

# Home Electrical Load Calculation Guide (kW to Wire Size)

*Add up your appliance loads and translate the total into the right wire size.*

Sizing the mains and circuits starts with knowing your **total connected load**. Here is the simple method.

## Step 1 — Add up appliance wattages

| Appliance               | Typical power |
|-------------------------|---------------|
| LED lights & fans       | 10–75 W each  |
| Refrigerator            | 150–350 W     |
| Television              | 50–150 W      |
| Microwave               | 1000–1500 W   |
| 1.5-ton air conditioner | 1500–1800 W   |
| Geyser / water heater   | 2000–3000 W   |
| EV home charger         | 3300–7400 W   |

## Step 2 — Apply a diversity factor

You never run everything at once, so multiply the grand total by a **diversity factor of about 0.6–0.8** to get a realistic maximum demand.

## Step 3 — Convert to current

For a single-phase 230 V supply, **current (A) = power (W) ÷ 230**. For example, a maximum demand of 6 kW ≈ 26 A, which points to a 6 sq mm copper main and an appropriately rated main switch.

## Step 4 — Size each circuit

Give heavy appliances (AC, geyser, EV charger) their own dedicated circuit and wire size, and keep lighting and general sockets on separate circuits. Use our [appliance wire-size chart](#) and MCB-to-wire chart to finish the job.

*Indicative guidance for typical Indian domestic installations. Always confirm final cable sizes against the applicable IS standards, your local wiring rules and a licensed electrician for your specific installation.*