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100 Ohm DIN Resistor Plug

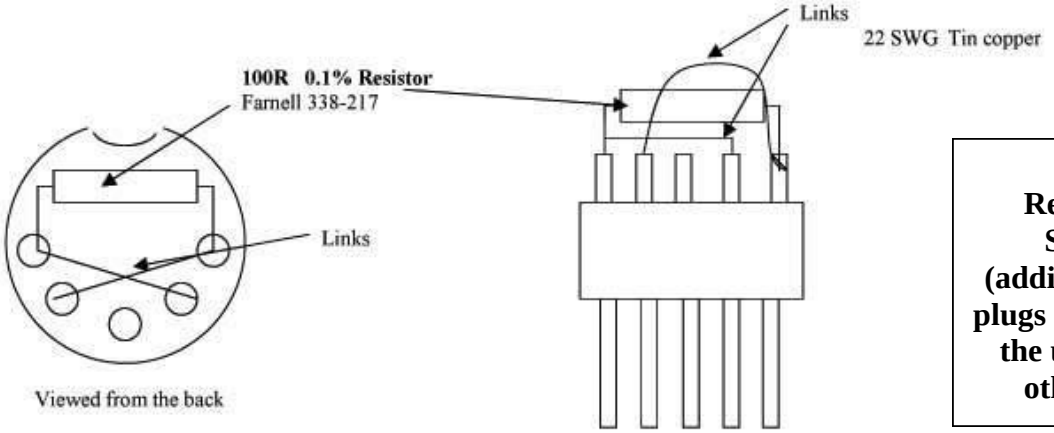
Included with the HM21 (and former HM20) Hand Held Meters

The the HM21 Held Meter each include a 100 Ohm resistor which is mounted inside a 5 pin DIN connector as shown here:

The 100 ohms resistor plug houses a precision resistor which can be used as an external reference to check the functioning and calibration of the HM21 Hand Held Meter. Plugging the 100 ohm test resistor into the HM21 will make the unit respond as if it is measuring a sample. Pressing 'Inc' or 'Dec' will increase or decrease the current. Use these buttons to set the unit to 1mA.

Press 'FWD'. The unit is now passing a current through the resistor and measuring the voltage. Since V=IR you can expect a reading of 100mV. The unit's accuracy is quoted at 0.5%, so the reading should be between 99.50mV and 100.50mV. In practice, particularly above 1mV, the accuracy is better than 0.5% so it would not be unusual to find that you are within 0.2% of the expected value.

Press 'REV'. The HM20 is now passing current in the reverse direction. Again you should receive a reading of 100mV, but this time with a minus figure. Press the 'Ω / □' button. For thin samples the most commonly used measurement is sheet resistance. This is measured in ohms per square. As the size of the square is not relevant to the measurement there are no units such as 'square centimetre' or 'square metre'. The formula for sheet resistance is quite complicated but can be resolved to 4.5324 x V/I. Therefore when using a 100 ohm resistor you can expect the reading to be approx 453.24 ohms/square. Press the 'Ω / □' button again and the unit will once again show the reading in mV. Note that the ohms/square value is absolute and therefore does not have a positive or negative sign.



100 Ohm Resistor Plug Schematic (additional resistor plugs can be built by the user to check other ranges)

Side view of Din Plug Farnell 148-489

Note
This assembled Din plug to be tested and supplied with every RM3.

Part	Supplier	Number
5 way Din Plug	Farnell	148-489
100R 0.1% res	Farnell	338-217