

Schematic Book

Pre-plumbed kit

for Samsung heat pumps



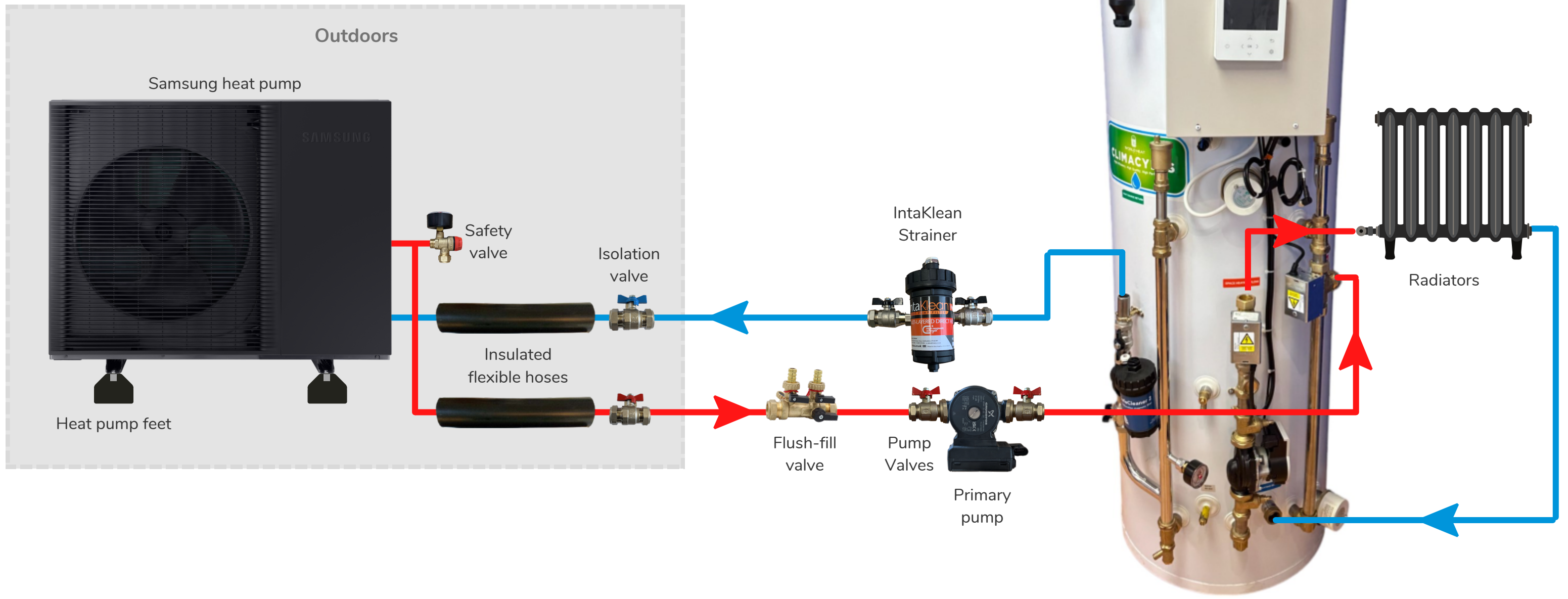
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Mechanical Schematic

Pre-plumbed cylinder



Pumps

With Samsung heat pump we sell Grundfos OEM pumps as the primary pumps. These pumps take an external speed control signal from the Samsung board to optimise pump flow-rate for heat pump performance.



Grundfos UPM4

5 & 8kW

The Grundfos UPM4 pumps we sell have a 60W motor and 7.5m nominal head. When you're using a buffer they are good for 5 and 8kW heat pumps. They will be powerful enough for some direct systems, but you need to carry out some calculations to be sure.



Grundfos UPM4XL

12kW

The Grundfos UPM4L pumps we sell have a 60W motor and 9m nominal head. When you're using a buffer they are good for 5 and 8kW heat pumps and often for 12kW heat pumps with shorter pipe runs. They will be powerful enough for some direct systems with volumisers and bypass valves, but you need to carry out some calculations to be sure.



Wilo Yonos PICO 25/1-8 - 180 long

Secondary Pump

The Wilo Yonos PICO has a 60W motor. It is perfect as a secondary pump for moving water around your heating system.

Secondary pumps are only required when there is a buffer vessel or header.

Additional Components



IntaKlean

An IntaKlean is a filtration system which keeps the heat pump safe from any debris. The intention is that you install them as close as possible to one another so the minimum amount of fluid is lost when you clear out the strainer. This can also be replaced with a strainer if desired.



Flush-fill valve

We supply a flush-fill valve in the kit to make it easier to flush, fill and drain the system, it needs to be installed on the primary pipework. Best not to flush through the heat pump though - make a U-loop of pipe to put in the system in place of the heat pump or install a flushing bypass before the heat pump isolation valves.



Expansion Vessel

The 18 litre expansion vessel covers you for the vast majority of heating systems. A sealed system kit can be used on a pre-plumbed if desired to get a slimline expansion vessel.



Red and blue valves

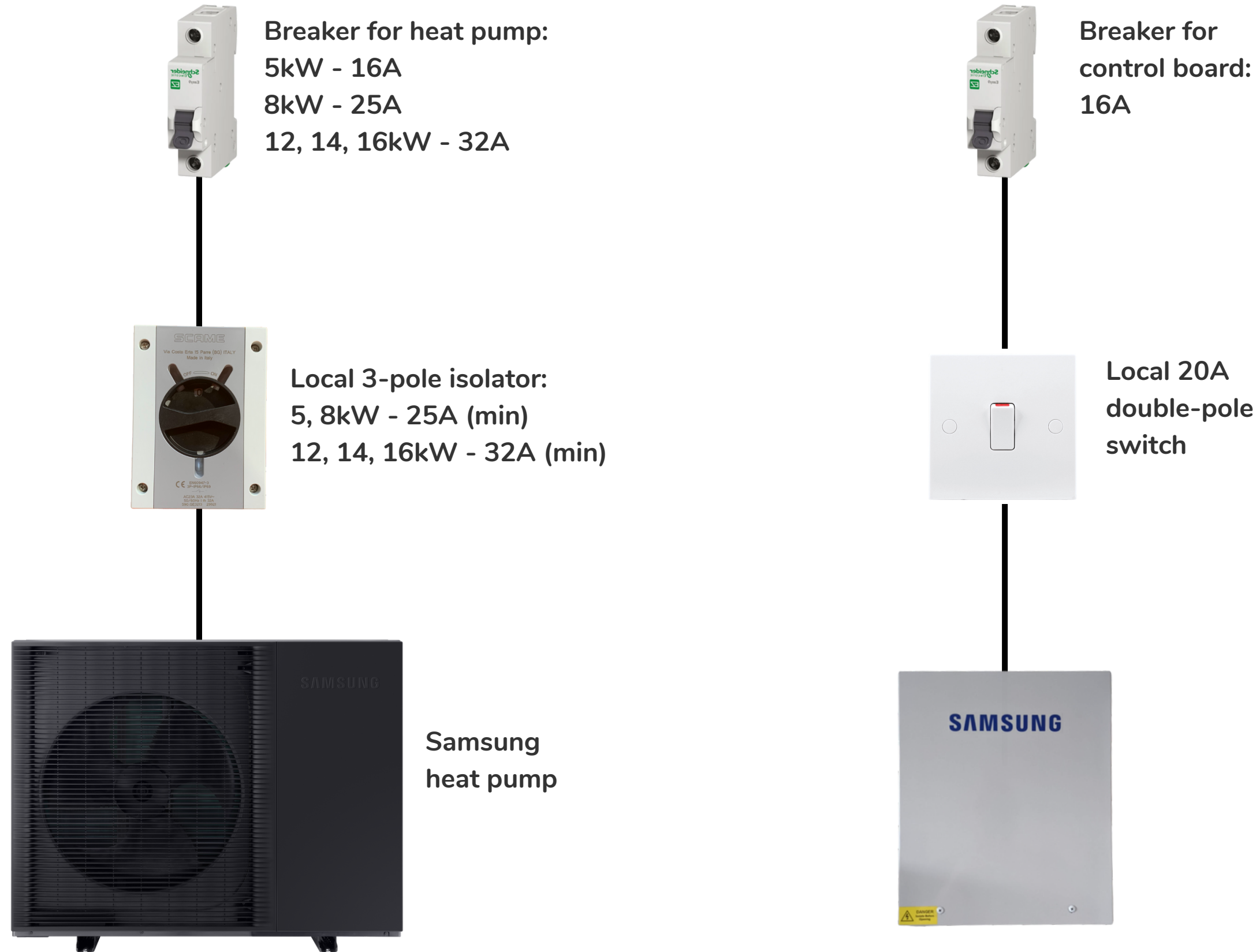
A red and blue valve are each connected to the hoses going into the heat pump, this allows the flow into and out of the heat pump to be locked off. The colour denotes whether it is the hot or cold feed.



Safety Relief Valve

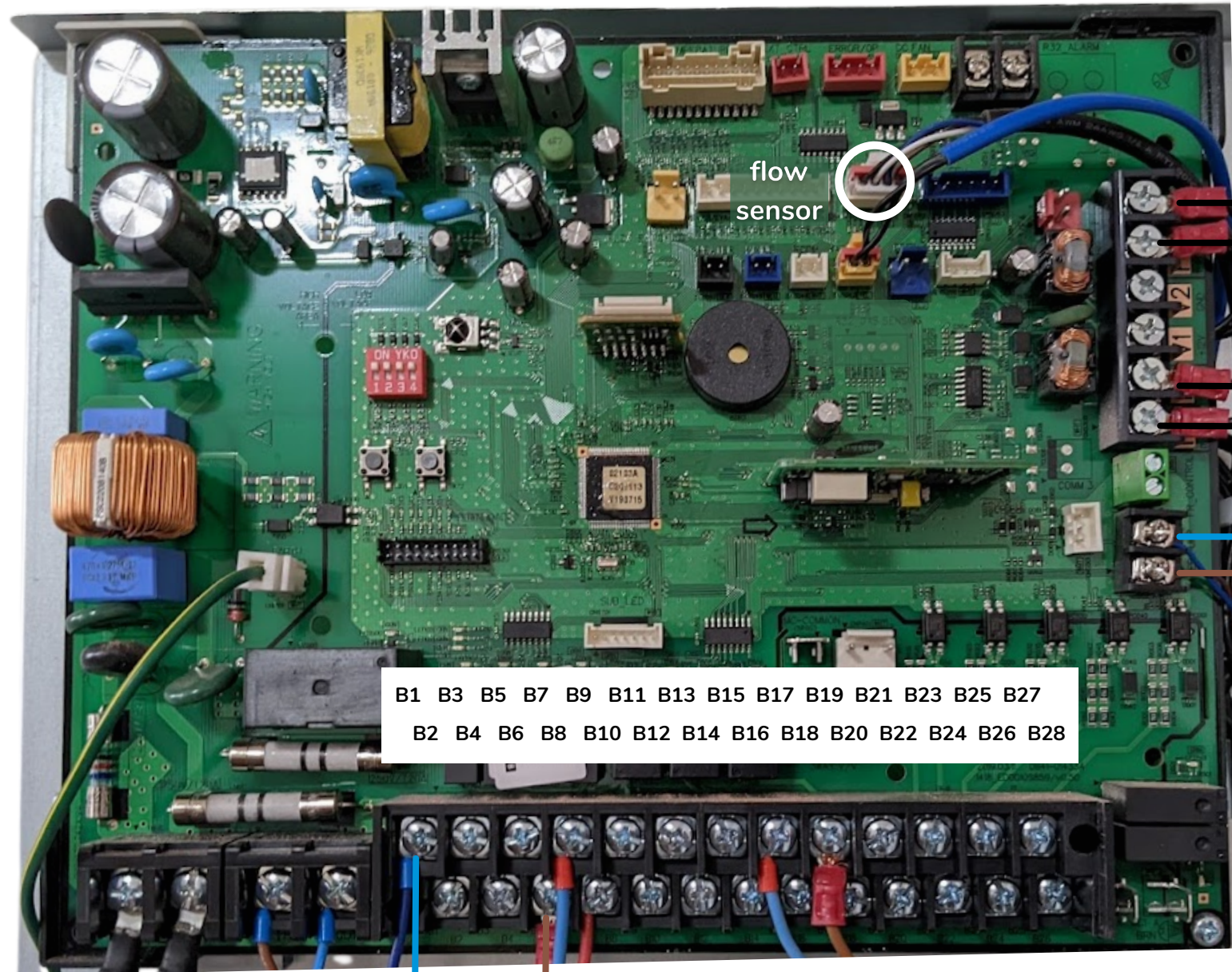
This valve attaches to the expansion vessel to allow pressure release. It comes with a gauge to show the pressure in the expansion vessel.

Main Power Diagram

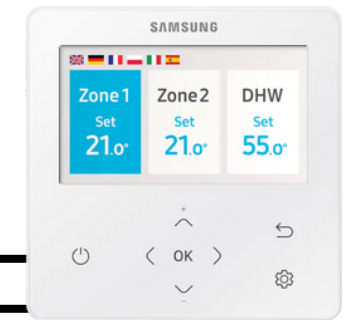


Wiring Diagram

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The Samsung thermostat comes mounted to Samsung board - it can be relocated to a more sensible thermostat location if you want to use it as the thermostat.



LCD stat
F3, F4

These cables must be shielded.
e.g. 1mm² CY cable



heat pump
F1, F2

B1 B3 B5 B7 B9 B11 B13 B15 B17 B19 B21 B23 B25 B27
B2 B4 B6 B8 B10 B12 B14 B16 B18 B20 B22 B24 B26 B28



incoming power A1, A2

3-port valve, immersion heater and secondary pump all pre-wired cylinder manufacturer.



primary pump **speed control**
top, bottom
(ignore the black cable)

primary pump **power**
B1, B6



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Set the time

Where you go to set the time on the controller is:
User Mode then **Wired remote controller** then you can set the **Current Time**.

Accessing service mode

To get into service mode for testing and setting up the heat pump you need to press and hold **up and down** for 5 seconds. The controller will then ask you to enter the PIN which is **0 2 0 2**

Check the flow-rate

Enter Service Mode, go to **Indoor Zone Option** then **Indoor Zone Status Information** and it will show a value for **flow sensor** in litres per minute.

Samsung Thermostat

The heat pump control is a bit more clever when you use the Samsung controller as the thermostat. This is the ideal option if you can find a route for the cable to a sensible thermostat location.

To use the Samsung LCD controller as the thermostat enter service mode and go to:

Indoor Zone Option

and set

Standard Temperature to Indoor

Now the controller is set up to act as the thermostat with the temperature setting via the Samsung LCD.

External Thermostat

If you need to use an external, 3rd party thermostat with a Samsung heat pump this needs to be wired up as shown below. Permanent live is **B20**, switched live is **B22**.



Then set the heat pump to use it as the signal to heat or not by setting **FSV 2091** - External Thermostat Application #1 (Floor) to **Use(Signal ON/OFF) or WL Interlink OFF(Water Pump3)**.

Heating - Weather Compensation

Samsung's name for weather compensation is "water law". You need to set up the water law before the heat pump will perform weather compensation properly. On a Samsung you set a warm weather point and a cold weather point and then the unit interpolates between them to provide the flow temperature asked for.

To do this you need to enter service mode, "Field Setting Value" and input the settings.

20** Water Law

201* Outdoor Temp. for Water Law (Heat)

Low = 20°C

High = -3°C

202* Water Out Temp. for WL1 Heat (WL1-Floor)

Low target value

25°C

High target value

45°C

Note: the two numbers inside the green boxes are the design condition, in this case shown as flow temp of 45°C at air temp of -3°C but you should use the temperatures you have designed to.

Hot water settings (FSV)

3011 - Domestic Hot Water Tank - **Use(Hysteresis Thermo ON/OFF state)**

3025 - Max DHW Operation Time - you want to give your heat pump a decent chance of heating the water up in one go here, but not let the house get cold while you do it. If it's a well insulated house you can set this time fairly long, if it's a poorly insulated house you can set it shorter. **90 minutes** is a reasonable starting point for most cases.

3032 - Delay time - This is how long the heat pump tries to do the hot water using the heat pump before it kicks in the immersion heater to help. You don't really want this to happen often so set this to **60 minutes**.

3042 - This is the day that the legionella cycle happens. Best idea is to set it mid-week probably **Tuesday** or **Wednesday**.

3043 - Legionella start time - Set this to a time where the water should already be hot anyway to minimise the energy used for this cycle, maybe **4am**.

3044 - Target temp - This is how hot the heat pump goes in legionella cycle - **60°C** is a good setpoint normally. If the occupants are older you might want to go for 65°C to be extra safe.

