

# HIPER II

HEAT INTERFACE UNIT



inta





# inta

## WORLDWIDE NETWORK. NATIONAL FOCUS.

By partnering with some of the World's best manufacturers and with over 30 years of experience in the UK heating and plumbing industry, Intatec has built an enviable reputation with UK boiler and cylinder manufacturers along with heating and bathroom distributors. The Intatec focus being temperature safety and control.

Intatec has a UK network of engineers on call, providing after sales service that's responsive and able to support any of Inta's products. Technical and customer support teams are based at Hixon, in the heart of England, providing direct support to on-site engineers.

A comprehensive range of spares is held in stock, with shipping direct to point of use if required.

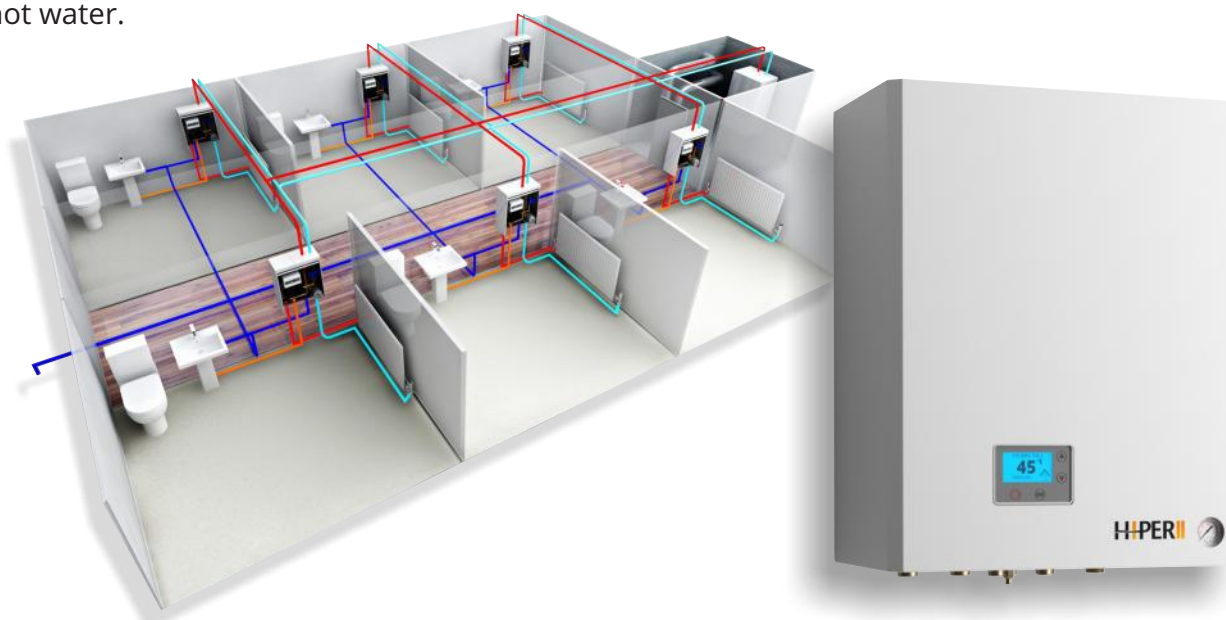
As an established innovator of products which enhance the efficiency of heating and plumbing installations, Intatec is registered 'carbon neutral' and is approved to the following standards; ISO 9001; ISO 14001 and ISO 45001 - Quality, Environmental and Occupational Health & Safety Management systems.



## Heat Interface Units

### Communal heat networks

Heat Interface Units are the key to the efficient use of centralised boiler houses. They are found in every apartment or home which is serviced by a central boiler. This distributes heated water through a network of pipes to each individual home, and by using the HIU, the occupier is able to independently control the heating and hot water.



### Lowest possible return temperature in the heat network

These have been measured and calculated using the BESA test regime. This is the VWART (volume weighted average return temperature) calculation and is a good guide to the HIU characteristics. VWART calculations are provided for DHW, space heating and standby operational modes. An overall average figure is then stated for each tested HIU.

Heating takes up most of the operational mode, either by radiators or by underfloor heating, and returns the highest temperatures to the network and plant. It's very important therefore that the circuit is balanced and used the most effective means of control with no circuits "left open". Underfloor heating by nature of its lower operating temperatures is particularly suited to HIUs.

Hiper HIU is electronically controlled and has an optimised heating' feature. Temperatures on both flow and return are monitored by the controller, and as the room temperature gets close to the comfort level of the room, the controller reduces the temperature to the space heating circuit, preventing overshoot of the room temperature and maintaining lower return temperatures to the network and plant.

So, the important trade-off against the VWART are the DHW and standby modes. Standby, or 'keep warm' is temperature controlled and controls and limits the return temperature to 40°C (a programmable function).



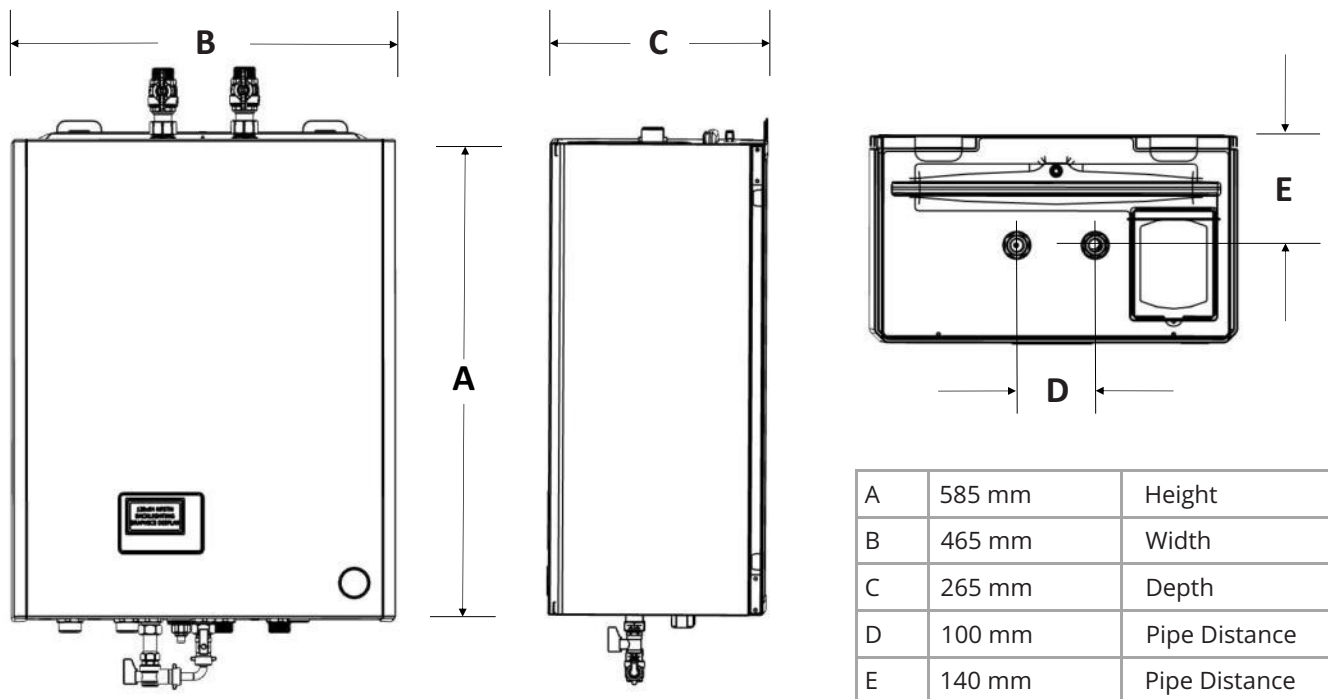
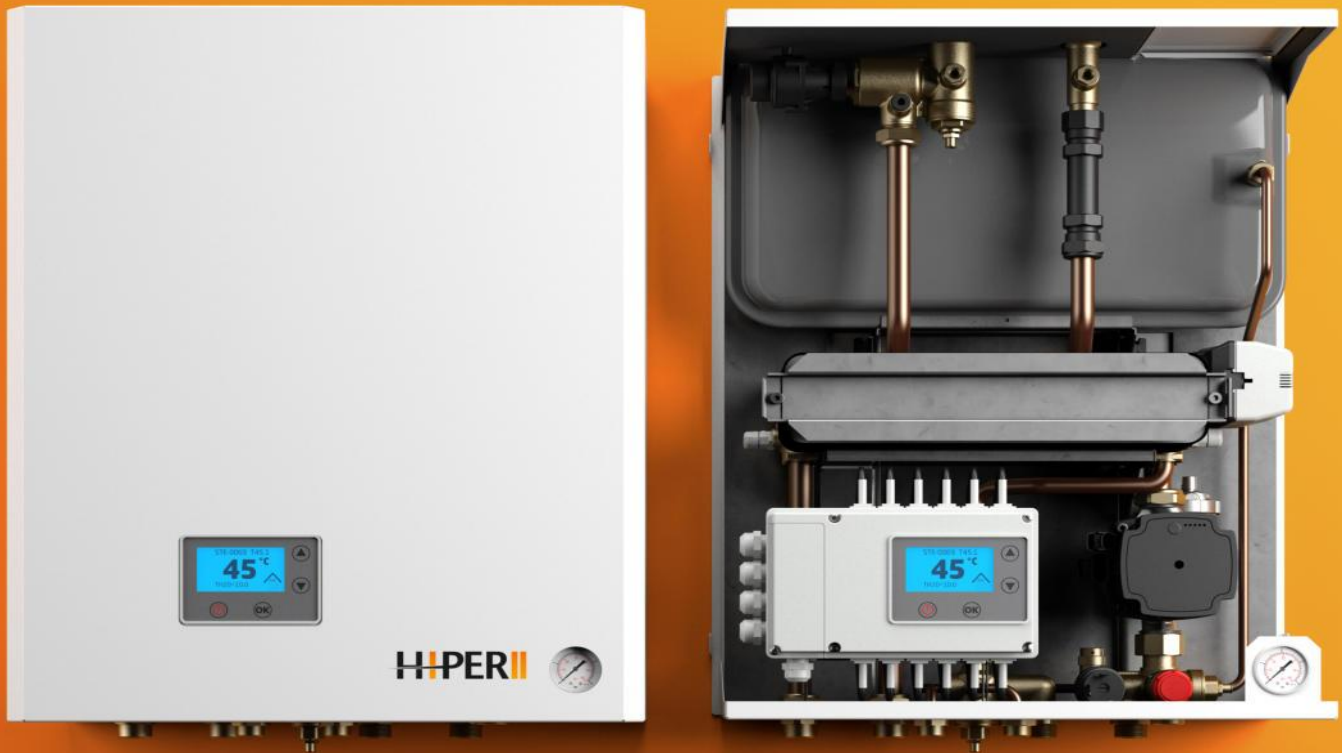
| High temperature test results | °C        |
|-------------------------------|-----------|
| DHW VWART                     | 15        |
| Standby VWART                 | 38        |
| Space heating VWART           | 41        |
| <b>Overall result</b>         | <b>28</b> |



| Low temperature test results | °C        |
|------------------------------|-----------|
| DHW VWART                    | 16        |
| Standby VWART                | 37        |
| Space heating VWART          | 35        |
| <b>Overall result</b>        | <b>26</b> |

# Dimensions

| Hiper II Heat Interface Units                                     | Code           |
|---|----------------|
| Hiper II Twin Plate HIU SZ 80kW DHW, 3 - 30 HTG                   | HIPER2TP1580   |
| Hiper II Twin Plate HIU 15-80kW DHW, 3 - 30 HTG ZENNER HEAT METER | HIPER2TP1580ZE |



For clearances see the Hiper II installation manual.  
Isolation valves are ordered separately. See accessories.





## Hiper II main features

- Auto fault diagnostics
- Modbus communications to report system or condition faults to a central monitor or BMS
- Pay As You Go (PAYG) prepayment switching
- Integral shut off for PAYG - no external valve required
- Automatic closing of the control valve when power lost for anti-scald and unnecessary heat returns
- Protection against pump sticking
- Heating radiators or under floor selection
- Optimised or constant temperature heating option
- Viewing access to heat meter calculator by lift up panel

## Functional and safety features

- Integral flushing and bypass filter valve
- Test ports
- UFH slab drying cycle
- Frost protection function
- PWM pump speed control
- Pressure differential and flow control PICV with fast stepper actuator
- Integral shock arrestor for cold water supply
- 3 strainers - one for each circuit
- Filling group for heating circuit

## Functional and commissioning features

- Start up menu for commissioning
- Set time and date
- Heating flow limitation setting
- Programmable return temperature limitation control
- Manual pump operation
- Room thermostat normally OPEN or CLOSED option
- Additional switch for adding a second pump to load a cylinder or for use as an alarm
- Optional programme to add a temperature controlled hot water storage cylinder
- Programmable anti-legionella cycle for hot water storage cylinder
- "Keep warm" function by time or temperature, programmable or switch off options
- Select plate heat exchanger for "keep warm" function to limit scale formation
- Select "heating" or "hot water only" operation of the HIU

### Optimised Heating Function

The controller is monitoring the secondary return temperature and as the temperature in the area surrounding the room thermostat nears the set point, the controller will then start to lower the secondary flow setpoint temperature. This function is aimed at UFH situations where temperature over-shoot in rooms is a particular problem.

**Pump protection**—to prevent pump 'seizing' during long shut down periods in the summer months. A timed programme is available to run the pump at regular intervals. The periods can be adjusted at time of commissioning if desired.

**Power Loss Shut down**—the controller retains enough residual power to shut down the control valve on loss of power to prevent wasted heat and prevent possibility of scalding with uncontrolled high DHW temperatures.

**Shut down** if control is lost due to failure of the control valve for high temperature safety.

### Pressure Independent Control valve

PICV cartridge is built into the inlet block. Fast acting stepper motor, dual speed PID control allows one application valve. DPCV can be employed externally if required where differential pressures exceed 4kPa.

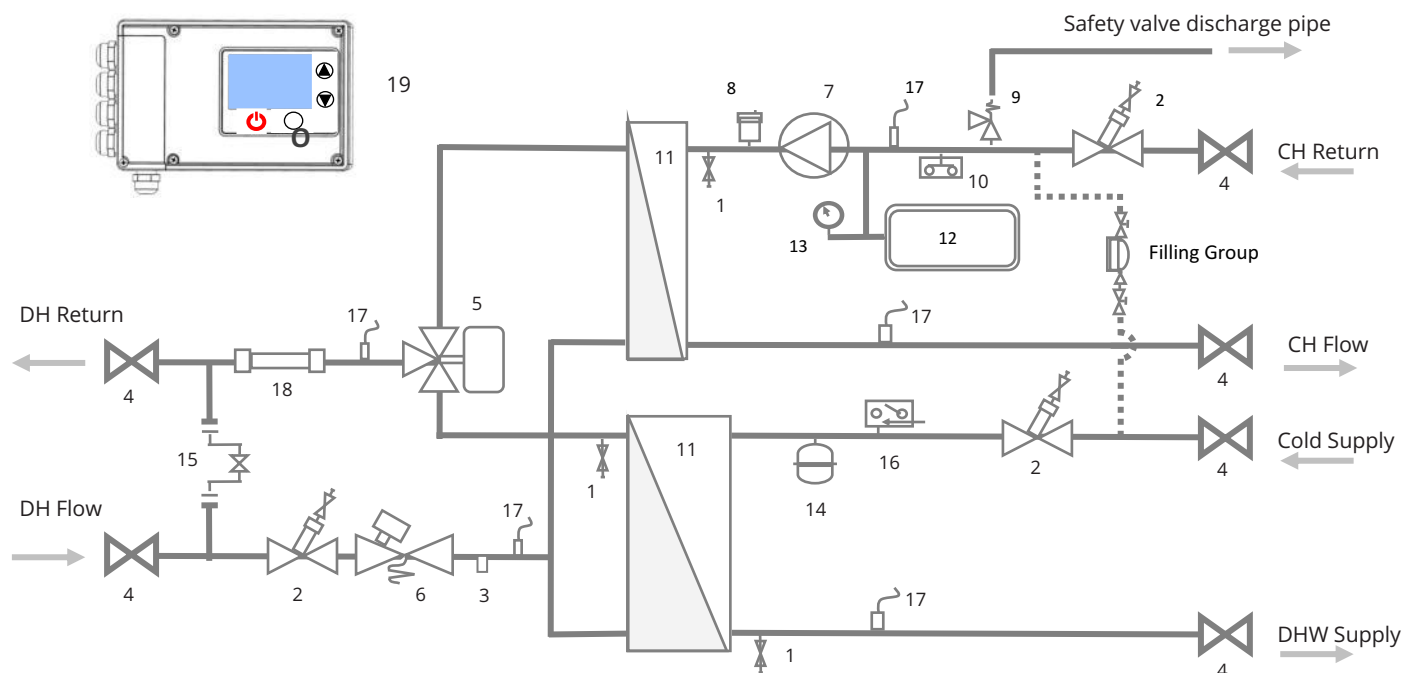
Combines an externally adjustable automatic balancing valve, a differential pressure control valve and a full authority modulating control valve.

### Filling Group with removable pipe.

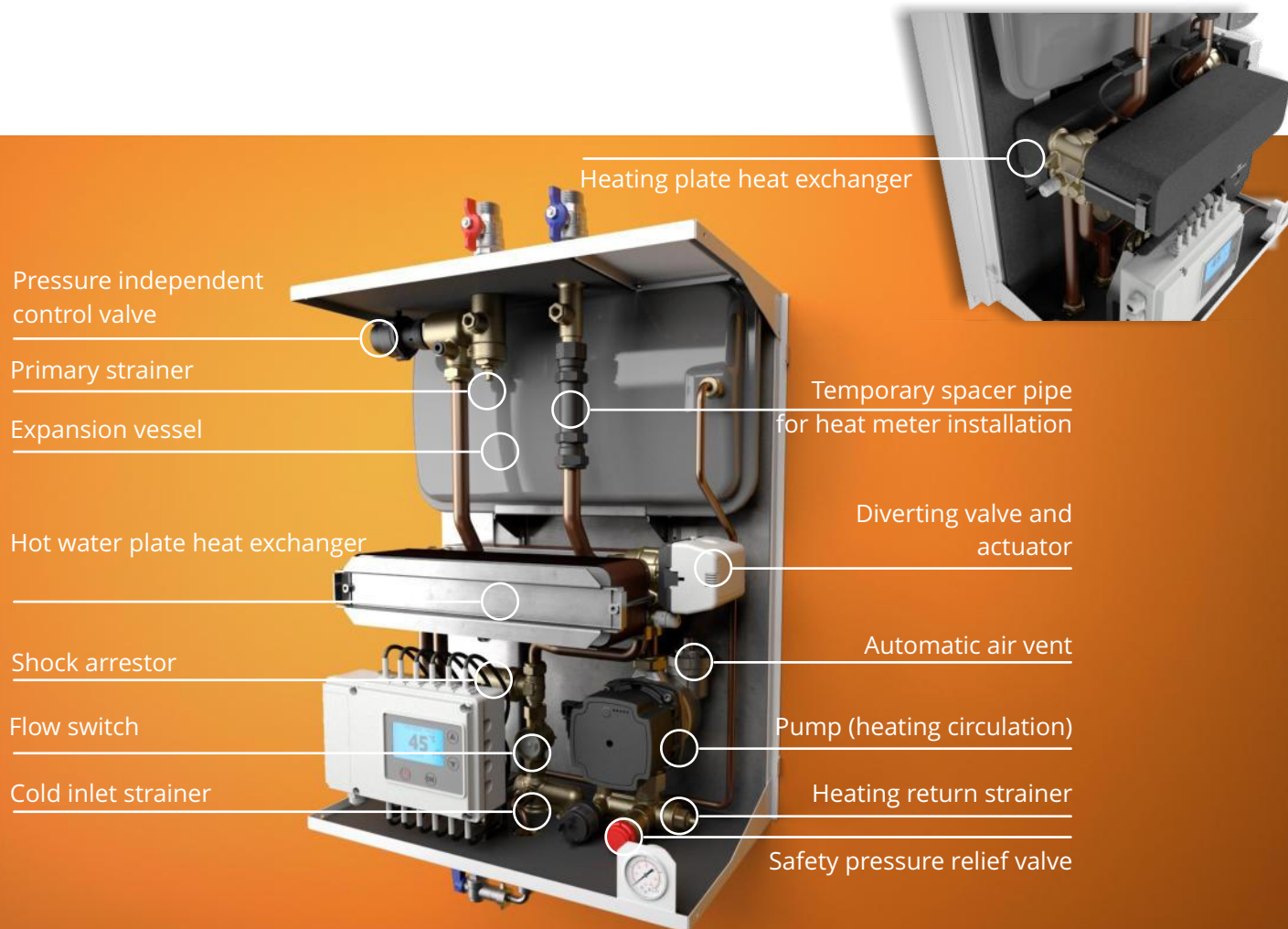
Was approved and with double check valve for back flow protection.

### Keep warm function

Temperature controlled to maintain heat within the DHW plate heat exchanger. Function starts at a pre-set time of non-use which is programmable between 5 minutes and 24 hours, the function also has an ON or OFF setting.



- |  |  |
|--|--|
| 1. Drain and vent valves                     | 11. Plate heat exchanger               |
| 2. Strainer with drain valve                 | 12. Expansion vessel                   |
| 3. Pocket for heat meter temperature sensor  | 13. Pressure gauge                     |
| 4. Isolation valves                          | 14. Shock arrester                     |
| 5. Diverting valve and actuator              | 15. Test ports and temporary bypass    |
| 6. Pressure independent control valve (PICV) | 16. Flow switch                        |
| 7. Pump (heating circulation)                | 17. Temperature sensors                |
| 8. Automatic air vent                        | 18. Temporary spacer pipe / Heat Meter |
| 9. Safety pressure relief valve              | 19. Electronic PID controller          |
| 10. Low pressure switch                      |  |



## General specification

|                                       |  |
|---------------------------------------|--|
| Control method                        | Electronic PID controller with fast acting stepper / PICV. |
| Plate Heat Exchangers                 | Stainless steel—insulated Wras approved                    |
| Expansion Vessel                      | 8 Ltr  |
| Casing                                | Fully insulated steel backplate and cover                  |
| Dimensions                            | 585mm H x 465mm W x 265mm D                                |
| Heat meter                            | Various (dependent upon order specification)               |
| Filters 1) Primary 2) Htg 3) CW inlet | 800 micron   |
| Wras approved shock arrester          | Mechanical spring loaded                                   |
| Internal pipework                     | Copper   |

## Technical specification

|   |                |
|---|----------------|
| DH maximum pressure   | 16 bar         |
| DH maximum temperature  | 85° C          |
| DH maximum flow (through the PICV)  | 1330 L/hr      |
| DHW maximum output with $\Delta T$ 45°C - DH at 85°C with 1120 ltrs/hr primary flow | Max 82kW       |
| DHW maximum output with $\Delta T$ 45°C - DH at 85°C with 1190 ltrs/hr primary low  | Max 90kW       |
| DH maximum pressure differential (as dictated by the PICV)                          | 4 bar          |
| HTG maximum working pressure  | 2.5 bar        |
| HTG safety valve setting  | 3 bar          |
| HTG maximum temperature   | 75° C          |
| HTG - radiators temperature adjustment  | 30°C to 75°C   |
| UFH - underfloor heating temperature adjustment                                     | 20°C to 50°C   |
| HTG maximum output (85°C at 1330 ltrs/hr)   | 29kW           |
| HTG minimum output  | 1kW            |
| Heating pump nominal head capacity  | 70 kPa         |
| DHW temperature adjustment  | 45°C to 65°C   |
| DHW side maximum pressure   | 10 bar         |
| Minimum suggested inlet pressure for cold water supply                              | 1.5 bar        |
| Electrical supply   | 1 ph 50Hz 230v |
| Average flow measured by BESA for 8 hour period of keep warm                        | 4.5 Ltrs / hr  |
| HIU installation weight, no cover.  | 25.4 kg        |
| HIU weight - Gross, incl. packaging   | 32.5 kg        |

Abbreviations - DH (district heating side) HTG (secondary heating side UFH (underfloor heating) DHW (domestic hot water)

### Insulation

Fully insulated cabinet including the backplate

Insulation Properties -

FT7 724 FR NP Low Density Open Cell Polyether Polyurethane

- Flexible low density open cell polyether polyurethane foam containing a flame retardant additive to reduce ease of ignition.
- Black Dual-Melt 25- 30 micron Polyurethane film on one surface.
- Thermal conductivity 0.033W/mk
- Density BS EN 845:1995: 24±3 Kgs/m<sup>3</sup>

# Electronic PID controller

## Electronic Control

Variable system conditions present challenges that the Hiper HIU PID control system meets by providing stability and rapid reaction to changes in supply and demand. The PICV (control valve) regulation delivers the design flow rate without affecting the modulating travel of the valve, so full authority is available throughout the full scope of the modulation. It is controlled by the electronic PID controller with constant monitoring from temperature and flow sensors at all critical flow and return paths. Key is control of the DHW demand, even at low flow, and still maintaining low return temperatures.

A proportional-integral-derivative controller (PID) continuously calculates an error value as the difference between a set point and a measured process variable and applies a correction based on the 'proportional, integral and derivative' values.

In practical terms it automatically applies accurate and responsive correction to a control function, much like cruise control on a car. The PID algorithm maintains the set point without delay or overshoot, by controlling the stepper motor of the PICV actuator.



### Pressure Independent Control with one valve.

Having one modulating valve with control of pressure differential means that it must adapt to the different demands of either hot water or central heating which is not possible with a thermostatic valve.

The Hiper HIU electronically maintains the temperature set points and limits the flowrates to presets within the controller.

In the Hiper HIU, pressure drop is created by the primary control valve and not the heat exchanger itself. For a low secondary flow, the primary valve is only going to open a small amount (10-15%). This will create a very high pressure drop from the valve itself. The pressure drops over the heat exchanger will be low. When the flow rate is high, this causes the primary valve to open wider or fully, and then decreasing the pressure drop over this valve significantly.

In Hiper II the total pressure drop decreases as the primary flow increases. The maximum pressure differential across the PICV is 400 kPa giving a good scope for consultants to size pipes accordingly - even for the closest connections to the pump.





# iPulse

iPulse enables operators and facilities management to monitor and interact with heat networks and Inta Hiper II heat interface units (HIU). Performance and efficiency can be monitored remotely along with network delivery and return temperatures and much more.

INT6300005P3 iPulse electronics, gateway and commissioning (cost per HIU)

INT6000401 HIU Connect Service Licence (annual licence cost per HIU)

iPulse technology allows you to collect data from Hiper II HIUs and heat meters as recommended in heat networks best practice guides and promoted by BEIS. A condition of all funding awards is that applicants/projects will be required to fulfil the monthly Monitoring and Reporting requirements as set out in the BEIS guidance document on a standardised template. This is to enable monitoring and evaluation of the benefits and impacts of the HNES Demonstrator (Heat Network Efficiency Scheme)

### Benefits

Year on year Improved network efficiency, improving running costs for operators and users. Pro-active visits ensuring that residents are not affected by outages. Cases where plant and equipment have gone down can almost be resolved before residents have become aware. Developers and consultants can understand how the energy systems they design and install in buildings operate, and plan for any future improvements.

### Operation

iPulse allows for real time data to be pulled from multiple buildings and heat networks in both new installations and refurbishment projects. Alerts operators to component failures in the HIU as a Fault Code. Alerts to system problems with Error code, for example inefficiency by blocked filters or PHE, or reports inefficient high return temperatures etc.



### Metering Pre-payment 'out of credit shut down'

For installations where the landlord of the properties has fitted a metering system that enables a scheme where the tenant pays for heat by pre-payment, the HIU has the capability to shut down the supply of heat when payment agreements have not been met. The HIU Controller has an auxiliary connection terminal that facilitates this option.

To connect to a prepayment billing system simply go into the installer setting and turn 'ON' the prepayment function. Then connect the billing system cable (always check it is 'volt free') to the connection in the controller. The controller shuts down the PICV completely and also cancels out the "keep warm" function to prevent 'credit minus' on billing. The HIU needs no other valves to shut down when the billing is out of credit, saving cost on the purchase of a motorised valve capable of closing against pressure differentials in the system and installation time.

### Metering and Billing Package.

Billing services and Energy Review plans are not provided by Inta. These will be provided by specialists in this field who will deal directly with the network operator.

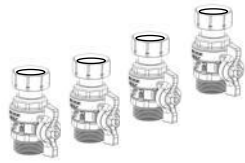
### The Billing Provider's duties are;

- Presenting for approval the Billing Package to the Client.
- Commissioning the data collection services with transfer to the Cloud.
- Provide ongoing billing services as an agreed package.

### Billing Services examples

- Monthly tariff billing with e-billing as standard.
- Account and billing information available 24/7 as part of the billing package.
- Credit, pay as you go or prepayment available on any unit and can be remotely disconnected as required.
- Remote disconnection on credit when the apartment or home is vacant.
- Inta promotes only open data protocol allowing change of billing provider should the operator request.

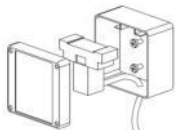




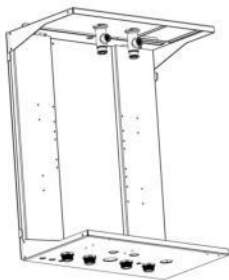
Set of four isolation valves  
**Part Code HIAC03BVPACK**



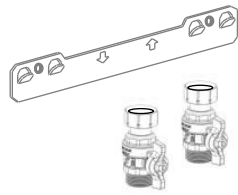
**KIT A** Flushing Bypass temporary pipe option.  
**Part code HI2ACKITA**



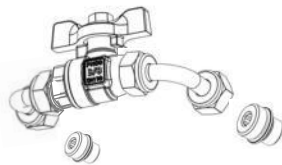
Pre-Payment 230v relay.  
**Part code HIAC04230KIT**



First Fix JIG  
install pipework without the HIU **Part code HI2ACJIG**



Supply wall bracket and two isolation valves  
**Part code HIACPFKIT**



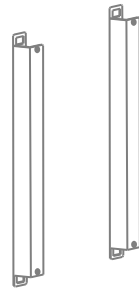
**KIT B** Flushing Bypass temporary pipe and valve option.  
**Part code HI2ACKITB**



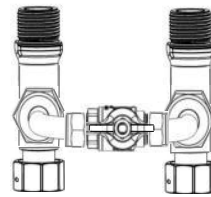
Security screw fixings (four).  
With driver bit.  
**Part code HIAC05SSPACK**



IntaKlean Compact magnetic filter 3/4"  
**Part code IKCMF34**



HIU Stand Off Brackets.  
**Part code HI2ACBKT**



**KIT C** Flushing Bypass external valve option with temporary pipe  
**Part code HI2ACKITC**

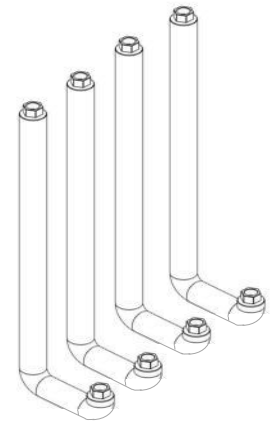


Insulation jacket for isolation valve.  
**Part code ARM022129**



Top entry kit with filter  
**HIAC13PACK**

## Top entry kits



4 x insulated pipes,  
**Part code HI2ACCON**

4 x insulated pipes  
4 x isolation valves  
HIU Stand off brackets  
**Part code HIACWBCONKIT**

3 x insulated pipes  
3 x isolation valves  
HIU Stand off brackets  
**Part code HIAC13CONKIT**

2 x insulated pipes  
2 x isolation valves  
HIU Stand off brackets  
**Part code HIAC14CONKIT**

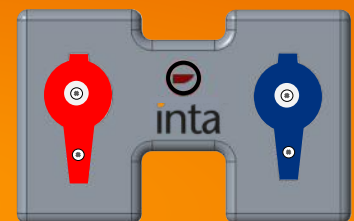
1 x insulated pipe  
1 x isolation valves  
HIU Stand off brackets  
**Part code HIAC15CONKIT**

4 x insulated pipes  
4 x isolation valves  
HIU Stand off brackets  
Magnetic Filter  
**Part code HIAC13PACK**



Flushing By Pass Valve (FBPV) with insulation **Part code HI2FBP34**

- Lockable
- Complete with insulation jacket Removable by pass section
- Caps for sealing the bypass
- Full bore flush
- Open or closed easily visible
- Conforms with CP1



FBPV with insulation jacket

## Hiper II single plate Heat Interface Units



### HIPER II V1

HEAT INTERFACE UNIT HEATING ONLY

The Hiper II V1 Heating only heat interface has a single plate heat exchanger that produces only heating by radiators or by underfloor heating.

Using the same design and components as the well-established twin plate version but without the hot water production output.

This HIU would typically be used in commercial applications where only room heating is required, or some domestic applications where electric water heating is installed.



### HIPER II V4

HEAT INTERFACE UNIT HOT WATER ONLY

The Hiper II V4 HW only heat interface has a single plate heat exchanger that produces only hot water (DHWS).

Using the same design and components as the well-established twin plate version but without the secondary heating output.

This HIU would typically be used in commercial applications where only hot water services are required, or some domestic applications where electric heating is installed.

## Hiper II recommended products



### ActivFlo

ActivFlo water conditioning for hot water systems - where the greatest levels of scale form. Scale accumulation will cause an increase in energy bills and leads to premature servicing and equipment replacement.

Activflo provide the greatest benefit for HIUs. Either protect individual properties or install the larger ActivFlo models in the central plant room.

### inta Pressure Independent TRV (PTRV)

High Secondary Return temperatures are actually the result of poor commissioning or balancing of the secondary (tertiary) system.

The **thermostatic valve with pre-setting independent from pressure** is a radiator valve that performs the functions of a thermostatic valve and a differential pressure regulator. Each pre-settable thermostatic valve comes with six pre-set Kv values. The valve comes complete with the EN215, class A efficiency rated Inta i-therm TRV valve head.

PTRV15FA - 15mm angle PTRV  
PTRV12FS - 1/2" straight PTRV

PTRV15FS - 15mm straight PTRV  
PTRV12FA - 1/2" angle PTRV



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supplied

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