Simple Battery Charge Level Indicator – Green for >10V (Charged), Red for ≤10V (Low)

How It Works

This is a low-component battery voltage level indicator circuit that visually shows whether a battery is adequately charged or running low.

When the battery voltage is above ~10 V the 10 V zener diode breaks down in reverse and supplies base current to transistor Q1.

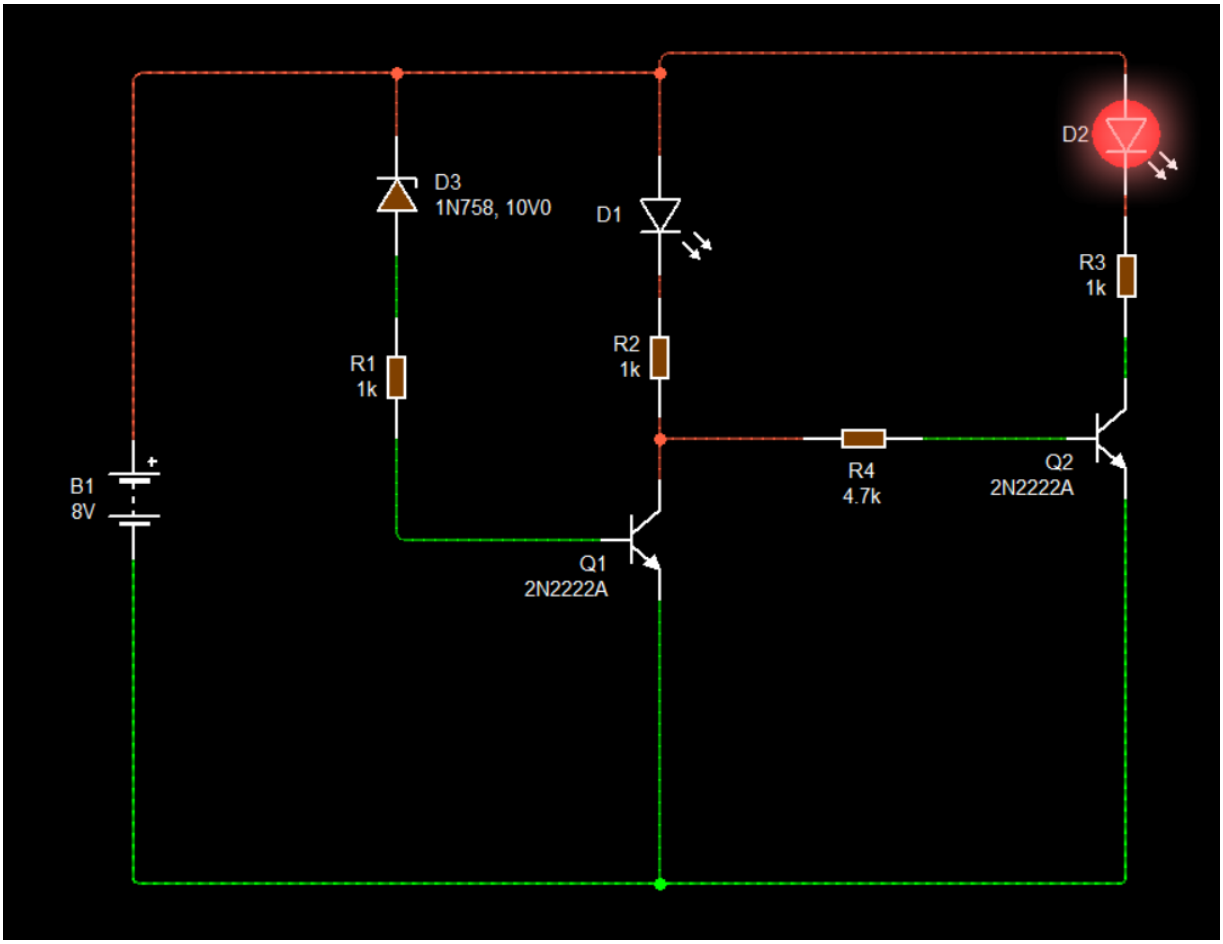
→ Q1 turns on, pulling current through the green LED (D1) → green light indicates "battery is good / sufficiently charged".

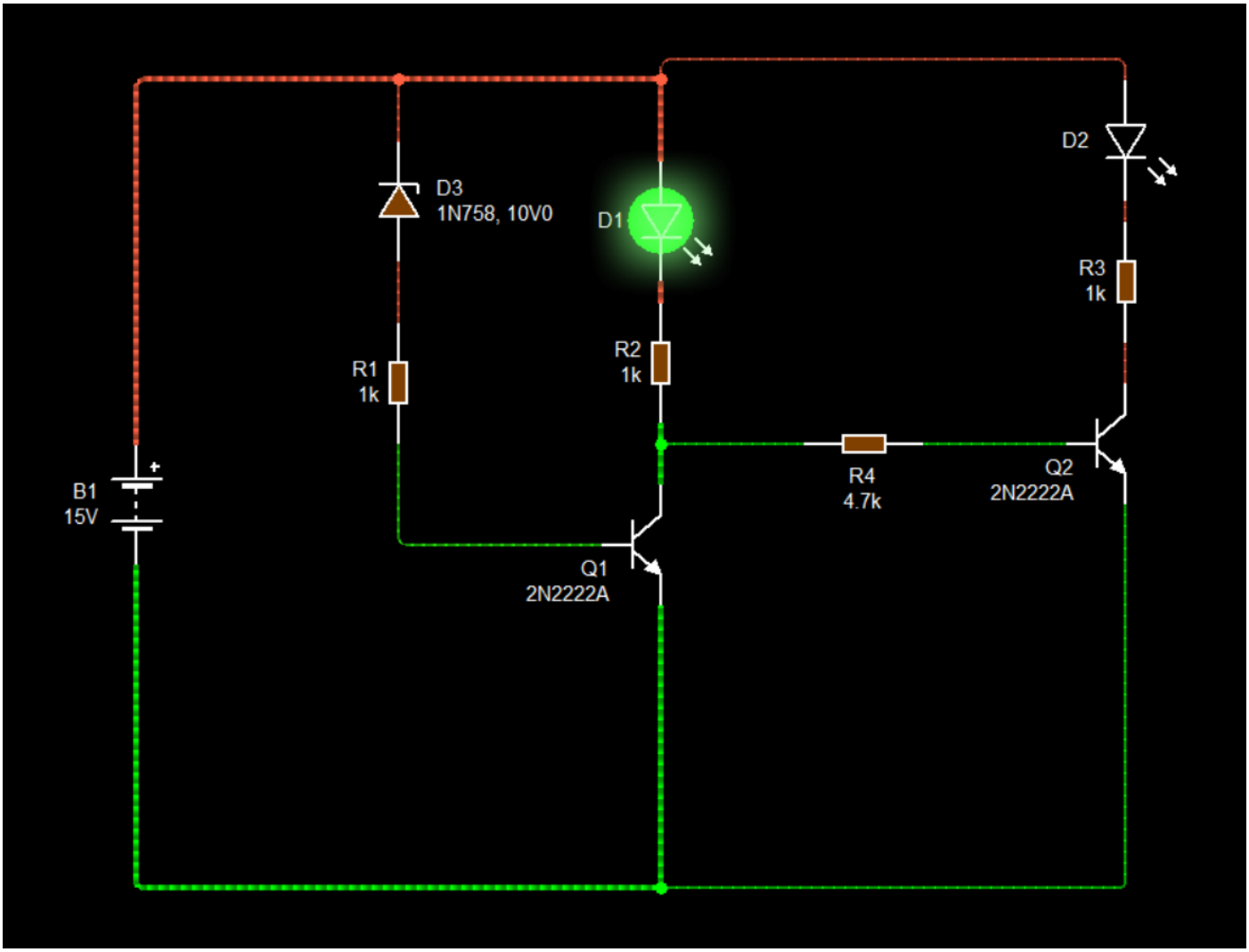
When the battery voltage drops below ~10 V, the zener no longer conducts significantly → Q1 turns off.

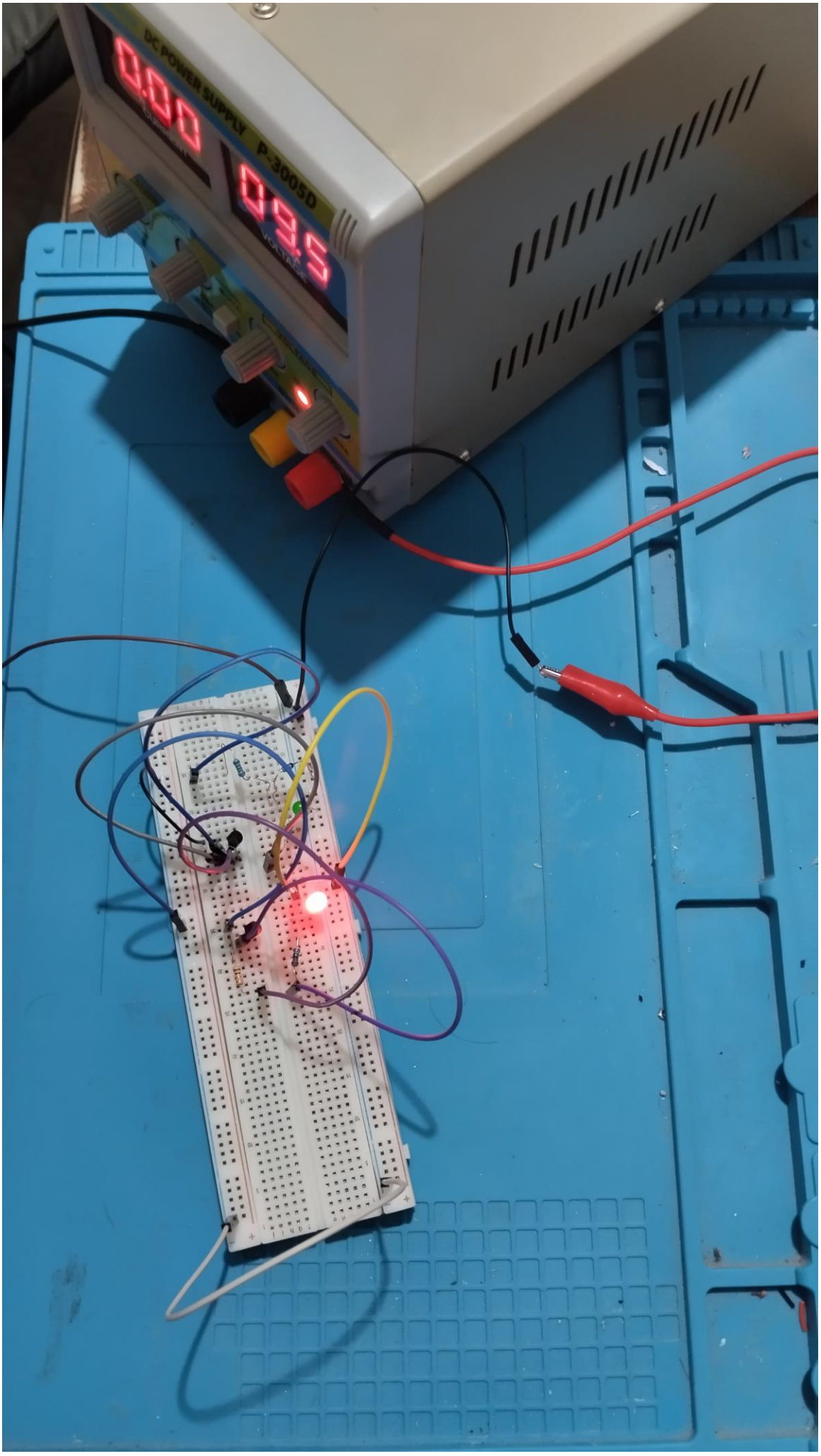
→ The base of transistor Q2 now receives current through R2 (and the path involving the green LED), turning Q2 on.

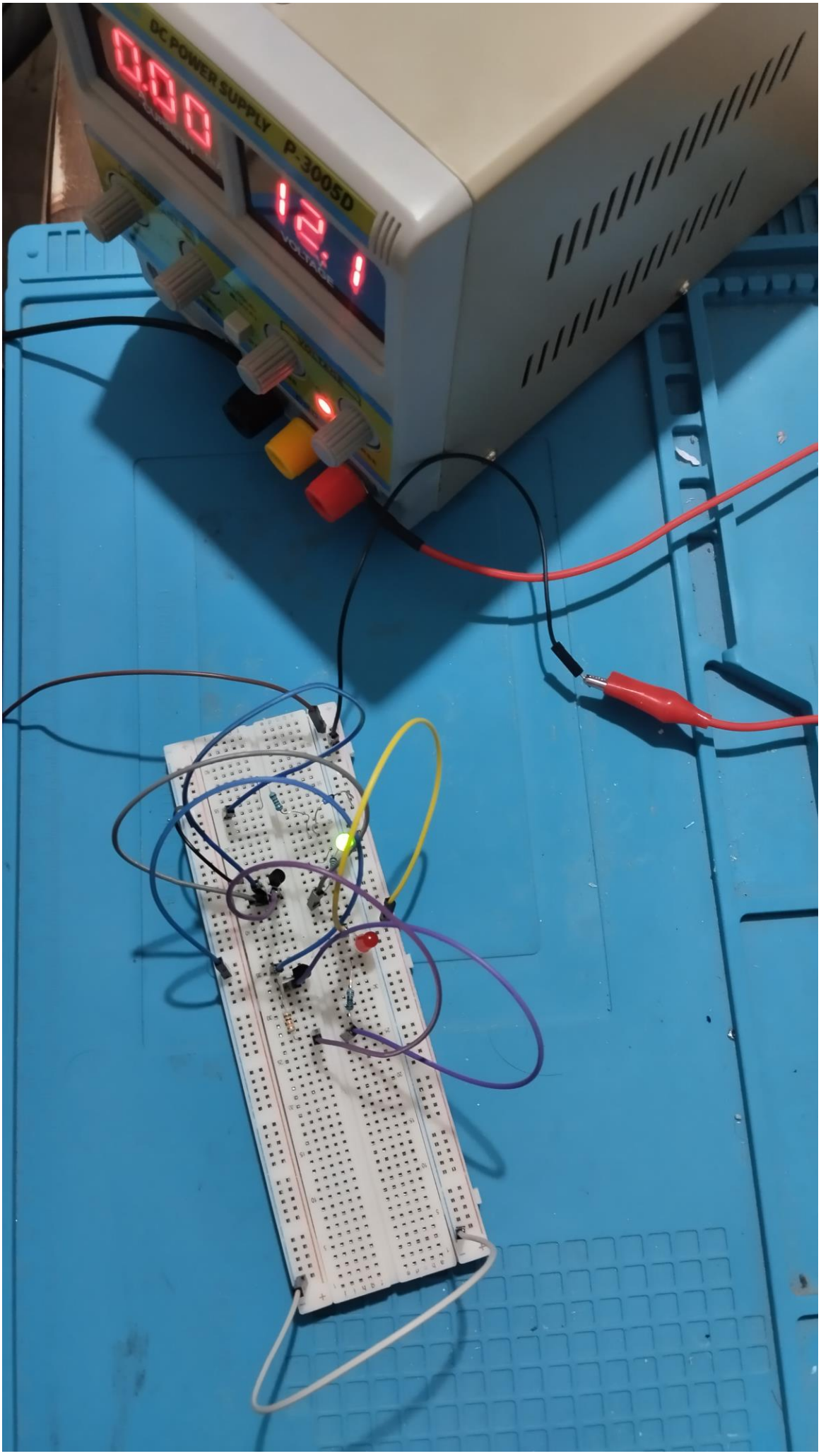
→ Current flows through the red LED (D2) and R3 → red light indicates "battery low / needs recharging".

The circuit uses a clever transistor inverter configuration so that only one LED is clearly lit at a time (the other is either off or light a bit). It draws very little current and works well for monitoring 9–12 V battery systems.


D3
1N758, 10V0
D1
D2
R3
1k
R2
1k
R1
1k
B1
8V
R4
4.7k
Q2
2N2222A
Q1
2N2222A


D3
1N758, 10V0
D1
D2
R3
1k
R2
1k
R1
1k
B1
15V
R4
4.7k
Q2
2N2222A
Q1
2N2222A


DC POWER SUPPLY
P-3005D
0.00
09.5


DC POWER SUPPLY
P-3005D
0.00
12.1