

General

The 2100 uses 10 Fixed value resistors for both the Loop calibration function and the Pat earth bond function. This give the calibrator 11 ranges, including 0 ohms. The nominal values of these resistors are

Range Nominal Value

Range	Nominal Value
Range 1 -	0 Ohms
Range 2 -	0.05 Ohms
Range 3 -	0.1 Ohms
Range 4 -	0.22 Ohms
Range 5 -	0.33 Ohms
Range 6 -	0.5 Ohms
Range 7 -	1 Ohms
Range 8 -	5 Ohms
Range 9 -	10 Ohms
Range 10 -	100 Ohms
Range 11 -	1000 Ohms

Each of these range resistors have a 'calibrated value', as measured as the difference from Range 1 – 0 ohms. This calibrated value will be different from unit to unit, and may also be change after the 2100 has been calibrated.

Loop Impedance.

This calibrated value is however not the value of the loop at the 2100 test socket, it is simply the 'known' value of the resistance. To get the actual value of the loop resistance at the test socket it is necessary to add on the local loop resistance of the supply and internal wiring of the 2100. This can be measured at the test socket of the 2100 with range 1 – 0 ohms selected. (Or automatically measured with the auto loop function)

The loop value at the test socket is then

Calibrated resistance value + local Supply loop

This sum of the calibrated resistance value plus the local supply loop is the value displayed by the 2100.

The 'local supply' loop being either entered manually via the 2100 keyboard, or automatically by the auto loop function.

Using the 2100 with ProCal

When running a test ProCal uses the value entered by ProEdit in the 'test value' box to select the resistor with the closest calibrated value. E.g. the value in the procedure DOES NOT include the local supply loop as this will vary.

The resistance value displayed by the 2100 is the calibrated resistance value as selected by ProCal **plus** the local supply loop as entered in the 2100, and will be higher than the value set in the procedure by the local loop.

The 'displayed output value' is sent back to ProCal to use as the nominal test value.

By allowing ProCal to automatically select the closet calibrated value, and then read back the value including the local loop allows the same procedure to be used with any 2100 and with any local loop resistance.

The same approach is used for the PAT earth bond as well.