

Fencing test box + scoring box

Per-build shopping lists - multiply quantities by units built

Sourcing & buy links

Doc 20 Rev B 2026-08-29

Build A - pocket cord & weapon tester (quantities are PER UNIT)

Everything one tester needs, nothing it doesn't. Mouser rows were verified in stock via the API on 2026-08-29. Kits marked "covers many units" only need buying once no matter how many you build.

Qty /unit	Part	Stock / price (live where Mouser)	Order
6	4 mm banana jack, panel (all six jack positions - FIE: all 3 plug pins are 4 mm) 108-0740-001	9,939 in stock · \$3.10	Mouser 530-108-0740-001
1	3 mm LED, yellow-green GaP (D1, Vf ~2.1 V) WP710A10GD	7,002 in stock · \$0.22	Mouser 604-WP710A10GD
1	3 mm LED, red (D2) WP710A10ID	31,618 in stock · \$0.24	Mouser 604-WP710A10ID
1	820 R resistor 1/8 W (green branch) CFR-12JB-52-820R	14,865 in stock · \$0.10	Mouser 603-CFR-12JB-52-820R
1	1.2 k resistor 1/8 W (red branch) CFR-12JB-52-1K2	3,315 in stock · \$0.10	Mouser 603-CFR-12JB-52-1K2
1	100 nF ceramic (across the rail) K104K15X7RF53L2	23,015 in stock · \$0.25	Mouser 594-K104K15X7RF53L2
1	18650 holder, wire leads (Keystone 1042) 1042	3,233 in stock · \$5.63	Mouser 534-1042
1	TP4056 charge module, USB-C, protected (DW01A + FS8205)	listing churns - any well-reviewed match	Amazon search
1	Protected 18650 cell, 2000+ mAh, reputable brand	listing churns - any well-reviewed match	Amazon search
1	M2 + M3 heat-set inserts w/ screws (kit covers many units)	listing churns - any well-reviewed match	Amazon search
1	26 AWG stranded/silicone wire (kit covers many units)	listing churns - any well-reviewed match	Amazon search
2	ALTERNATIVE to the six jacks: real 3-prong fencing sockets, guaranteed fit	fencing vendor (blocks link checks)	Absolute Fencing, search '3-prong socket'

Per-unit cost: ~\$25.14 Mouser + roughly \$14-18 of Amazon parts ≈ \$32-38 each (the insert/wire kits amortize across units).

Building five? Multiply jacks, LEDs, resistors, cap, holder, TP4056, cell and switch by five - resistor and LED unit prices drop hard at qty 10+.

Before ordering jacks: measure your cords' pin diameters (Doc 00/02 Rev D - typically B = 3 mm, A and C = 4 mm). The real 3-prong fencing sockets are the guaranteed-fit route and replace all six jacks per unit.

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Build B - three weapon scoring box (quantities are PER UNIT)

Complete list for one scoring box, including the two design-review additions (clamp diodes, buzzer transistor). The Black Pill and the fencing-socket alternative are the only rows Mouser cannot supply.

Qty /unit	Part	Stock / price (live where Mouser)	Order
7	1 k resistor 1%, matched sense network (buy 10, keep spares) MFR-25F8F52-1K	73,452 in stock · \$0.042	Mouser 603-MFR-25F8F52-1K
9	220 R resistor (LED limiting) CFR-25JB-52-220R	23,296 in stock · \$0.036	Mouser 603-CFR-25JB-52-220R
1	5 mm LED, green (on target A) WP7113SGD	21,272 in stock · \$0.25	Mouser 604-WP7113SGD
1	5 mm LED, red (on target B) WP7113ID	83,829 in stock · \$0.21	Mouser 604-WP7113ID
2	5 mm LED, white (off target A + B) C503B-WAN-CBBDB231	6,558 in stock · \$0.28	Mouser 941-C503BWANCBDB231
5	5 mm LED, yellow (3 mode + 2 fault) WP7113YD	19,856 in stock · \$0.22	Mouser 604-WP7113YD
1	Active piezo buzzer, 3 V AI-1223-TWT-3V-2-R	7,024 in stock · \$1.66	Mouser 665-AI1223TWT3V2R
2	Momentary pushbutton, panel (mode + reset) PS1024ABLK	1,071 in stock · \$1.66	Mouser 612-S1024ABLK
7	BAT54S clamp diode, one per fencing line (design-review addition) BAT54S	7,100 in stock · \$0.071	Mouser 637-BAT54S
1	Buzzer driver transistor (design-review addition) MMBT2222A	122,409 in stock · \$0.13	Mouser 637-MMBT2222A
7	4 mm banana jack / binding post (6 fencer lines + 1 piste) 108-0740-001	9,939 in stock · \$3.10	Mouser 530-108-0740-001
1	Perfboard 0.1 inch SB404	18 in stock · \$5.50	Mouser 854-SB404
1	WeAct Black Pill STM32F401CCU6 (doc says buy 2 - they are cheap)	listing churns - any well-reviewed match	Amazon search
1	22 AWG stranded wire (kit covers many units)	listing churns - any well-reviewed match	Amazon search
1	Heavy alligator clip lead (piste ground)	listing churns - any well-reviewed match	Amazon search
2	ALTERNATIVE to the six fencer jacks: real 3-prong fencing sockets	fencing vendor (blocks link checks)	Absolute Fencing, search '3-prong socket'

Per-unit cost: ~\$35.55 Mouser + roughly \$10-14 of Amazon parts ≈ \$38-45 each.

One-time tools (any number of scoring boxes)

Qty /unit	Part	Stock / price (live where Mouser)	Order
1	ST-Link V2 programmer clone (flashing backup - USB DFU also works)	listing churns - any well-reviewed match	Amazon search

Building bright? The Doc 12 lamp upgrade parts are on sheet 3.

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Optional per-unit: bright lamp upgrade for the scoring box (Doc 12)

Gym-visible glowing lamp zones, same pins, zero firmware changes - each GPIO switches a MOSFET driving a 5 V LED strip segment. Full design in Doc 12.

Qty /unit	Part	Stock / price (live where Mouser)	Order
4	IRLZ44N logic-level MOSFET (bright lamp zone driver, Doc 12) IRLZ44NPBF	57,198 in stock · \$1.70	Mouser 942-IRLZ44NPBF
4	10 k resistor (gate pulldown, Doc 12) CFR-25JB-52-10K	151,275 in stock · \$0.10	Mouser 603-CFR-25JB-52-10K
1	5 V LED strip, white 60 LED/m (one metre serves many boxes)	listing churns - any well-reviewed match	Amazon search
1	5 V LED strip red + green (or one analog RGB strip)	listing churns - any well-reviewed match	Amazon search
1	5 V 2 A USB wall supply or always-on power bank	listing churns - any well-reviewed match	Amazon search

Optional - hit simulator & verification rig (build ONCE, tests every box you ever make)

Not part of any box. This is the instrument that fires contacts of exact duration (a human cannot produce a repeatable 13 ms touch) and measures the real lockout windows. Skip it for a personal practice box; build it if other people's bouts will depend on your boxes' calls - one rig verifies all of them.

Qty /unit	Part	Stock / price (live where Mouser)	Order
1	Arduino Nano clone, CH340	listing churns - any well-reviewed match	Amazon search
1	8-channel 24 MHz USB logic analyzer (Saleae-clone)	listing churns - any well-reviewed match	Amazon search
7	2.2 k resistors (from any 1/4 W kit)	listing churns - any well-reviewed match	Amazon search
1	Dupont jumper wires M-M / M-F	listing churns - any well-reviewed match	Amazon search

One-time cost: roughly \$20-25. The minimum useful subset is just the Nano and seven 2.2 k resistors (~\$7): exact-duration contacts while you watch the lamps. The logic analyzer adds microsecond-level lockout measurement.

Order strategy for multiple builds

Put ALL Mouser lines for every planned unit in one cart - shipping is free over \$50 in the US and resistors/LEDs get dramatically cheaper at the 10 and 100 price breaks. Amazon module listings churn, so buy those per batch. Fencing sockets: order a couple of spares; they are the one part with real lead-time risk.

Combined example - 3 testers + 2 scoring boxes + the rig: one Mouser cart around \$120, one Amazon order around \$60-75, one fencing-vendor order around \$25-40. Well under \$250 for the whole fleet, verification included.