

Fencing body cord and weapon tester

Printed pocket build, 18650, 84 x 40 x 26 mm

Overview + BOM

Doc 00 Rev F 2026-08-30

What this unit does

Pocket go / no-go tester for three conductor fencing body cords and for foil and epee weapons. Two LEDs, two sockets, no logic. Green sits across the A and B lines, red across the B and C lines. Because the B line is shared by both loops, two lamps resolve all three conductors.

Both lit	Red only	Green only	Neither
A, B and C all good	A line open	C line open	B line open

It does not measure resistance, so it will pass a cord that is continuous but too resistive for a scoring box. Reference limits: foil and epee weapon circuit 2 ohms maximum, body cords under 1 ohm, lame under 5 ohms between any two points.

Bill of materials

Qty	Part	Notes
6	4 mm panel banana jacks	FIE Material Rules: the 3-prong plug has three pins of 4 mm diameter at 15/20 mm spacing - all six jacks are 4 mm, matching commercial testers. Standard spring-leaf jacks, not sheathed-safety types. Two real 3-prong fencing sockets are the drop-in alternative.
1	M3 heat set insert + M3 x 10 brass pan head	J3, the clip bites the head
1	Green LED 3 mm, yellow green GaP	Vf about 2.1 V. Not InGaN
1	Red LED 3 mm	Vf about 1.9 V
1	820 ohm resistor	Green branch, 1/8 W fits better than 1/4
1	1.2 k resistor	Red branch
1	TP4056 module, protected	Four pads, DW01A + FS8205 fitted
1	18650 cell 2000 mAh or more	
1	18650 holder 76 x 20 x 18 mm, wire leads	
1	100 nF ceramic	Across the rail
4	M2 heat set insert + M2 x 6 screw	Lid
-	26 AWG stranded wire	No board needed, point to point

Rev E correction: Rev C specified 2 mm jacks (nothing would seat); Rev D guessed a 3 mm middle pin. The FIE Material Rules settle it: the 3-prong plug has **three pins of 4 mm diameter**, polarised by its 15/20 mm spacing, so all six jacks are 4 mm. (The 3 mm pins in vendor catalogues belong to the 2-prong foil/sabre WEAPON plug, which polarises by pin size instead.) The printed shell's jack holes and the spacing coupon must match your jacks' bushings - see Doc 02 and Doc 04 before printing.

Rev F: the ON-OFF-ON switch is gone. It cost more than the battery (\$9 street price for the odd ON-OFF-ON type) and every one of its jobs has a free equivalent: the tester draws essentially nothing with no cord plugged in (unplugging IS the off switch), and the shorts test is now "plug only the J1 end" - shorted lines light their lamps through J1 alone, so the verdicts are identical (Doc 03). J2's B jack wires straight to the common node. Just don't store it with a good cord plugged in.

The charge module needs no modification. It ships set for 1000 mA, which against an 18650 of 2000 mAh or more is between 0.3 and 0.5 C, squarely inside what the format wants. Use the holder rather than soldering to the cell, since heat at the terminal damages the cell just under the cap.

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Inputs and outputs

Port	Face	What connects here
J1	Top edge	Weapon side. A body cord with a weapon on the far end, or one end of a cord under test
J2	Front	Cord end. The other end of the body cord under test
J3	Right	Lame alligator clip of a foil or sabre cord
USB-C	Left	Charge, and runs the tester while charging
D1 green	Front	A to B path is closed
D2 red	Front	B to C path is closed
SW1	Top edge	Link, off, isolate

Build order

Step	Document	Do this
1	Doc 00	Buy six 4 mm spring-leaf banana jacks (FIE: all three plug pins are 4 mm)
2	Doc 04	Adjust the shell and coupon jack holes to your jacks' bushing sizes, print the test coupon, confirm a real cord seats in it
3	Doc 04	Print body and lid, fit the heat set inserts
4	Doc 02	Fit the six jacks and the clip post
5	Doc 01	Wire the core circuit and the charge module
6	Doc 03	Run the full procedure against known good gear