# WHAT A GLOBAL READING ACTUALLY IS

## 35, 125 AND 75 MEGOHMS. WHAT'S THE GLOBAL?

Every circuit in a property is wired in **parallel**, so a test across the main switch returns the **parallel combination** of all of them.

> `The global reading is always lower than any individual circuit`

Where you put the leads: line on the load (busbar) side of the main switch, and the other lead on the **neutral bar** for a line-neutral global, or the earth bar for line-earth.

> **Then invert it.**
> The ordinary parallel formula gives you $1 \div R_T$, so you invert at the end to get $R_T$ — whatever the units, ohms or megohms. That is the step that catches people.

### A SIMPLE ONE FIRST: 60, 12 AND 5 MΩ

Common denominator: **60**

```
  60 ÷ 60 = 1
  60 ÷ 12 = 5
  60 ÷  5 = 12
             ----
              18  over 60

Invert:  60 ÷ 18 = 3.33 MΩ
```

### THE REAL ONE: 35, 125 AND 75 MΩ

Find the number all three divide into: **2625**

```
  2625 ÷ 35  = 75
  2625 ÷ 125 = 21
  2625 ÷ 75  = 35
               ----
                131  over 2625

Invert:  2625 ÷ 131 = 20 MΩ
```

```
AND AN EASY ONE TO PRACTISE ON: 200, 400 AND 100 MΩ
Common denominator: 400

  400 ÷ 200 = 2
  400 ÷ 400 = 1
  400 ÷ 100 = 4
               ---
                7  over 400

Invert:  400 ÷ 7 = 57.14 MΩ
```

**This formula is not in the book.**

It explains what your instrument is doing when it gives you a global figure — so that a low global number does not panic you into condemning healthy circuits. If the global looks poor, go back and test them individually to find which one is pulling it down.

**Shortcut.**

You do not have to hunt for the lowest common denominator by hand — a calculator will do 1/35 + 1/125 + 1/75 and then 1 over the answer. The long way is shown because it explains **why** the number comes out where it does.

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