

Measuring amps without killing your meter

Series versus parallel, when to reach for a clamp instead of leads, and the wiring mistake that blows a fuse inside your DMM.

PROCEDURE

- 1 Decide the range first**
Above about 10 A, use a clamp. Below that, in-line leads are fine — but move the red lead to the 10 A jack and select the A range before you touch anything.
- 2 Break the circuit**
Open the path at one point: pull a fuse and use fused jumper leads, or disconnect a battery cable for a draw test.
- 3 Insert the meter**
One lead to each side of the break, so current has no path except through the meter.
- 4 Restore and read**
Power up and read. If you see zero, the meter's internal fuse is likely already blown — check it in ohms with the leads touched together.

NUMBERS

DMM in-line limit	10 A, often 20–30 s	most handhelds; the 10 A jack is usually unfused or fused high — read your manual
Clamp usable floor	about 100 mA	below this, use in-line leads instead
Starter draw, gas	150–250 A	clamp only
Starter draw, diesel	400–800 A	clamp only; twin batteries share it

COMMON MISTAKES

- Leaving the red lead in the 10 A jack, then measuring voltage — that puts a near short across whatever you probe.
- Clamping two conductors at once, or a cable and its return, which cancel out and read near zero.
- Trying to read a 30 mA parasitic draw with a clamp meter and trusting the number.
- Forgetting the clamp's zero button — offsets drift and quietly add or subtract an amp.

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