

12V Cable & Fuse Size Chart

A simple method for choosing 12V cable and fuse sizes for your own setup. Keep it in the toolbox.

The fuse protects the cable, not the device. Choose the cable first, then a fuse above the normal load current but no higher than the cable can safely carry. Mount it as close to the battery as you can.

Step by step

Step	What to do
1. Find the current	Check the label or manual. Watts only? Divide by 12 to get amps ($60W \div 12 = 5A$). Use the highest current, not the average.
2. Measure the run	Add the positive and negative lengths. A device 3m from the battery is a 6m round trip.
3. Check voltage drop	Around 3% (about 0.36V on 12V) is a common target. Chargers and fridges often need less. Follow their manual.
4. Check the cable rating	Get the current rating from the cable maker. It depends on the cable and how it's run.
5. Pick the fuse	Above the device's normal current, at or below the cable's rating. If the manual names a fuse size, use that.

Voltage drop quick maths

Resistance (ohms) = $0.0172 \times \text{round-trip length (m)} \div \text{copper area (mm}^2\text{)}$

Voltage drop (V) = current (A) $\times$ resistance (ohms)

Example: 60W light bar, 5A, 3m away (6m round trip) on 2.5mm² cable: $0.0172 \times 6 \div 2.5 =$ about 0.04 ohms. $5A \times 0.04 = 0.2V$, under 2%. Inside a 3% target.

Common fuse types

Type	Used for
Blade	Small plug-in fuses for lights, USB outlets and other low-current circuits.
MIDI	Bolt-down fuses for medium-current runs such as DC-DC chargers and smaller inverters.
ANL	Larger bolt-down fuses for high-current runs such as big inverters and battery links.
Circuit breaker	Resettable. Check the rating suits DC.

Common mistakes

- Sizing the fuse to the device instead of the cable.
- Mounting the fuse far from the battery, leaving a long unprotected cable.
- Forgetting the negative side when measuring the run.
- Using the advertised auto cable size ("6mm", "8 B&S") instead of the real copper area in mm².
- Poor crimps, which cause heat and voltage drop even with the right cable.

High-current gear such as inverters, DC-DC chargers and battery links carries serious current. Follow the manufacturer's manual exactly, and if you're unsure, have an auto electrician check your work. Any work on 240V AC wiring must be done by a licensed electrician.