

Installer  
Please  
Read  
Instructions  
Inside

## Air Source Heat Pump Installation and Maintenance Manual Non TDM Split Systems

Model Numbers:  
AEN08 and 160/YDEHA/EU  
AEX060/100/125/140/160/EDEHA-EU



## The outdoor unit

### Deciding on Where to Install the Outdoor Unit

The outdoor unit must not be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.

Choose a location where the noise and the disturbed air from the heat pump will not disturb any neighbours.

Install the outdoor unit on a flat, stable surface with plenty of drainage, gravel or grass is ideal; make sure the base can support its weight

Position the outdoor unit so that the air flows into an open area.

Place the outdoor unit where there are no plants and animals

When installing the outdoor unit near sea make sure it is not directly exposed to sea breeze.

The golden rule is, if you can see the sea from the position of the outdoor unit you need to apply Blygold or equivalent anti-corrosion coating on the whole unit.

The unit needs to be securely mounted at least 100mm off the ground on rubber feet or wall brackets, the unit must be bolted down for security using 10mm bolts and Zebedee bolts.

The unit must have adequate drainage away from the unit; it can produce up to 10L / hour.

There is a drainage kit included which we recommend you don't use, its best to let the unit drain into the ground. The drain holes in the unit are clearly shown, if a drip tray is used it must be 25mm longer and wider than the base of the unit to catch all the drips.

### Dimensions:

#### Small outdoor unit size 6 dimensions

638mm (h) 880mm (w) 310mm (d) 48kg

#### Medium outdoor unit dimensions

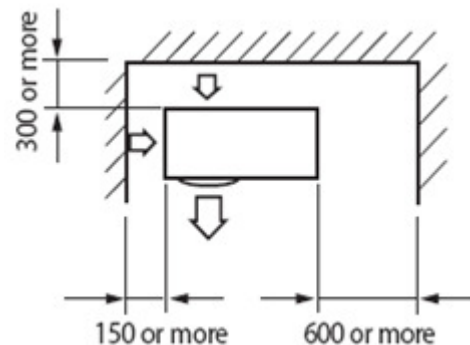
998mm (h) 940mm (w) 330mm (d) 82kg

#### Large outdoor unit Dimensions

1420mm (w) 940mm (h) 330mm (d) 108kg

The space around the unit is very important, allow:

150mm to the left hand side (facing the front of the unit), 600mm to the right of the unit, 300mm to the rear of the unit and 1500mm to the front of the unit.



The unit will not benefit from being mounted on the North or South of the building any aspect is fine, you should avoid very exposed positions to avoid wind blowing into the back or front of the unit and very sheltered positions.

An exposed location may increase difficulty for full unit defrost.

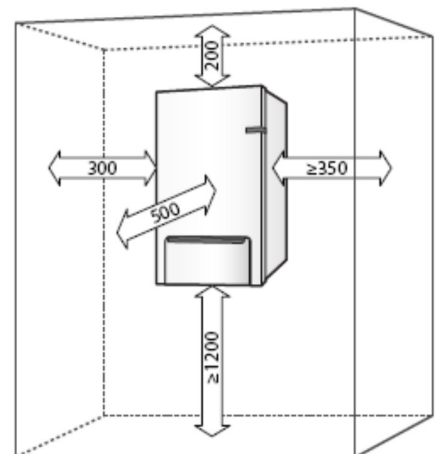
## The Boiler / Hydrobox

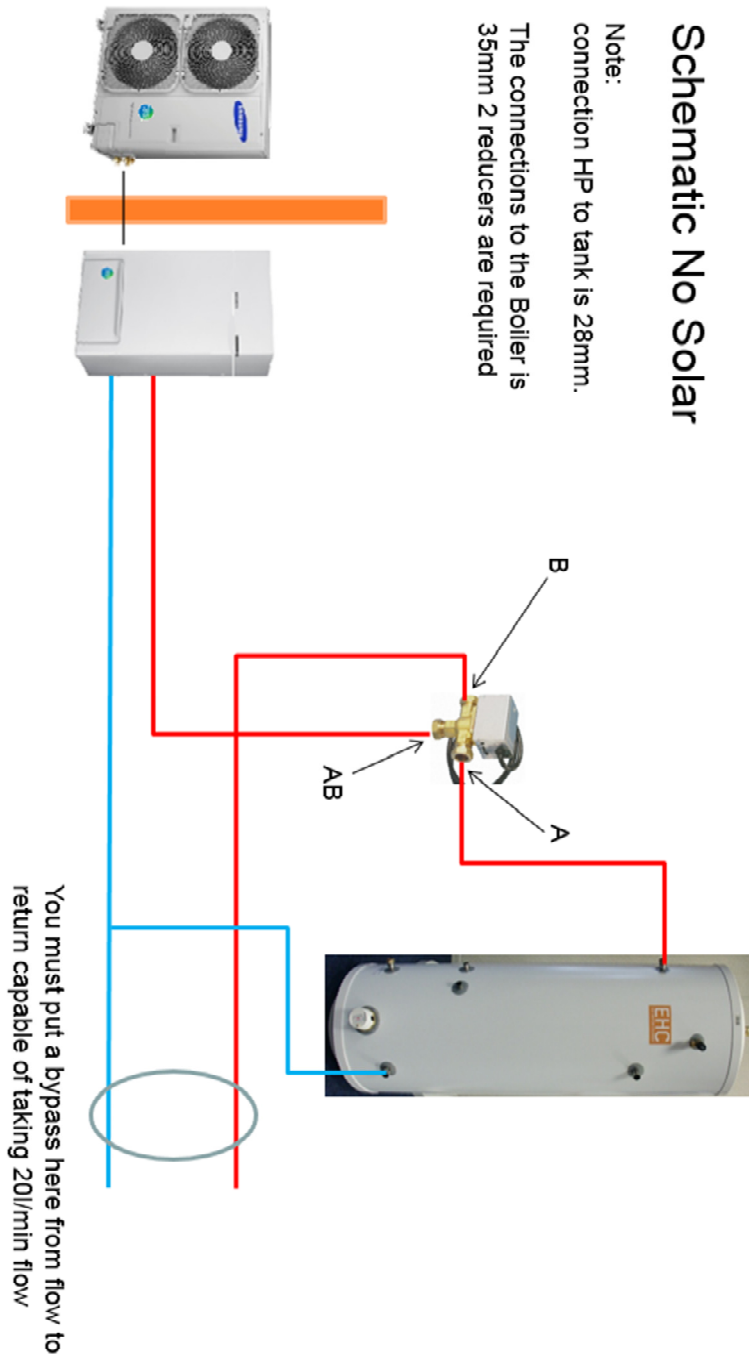
The boiler also requires its own space. It needs to be 1200mm from the floor, with 300mm clearance to the left, 350mm to the right and 200mm above.

### Dimensions:

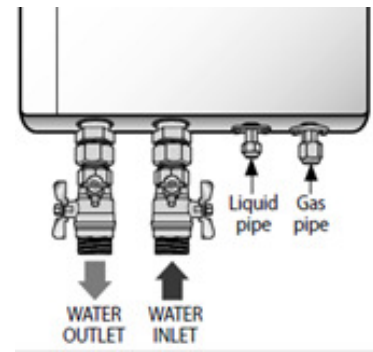
850mm (h) 510 (w) 315 (d)

The power distribution board usually mounts to the right of the unit with the 3 way valve, magnetic water filter and flow meter underneath.





Both units have male connections.



To maintain flow rate we recommend 28mm pipework is used with this machine. **NEVER use 22mm plastic tube, if you insist on using plastic use 28mm throughout**

The unit has a Wilo pump installed inside it.

All Pipework needs to be insulated with 19 mm lagging

A 3 port diverter valve needs to be installed if a hot water cylinder is being used for domestic hot water prioritisation.

The domestic hot water cylinder must be manufactured specifically for the heat pump and have a coil with a surface area of more than 3m<sup>2</sup> equivalent. There also needs to be a sensor pocket halfway up the cylinder

You will need 35mm female iron to 28mm compression. BES part 9008.



## Other components you need to supply and fit:

### Pump

There is a pump (25/70) installed in the boiler unit. It needs to supply 20l/min for the 8kW and 30l/min for the 16kW unit. If the pump in the unit is not big enough an external pump may also be required.



### Diverter valves

If you require domestic hot water and heating, diverter valves are required, you need to supply these. In a split system a 3 port valve has to be used. It is not possible to heat water and have the heating on at the same time. It is very important to make sure the valve is plumbed in the right way (see schematic).



A must go to the hot water tank

B must go to heating

AB must come from the boiler unit

If you want to use 2 ports you will need a relay (wiring diagrams available)

### Bypass Valve

You must install a bypass valve in the heating circuit as far away from the heat pump as possible. The bypass valve enables flow to be maintained as the trvs shut down at all times to prevent unit flow fault. It needs to be as far away from the boiler unit as possible in the heating circuit.



### Buffer vessels

We don't normally use buffer vessels on Samsung EHS systems; as long as the water volume circulating is over 20 Litre. The inbuilt variable speed compressor means the unit can operate without a buffer.

1m of 22mm pipe holds 380 ml of water, if you add the volume in the unit and components and make sure you put the bypass valve more than 25m from the heat pump your system volume will be adequate. When utilizing multiple units, a buffer or low loss header is required to hydraulically join the units.

### Water Filter

In all cases a filter with strainer needs to be installed in the return to the heat pump. A magnetic filter **must** also be installed in the return to the unit. The filters ensure that debris/foreign materials do not cause damage to the heat exchanger in the unit voiding warranties.

### Glycol

The split unit does not normally need Glycol in the water as all water components are housed internally.

## The Cylinder:

The cylinder needs to be installed less than 15m from the outdoor unit to allow for the temperature sensor cable. Note the size and weight of the cylinder. Full installation instructions are included with the cylinder.

We only recommend using Gledhill heat pump stainless steel cylinders however other cylinders can be used IF the coil area is more than 3m<sup>2</sup>. Smaller coils are not acceptable and cannot be used. Please do not attempt to utilize a standard central heating, non-heat pump optimized cylinder. Cylinders can be pressurised or open vented.

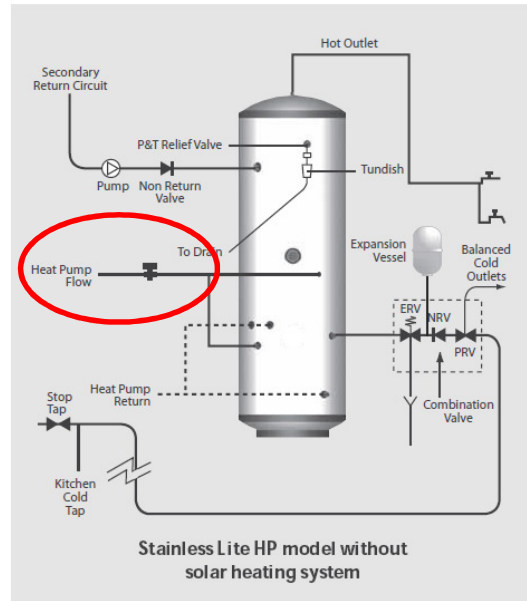
When using Gledhill cylinders both the heat pump (top) coil and the solar (bottom) coil should be used. If no solar thermal is being used the heat pump should connect to both coils as per the recommendations in the Gledhill installation instructions, and oversized by 30% to take into account 0kW input from solar thermal in winter.

### G3

The G3 regulations state in section 3.13a “for all indirect heat sources an overheat cut out to disconnect the supply to the stored vessel in the event of the stored water overheating must be employed so that the temperature of the stored water does not exceed 100C”.

For this reason the heat pump cylinder comes with a 2 port valve and cylinder stat. The valve can be installed in the flow as per the diagram.

However as the refrigerant used in the Samsung EHS is R410A it is not able to physically heat above its critical temperature of 72.8C. Many heating engineers do not install this valve.



## Refrigeration Pipework

Refrigeration pipework needs to be installed between the outdoor and indoor units. The pipe work should be installed by CITB / C&G / ACRIB qualified refrigeration engineers and insulated with class "O" insulation minimum 13mm thick.

### **Pipework Rules**

How the pipework is installed depends on the size of the unit. All pipework from the outdoor to indoor unit is to be 3/8 and 5/8.

#### **Small outdoor unit**

Max run 50m

Height difference between units max 15m

Additional charge after 15m at 50g / metre

#### **Large outdoor unit**

Max run 50m

Height difference between units max 15m

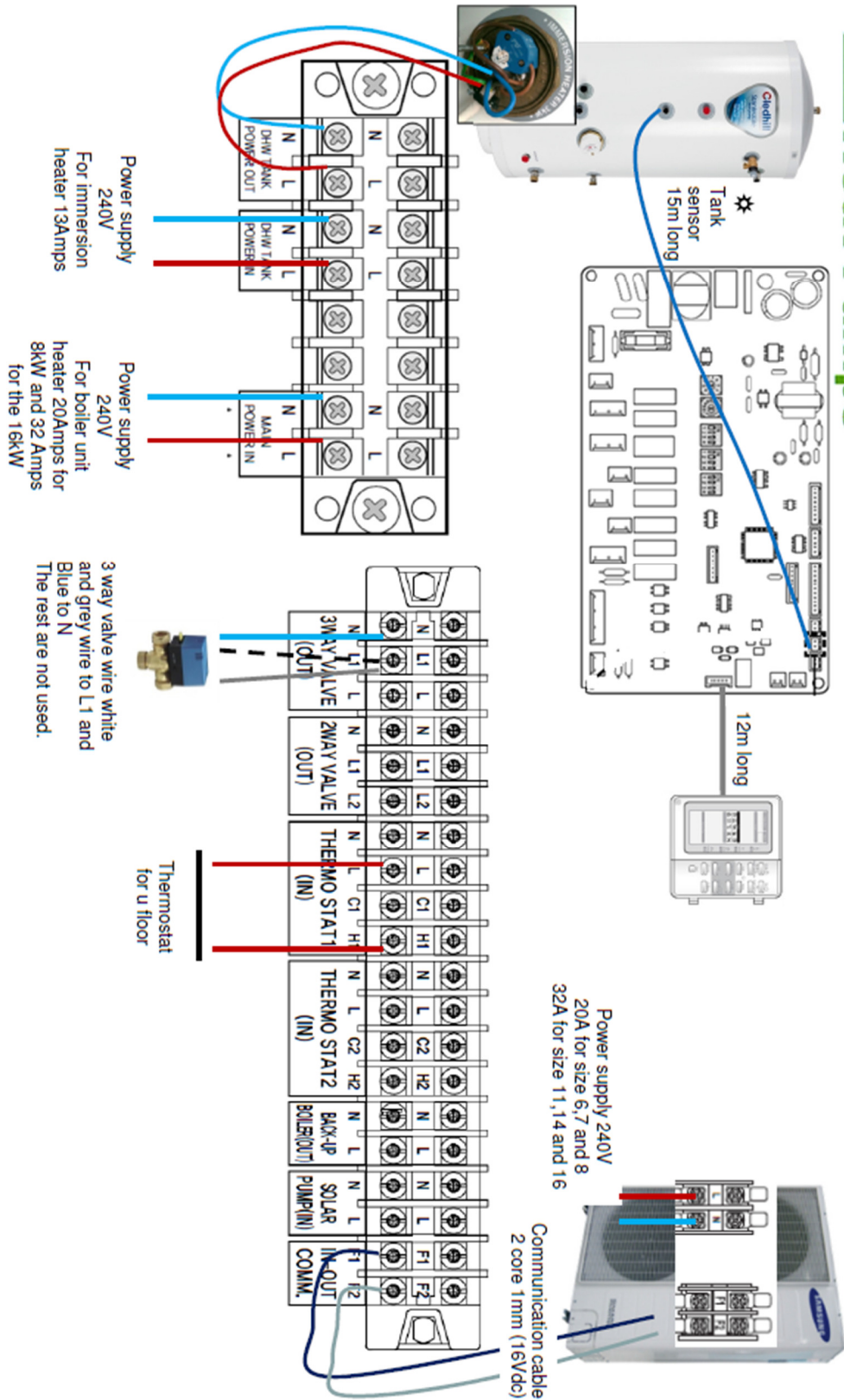
Additional charge after 15m at 50g / metre



Wiring diagram for heating and HW heat pump:



Wiring Diagram 3 port valve





## Wiring and Power Supply Information:

### Power

The EHS system needs 3 power supplies:

One connects into the outdoor unit, 20 Amp for size 8 and 32 Amp for the size 16

The second connects to the hydro box / boiler for the immersion heater this is 13 Amps.

And the third is power for the boiler / hydro box and the inbuilt backup heaters.

The size 8 hydro box has 2 x 2kW heaters so a supply of 20Amps is required

The size 16 hydro box has a 2 and a 4 kW heater so a 25Amp supply is required.

It is possible to disable the heaters if inadequate power is available, we recommend this.

If you disable the second stage heater (un-plug it from the contactor) you only need a 10 Amp supply on both the 8 and the 16kW hydro boxes.

### Communication cable

This must be run from the outdoor unit to the boiler. Use 2 core flex 0.5-1mm (its 16V ac)

### Immersion Heater

The immersion heater is connected into the boiler terminals DHW power out L and N, The control box controls the operation of the immersion heater. If a fused spur is used it must be labelled as switching it off will cause an error.

### Sensors

The **blue cylinder sensor** plugs into a socket CN53 (red) on the boiler PCB and into the control sensor pocket in the cylinder in the top ½ of the cylinder. **Must be above immersion.** The cylinder sensor needs to go 115mm into the cylinder; it must be clipped so it can't pull out.



There is a **black wire** with a red plug in the box, this is not used.

**Sensors cannot not be cut or extended. Keep sensors away from mains cables please**

### Diverter Valves

#### Using 3 port valves

The white and grey wires need to be connected to 3 way valve L and the blue to N. The rest of the wires are not used.

#### Using 2 port valves

Generally 3 port valves are used in split systems; however 2 port can be used with a relay.

### Thermostats/ timers and under floor heating manifolds

**We recommend in all cases the heating should be controlled by an external field supplied room stat / setback stat time clock etc. or run signal from a boiler enable signal from under floor manifolds.** If both rads and u floor are used in the same system the heat pump can be controlled to run at 2 different set points one for each thermostat terminal.

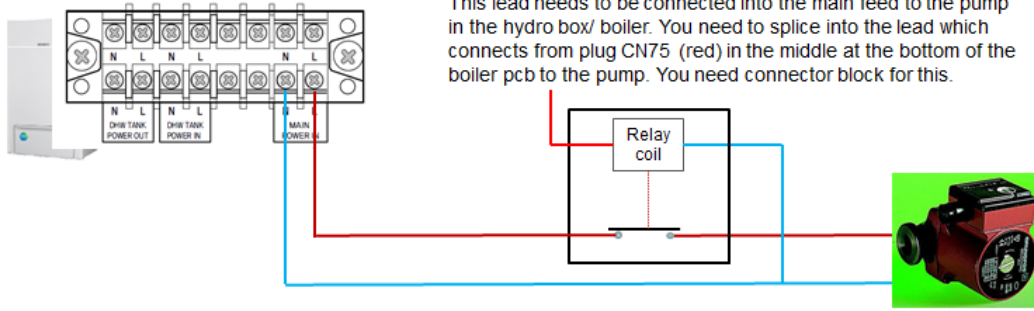
To run the unit with underfloor or radiators make a connection in thermostat 1 L and H1. To run the unit with both use thermostat 2 L and H2 as well as thermostat 1.

When the stat is made the unit will run, when the stat opens the unit will stop. **NOTE the pump will run on for 6 minutes after the unit is told to stop.** Hot water production is not affected and will always take priority.

### Pump

Samsung EHS must not have a pump installed in the water circuit which can pull water through the hydro box if this happens a fault occurs. If an extra pump/ pumps are used they must only run when the pump in the hydro box is running.

All external pumps must be controlled and wired from the hydro box / boiler using a field supply relay as below.



This lead needs to be connected into the main feed to the pump in the hydro box/ boiler. You need to splice into the lead which connects from plug CN75 (red) in the middle at the bottom of the boiler pcb to the pump. You need connector block for this.

## Start Up Procedure:

### Checklist

#### Check the clearance around the outdoor unit:

- Is there 150mm to the left of the outdoor unit?
- Is there 600mm to the right of the outdoor unit?
- Is there 300mm to the rear of the outdoor unit?
- Is there 1500mm at the front of the outdoor unit?
- Is the unit more than 150mm above the ground?
- Have you allowed for the unit drainage?

#### The plumbing:

- Is plastic pipe being used? If so is it all bigger than 22mm?
- Is the cylinder sensor plugged in 2/3 of the way up the cylinder?
- Have you lagged all external pipework?

#### The wiring:

- Is there a power supply to the outdoor unit?
- Is there a separate supply for the indoor unit or 2 if a cylinder is being used?
- Have you wired in a room thermostat? OR a run signal from ufloor manifold
- Is the Samsung remote controller well out of reach of the end user? This is usually found on front of boiler but it can be moved

#### Hot water:

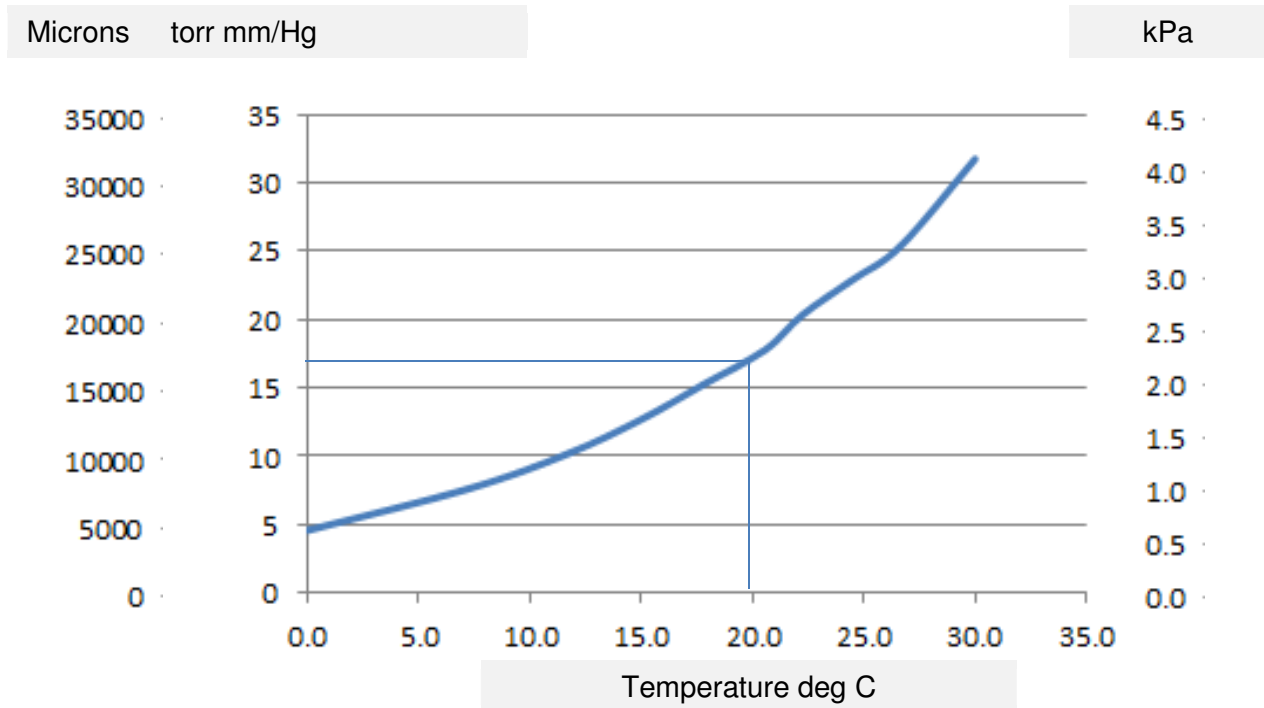
- Have you checked the adjustment on every mixer tap and shower in the house to make sure the hot water is hot enough?
- Is the cylinder sensor plugged in 2/3 of the way up the cylinder?

#### You:

- Have you left the end user page with the end user?
- Have you filled in and sent back the warranty card?
- Have you stuck the yellow sticker (attached) to the front of the unit?

## Information on Refrigerant

### Evacuating the System



Vac the system to AT LEAST the value on the above graph. Once the appropriate level has been reached the vacuum pump should be switched off. If the system holds the vacuum for 15 minutes there is no more water vapor present in the system.

#### Working out additional Charge

If the pipe length is over 15m add 50g/m

## Start-up Procedure:

### Filling and flushing:

The Building Regulations for England and Wales, Part L, 2006, now require a central heating system to be cleaned and inhibited chemically whenever the boiler is changed or any major works are carried out to the system. When installing any Heat pump **we insist on** a thorough system flush prior to connection of the new equipment, your warranty will be at risk if a suitable flush is not carried out and the system becomes blocked during normal operation. The recommended procedure is to power flush the system in both forward and reverse directions at 110% of the normal flow rate and to use a chemical flushing agent where required.

With the power **OFF**, remove the front of the remote controller, slide it upwards, turn it over **DON'T TOUCH THE PCB**, there are 8 dip switches near the red sensor, using a small screwdriver flick dip switch **1 and 5** to on. Cooling will no longer be available. Put the controller back on the wall.

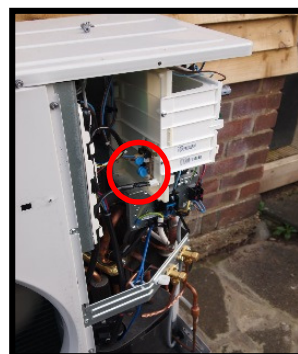


On the **outdoor unit** remove the front cover, there are 2 screws at the top and one at the bottom, slide the cover down. Inside the unit on the back of the white switch box there is a baseplate heater PCB see picture. Which is not normally required in the UK, disconnect the bottom wire with the white plug and tuck it out the way

### Powering Up

Apply power to indoor control box first then the outdoor unit.

In the middle of the control box PCB you will see two tiny leds one red and one orange / green flashing. The red one shows the signal leaving the PCB and the orange shows the signal coming back from the outdoor unit. If this doesn't happen check there is power on at the outdoor unit. Check the comms cable between the outdoor unit and the control box F1 and F2.



Put the cover back on the outdoor unit.

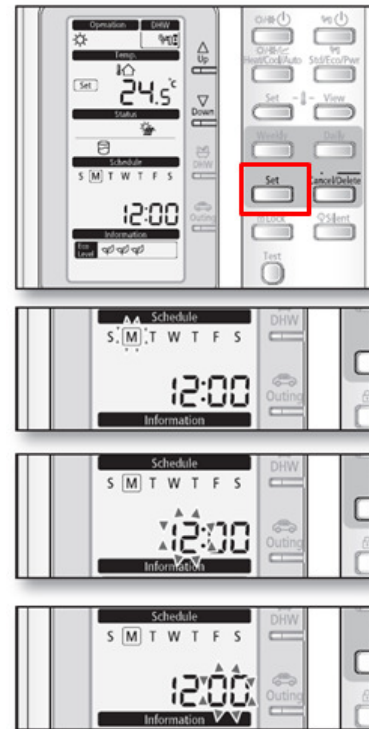
## Setting the Clock

Press the grey set button for 5 seconds.

The day will flash, adjust this with the silver up and down buttons, press grey set.

The hours will flash adjust this with the silver up and down buttons, press grey set.

The minutes will flash, adjust this with the silver up and down buttons, press grey set you are back to the normal screen.

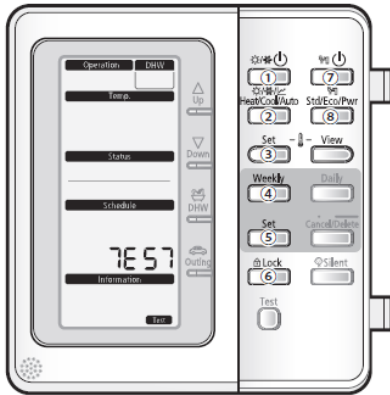




## Electrically testing the unit:

It is possible to test each component one after another using a service function. You can use this to make sure you have wired everything correctly.

To access service mode press **blue set** button **and test** button together for 6 seconds.



The controller will display TEST. Immediately press the top left button to turn the pump on and leave it running while in test mode to avoid a fault.

Press the **top left** button the unit will run the pump.

Press **weekly** to test the immersion heater in the hot water cylinder. Press **grey set** button to test the backup boiler

The 3 port valve will be un-powered so closed to Hot water, Press the **lock** button to make coke can appear the HW valve should move to open, press lock again to close it.

Using the **blue view** button you can see 5 temperature sensors, inlet and outlet to the heat exchanger, the red sensor (where used), water cylinder and sensor in the remote controller.

To test the external run signal or stat is connected adjust temperature on stat up.

If stat is wired to H1 Heat1 will replace test on screen.

If stat is wired to H2Heat 2 will be displayed.

If both stats 1 and 2 are operating heat 1 and 2 will flash one after the other. Watch out for this, wireless stats can cause problems where they send a signal which the unit sees on both terminals, it sees this through the neutral, if this happens you will need a relay.

To exit service mode press and hold **cancel delete** for 6 seconds

Set Test	(3sec) Enter Self Test Mode	7E57
Cancel/Delete	Function OFF / (3sec) Quit Self Test Mode	-
①	Water Pump	
②	Back up Heater 1 <sup>st</sup> state	
③	Back up Heater 2 <sup>nd</sup> state	
④	Booster Heater	
⑤	Back up Boiler	
⑥	DHW Valve	
⑦	Zone #1 Valve	2-1
⑧	Zone #2 Valve	2-2
View	Show five temp. sensor values in order	
-	Not available	
-	Thermostat (Heating) No.1 / No.2	
-	Thermostat (Cooling) No.1 / No.2	

**Test 1** To Avoid further problems we recommend you set the units up in test mode before starting the heat pump.

Firstly in test mode run the pump, press **blue set** button **and test** button together for 6 seconds. The controller will display TEST. Immediately press the top left button to turn the pump on and leave it running while in test mode.

When the pump is running a little house with a circle around it in the status window of the controller.

The unit wants to see at least 16 l / min flow to activate the flow switch, if there is not enough flow the unit will never operate. You should have a flow meter installed, if you haven't now is the time to buy one.

If you look into the flow meter you can see the flow in litres per minute. In this picture you can see a flow rate indicated, this shows 25l/min NOT 35l/min



**If the flow rate is too low you need to fix this before moving on.**

#### **Check:**

All valves are open. Including TRVs, underfloor heads etc. the heating zone valves should also be open by default during this test.

The pump speed is set at highest, not fluctuating but at high constant speed

There is no air in the system, hold the top of the flow switch, you can actually feel the paddle moving back and forward and hear it rattling if there is air.

If you manually open the hot water 2 way valve check the flow rate again, if you can only reach 16l with the heating and hot water open together it's a sure sign the pump you have installed is too small.

Once the flow rate is high enough move onto test 2 below (while still in test mode)

## **Test 2**

### **Set up the bypass valve**

In heating mode check the unit is pushing water into the heating circuit. **Open the bypass valve fully, if you are not sure set it to its lowest setting. Now close every radiator and under floor zone .**

**Using the flow meter check the flow rate is above 16/l to avoid faults. Adjust the bypass valve to achieve this. The bypass is set now open the rads again.**

To exit service mode press and hold **cancel delete** for 6 seconds

## Caution in Cold weather

If the water in the system is below 10C the heat pump WILL NOT START. It will use its inbuilt backup heaters to get the water up to temperature, you have to wait till the water is 10C before the compressor will start.

Press the blue view button, you can see 4 sensor readings, press it until the pump symbol shows (a circle round a house). This is the water temperature, if it's below 10C the unit will not start but the pump will run.

## Further cold weather cautions

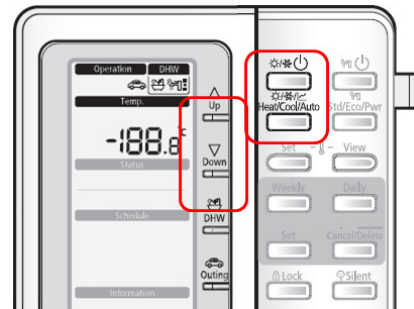
If everything is cold less than 5C (the remote controller, the water, the tank etc.) the unit will not operate correctly, it can't understand how the house has got so cold. You will find the on off button for heating won't work and if you try to use HW mode it will switch itself off. You need to allow the unit to warm up first. Make sure the remote controller is in a heated room.











## Starting it up in heating mode:

If you have two port valves you should find the heating valves are open and the hot water valve closed. If you have a 3 port valve it should be open to heating mode.

Start the unit by Pressing heating **on off** button (top left inside the door) to start the unit, set the mode to heating (sun symbol)

Set the desired water temperature i.e. 50C using the up and down buttons.



Status	Display
Compressor On	
Back-up heater On	
Booster heater On	
Solar thermal panel On	
Back up boiler On	
Water pump On	
Domestic water On	
Defrost operation On	
Anti freezing operation On	
Sanitary operation On	

Once the unit starts, the pump will start immediately the compressor will start after 3 minutes, you will see the symbol for the compressor in the status screen. The pipework will begin to heat up, check the flow temperature by pressing blue view button once, the temp of the flow is shown next to a symbol of a house in a circle. Over time this will warm up, now check all the radiators or U floor loops are hot as well.

## NOTE:

On the latest software if there is a problem with flow no error shows for 10 minutes, it's waiting for the air to come out the system.

If the compressor (outdoor unit) fails to start this could be due to flow problems. See next page

## E911 and compressor not running **READ THIS**

When the pump is running a little house with a circle around it in the status window of the controller.

The unit wants to see 16 l / min flow to activate the flow switch, if there is not enough flow the compressor will fail to start, after a few minutes an E911 fault will show every 15 seconds

### **Check:**

The flow rate on the flow meter it **MUST** be over 18l/min

All valves are open.

The pump speed is set at highest

There is no air in the system

There is water in the system

If none of this works you need a bigger pump or its air locked

If you think the flow switch is faulty, (it very rarely is) remove the paddle from the water by undoing the red nut, you will need to block up the hole temporarily. Now run the pump system again using the top left button, pressing it twice clears any faults. **After 3 mins of pump operation and holding the flow switch the outdoor unit will start, don't rush the system it takes time**

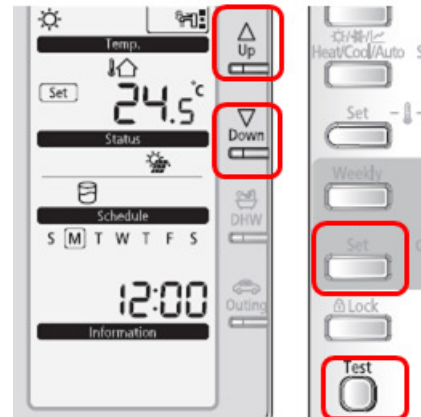
If the flow switch is ok After 3 minutes the compressor / outdoor unit will start so the problem is flow and possibly air / cavitation see below:

## Telling the unit it has a cylinder.

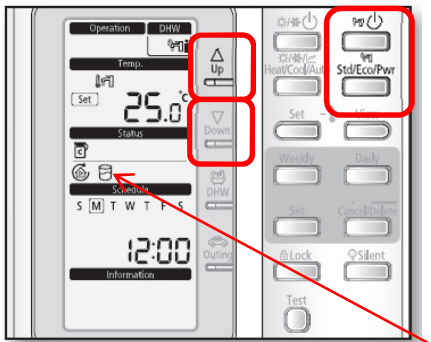
When the unit is delivered it doesn't think there is a hot water cylinder installed. You have to tell the unit about the cylinder.

Press test button for 3 seconds  
 The screen will start to flash,  
 Press up twice, 30 will appear  
 Press set (grey) 3011 will appear Press set (grey), 0  
 will appear Press up once 1 will appear  
 Press set (grey) once 3011 will appear press cancel  
 delete 2 x to return to normal screen

IF E904 error shows the cylinder sensor is not connected



## Starting the System in hot water mode

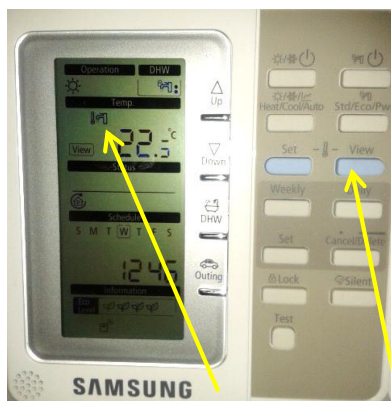


Press Hot water on off button to start the unit, top right button.

Set the desired temperature to 48C press blue set button once until a tap shows now set using the up and down buttons.

**NOTE the unit will take up to 6 minutes to start in Hot water mode, be patient don't press buttons.**

The unit speed is adjusted with the std, eco power button, set to middle position, 2 dots showing. In 2 dots after 20 mins of operation if the cylinder temperature is not reached the immersion heater will start to help out. This time can be adjusted using setting 3032 later.



**NOTE** when the unit is heating the cylinder this coke can symbol shows on the controller.

Press the blue view button you can see 4 sensor readings, press it until the tap symbol shows. This is the cylinder temperature. It will display for about 10 seconds. Check the temperature is not fluctuating more than 1C in this time. If it is the sensor is not installed correctly or is damaged. If this happens the system WILL NOT WORK PROPERLEY



## Run test in hot water mode

In hot water mode check that the 3 port valve or the 2 x 2 ports are sending water into the hot water cylinder, if not check the wiring.

Using the **view button (blue)** on the remote controller check the hot water cylinder temperature and note it down, the hot water temperature is displayed when the tap symbol shows.

After 15 minutes of running check the hot water temperature again, it should have risen, again note the temperature.

If the temperature has not raised check the temperature sensors is installed properly and again check the operation of the 3 port or 2 port valves. If the unit is running well it should heat the cylinder to 48C without needing the immersion heater

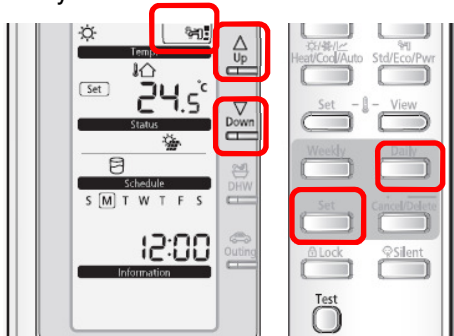
## Setting up the cylinder immersion heater

The Gledhill cylinder has an immersion heater with its own stat; this **MUST** be set to 70C. This is to avoid the immersion heater cutting out before the legionella function is complete



## Cylinder timer

To avoid the cylinder heating being switched off we always add 2 on timers a day, one at 3-00 am and one at 15-00 pm. To insure the cylinder is hot 24 hours a day we don't normally set any off times.



Press **daily** button once, no 1 and on shows, press **grey set**, press up or down until the tap symbol shows at the top of the screen with 2 dots **press grey set**, adjust hours with up or down button to 3 am press **grey set**, minutes flash press set. Now everything flashes press set (grey). No 2 appears do the same again but for 15-00.

After everything is set no 3 will show. Press **cancel delete** twice, the normal screen will show.

Daily will appear next to the time. The timer is active.

To **delete the timers** press daily 2 x the set schedule will show, press and hold cancel delete for 5 seconds, keep doing this until no1 shows, press cancel delete 2 x and in the normal screen daily will have disappeared.

## How hot water works

The hot water cylinder has priority over the heating, if the cylinder temperature falls 5 degrees below its set point the unit will automatically switch to heating the cylinder. Once set temperature is achieved the unit will go back to heating the house.

The hot water cylinder loses almost no heat (1/3 a degree an hour) if no hot water is used.

The hot water cylinder takes less than an hour to heat up from cold. If you need hot water very fast the DHW button forces the unit to heat the water flat out, the unit will stay in this mode until you press the DHW button again

To protect from legionella the cylinder is heated to 60 degrees C once a week automatically.

## Performance testing

With the unit running flat out measure the temperature of the air temperature as it enters the coil and the ambient temperature well away from the unit? They need to be the same for the unit to operate properly.

## Not enough hot water.

The Water storage temperature is lower (48C) than a normal fossil fuel cylinder. It's important to check that any shower or bath mixers do not further reduce the water temperature. Using your thermometer check that the hot water comes out the tap at the same temperature it leaves the cylinder. If it doesn't you might need to make adjustments to taps mixers etc. **DON'T** raise the cylinder temperature to compensate.



## Field Settings

Field settings are what define how the unit is configured and how it will work, each system can have very different field settings.

Many field settings will need to be made: NOTE the set button is the grey one not the blue

Field settings are in groups the 20s are for weather compensation and temperature control in heating, the 30s are for the cylinder and the 40s are for backup boilers and hybrid systems. Below are the field setting specific to your system as described in this book.

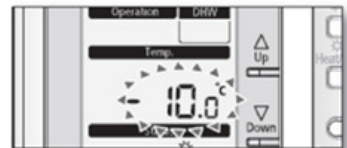
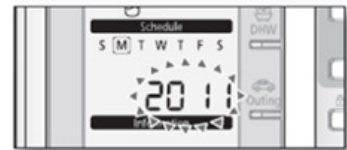
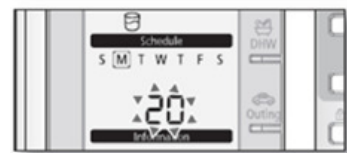
Enter field settings by pressing **test** for 6 seconds, 10 will show on the screen

Scroll up to 20 using the silver up button, press **set**, 2011 will show.

To adjust this setting press **set** again the setting will appear at the top of the screen, adjust it with the silver up down buttons and press **set** again, scroll up to the next field setting using the up and down buttons and repeat.

When you have finished all your 20 settings press **cancel delete** once, 20 will show on the screen, press the silver up button to move to the 30s and repeat the procedure above.

When finished or if you get lost press cancel delete 2 x to return to the normal screen



**Note: if you set a field setting and go back to check it, it will not have changed, the field setting do not get written to the PCB until you finish setting and exit.**

## Field settings to set see user manual for a full list

2011	-2	low ambient setting for optimisation set to -5 in Scotland
2012	+15	high ambient temp for optimisation
2021	45C	for u floor 50C for rads Hi water temp for optimisation. For zone 1
2022	37C	lowest water temp for optimisation. For zone 1
2091	1	if stat is wired to h1. For zone 1
3011	1	tells unit it has a cylinder connected
3025		Max cylinder heating time, 50mins for 200ltr, <b>90mins for 300ltr</b>
3032		Delay time before immersion heater starts, 30mins for 200ltr, <b>60mins for 300ltr</b>
3042	T	Tuesday day legionella happens (always use Tuesday) #
3043	3am	time it happens
3044	60C	legionella temp

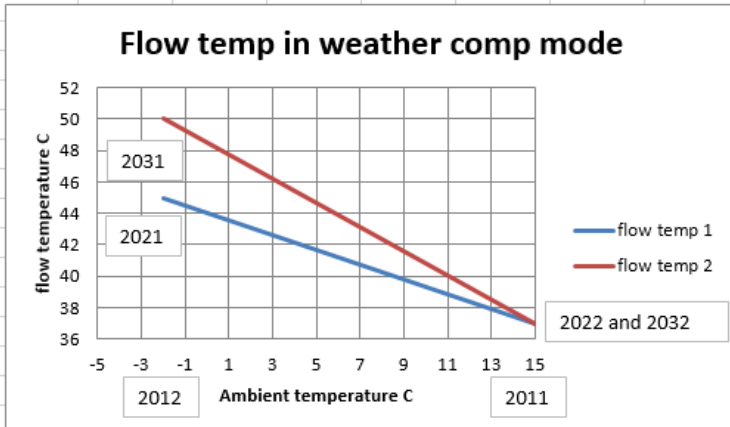
A full list of field settings are in the installation and user manual which come with the outdoor unit

*# it is possible to scroll through the days & select every day, then legionella can be run daily rather than weekly.*

## Operating the System in heating mode using an external thermostat and / or a boiler run signal from an under floor manifold.

You have now set the unit up to run from an external signal Using a field supplied room thermostat or signal from an under floor heating system through B20-B22 and/or B20-B24; the controller no longer drives the unit.

When the contact is made the unit will start and the water temperature will be controlled by the heat pump, you will not have any control over it. The water temperature is determined by the outdoor temperature; the colder it is outside the warmer the water. The unit is running in weather comp mode,



**You will see 0.0C on the screen;** the unit is using weather compensation function to work out the water temperature. If you need to boost the heating water temp this can be done by pressing the silver up and down buttons. This boosts the radiators by up to +5 C but warning this will cost more money to run.

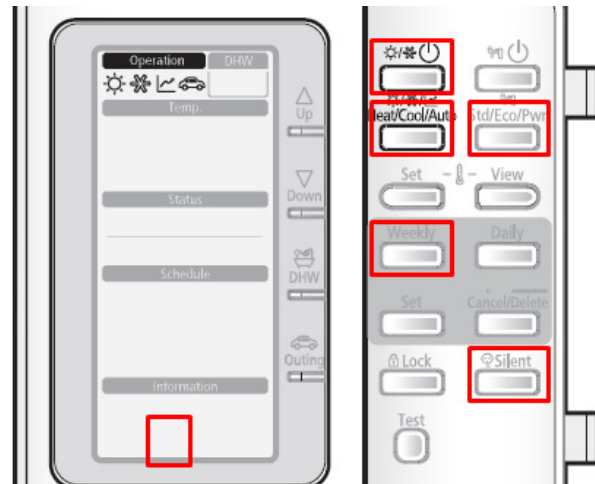
When an external stat or run signal is used most of the

functions of the Samsung remote are disabled. A waging finger shows at the bottom to show this.

All these buttons are disabled and the functions they control are also disabled

**Note:** when the heating command is sent to the unit it will not start for 3 minutes. And when the thermostat or signal is removed the pump will run on for up to 6 minutes.

On latest software the end user can override the stat switching the unit off with the top left button. Avoid this as the unit will no longer run. If the sun signal is not on the display the heating is not going to operate.



## Warranty Registration Card

**Warranty MUST be registered within 30 days of delivery to site. You must send proof of delivery with the warranty card.**

**Warranty will start from the date the unit is delivered.**

**All registrations made more than 30 days after this period will be rejected.**

If commissioning data is not available at this time register the unit and send the data at a later date, the warranty certificate will be returned to you when the whole form is completed.

This warranty covers only the Samsung components of the installation, it is parts with a pre-set labour allowance only. The warranty is between Freedom Heat pumps and the installation company only, this is NOT an end user warranty.

It is the role of the installer to offer a warranty to the end user covering all of the heating system including the heat pump.

The standard warranty is valid for 12 months from date of delivery as entered on this card. If the unit is installed by a Samsung approved installer **and** this card is sent back within 30 days of delivery date the warranty is automatically extended to 36 months.

Approved installers also have access to warranty extensions at the time of registration for warranty; a 4 year extension to the warranty can be purchased from your distributor or directly from Freedom Heat Pumps.

Call 02380274833 for details and pricing

**The warranty card can also be used as a maintenance card.**

Please return a photo or scan of this form and the delivery note to [warranty@freedomhpc.co.uk](mailto:warranty@freedomhpc.co.uk) Once received we will confirm receipt and start of the warranty period.

## Samsung EHS commissioning and maintenance sheet

You will need a thermometer and a pen to complete this form:

The Unit		
Model Number		From outdoor unit right hand side
Serial Number		From outdoor unit right hand side
Ambient air temp		measure this in the garden
Have you cleaned the filter		
Glycol concentration %		measure this
Have you cleaned the coil		
Have you polished the unit?		
In Heating Mode		
Water flow temp		from remote controller
Water return temp		measure this
Flow rate l/min		from flow meter
Temp of air at the back of the unit		from remote controller
Flow rate l/min when radiators and ufloor manifolds closed		from flow meter
Cylinder		
Hot water cylinder model and serial no		
Cylinder water temp at start up		press view button on rc
And after 30 mins		press view button on rc
Water flow temp		from remote controller
Water return temp		measure this
Flow rate l/min		from flow meter
Immersion heater current		press immersion button on rc
Immersion heater cutout setting		remove cover and adjust to 70C
Commissioning Data not required at maintenance		
Where was the unit purchased		
Date Installed		
Date delivered proof of delivery required		warranty starts from this date
Date Commissioned		
Are you a Samsung approved installer?		
Would you like to be an approved installer?		
Warranty required years	3 / 5 / 7 years	
Installation Address		
You		
Engineers name		
Company		
Address		
Engineers phone number		
Email address		
Signature of engineer		
Date		

I accept the terms of the Samsung warranty and confirm the system has been registered within 30 days of delivery. I also include a copy of the delivery note.

Signed

Name

## Maintenance Split Systems

The Samsung heat pump should be maintained at least once a year to comply with warranty and RHI. The warranty card also doubles up as a maintenance sheet.

### Maintenance procedure

Stop the unit, clean the strainer or magnetic filter in accordance with manufacturer's recommendations and replace it.

Refill the unit, pressure should be 1 -2 bar,

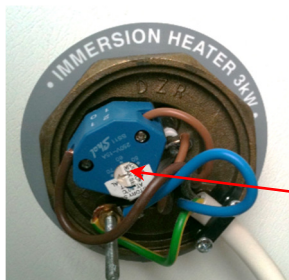
We need to **test the operation of the unit** against the hot water cylinder. So first we need to draw off 50 liters of water, run a couple of taps for 5 mins to achieve this. The unit should start up automatically in hot water mode, if it doesn't press the top right button on the controller, in 3-4 mins it will start heating the cylinder, a coke can symbol will show in the status section of the remote controller.

The heat pump should be able to achieve 48C cylinder temperature without using the immersion heater.

While running, check the outdoor unit for damage & debris, the coil needs washing, we recommend you use an approved EHS heat pump cleaning chemical, your distributor will stock this. Instructions are given on the bottle. You also need to clean and polish the outside casing we recommend car wax to do this.

### Hot water Cylinder:

Check electrical connections & sensor are fixed properly and the overheat thermostat is set to 70C.



Overheat Thermostat Adjustment

Press the silver immersion button on the Samsung remote controller; this will force the immersion heater on. Check immersion heater works properly, Measure the current drawn by the heater; it should be 12-13 Amps.

Measure the temperature of the flow using the remote controller.

Measure the flow rate from the flow meter.

With the unit running flat out measure the temperature of the air as it enters the coil and the temperature of the air in the garden. They should be the same check cold air is not recirculating.

## Leave this page with the Homeowner

**Your Samsung heat pump heats the house and hot water cylinder much like a normal fossil fuel boiler however there are a couple of differences which you should notice.**

- 1 The radiator temperatures are lower than normal and will alter as the outdoor temperature changes. The colder it is outside the warmer the rads and vice versa. This function is automatic and is designed to save you money. At their hottest they will reach 50C. If you would like a constant radiator temperature this can be set by an engineer but it will increase your run costs by up to 25%.
- 2 The system is designed to run continuously in cold weather, turning the system on and off will make the house uncomfortable and will increase your run costs. The most efficient way to run this heating system is to leave it running at the set temperature 24 hours a day in winter time. If you turn off the heating and let the house get cold (less than 17C) it will take a very long time to warm back up to a sensible temperature.

### **Your systems have been set up to be simple to operate.**

The Samsung controller looks like this, you should not use this or press the buttons on it, it is for commissioning and making settings to the system only.



You should see 0.0C on the screen this means the unit is under external control from a room thermostat.

If the system goes into fault, the screen will show a number at the bottom starting with E, for example E911 – A00  
The engineer will want to know this number when you call him.

## Heating

Control of the heating is by your wall mounted thermostat, not the Samsung controller; you need to read the instructions for this thermostat as its field supplied. The boiler will run when told to by the thermostat. DON'T set the room temperature too low, the heat pump takes time to recover the house temperature, as a rule don't set the temperature more than 2 degrees below your normal set temperature when you go out of the house or it will take a long time to recover.

To switch off the heating in summer set the temperature down to 16C to avoid the heating starting up.

To control the temperature in your rooms please use the radiator valves.

## Hot water

Your system will keep the hot water cylinder hot at all times automatically, as you use the water the heat pump will constantly top up the cylinder. A cold cylinder should be reheated within an hour. An anti-legionella operation will be completed at a predetermined time every Tuesday morning. The hot water will be hotter on a Tuesday morning than the rest of the week.

## Warranty Important

Attached to this document is a warranty page **your installer must** fill it in and return it to activate the warranty. No claim will be processed without this paperwork being returned. Your installer will offer you some warranty packages to cover your installation and their own work.