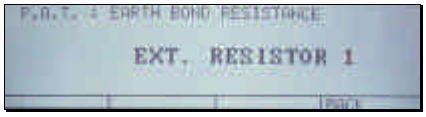
External Resistor Option : Introduction



The external resistor option provides the facility to add to the LOOP and PAT Earth Bond resistors *two custom values* as required.

This allows the user to provide a resistance range which is not covered by the internal resistance values available from the 2100 internal resistors (as detailed below) :

Standard LOOP & PAT Earth Bond Resistances values (Nominal)

1) 0.05Ω
2) 0.1Ω
3) 0.22Ω
4) 0.33Ω
5) 0.5Ω
6) 1Ω
7) 5Ω
8) 10Ω
9) 100Ω
10) 1kΩ

External Resistor Option : Connection

By connecting external **power** resistors to the rear panel terminals, the LOOP and PAT Earth Bond resistance ranges available can be extended with two custom values.

NOTE : These resistors should be capable of handling up to 23A, which is the normal test current used by LOOP testers.

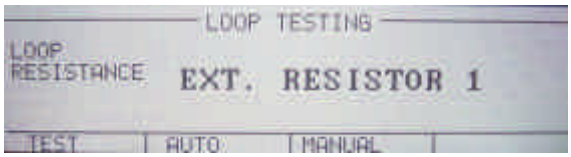
Connection to the left hand terminals allows the range EXT. RESISTOR 1 to be used. Additionally, connection of a resistor to the right hand terminals allows the range EXT. RESISTOR 2 to be used.

Using the External Resistors

With the required external resistors connected to the rear panel terminals, select the PAT Earth Bond Resistance or LOOP function from the 2100 front panel.

Use the Range Up button or turn the digital potentiometer clockwise to range up to the highest internal resistance value (nominal value 1kΩ).

Range up again – the 2100 display will indicate EXT. RESISTOR 1 is selected, as shown below :



The resistance value is now available on the connector marked **PAT Test**. See 'Important Note' section below for details on the actual resistance value available at this connection.

Ranging up again, the 2100 display will indicate EXT. RESISTOR 2 is selected, as shown below :

IMPORTANT NOTES ON THE EXTERNAL RESISTOR VALUES

The connection from the rear panel external resistor terminals to the front panel connector will have an impact on the actual resistance value available at the front panel connector.

Although the added (end) resistance of the connections through the 2100 have been kept to a minimum, these connections will inevitably cause the actual resistance output on the front panel connector to be higher than just the resistor value itself.

For example a low value resistor, e.g. 0.1Ω, may actually produce a measured value on 0.15Ω on the front panel connector due to the added connection resistance added when the resistor is switched from the rear of the 2100 through to the front panel.

For this reason it is important to use a resistance meter to **verify the actual resistance value** measured on the 2100 front panel connector from the external resistors used. These values can then be used to compare against the unit under test.

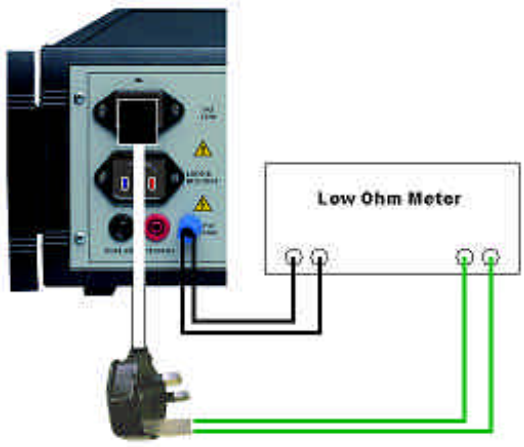
PAT Earth Bond Resistance

Measuring The 'Custom' Value Of The External Resistor

Select the PAT Earth bond mode, then select EXT. RESISTOR 1 or EXT. RESISTOR 2 as required.

Connect up a low ohm meter as shown below, and measure the resistance between the earth pin of the calibrated PAT Earth Bond lead (as supplied with the 2100) and the PAT GND terminal.

This measured value should then be used as the calibration value for the EXT. RESISTOR selected.



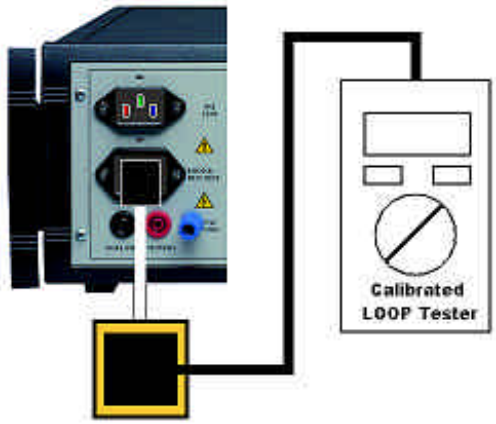
LOOP Resistance

Measuring The 'Custom' Value Of The External Resistor

Select the LOOP mode, then select EXT. RESISTOR 1 or EXT. RESISTOR 2 as required.

Connect up a calibrated LOOP Tester as shown below, and measure the resistance on the LOOP Adaptor lead.

This measured value should then be used as the calibration value for the EXT. RESISTOR selected.



NOTE :

THIS VALUE WILL ALSO INCLUDE THE VALUE OF THE IMPEDANCE OF THE SUPPLY WHICH WILL VARY FROM THE TIME OF MEASUREMENT, DEPENDING ON THE STABILITY OF THE MAINS SUPPLY.

CHANGING THE LOCATION (OR SOCKET) INTO WHICH THE 2100 IS CONNECTED WILL ALSO AFFECT THIS VALUE