

HIPER II

HEAT INTERFACE UNIT

Commissioning Report

Address of Installed HIU
Property Name/Number:
Building/Street Name:
Town:
City:
Post Code:

HIU Serial Number	
IN	AR

HIU Type	
INDIRECT	DIRECT
HEATING ONLY	HOT WATER ONLY

Register warranty at:

<https://www.intatec.co.uk/hiu-product-registration/>

Date Installed
Name of Installation Company and Installer
Company:
Installer:

Date Commissioned
Name of Commissioning Company and Engineer
Company:
Engineer:



Required HIPER II HIU documents.

1. Installation and Operation Manual (included with the HIU).
2. Commissioning Report (This document - LF176).
3. Controller Programming Guide (Only available direct from Intatec - LF173).



Annual servicing is required to ensure that the conditions of the warranty are met.

This guide details the maintenance regime that should be carried out annually.

It is the responsibility of the network operator to ensure this is met to honour the conditions of the warranty.

In this document Inta have endeavoured to make all the information and procedures accurate. Inta cannot accept responsibility should it be found that in any respect the information is inaccurate or incomplete as a result of future developments.

Unless the HIU is commissioned by an approved independent Commissioning Services Company, this checklist is to be completed in full by the competent person appointed to carry out this work. On completion the document should be handed to the customer, and the HIU registered with Inta to validate the warranty agreement.

This does not affect the customer's statutory rights. **Steps 1 to 4 are mandatory.**



It is the installer's responsibility to have the installation complete with power off before the commissioning engineer arrives.

If this criteria is not met, then commissioning may be aborted at the installers cost.



If the heating is OFF or the property is to be knowingly left unoccupied for over 2 months, then the pump protect parameter should be turned on, to protect the pump from any possibility of seizing due to water damage.

Step 1 - Pre-Commissioning Checklist Before Power Up

No	HIU Commissioning Checklist	Comment and Confirm Checked						
1	Record installation date, serial number and apartment number. (Front page)	Heat Meter Model and Serial Number: <i>(If Applicable)</i>						
	Advise Heat Meter details if applicable.	Model: S/N:						
	If the HIU installation date was more than 12 months ago, and the unit has been filled and left with standing water, then flush thoroughly.	Remote Monitoring Model and Serial Number: <i>(If Applicable)</i> Model: S/N:						
2	Verify and record if the room thermostat is 'VOLT FREE' .	Record make and model of room thermostat:						
	If the room thermostat is not VOLT FREE do not turn on power to the HIU. **For Indirect, Heating Only and Direct Units	VOLT FREE switching YES/NO If No, abort commissioning. 						
3	Pre-payment wiring connection? If wired-in check is VOLT FREE or that a relay has been fitted to supply a VOLT FREE signal to the controller.	VOLT FREE switching <div style="border: 1px solid black; padding: 5px; display: inline-block;">Y / N / N/A</div>  If No, abort commissioning.						
4	Confirm Heat Network supply; 1) Is fully operational. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>Y</td><td>/</td><td>N</td></tr></table> 2) Has been flushed. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>Y</td><td>/</td><td>N</td></tr></table>	Y	/	N	Y	/	N	Notes.
Y	/	N						
Y	/	N						
5	Is the cold water supply in a hard water area greater than 200 mg/l? A water conditioner may be fitted in the plant room (supplying all properties with conditioned water). <i>See www.intatec.co.uk for water conditioners.</i>	Note type of water conditioner fitted if applicable.						
6	Note position of cold mains stopcock.	Notes.						
7	Pressure reducing valve with gauge? Note water pressure.	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Y / N / N/A</div> If Yes: Bar g						
8	Leaks or signs of water damage ?	Notes. <div style="border: 1px solid black; padding: 5px; display: inline-block;">Y / N</div>						

Step 2 - Installation External Checklist

No	HIU Commissioning Checklist	Comment and Confirm Checked
9	Manual bypass valve is closed or flushing pipe on the PRIMARY is removed and capped.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>Notes:</p>
10	Safety valve Discharge Pipe is free from leaks; has a continuous fall: and record that it conforms to regulations.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>Notes:</p>
11	Insulation is accordance with current building regulations.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>Notes:</p>
12	Pipes connecting to the HIU are secure with adequate wall fastening.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>Notes:</p>
13	Installation Position. Confirm access to the front of the HIU and casing fixings are accessible.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>If NO is ticked then the commissioning may be aborted.</p>
14	Electrical wiring to the HIU. Verify fused spur and electrical supply are as per installation instructions and meet current regulations.	<div style="text-align: center;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div> <p>Notes</p> <p>If No, then the commissioning may be aborted.</p>

Step 3 - Installation Internal Checklist Before Power Up

No	HIU Commissioning Checklist	Comment and Confirm Checked												
15	Check all isolation valves are securely tightened. Not just 'finger tight'.	Notes. <div style="float: right;">Done <input type="checkbox"/></div>												
16	Remove the HIU Casing. Leaks or signs of water damage ?	Notes. <div style="text-align: right;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div>												
17	Remove controller wiring access cover. Confirm wiring is as per installation instructions. Replace controller wiring access cover.	Notes. <div style="text-align: right;"><input type="checkbox"/> Y / <input type="checkbox"/> N</div>												
18	Verify and record if the Strainers are CLEAN/ FREE of DEBRIS 1. Heat network side strainer inside HIU. 2. Tertiary heating side strainer. 3. Cold water inlet.	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">NO</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">YES</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">NO</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">YES</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">NO</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">YES</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	NO	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	YES	<input type="checkbox"/>
NO	<input type="checkbox"/>	YES	<input type="checkbox"/>											
NO	<input type="checkbox"/>	YES	<input type="checkbox"/>											
NO	<input type="checkbox"/>	YES	<input type="checkbox"/>											

Step 4 - Power on Checklist

No	HIU Commissioning Checklist	Comment and confirm checked
19	<p>Switch ON power supply to the unit.</p> <p>If this is the first Power Up, follow the instructions on the screen and as in the installation manual.</p> <p>Underfloor Heating selected.</p> <p>The correct selection of temperature is critical for both slab drying and operating temperature. If the temperature is set too high then the floor could become irreparably damaged.</p>	<p>Address error codes accordingly and record actions.</p> <p>Record slab drying? Temp Set</p> <p style="text-align: center;"> <input type="text" value="Y"/> / <input type="text" value="N"/> / <input type="text" value="N/A"/> </p> <p style="text-align: right;"> <input style="width: 100px; height: 30px;" type="text"/> </p>
20	<p>Does the installation require any settings changes to the controller?</p> <p>See 'Controller Programming Guide' for list of parameters that can be changed for aligning the HIU controller to the special requirement of the system.</p> <p>See 'Controller Programming Guide' for gaining entry to the installer level programming. This guide is available on request by contacting Intatec.</p>	<p>See the installation manual for record of any changes made to any of the operating parameters by the installer.</p> <p>Parameter. <input type="text"/> New parameter setting. <input type="text"/></p> <p>Parameter. <input type="text"/> New parameter setting. <input type="text"/></p> <p>Parameter. <input type="text"/> New parameter setting. <input type="text"/></p> <p>Parameter. <input type="text"/> New parameter setting. <input type="text"/></p> <p style="text-align: center;">No changes to parameter settings tick here; <input type="checkbox"/></p>
21	<p>Before running the HIU in heating mode check and record the system pressure reading from the gauge on the HIU.</p> <p>If necessary, using the filling loop as per installation instructions, recharge the system to the recommended pressure.</p> <p>**For Indirect, Heating Only and Direct Units</p>	<p>System pressure requirement, and actual pressure. Bar g. For installations up to 2 x floors or 10 bar static.</p> <p style="text-align: center;"> <input type="text" value="1.2 Bar g*"/> <input style="width: 100px; height: 30px;" type="text"/> </p>
22	<p>When filling is complete and the system is at the correct pressure, close the valves and remove the filling pipe from the filling loop.</p> <p>Seal the valve connections with the caps provided, and leave the pipe safely for future use.</p> <p>**For Indirect and Heating Only</p>	<p>Filling loop in place? <input type="text" value="Y"/> / <input type="text" value="N"/></p> <p>Are both taps turned off? <input type="text" value="Y"/> / <input type="text" value="N"/></p>

Step 5 - Operational Checklist

After initial power on, HIU self diagnostics check complete, programming checks complete, now run the HIU in both heating and hot water modes and record the operating conditions.

Should any anomalies be noticed during this time consult the fault finding section of the HIU installation manual.

Test positions for surface test probes.

Use the heat meter to record the primary return flow rate.

T11	Primary Flow (Supply) Temperature °C.
T12	Primary RETURN TEMPERATURE °C.
Heat Meter	Primary RETURN flow rate.
T22	**Heating FLOW TEMPERATURE °C.
T21	**Heating RETURN TEMPERATURE °C.
T31	Cold water mains supply TEMPERATURE °C.
T32	*Hot water SUPPLY TEMPERATURE °C.

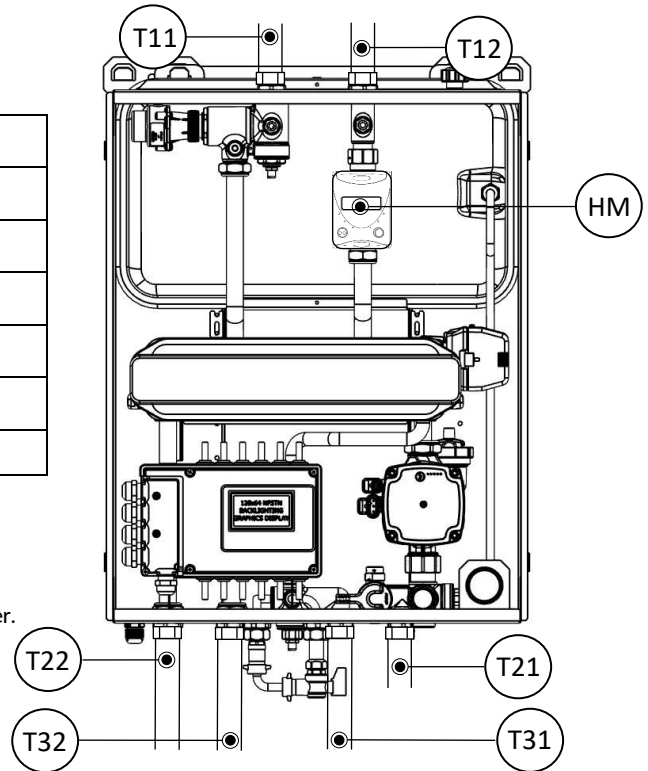
**For Indirect, Heating Only and Direct Units

*For Hot Water Only Unit

In accordance with CP1 2020 the water temperature at an unmixed outlet (kitchen basin) should be at least 45°C within 45 seconds of running the water.

Test Position	Temperature
T31	

Test Position	Design Set Point	Actual After 60 Sec	Additional
T11			
T12		Also see addendum 3	Record pressure drop here (optional)+
Heat Meter			
**T22			MUST always be lower than primary flow. T11
**T21			
*T32 ++		Also see addendum 2	Temperature at Kitchen sink. Temperature at Bathroom basin. <div style="display: flex; justify-content: space-around; align-items: center;"> °C °C </div> MUST always be lower than primary flow. T11



**For Indirect, Heating Only and Direct Units

*For Hot Water Only Unit

+See Addendum 1 on page 7

++See Addendum 3 on page 7

Step 6 - Balancing the Heating System

Though not part of the manufacturers instruction for the HIU, the radiators or UFH circuits require professional balancing before being handed over to a home owner. A system that is not balanced will not only give poor comfort levels but more importantly be inefficient with higher than designed return temperatures. UFH systems balancing is the responsibility of the UFH installer, so will not be part of the commissioning engineer's duty unless agreed.

For commissioning the HIU, radiator circuits should be reviewed and reported on as part of ensuring the proper operation of HIU.

Method 1 - Minimum Practice

No	Method 1 - Minimum Practice	Complete this table if using Method 1
23	<p>**All air is purged from the Radiators.</p> <p>AAV is installed at the high points in the pipe work where there is a risk of air entrapment.</p>	<p>Notes</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> Y / N / N/A </div>
24	<p>**Check all radiators are heated to design FLOW temperature.</p> <p>Design Temperature <input style="width: 50px; height: 20px;" type="text"/> °C</p>	<p>Notes</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> Y / N / N/A </div>
25	<p>**Check all radiators are heated to design RETURN temperature.</p> <p>Design Temperature <input style="width: 50px; height: 20px;" type="text"/> °C</p>	<p>Notes</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> Y / N / N/A </div>
26	<p>**All radiators balanced to have equal pressure drop and temperature by manually adjusting the lock shield radiator valves.</p>	<p>Notes</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> Y / N / N/A </div>

Method 2 - Best Practice For Balanced Radiator Systems

**PTRV (presentable thermostatic radiator valves). Specified and fitted to each radiator.

Y / N

**The valves have been accurately set as per the manufactures instructions.

Y / N

**The commissioning instructions as written in the CIBSE CP1 2020 Code of Practice for the UK have been adhered to without exception.

Y / N

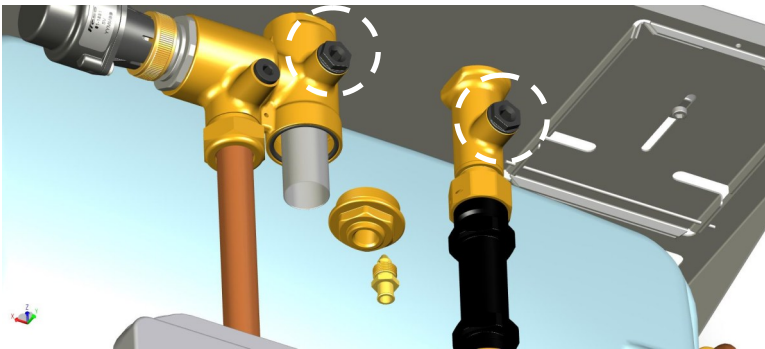
**For Indirect, Heating Only and Direct Units
*For Hot Water Only Unit

Addendum

Addendum 1

The maximum pressure differential across the PICV is 400kPa giving a good scope for consultants to size pipes accounting for even the closest connections to the pump. If the differential pressure across the PICV actually exceeds that then control can be lost. It is good practice therefore to monitor the pressure drop during commissioning. The HIU has two 1/4" test ports on the inlet block which can be used for this purpose.

Two gauges can be fitted at the same time as cleaning the strainer at Step 3 to these ports, circled in below. These are to be removed when commissioning is finished, so then additional time is not lost waiting for the block to cool. Isolate, drain, remove, and replace the plugs then re-fill. This may only be required on selected apartments, 1 per floor or closest to the pump station. Professional commissioning will carry specialist equipment for measuring pressure differential.



Gauges specification.

Intatec	
1/4" back entry 0-10 bar	GP1576010
1/4" back entry 1-14 bar (Glyc)	GFG1463BK

Pressure drop can be recorded in the table on page 6 as indicated.

Addendum 2

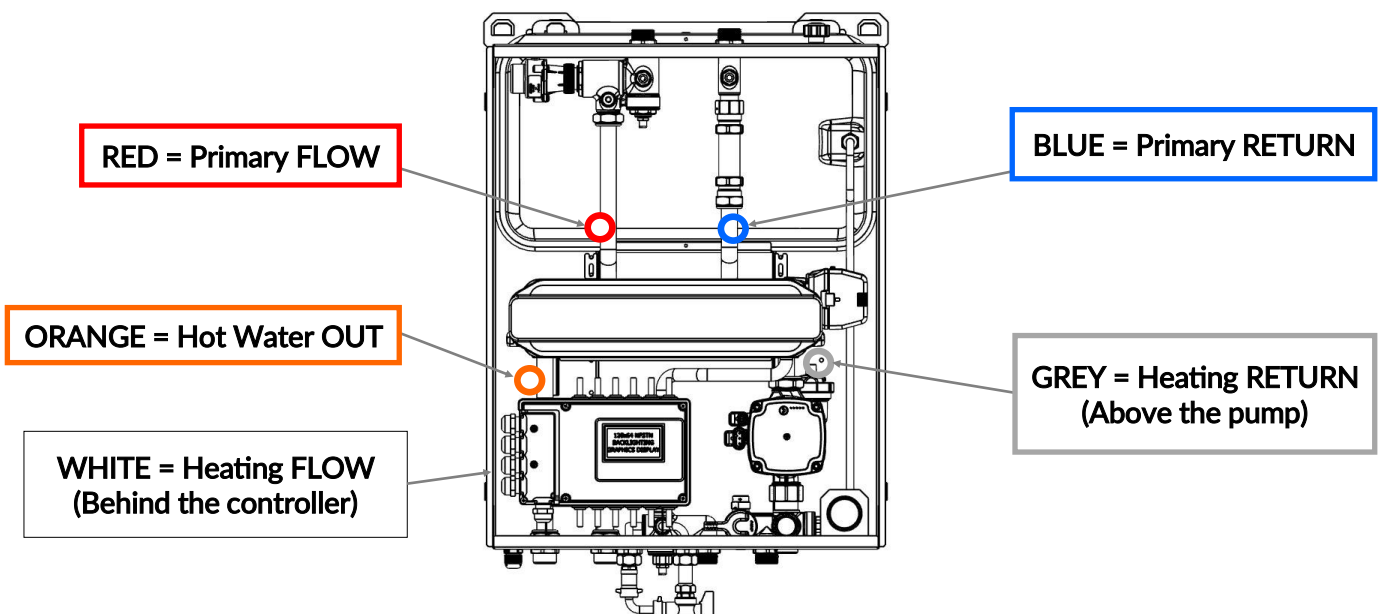
Temperatures to be recorded as per CP1 2020. Temperatures not reaching 45°C in 45 seconds would indicate that the pipe runs to the tap are too long, and this may also point to long dead legs of pipework that may be considered a legionella risk. All the commissioning engineer is required to do is note this for the installer's consideration.

Note if temperatures exceed 60°C at the taps, this is a SCALDING risk and the controller SET TEMPERATURE must be reduced.

Addendum 3

Always check the temperature sensors are clipped securely to the pipes for accurate control. All the sensors are colour coded for connection identification.

Temperature Sensor Positions



Diagnostics - Fault code definitions.

When a fault occurs the relevant code will be displayed on the controller screen.

Fault codes inform that the controller has diagnosed a fault in one of the HIU's components.

Code	Cause	Effect	Remedy
F0	DHW temperature sensor is short circuit or broken circuit, or disconnected.	The HIU will not operate in DHW demand. It will still operate in heating demand mode.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F0 code, then replace the sensor. The F0 will clear and return to normal operation.
F1	Primary flow temperature sensor is short circuit or broken circuit, or disconnected.	The HIU will not operate in DHW or heating demand. Without information of the primary temperature in, the controller can not function.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F1 code, then replace the sensor. The F1 will clear and return to normal operation.
F2	DHW storage tank temperature sensor is short circuit or broken circuit, or disconnected.	The controller disconnects the control of an optional hot water cylinder and all its parameters.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F2 code, then replace the sensor. The F2 will clear and return to normal operation.
F3	Heating flow temperature sensor is short circuit or broken circuit, or disconnected.	The HIU will not operate in Heating mode. It will still operate in DHW demand mode.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F3 code, then replace the sensor. The F3 will clear and return to normal operation.
F4	Primary return temperature sensor is short circuit or broken circuit, or disconnected.	The HIU 'keep warm' function is disabled as this sensor controls the DHW PHE temperature during periods of non-use. Also efficiency is reduced as there is no control of the primary return Temperature DHW and Heating are both still operational.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F4 code, then replace the sensor. The F4 will clear and return to normal operation.
F5	Heating return temperature sensor is short circuit or broken circuit, or disconnected.	The HIU 'heating optimisation' function is disabled as this sensor controls the heating return temperature. DHW and Heating are both still operational.	Check that the sensor cable plug connection is good, if OK then check the connection inside the controller. If this doesn't clear the F5 code, then replace the sensor. The F5 will clear and return to normal operation.
F6	It is a notification that unexpected fluctuations in the return temperature have been monitored during hot water production. Probable cause is the network supply to the HIU.	The F6 code is a notification that this is unusual. F6 will reset back to normal operation after 60 seconds.	Check the network supply temperature and flow and remedy. If F6 persists, then make a factory reset on the controller (parameter 00). This will recalibrate the PICV actuator. Check DHW sensor is in the correct position. Check with a manual operation of the PICV. Set this on parameter 91. If not working, replace the PICV actuator as a last resort.
F7	Either the pressure in the heating system is too low or the pressure switch is faulty.	The HIU will not operate in heating mode. It will still operate in hot water mode.	Check the system pressure on the gauge on the HIU. The pressure switch will cut out at 0.15 bar. Refill system to 1.2 bar. Resets normal operation after 30 seconds. If low pressure is not the issue, replace the pressure switch.
F8	The controller is recognising from the feedback from the electrical connection that the rotation of the pump is not what it is expected to be.	Depending on the issue, it's most likely that heating will not be available.	Check wiring connections to the pump. Check pump for red LED lights signifying a fault. Check PWM is not set as ON in parameter 24. Setting must be 00 as factory set. Only consider replacing the pump head once all else has been checked. Check water quality which is usually the cause of a premature pump failure.

Diagnostics - 'E' code definitions.

When an 'E' code is seen, the controller is warning of unsuitable operating conditions that may be causing the HIU to operate inefficiently or not at all. Also could be potential operating conditions that could become a safety issue, if left in that state.



If an 'E' numbered code is seen on the screen, this is NOT a HIU fault, it is an operational message. 'E' = Environmental.

Code	Cause	Effect	Remedy
E1	The measured primary temperature is lower than the set point temperature for heating or hot water, so the HIU will not be able to achieve the set temperature. This is after approximately 60 seconds of flow.	E1 does not stop operation, it is recording that the supply is not up to temperature yet. It will clear automatically after 10 minutes when normal supply to the HIU is resumed from the network. E1 does limit the control valve travel as a precaution for this period.	Check the set point in the controller, adjust if the set point is set higher than the design supply temperature. Check Primary flow. Check that the primary temperature sensor is correctly connected to the primary pipe. When the primary temperature and set point are aligned, the code E1 automatically disappears.
E2	In installations where Radiators are at very high temperatures, then this is a warning that the return temperature is higher than the maximum allowed in parameter 20.	As this is a safety function, the PICV closes until the sensor on the primary return sees a temperature drop of 10°C below the parameter 20 set point for maximum.	Check parameter 20 is set correctly, if too low, reset this at 5°C higher than secondary heating flow set temperature. Check the temperature sensor is positioned correctly. Reset (turn power off and on) to recalibrate the PICV actuator. When on DHW demand, possible cause external by-pass open and this causes the return pipe to super heat up to with primary temperature when demand is turned off. This strongly indicates an issue on the district and open bypasses. Check district valves.
E3	The controller is recognising and warning that the HIU performance is not as the algorithm predicts. The energy transfer is poor, and the HIU is not delivering heat as it should be.	Heat transfer is inefficient, hot water production reduced and temperature control unstable.	If signs of blockage it could be the strainer is blocked or the PHE is partially blocked with limescale. Check the PICV is fully open and check flow on the heat meter. Low flow value would prove that a blockage of some sort is the issue.
E4	No hot water.	The controller has detected that the hot water temperature control behaviour is consistent with the sensor being in the wrong position, and shut down hot water production as a safety precaution. The HIU will automatically rest after 10 minutes.	Check DHW temperature sensor position is in the correct position as seen in this manual. If not, re-position the sensor into its correct position. Then system reset, turn off the power at the supply, and then turn on again to allow the PICV actuator to re-calibrate its position. Check Honeywell diverter and the cartridge, possible poor water quality. Check for corrosion. Check diverter arm is moving over to the correct positions.

Notes:

Diagnostics - 'E' code definitions.

When an 'E' code is seen, the controller is warning of unsuitable operating conditions that may be causing the HIU to operate inefficiently or not at all. Also could be potential operating conditions that could become a safety issue, if left in that state.



If an 'E' numbered code is seen on the screen, this is NOT a HIU fault, it is an operational message.
'E' = Environmental.

Code	Cause	Effect	Remedy
E5	Heating is not reaching the set point so is performing poorly or not at all.	Heating stops after 20 minutes and shows the E5 code. Resets after 30 seconds Or Error LEDs on the pump? Power OFF and ON at the mains switch, this allows the PICV to recalibrate, and in doing this will allow a small flow into the PHE, which then proves the PICV and Diverter are not at fault.	Check the following possibilities. - Primary temperature is too low. - Is the set temperature on the controller higher than the incoming primary (network) temperature and temperature is impossible to reach? Reset the temperature so it is 10°C lower than the primary. - PICV blocked/strainer blocked? - Diverter in the wrong position? - Check primary flow rate. On new installations check the DHW for signs of air in the pipework, possible PHE kettling. - Check pump LEDs and ensure pump is running.
E6	Temperature information from the heating temperature sensors is wrong or unusual.	Return temperature is too high with no apparent control being seen.	This code is showing that either; 1.The heating temperature sensors have been wrongly positioned with the flow on the return and the return on the flow, change them to their correct position. 2.The installer has not connected the primary connections correctly, with the flow connected to the return connection. Check temperatures.
E7	The heating return temperature is too high and the HIU is warning the operator.	Various causes may be considered, example all TRVs may be closed with only 1 x small radiator open, but the room thermostat is still calling for heat. The return temperature is much too high, so the HIU ceases. The effect is that the controller shuts down the pump before re-starting again after 10 minutes.	The E7 will automatically reset itself after 10 minutes. Attention should be paid to the set up of the heating radiators and controls. Is the room thermostat positioned correctly to turn off before all the TRVs shut down? Is the radiator circuit balanced correctly at the radiator valves? E7 may occur under certain test conditions where unnatural operating conditions are forced.
E8	The PICV actuator cable has been disconnected from the controller or No DHW available, so to avoid scalding risk due to very high DHW temperature. The E8 code appears on the screen. Both Heating and DHW are no longer available.	To avoid scalding risk, when the HIU detects a DHW or Heating flow temperature 10°C above setpoint for more than the programmed time interval (90 seconds factory set, adjustable up to 210 seconds) the HIU will shut down and show an E8 code. The diverter will move into the Heating position and Pump will switch off.	Allow the unit to cool down first. Check PICV actuator connection, and that the valve stem pin is not jammed (free if possible). Power OFF then ON again, check for movement in the actuator stem. Replace the actuator if failed, or replace the valve cartridge if found to be seized. This code will not automatically reset. When the issue has been identified and resolved, press and hold the on/ off button whilst the E8 code is on the display until the standby mode (two dashes) are seen on the display. E8 should then be fully reset. If the E8 code is displayed again repeat the E8 fault diagnosis process.

Notes:

Param	Description	Fact Set
03	Start temperature Slab drying (slow warm up function).	25°C
08	Factory set temperature for Under Floor Heating UFH).	30°C
09	Factory set temperature for Radiators heating.	60°C
10	Select heating type.	FLOOR HEATING
11	Set minimum temperature for Under Floor Heating (UFH).	20°C
12	Set maximum temperature for Under Floor Heating (UFH).	40°C
13	Set minimum temperature for Radiator Heating.	40°C
14	Set maximum temperature for Radiator Heating.	65°C
15	Optimised heating function switch ON (YES) or OFF (NO).	NO
16	Set ΔT optimized function for UFH (ΔT opt. UFH) - As set in param 10.	5°C
17	Set ΔT optimized function for radiators (ΔT opt. RAD) as set in param 10.	10°C
18	Set the time period for measuring the ΔT in optimized function.	25°C
19	Limiting the primary flow for Heating (max travel of the stepper motor in heating mode) value 99% valve fully closed.	70%
20	Set max. primary return temperature limit.	60°C
21	Select pump protection.	NO
22	Set time for pump activation (after a full 24 hours, the time the pump will run for to prevent it 'seizing' due to long periods of inactivity).	2 Minutes
23	Set frost protection (temp. measured by heating return sensor).	3°C
24	Set PWM function (00 = OFF) 01 to 99 allows pump modulation. The selected value affects the pump speed variation in setpoint reached during optimised heating mode through PWM function. The PWM cable is available as an accessory.	00
25	Manual overrides room thermostat. Heating is 'on'.	NO
26	Select type of contact room stat connection switching. (NO = Normally Open / NC = Normally Closed).	NO
28	Manually operation of the pump only. 00 = AUTO / 01 = ON / 02 = OFF.	00
29	Manual operation of optional relay switching. Connection 9 in the wiring compartment. (00 = Automatic / 01 = Manual turn on Relay / 02 = Manual turn OFF relay).	00
50	Set temp DHW.	55°C
51	Set DHW temperature in the hot water cylinder/buffer when parameter 53 is set YES . This now over-rides parameter 50.	60°C
52	Set ΔT for loading the cylinder/buffer when parameter 53 is ON (YES).	5°C

Param	Description	Fact Set
53	OPTION for connecting to the DHW a storage cylinder/buffer. (NO = No cylinder/YES = Cylinder). This automatically activates parameter 51 and 52, and sets parameter 54 to 01. An additional temperature sensor is required at position 10 in the controller wiring compartment. A relay must be added to wiring connection 9 in the wiring compartment as this relay is only VOLT FREE switching. Keep Warm parameter 56 automatically switches OFF, and parameter 61 is now automatically set ON.	NO
54	Optional - connection of relay switching at connection 10. Off = 00. / Switching a loading pump or heating element = 01. (via a VOLT FREE relay accessory) Switching remote fault or error indicator = 02 (via a VOLT FREE relay).	01
56	Select keep warm function (YES/NO).	YES
57	Set delay time for activating the keep warm function after closing the PICV (last operation heating or DHW). Set time in 10 minute values (1=10 minutes).	1
58	Set maximum primary return temperature during keep warm function.	40°C
59	Set minimum primary return temperature during keep warm function.	37°C
60	Select which PHE will be used in combination with the keep warm function, or program to single plate HIU operation. 00 = PHE for DHW / 02 = Heating ONLY / 01 = PHE for Heating / 03 = DHW ONLY	00
61	Legionella cycle - Only available when Parameter 53 is on. 00 = No / 01 = Yes.	NO
62	Legionella cycle - Time of cycle once the pasteurisation set temperature is reached as sensed by the additional temperature sensor fitted.	30 Minutes
63	Time for the Legionella cycle to start after the last demand for DHW Function.	7 Days
64	Set the temperature to pasteurise in the legionella cycle.	65°C
90	Prepayment - Select Prepayment (PAYG) connection to a billing system.	NO
91	Manual operation of the PICV actuator stepper motor. 00 = Auto / 01 = Fully closed / 02 = Fully open	00
92	DIVERTING VALVE manual operation - 00 = Auto / 01 = DHW / 02 = Heating	00
93	Language - Select from English/Italiano/Francais/Nederland/Deutsch.	English
94	SLAB - Start the slab drying function.	NO
99	Reset to Factory Settings. Note: If operating as a single plate HIU - Reset parameter 60.	NO
00	Diagnostics (display shows operation, temperature, valve opening position in number of steps).	NO

HIIPER II

HEAT INTERFACE UNIT

Commissioning Report