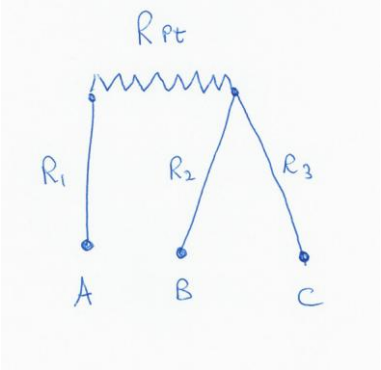
Where do those wires go – PT100



1. A PT100 normally has 3 wires. It is in simple terms a resistance that changes with temperature.
2. It is called a PT100 because at 0 deg C it will measure 100 ohms.
3. At ambient it will be around 138 ohms.
4. Because a very small change in resistance happens with each degree in temperature the added resistance of the wires will cause an error when connecting to a temperature controller.
5. In order to eliminate the effect of the wires we need at least 3 wires.
6. The controller will measure the wire resistance and subtract it to leave us with just the PT100 resistance.
7. In our sketch below we have the following resistances, Rpt, R1, R2 and R3
8. Mathematically the controller does the following calculation...
9. Rpt = “the measurement between A and B” less “the resistance measured between B and C”
10. So Rpt = (R1 + Rpt + R2) – (R2 + R3)
11. So it is important where each wire is connected.
12. Normally the wires will be coloured so that 2 wires are the same colour and a third is different.
13. So wire A could be red and wire B and wire C may be another colour say black
14. Although not good practice electricians often extend PT100 wires with conventional copper wire which is fine, but not adhering to the colour code of two one colour and the third another.

15. If you are trying to identify which wire goes where start off and measure the resistances between all 3 wires and use the measurement to identify the wires.
16. The measurement between wire A and wire B will be over 100 ohms.
17. The measurement between wire A and wire C will be the same.
18. The measurement between wire B and wire C will be low, just the resistance of the wire itself.

19. You will now have identified which wire is which. Now connect them to the appropriate terminals on the controller.
20. So the marking on the controller is normally marked B, B and A
21. So the two same colours go on B and the other colour goes on A