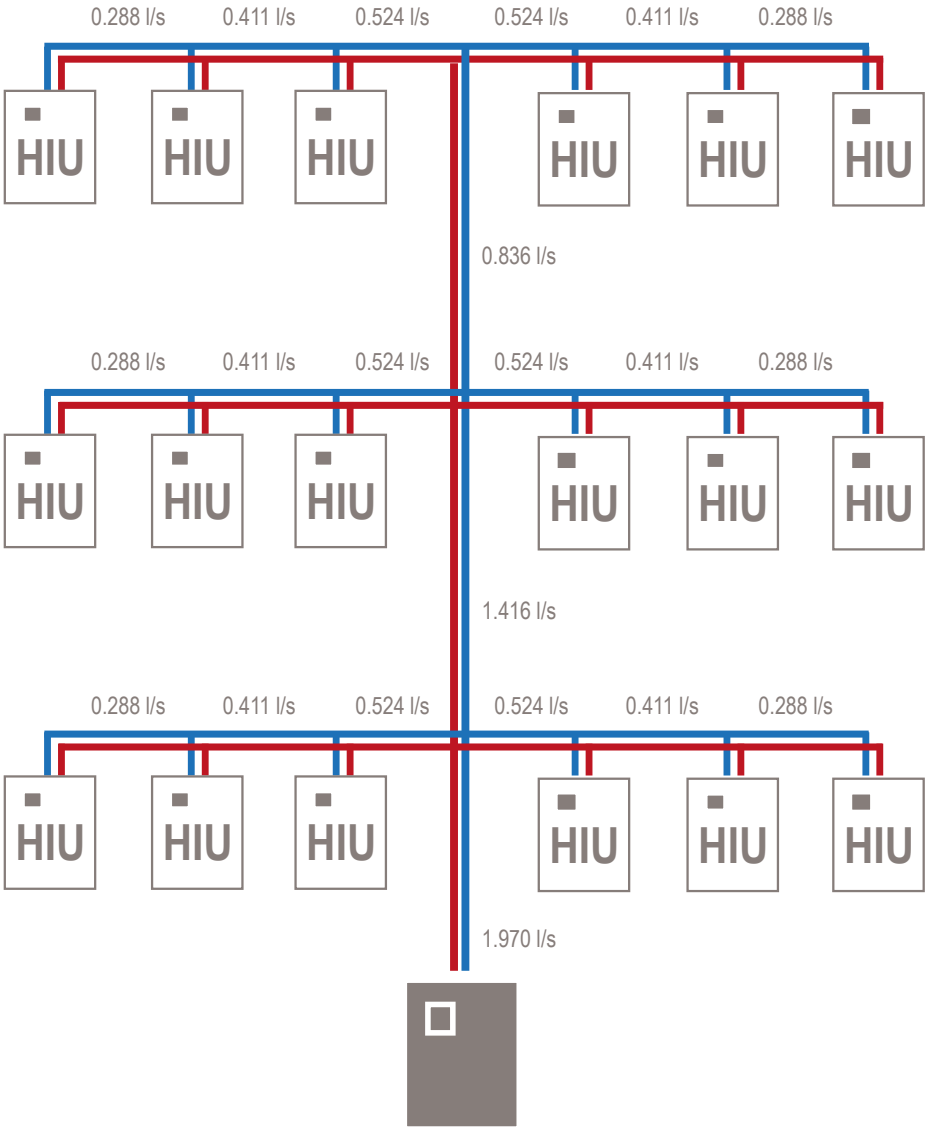
Technical

Effect of Diversity Factors

The simple system below illustrates the effects for diversity.

It assumes that each apartment is identical with the following:-

Heat Load	3kW
DHW load	50kW
Heating ΔT	10 °C
DHW Primary ΔT	55°C



Total flow rate without diversity = 2.592 l/s

Total flow rate with diversity = 1.970 l/s

HIU

Technical

Flow Rate Calculation

Using the diversity factor from the chart, the maximum design flow rate for each section of heating pipe can be determined.

The flow rate through each pipe must be capable of delivering the peak heating demand for the apartment being served plus the peak simultaneous diversified demand for domestic hot water.

$$QT = (F * Q_{HW}) + (Q_{HTG})$$

Where

F = coincidence or diversity factor

QT = total design flow rate - l/s

Q_{HW} = water flow rate to meet peak domestic hot water demand - l/s

Q_{HTG} = Water flow rate required to meet peak space heating demand - l/s

The quantity of hot water to heat the domestic hot water QHW can be calculated from the equation:

$$QDHW = \frac{PHW}{4.2 * \Delta TDH}$$

Where

P_{HW} = energy required in kW for all HIU domestic hot water

ΔT_{DH} = design temperature drop across the central boiler plant side of the heat exchanger during hot water production - typically 50 °C - 75 °C flow, 25 °C return.

4.2 = specific heat factor - kJ / kg °K

The quantity of hot water for space heating QHTG can be calculated from the equation:

$$QDHW = \frac{PHG}{4.2 * \Delta_{THTG}}$$

Where

P_{HTG} = energy required in kW for all apartments - typically 3 to 10 kW each

ΔT_{HTG} = design temperature drop across the central boiler plant side - typically 30 °C - 75 °C flow, 45 °C return.

Sizing the Central Boiler Plant

Buffer tank provides a thermal store to enable the system to supply a large amount energy for a short period.

The buffer tank cools during peak demand and returns to the design temperature when the peak demand has passed.

The central boiler plant can therefore be sized to meet the total heating load P_{HTG} plus an additional allowance to re-heat the buffer tank within one hour P_{BUFFER}.

The ESS-Cylinder with a storage cylinder in each apartment acts in a similar manner as a buffer vessel for the domestic hot water dealing with peak demand and reheating within short time period.

A buffer vessel should still be installed as part of the centralised plant to deal with peak demand for energy as previously described.

Energy Required to Heat Buffer Vessel

The quantity of hot water to heat the contents of the buffer vessel within one hour can be calculated from the equation:

$$PBUFFER = \frac{V * 4.2 * \Delta TDH}{3{,}600}$$

Where

V = volume of buffer vessel - litre

For a duration less than one hour substitute the number of seconds for 3,600.

Buffer Vessel Sizing

The buffer vessel should be sized to deal with peak heating and hot water demand sustained over a period of 10 minutes = 600 seconds.

Assuming the boiler plant is controlled to maintain the required heating flow temperature at a point two thirds of the way down the vessel then the required energy flow into the vessel will be for 900 seconds.

$$V = 900 * F * QHW$$

Where

V = volume of buffer vessel - litre

Technical Calculation Guide

Please complete the table below, together with any further additional information.

Domestic Hot water specification	Required Value submitted by the System Design House	Actual confirmed
DHW Temperature requirements		
DHW flow rate requirements		
Central Heating Specification	Required Value submitted by the System Design House	Actual confirmed
Heating LOAD (Kw)		
Heating flow design temperature		
Primary (District) specification	Required Value submitted by the System Design House	
PRIMARY (District) Flow temperature		
PRIMARY (District) Return temperature		
Pressure Drop across the Primary Flow and return		
Cold water	Required Value submitted by the System Design House	
Cold water (inlet) design temperature		
Cold water (inlet) design pressure		
Additional Specification	Required Value submitted by the System Design House	

HEAT INTERFACE UNITS

SERVICE & SUPPORT

Service

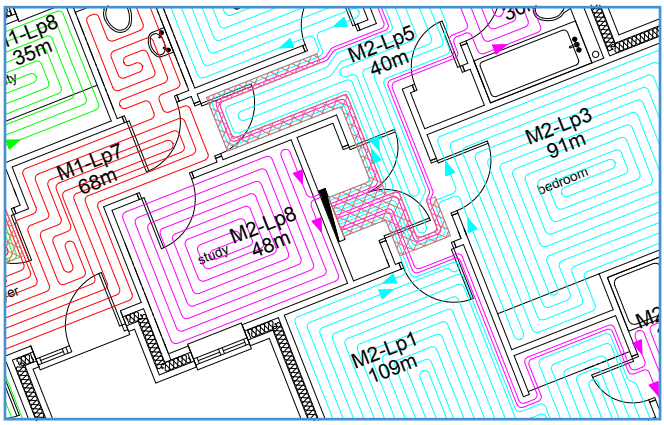
Our aim is to provide the kind of customer service and technical support that ensures long-term sustainable partnerships with our clients:

- Comprehensive technical support
- National field sales support
- Installer training at two locations for customer convenience
- Large UK stocks
- On time complete deliveries
- A brand new pre-insulated pipe cutting machine for accurate, rapid order preparation

Quotations

Call us today for quick turnaround, free of charge quotations:

- No obligation quotes
- We cover the full spectrum - UFH, plumbing and pre-insulated pipe projects
- Design, drawing and estimating service



Warranty

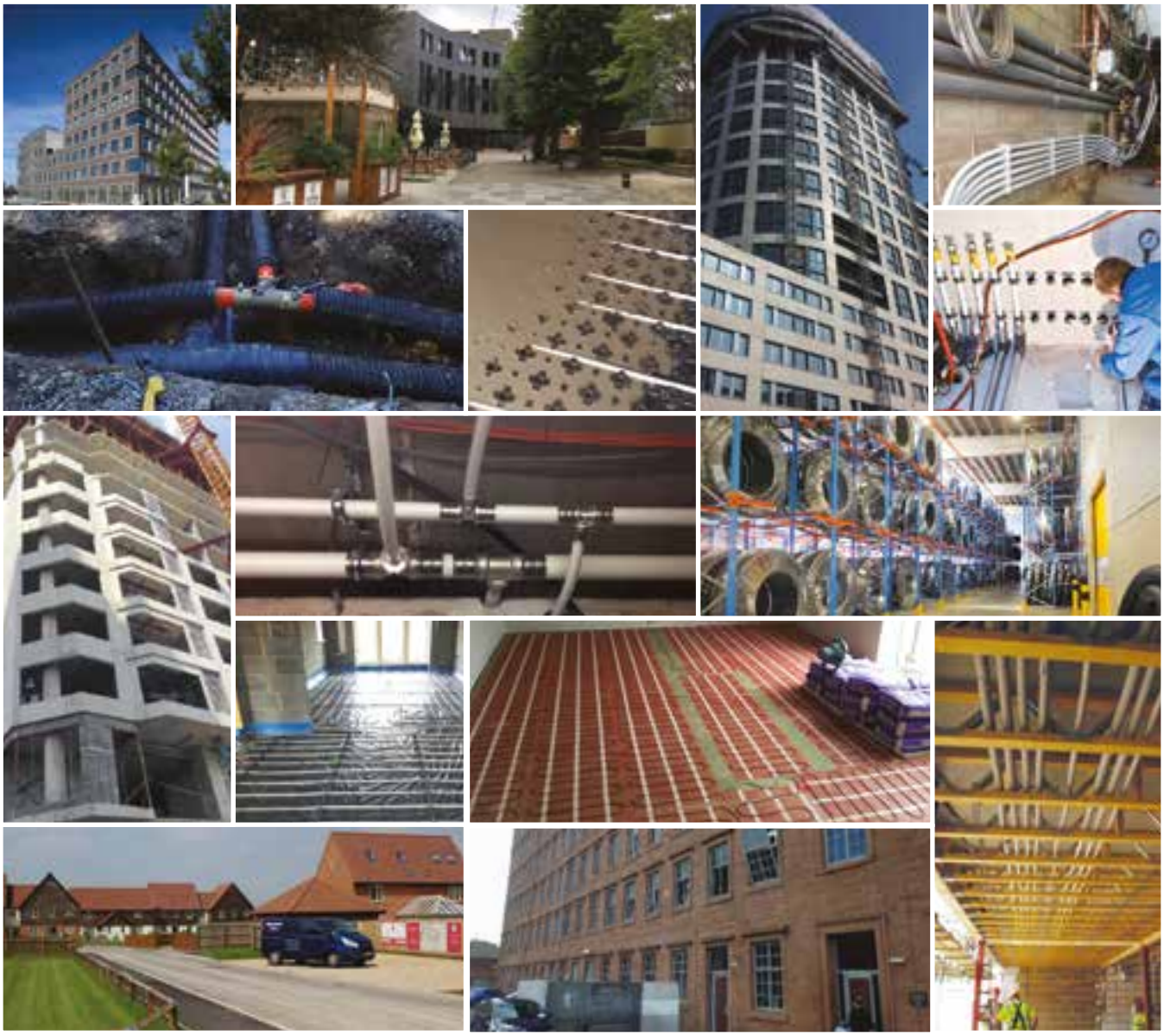
Our high quality Multitubo MLCP and fittings come with an industry leading comprehensive warranty for extra peace of mind:

- 25 year guarantee
- Project specific 50 year guarantees are available on request
- Collateral damage warranty of 2 million Euros

'Man in a Van' Support

Our newest team members at Multipipe are here to help installers and support merchant branches with a hands on approach:

- Site experienced and practically minded guys who can help you when you get stuck
- Can provide training on site or in branch
- Have plenty of goodies for breakfast mornings and trade evenings
- Carry on-board spares etc to resolve immediate issues



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