Quick Start

for Samsung integrated heat pumps
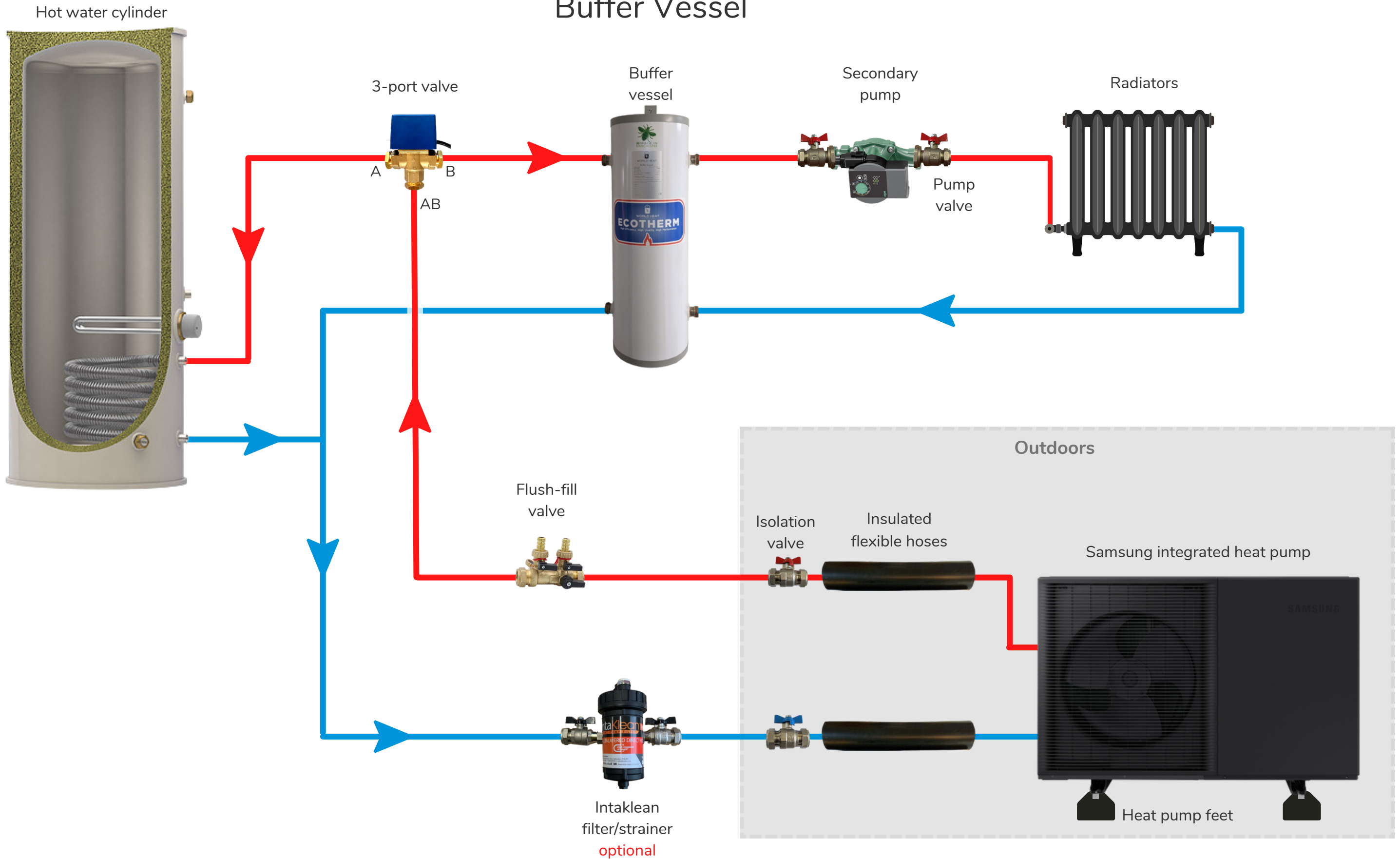
Components Included with
the Monoblock Unit
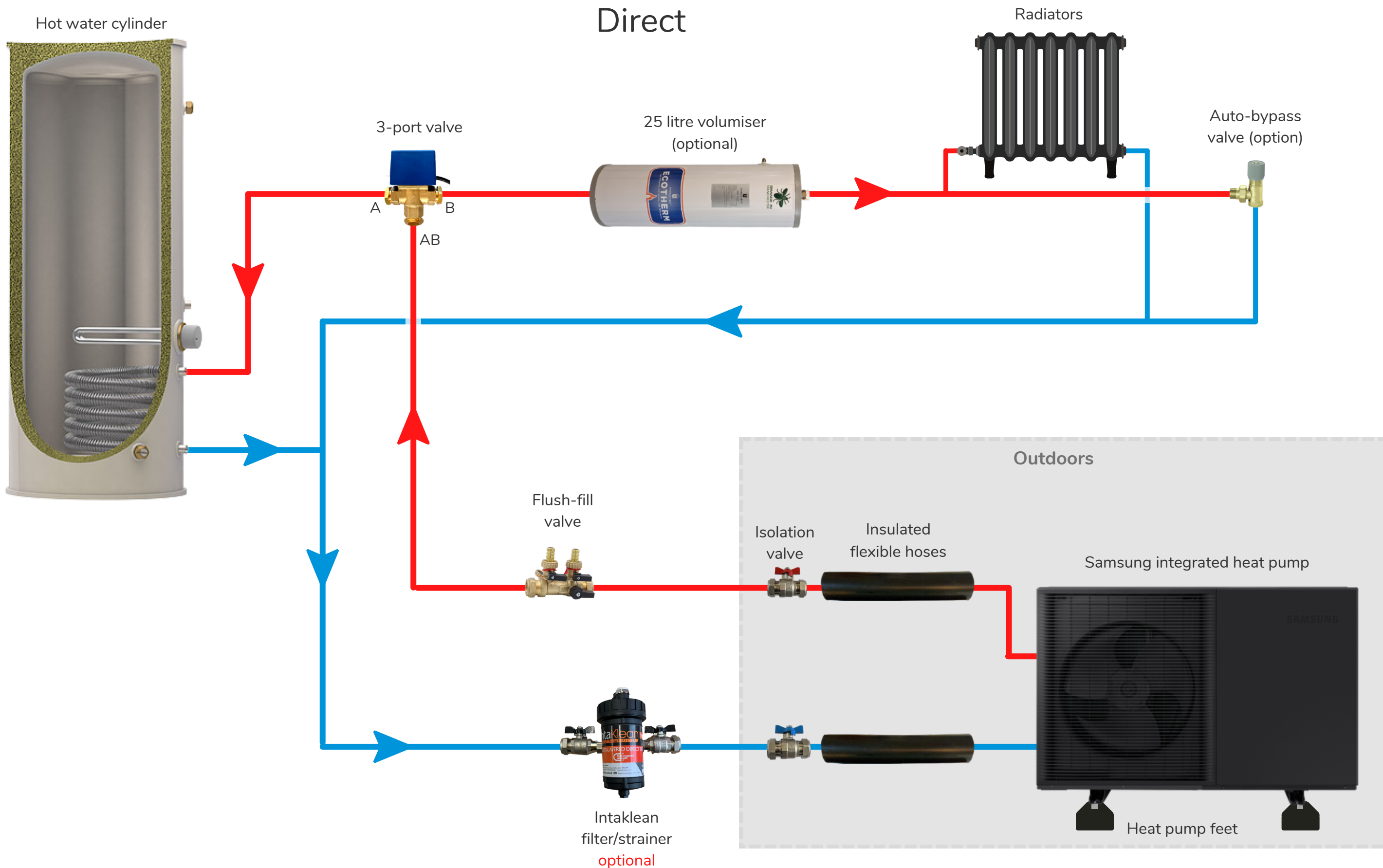
EHS
Wifi

Samsung Flow Sensor

Gas Separator

Expansion Vessel

Pressure relief valve

Pressure Sensor

Strainer

Primary Pump

The unit contains either a
UPM4 (5&8kW) or a
UPM4XL (12&16kW)
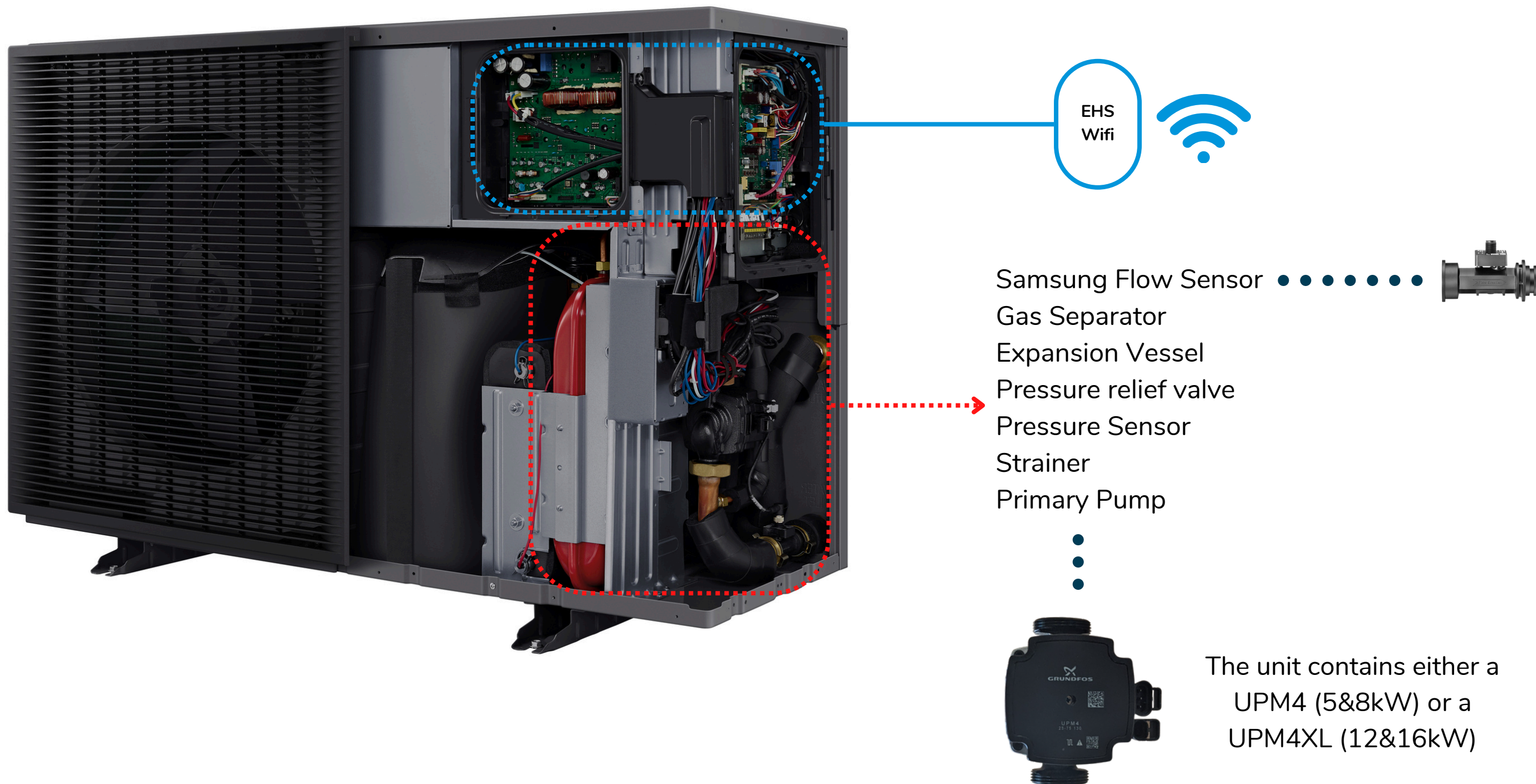
Mechanical Schematic
Buffer Vessel

Hot water cylinder

3-port valve

A   B

AB

Buffer vessel

ECOTHERM

Secondary pump

Pump valve

Radiators

Flush-fill valve

Outdoors

Isolation valve

Insulated flexible hoses

Samsung integrated heat pump

SAMSUNG

Intaklean filter/strainer
optional

Heat pump feet

Mechanical Schematic
Direct

Hot water cylinder

Radiators

3-port valve

25 litre volumiser
(optional)

Auto-bypass
valve (option)

A   B

AB

ECOTHERM

Outdoors

Flush-fill
valve

Isolation
valve

Insulated
flexible hoses

Samsung integrated heat pump

Intaklean
filter/strainer
optional

Heat pump feet

Buffers, Volumisers, and Heating Pump

The minimum circulating water content of the system is 30 litres for Samsung 5 and 8kW heat pumps and 50 litres for the 12 and 16kW models.

To make it simple to always meet these requirements we can sell you a kit with either a buffer vessel or volumiser.

Buffer Vessel

A buffer vessel adds extra volume to the system and introduces flow separation between primary and secondary circuits.

We recommend a 25 litre buffer vessel for the 8kW or below heat pumps and a 50 litre buffer vessel for those rated 12kW or higher.

Larger buffer vessels are available if required.

Volumiser

A volumiser adds volume to the circuit to when doing a direct system without seapration.

We can supply a 25 litre volumiser that can be mounted vertically or horizontally.

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 low loss header.

Valves

3-port valve

We like to send you a Mut Meccanica 3-port valve. We select these for their very low pressure drop and to give you a 2-pole auxillary switch. You wire the live and neutral from the board as indicated on the wiring diagram, you can wire the live via the high limit stat on the cylinder if you are doing a hybrid installation. Port A is for the cylinder, port B is for the heating.

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. Actually ideally it's 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.

Red and blue valves

A red and blue valve are normally installed for isolation of the heat pump. The colour denotes whether it is the flow or return.

Pump Valves

These are attached either side of a pump and used to plumb it into the system, 1 pair for each pump. They have a union to connect them to the pump.

Main Power Diagram
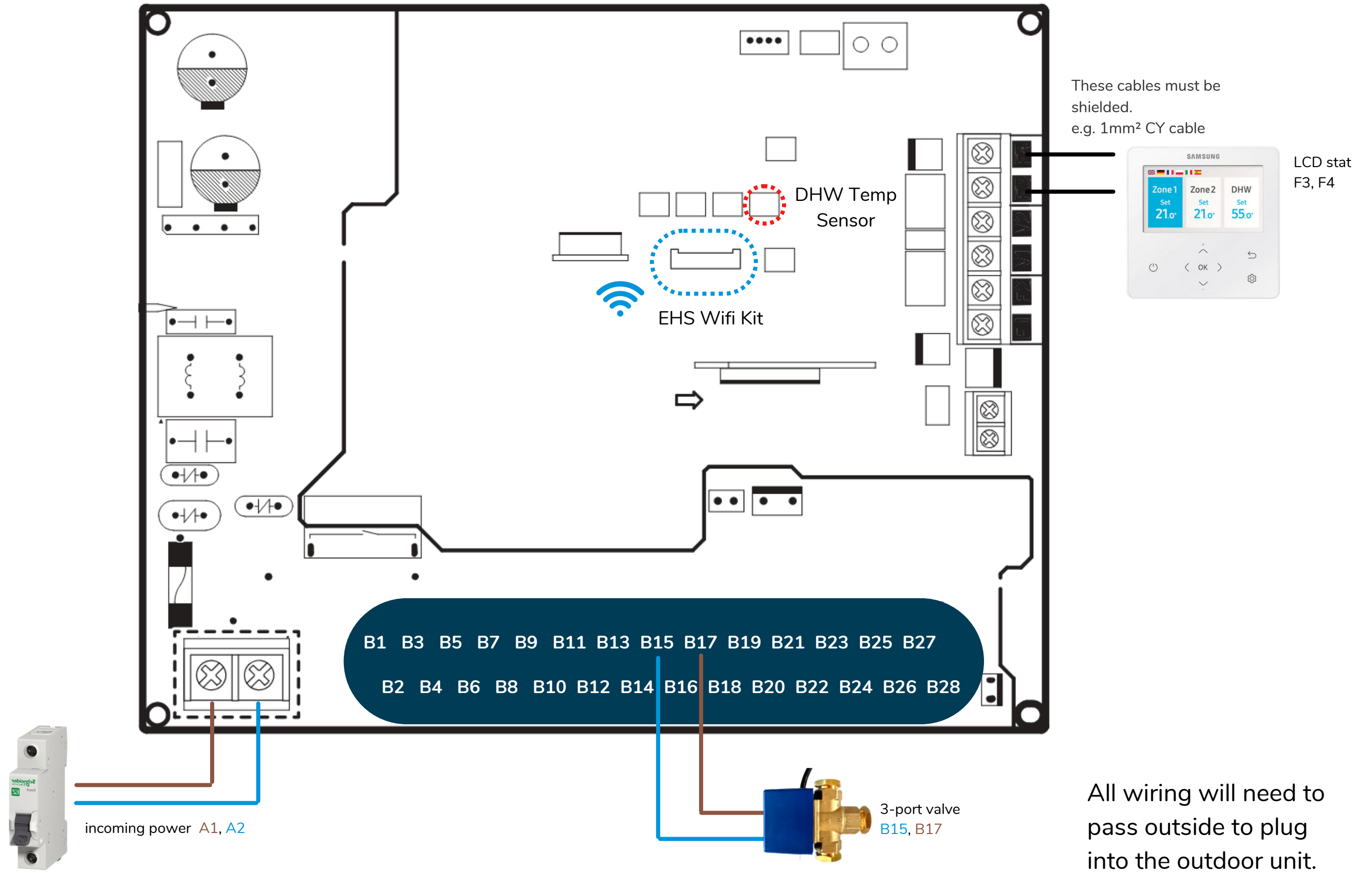
Breaker for heat pump:

5kW - 16A

8kW - 25A

12, 16kW - 32A

Local 3-pole isolator:

5kW - 16.1A (min)

8kW - 26A (min)

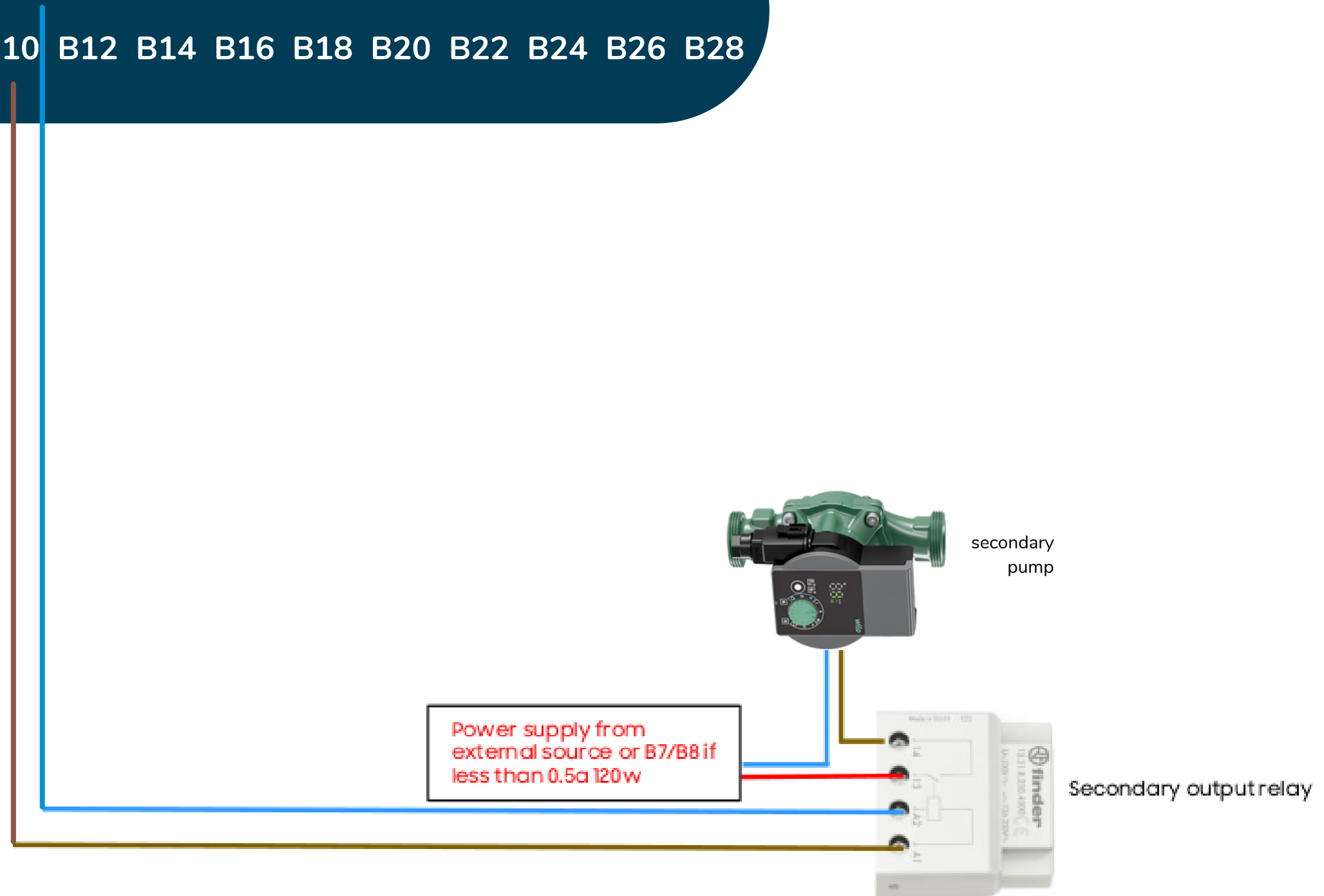12, 16kW - 32A (min)

Samsung
Integrated
heat pump

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Wiring Diagram

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

LCD stat F3, F4

DHW Temp Sensor

EHS Wifi Kit

| 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
B15, B17

All wiring will need to pass outside to plug into the outdoor unit.

Midsummer Energy Ltd, Cambridge Road Industrial Estate, Milton, Cambridgeshire, CB24 6AZ
Email: trade@midsummerenergy.co.uk | Telephone: 01223 851535

Wiring Diagram - Secondary Pump

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

secondary pump

Power supply from external source or B7/B8 if less than 0.5a 120w

Secondary output relay

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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**.

B19 B20 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.

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)
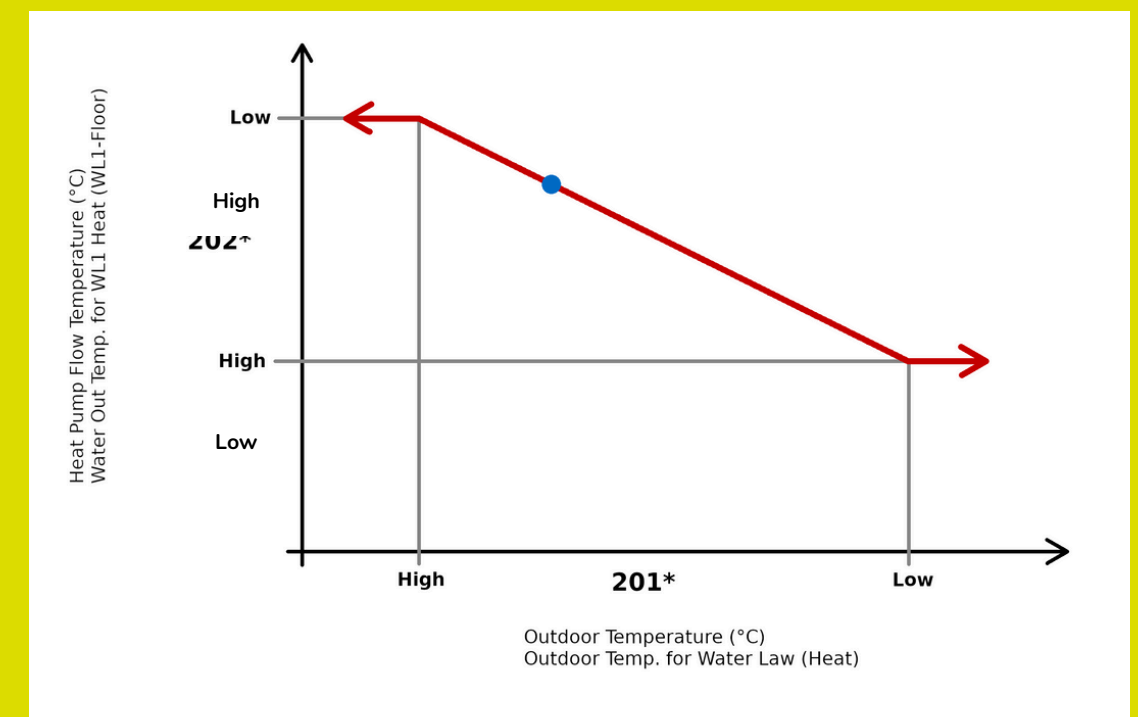
Low target value   High target value
25°C   45°C

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.

Note: For optimum performance of your heat pump you may want to install a Homely. Please ask one of our team for more information on this.

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.