

Objective: I have an existing s-plan plus (see below for details) heating and hot water system, with 2 independent heating zones. There is a separate programmer and a simple room thermostat for zone 1 and programmable thermostat for zone 2. I have purchased the Drayton Wiser 3 zone kit and wish to replace the existing room thermostats and programmer with the new smart system.

System description:

Firstly, I understand the solution requires me to replace both the room thermostat and the programmer from the zone terminals on the new Wiser Hub, as it connects to the room thermostats via wireless protocols over Wi-Fi. Now it is a matter of understanding my current system in detail.

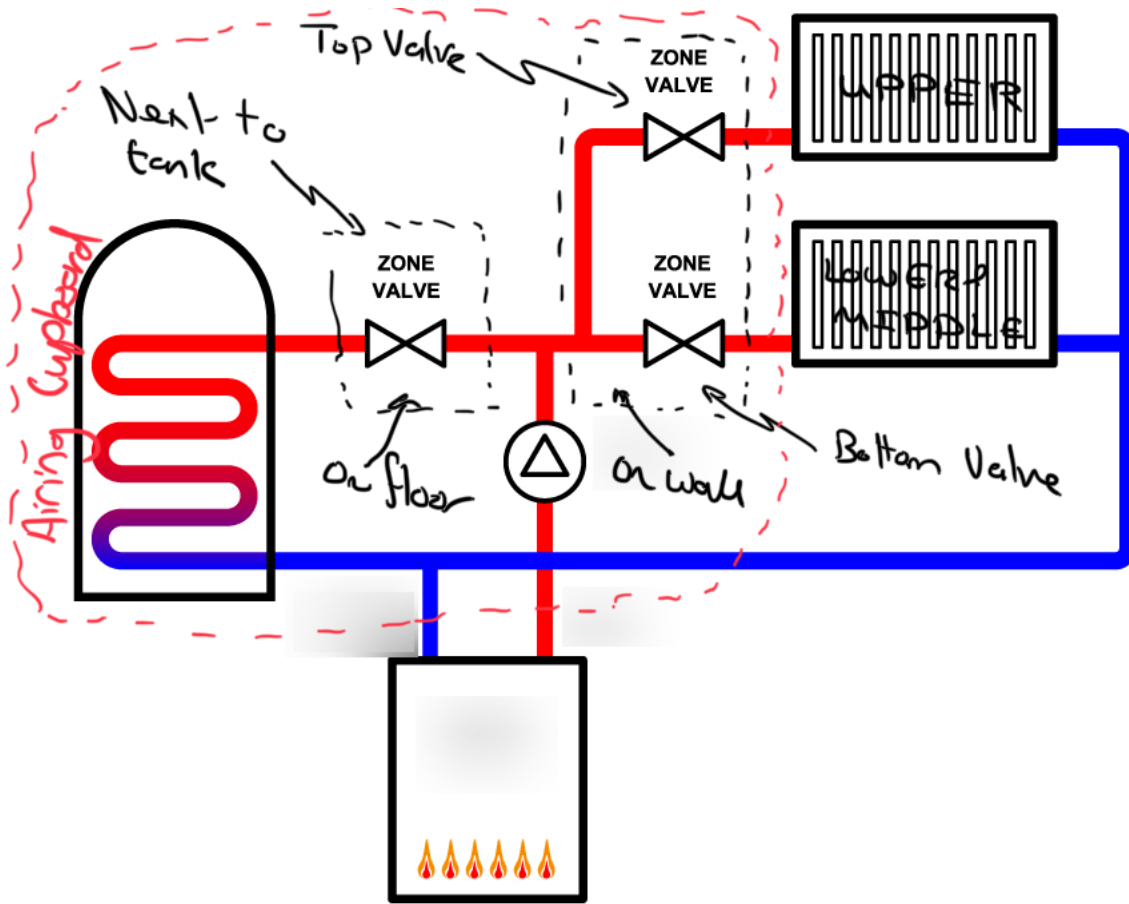
Location of things:

The boiler and programmer are located in the utility on the ground floor and that is it.

The wiring centre is located in the middle floor airing cupboard, which also houses the hot water cylinder, the 2 CH zone valves and the HW zone valve, and also the primary system circulation pump.

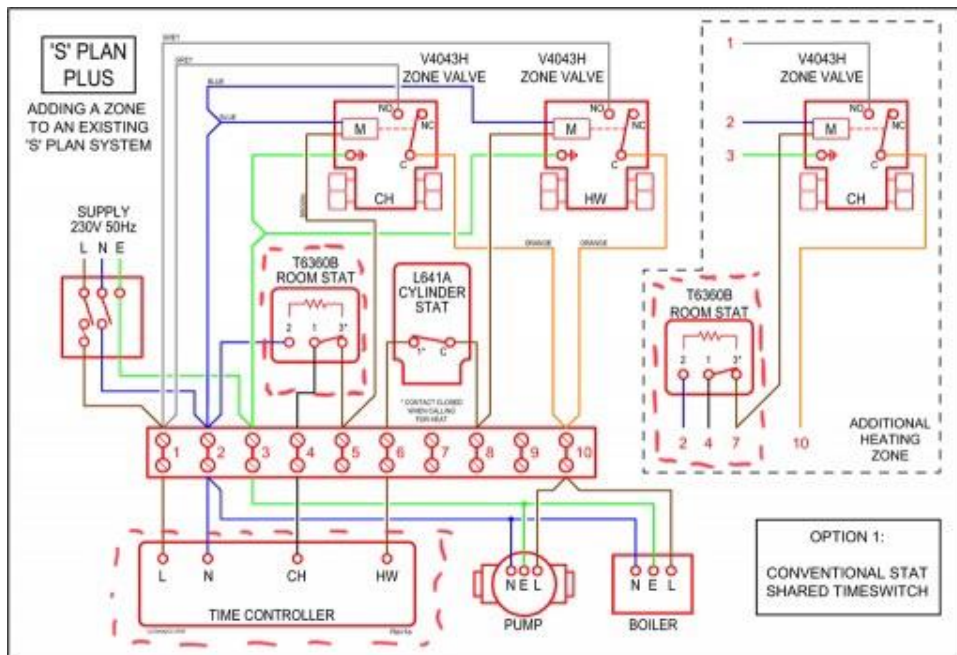
Plumbing setup:

The plumbing setup of the system appears to be what is called an “S plan plus”, as it has 3 2 way valves controlling the direction of the heated primary water, for either CH zone or HW. The diagram below shows this in summary.



Electrical setup:

The system would appear to follow the standard wiring setup of the S-plan system, albeit in a rather chaotic fashion. The example wiring diagram of a two zone plus hot water system is shown below in the current setup, before the installation of Wiser Hub. In the diagram, those elements outlined in dashed red lines indicate those that will be removed and replaced with just the 3 channel Wiser Hub.



The Drayton Wiser Hub installation:

As shown by the diagram above, the installation of the Drayton Wiser Hub as I have interpreted requires the isolation and removal of both the time controller programmer, and the CH zone thermostats, as the hub will do the job of both of these.

The complete removal of the room thermostats means that for the Wiser Hub to work, it needs a connection from each of the CH channels (and the HW channel), to the relevant zone valve motor switched live. This means that when the Wiser Hub demands heat in either CH zone, or HW, the first thing it does is trigger the zone valve to open. This then starts the process of sending a signal to the pump and boiler to commence circulation and heating. For the HW, the Cylinder Thermostat still remains in the loop, and therefore the heat demand from the HW channel is sent via the thermostat as currently wired (block 6).

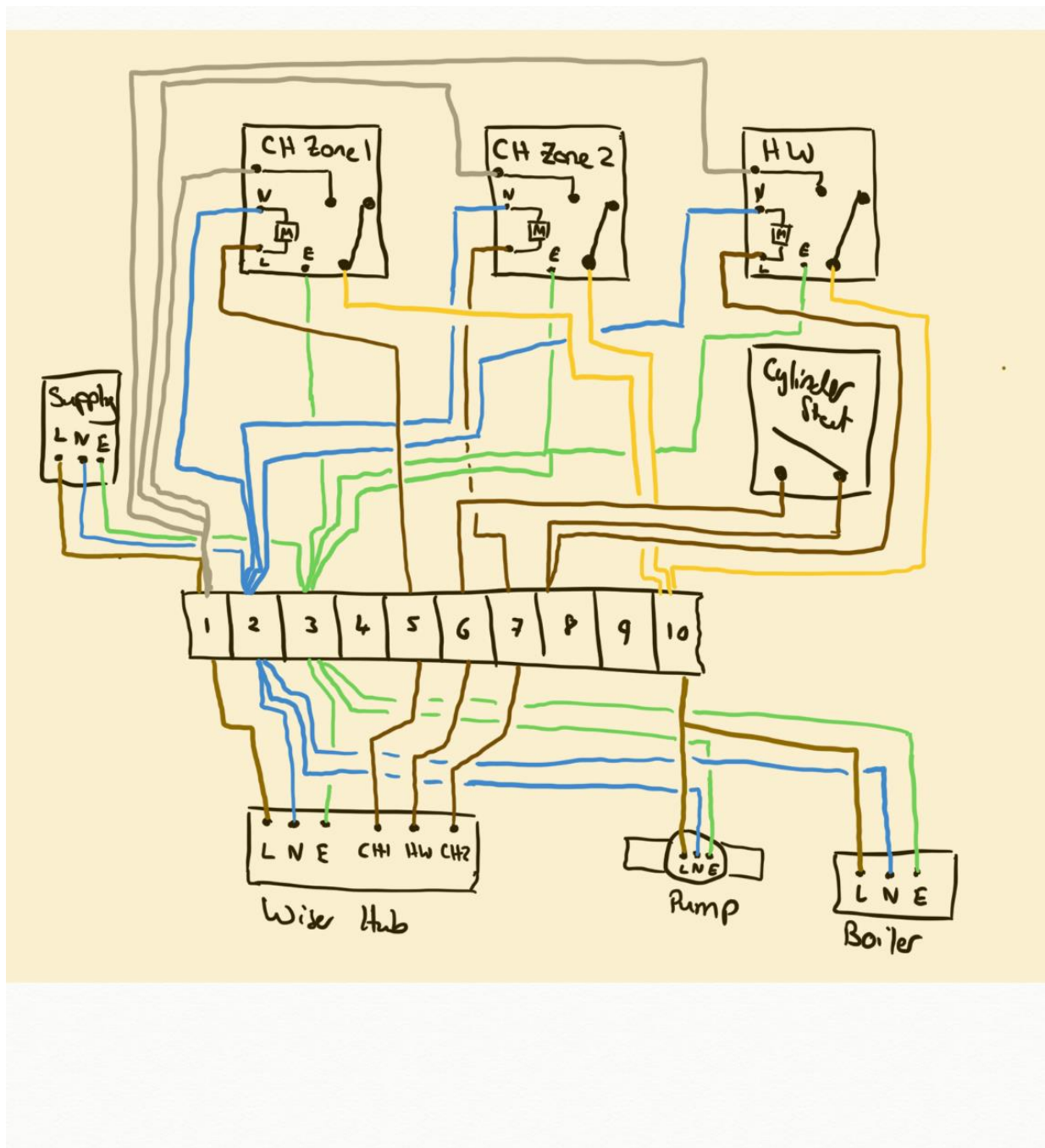
Therefore, the following connections need to be made, following the removal of the programmer and the room thermostats:

Wiser Hub

1. CH1 channel
2. HW channel
3. CH2 channel

Wiring Centre

- | | | |
|-----|---------|-------------------------------|
| --> | Block 5 | (SL to CH Zone 1 valve motor) |
| --> | Block 6 | (SL to Cylinder Stat) |
| --> | Block 7 | (SL to CH Zone 2 valve motor) |

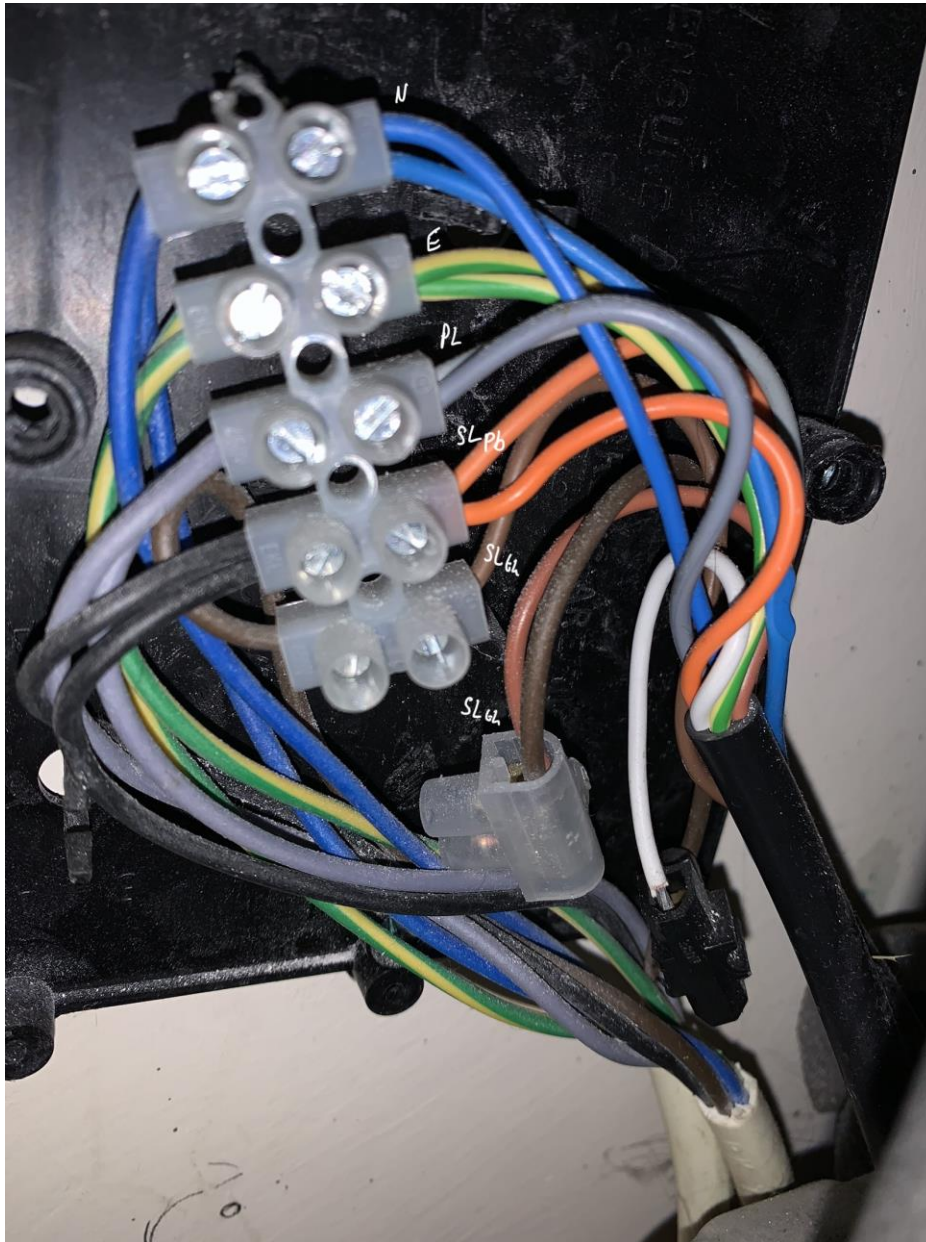


The actual system:

All of the above changes are to be made in the airing cupboard. The wiring centre is actually split between two boxes. The box on the floor is the primary box, which contains connections for power, from the programmer downstairs, from the two thermostats and for communication with the boiler. For some reason, the two CH zone valves have an additional wiring centre box on the wall, however this just appears to be an extension of the existing wiring coming from the box on the floor.



The secondary wiring centre for the CH zone valves is pretty easy to interpret I think. All wires are paired, which makes complete sense, apart from the brown wires, which are separate joined. These are the SL wires that go to each zone valve motor and it makes sense for these to be separate as this is how the heating zonation is achieved. When either thermostat demands heat, and the CH is on on the programmer, then the valve opens for that zone and the heating starts. **The Wiser Hub installation, this can remain untouched.**



As previously described the primary wiring centre location on the floor has all connections coming to it, those from within the airing cupboard and through the floor from the terminal for power supply, boiler, room thermostats, and the time programmer. This is what the exterior looks like.



The interior is a lot messier than the wiring diagrams shown above, and unfortunately does not confirm to the same block numbering as in the diagrams. What I have done is, through mapping back the connections from the zone valves, pump and cylinder stat, and my expectation of the number of wires coming to terminal blocks, I have done my best to interpret the wiring. In the photo below I have written on the connections relative to the number in the wiring diagram to try and make sense of it.



For the Wiser Hub installation based on the above interpretation, I think the following needs to be changed in the this wiring centre (I use the interpreted block numbers for explanations, and reference the physical block number from the left in brackets):

1. Block 4 (actual block 9) is the CH SL from the programmer, being sent to both room thermostats (hence the 1 black into 2 brown). **This is totally defunct and needs isolating.**
2. Block 6 (actual block 8) is the HW SL from the programmer, which sends to the cylinder stat. **The incoming programmer SL needs removing and a replacement connection made to the HW terminal on the Wiser Hub.**
3. Blocks 5 and 7 (actual blocks 3 and 4) are the room thermostat SL for each CH zone, leading to the brown wires going to the zone valves, when live, turn on the valve motor and open it. **The incoming thermostat SL wires need to be removed, and a new connection made to CH1 and CH2 terminals on the Wiser Hub.**
4. **New connection needs to be run from block 1 (actual block 7) for PL, block 2 (actual block 5) for N, and block 3 (actual block 2) for Earth, to give the Wiser Hub power.**