AeroSense materials and equipment

USD reference prices. Notes define each purchase unit. Checked 2026-10-13. Shipping and tax excluded. Do not sum mixed purchase units.

Category	Name	Retail reference USD	Specification	Purpose	Notes
Device parts	M3 × 8 mm screws	$0.98	M3 × 8 mm; 4 pieces	Retain the PCB	Pack of 20, Bambu AA037. Use 4. https://us.store.bambulab.com/products/m3-socket-head-cap-machine-screws-shcs-1
Device parts	M3 × 16 mm screws	$0.98	M3 × 16 mm; 2 pieces	Retain the fan	Pack of 10, Bambu AA039. Use 2. https://us.store.bambulab.com/products/m3-socket-head-cap-machine-screws-shcs-1
Device parts	M3 × 35 mm screws	$0.34	M3 × 35 mm; 2 pieces; socket cap head	Retain the lid	Price per screw. Bolt Depot 23069. https://boltdepot.com/Product-Details?product=23069
Device parts	M3 nuts	$2.97	M3 × 0.5; 8 pieces	Retain PCB, fan and lid screws	Pack of 25. Pololu 1069. https://www.pololu.com/product/1069
Device parts	M3 flat washers	$0.05	3.2 mm ID, 7 mm OD, 0.5 mm thick; 6 pieces	Spread the screw load	Price per washer, DIN 125. Match these dimensions. https://www.fmwfasteners.com/products/m3-metric-flat-washer-din-125-zinc-plated
Device parts	LEE 101 Yellow filter	$12.00	1 receiver layer; trim to the 5.2 × 4.2 mm seat	Reduce blue light at the PD	Price for one 21 × 24 in sheet, not a small cut piece. Keep LED paths clear. https://usa.leefiltersdirect.com/products/101-yellow
Device parts	Assembled PCB		NTHU_TEST_BOARD; about 100 × 90 × 1.6 mm; 1 board	LED, PD, ADC, ESP32 and power control	Custom assembly; no retail price. Retained quote: NTD 131,250 for 2, at 31.805 NTD/USD = USD 2,063.35 per board. Historical quote.
Device parts	Printed enclosure and four wells		All 8 STL parts in 01_print; 4 black parts and 4 clear wells	Support parts, block stray light and hold samples	Printed in-house; no retail price. Retained 3-batch cost estimate: USD 35.07. Printer is listed as existing equipment.

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Device parts	Gas tubing	$7.99	Silicone; candidate 3 mm ID, 5 mm OD; cut to inlet and outlet lengths	Connect the gas source and device	Price per metre. Test fit on the 4 mm maximum barb. VOC compatibility is not verified. https://www.stirlingkit.com/products/3mm-id-x-5mm-od-1m-heat-resistant-peristaltic-pump-silicone-rubber-tubing-hose
Device parts	Gas-line filter	$95.06	Candidate hydrophobic PTFE, 0.22 µm, 25 mm; quantity depends on gas lines	Filter particles from the gas supply	Pack of 50, PT022550. Nonsterile; not a validated sterile barrier. Actual filter model is unspecified. Match tube adapters. https://www.sterlitech.com/ptfe-syringe-filters-pt022550
Device parts	Cooling fan	$7.99	Existing fan: DC 5 V, 0.2 A; red/black wires with plug; 1 fan	Cool the electronics bay	Reference price for a similar 40 × 40 × 10 mm two-wire fan. Not the confirmed model. Base pitch: 32 mm. Match a 5 V power adapter lead. https://tinkersphere.com/power/1041-fan-40x40x10-5v-2-pin.html
Device parts	18650 lithium-ion cell	$6.99	Molicel INR-18650-P30B; 3.6 V, 2.85 Ah on cell label; 1 cell	Supply power through the J1 battery holder	Price per cell. Listings use 3000 mAh typical capacity. Check polarity. Do not solder directly to the cell. https://www.18650batterystore.com/products/molicel-p30b-18650-3000mah-36a-battery
Build tools	USB-to-TTL adapter	$9.95	3.3 V TX/RX logic and GND; 1 adapter	Program and read serial output through J3	Comparable reference: Adafruit 954. Connect TX, RX and GND only. Leave VCC open. https://www.adafruit.com/product/954
Build tools	Finishing abrasive paper	$4.70	Fine abrasive assortment; select grit for the resin surface	Remove support marks and smooth surfaces	One Tamiya 87024 set. Do not thin optical windows or seal surfaces. https://www.tamiyausa.com/shop/finishing/finishing-abrasives-fine-2/
Build tools	Polishing compound	$3.00	Tamiya 87069 Fine, 22 mL, or suitable equivalent	Polish outer optical faces of clear wells	Reference price per tube. Leave no residue on liquid or cell contact surfaces. https://www.sealmodel.com/product_details.php?item_id=2203

Category	Name	Retail reference USD	Specification	Purpose	Notes
Build tools	Soldering tools	$19.95	Adjustable soldering iron; solder and insulation as needed	Prepare a fan power lead if needed	Iron-only reference: Adafruit 3685. A matching plug adapter avoids soldering. Reuse existing tools. https://www.adafruit.com/product/3685
Existing equipment	Laptop		Browser and PlatformIO support	Program, control and analyze	Existing equipment. Not costed.
Existing equipment	USB wall charger and Type-C cable		Existing 5 V, 3 A USB charger and suitable cable	Supply power through J2	Existing equipment. Not costed. 3 A is supply capacity, not forced current.
Existing equipment	LCD resin printer set		LCD resin printing with suitable black and clear resins	Print enclosure and wells	Existing equipment. Not costed. Resin consumption is in the printing estimate.
Existing equipment	Ultrasonic cleaner		Use a compatible resin-cleaning procedure	Clean printed parts	Existing equipment. Not costed. Follow the cleaner instructions.
Existing equipment	Post-curing unit		UV wavelength and exposure suitable for the resin	Post-cure printed parts	Existing equipment. Not costed.
Existing equipment	Cell incubator		Suitable for the established HEK293 temperature and CO2 conditions	Culture HEK293 GCaMP6f cells	Existing equipment. Not costed.
Existing equipment	Fluorescence microscope		Green fluorescence filter set suitable for GCaMP6f	Check cells and fluorescence response	Existing equipment. Not costed.