

The process for nulling test lead resistance is a simple but important process which can often be overlooked. When measuring the resistance of a circuit, if the test leads aren't nulled, the resistance of the leads will also be measured in the reading. Below is a step by step guide explaining how to null out test lead resistance when using Martindale ET4000 Series multifunction testers. On completion the results are stored in the instrument for future use.

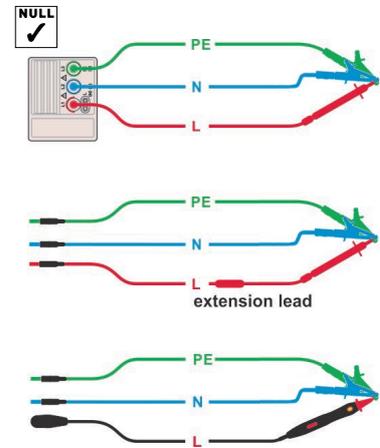


Fig 1. Lead configurations for nulling.

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, a 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. See Fig 1. Lead configurations for nulling (above).

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



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.



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.



Further information on the operation of the ET4000 / 4500 can be found in the full user guide which can be downloaded from the Martindale website.



Fig 3. Instrument settings



Fig 4. Example screen displays during nulling

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