

Removing sources of error for low resistance measurements

Lead Nulling

Compensation is required to remove the test lead and instrument resistance from the measured resistance. The lead compensation is very important in order to obtain correct results when measuring low resistances. There are two separate calibration values which are automatically stored after carrying out the nulling process:

- ♦ one for r1, rN, r2, R1+R2 and R2,
- ♦ one for R1+RN, R LOW Ω and CONTINUITY.

There is a simple process for nulling the lead resistance which requires the three test leads to be connected to the instrument and shorted together. On completion of the process the following symbol is displayed on screen in the Continuity message field and the values are stored in the instrument's memory until the process is repeated.

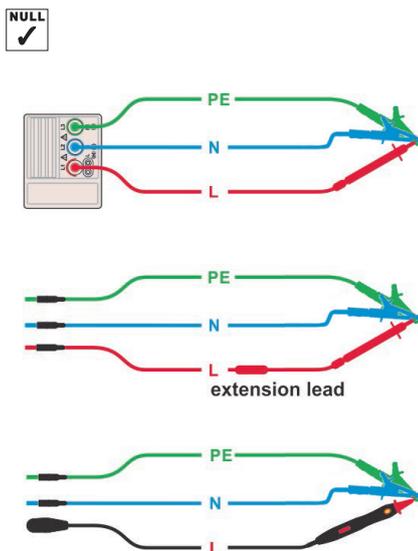


Fig 1. Lead configurations for nulling.

To make it easier to connect all three leads and clips together and reliably null out their resistance, Martindale now include a nulling adaptor (TL178) in all deliveries of ET4000 /4500.

For existing customers, please register your product at to receive a free nulling adaptor:

www.martindale-electric.co.uk/registermyproduct



Fig 2. Using the TL178 lead nulling adaptor with different lead configurations

Lead Nulling Process

- ◆ Power on the instrument and select the RLOW Ω function using the function selector switch as shown in Fig 3.
- ◆ Connect the test leads to the instrument and short the test leads together as shown in Fig 2.
- ◆ Press the NULL button key as shown in Fig. 3 to perform the test lead nulling.
- ◆ The measured resistance is briefly displayed based on any existing compensation followed by 0.00 Ω as shown in Fig. 4.
- ◆ On completion the values are stored and the following symbol is displayed



Fig 3 Instrument settings



Fig 4 Example screen displays during nulling

Notes:

The highest value for lead compensation is 5 Ω . If the resistance is higher the compensation value is set back to the default value.

The following symbol is displayed if no compensation value has been stored.



For further information on the operation of the ET4000 / 4500 see the full user guide at:

www.martindale-electric.co.uk/manuals/manMARET4000.pdf