ZE: THE EXTERNAL IMPEDANCE, AND WHAT YOU ARE NOT ALLOWED TO TOUCH

CAN YOU PUT YOUR LEADS IN THE METER TAILS?

Z_e is everything **outside** your installation — the supply transformer, the service cable and the earth return path. You are testing the DNO's supply, not your own work. **Guidance Note 3** · p.84 .

> ✋ **Z_e is a LIVE test.** You disconnect the earthing conductor, but you are measuring across **the incoming (supply) terminals of the main switch** — usually the top on a single-phase consumer unit; check the board in front of you, on the incoming supply. This one catches people out.

Which raises the question of where you are allowed to put your leads:

POINT	MAY YOU TOUCH IT?
DNO cutout / service head	**No** — illegal
The kWh meter and its tails	**No** — the DNO's
The electricity company's isolator	You may **lock off** there, but not disconnect inside it
Incoming terminals of your main switch (usually the top)	**Yes** — the closest legal point to the incoming tails
Incoming terminals of a separate isolator, if fitted	**Yes** — you can take the measurement there instead

> **No parallel paths for Z_e.**
>
> You disconnect the **earthing conductor at the MET**. In principle you could instead remove every cpc in the board — nobody does, because one conductor is quicker than twenty.

> ✋ **While that earthing conductor is out, the installation is not protected.** Metal casings and extraneous conductive parts — gas and water pipes — have lost their connection to earth. If a fault developed on one while you were brushing past it, you would be in serious trouble. **Reconnect it the moment the test is done**, before you move on to anything else.

Say the reading comes back at **Z_e = 1.09 Ω** on a TN-C-S supply, which is very high for that system type — which is exactly the point of measuring it rather than assuming it.

Free section from Sparky Study Notes. The full Level 3 notes, 1,463 practice questions and the video lessons: sparkystudynotes.co.uk