

**This workbook is a live model — the totals recompute when you change an input.**

Currency is USD. This is a DIRECT-MATERIALS (parts-only) BOM. It excludes NRE, tooling, labor, assembly, test, certification.

Every line carries a LOW and a HIGH figure, both real. The range is never collapsed to a single false-precise number.

THE THREE LEVERS — change these on the 'Assumptions' sheet and watch the Volume total move:

1. Compute: Jetson AGX Thor dev kit vs. T4000 / T5000 production module
2. Arm: 6-DOF research arm vs. purpose-built low-DOF arm
3. Dispenser: machined one-off vs. injection-molded unit-dose mechanism

HOW TO FLEX A LEVER: on 'Assumptions', type your chosen figure into the 'Your choice (low)' and 'Your choice (high)'.

NOTES COLUMN: each line says whether its figure is VERIFIED (vendor's own page, 2026), an ENGINEERING ESTIMATE, or a GUESS.

READING THE TOTALS ROWS vs. THE HEADLINE BAND — important:

The totals rows sum every line's LOW and every line's HIGH literally. Sum-of-lows and sum-of-highs are the arithmetic means of the ranges.

Prototype totals row computes ~\$15,800 (all lows) to ~\$25,500 (all highs), base parts.

The dossier's PROTOTYPE HEADLINE is ~\$28,000-\$42,000. It is higher because a real engineering prototype adds the cost of a real engineering prototype.

Volume totals row computes ~\$5,600 (all lows) to ~\$10,600 (all highs), per unit.

The dossier's VOLUME HEADLINE is ~\$4,200-\$6,800/unit (+/-30%). It is TIGHTER than the sum-of-highs because it is a tighter range.

WHY BOTH ARE TRUE: the totals rows are the literal arithmetic of the ranges you can see and edit; the headline band is a summary of the ranges.

| Lever                                                           | Option A                          | Option A (low) | Option A (high) | Option B                              | Option B (low) | Option B (high) | Your choice (low) | Your choice (high) | Notes                                                             |
|-----------------------------------------------------------------|-----------------------------------|----------------|-----------------|---------------------------------------|----------------|-----------------|-------------------|--------------------|-------------------------------------------------------------------|
| Compute                                                         | Jetson AGX Thor dev kit           | \$5,499        | \$5,499         | T4000 / T5000 production module @1KU+ | \$2,999        | \$4,999         | \$2,999           | \$4,999            | Dev kit \$5,499; T5000 module \$4,999 @1KU+, T4000 \$2,999 @1KU+  |
| Arm                                                             | 6-DOF research arm (WidowX-class) | \$3,100        | \$4,600         | Purpose-built low-DOF Dynamixel arm   | \$700          | \$1,400         | \$700             | \$1,400            | WidowX 250 S ~\$3,100 (discontinued); WidowX AI from \$4,545.95 — |
| Dispenser                                                       | Machined one-off carousel         | \$500          | \$1,200         | Injection-molded unit-dose mechanism  | \$150          | \$400           | \$150             | \$400              | Custom heart of the product. Volume cost = molding + one motor +  |
|                                                                 |                                   |                |                 |                                       |                |                 |                   |                    |                                                                   |
| Volume assumed:                                                 | 10,000 units / year               |                |                 |                                       |                |                 |                   |                    |                                                                   |
| The volume figures assume design-for-manufacture work not yet d |                                   |                |                 |                                       |                |                 |                   |                    |                                                                   |

| Subsystem                                  | Reference part / class                            | Proto low (USD) | Proto high (USD) | Basis      | Notes & source                                                               |
|--------------------------------------------|---------------------------------------------------|-----------------|------------------|------------|------------------------------------------------------------------------------|
| High-level compute                         | NVIDIA Jetson AGX Thor dev kit                    | \$5,499         | \$5,499          | VERIFIED   | Dev kit \$5,499 — verified NVIDIA/VideoCardz 2026. LONG LEAD, allocation     |
| Safety supervisor MCU                      | STM32H7 dual-core + dev board                     | \$50            | \$120            | VERIFIED   | Chip price verified STMicroelectronics 2026. ECC memory, FD-CAN.             |
| Dispenser MCU                              | STM32H7/STM32G4 class + board                     | \$50            | \$100            | VERIFIED   | Second MCU for the independent dispense/escalation channel.                  |
| Manipulation arm                           | Trossen WidowX-class research arm                 | \$3,100         | \$4,600          | VERIFIED   | WidowX 250 S ~\$3,100 (discontinued); WidowX AI from \$4,545.95 — verifi     |
| Wrist force/torque (optional)              | ATI Nano17 / Mini45                               | \$3,000         | \$7,000          | QUOTE-ONLY | QUOTE-ONLY, LONG LEAD — every ATI distributor lists price/delivery as r      |
| Mobile base — drive                        | ODrive S1 x2 + BLDC hub motors                    | \$600           | \$1,000          | VERIFIED   | ODrive S1 \$149, Pro \$229, Micro \$89; Botwheel kit from \$279 — verified C |
| Base chassis / structure                   | Custom machined + 3D-printed                      | \$800           | \$1,500          | ESTIMATE   | Prototype machined/3D-printed; volume molded.                                |
| Depth cameras (x2)                         | RealSense D435i / D455                            | \$700           | \$900            | VERIFIED   | D435i ~\$350, D455 ~\$400 — verified 2026. SUPPLY RISK — Intel winding c     |
| 2D LiDAR                                   | Slamtec RPLIDAR A1 / A2                           | \$100           | \$350            | VERIFIED   | A1 ~\$100 class, A2 higher — verified Slamtec/listings 2026.                 |
| Thermal camera                             | FLIR Lepton-class radiometric                     | \$200           | \$300            | ESTIMATE   | Trend/dark-detection sensor.                                                 |
| Contact vitals — BP cuff                   | Oscillometric upper-arm OEM                       | \$40            | \$100            | ESTIMATE   | Home-validated cuff module.                                                  |
| Contact vitals — SpO2                      | Medical OEM pulse-ox (Masimo/Nonin class)         | \$150           | \$400            | ESTIMATE   | FDA-cleared OEM module; supplier qualification is a lead item.               |
| Contact vitals — temperature               | Contact/clinical IR thermometer module            | \$20            | \$60             | ESTIMATE   |                                                                              |
| Med-dispensing mechanism                   | Machined carousel + geared motor + optical gate + | \$500           | \$1,200          | ESTIMATE   | The custom heart of the product.                                             |
| Display / face                             | Touchscreen + face display panel                  | \$150           | \$400            | ESTIMATE   | Telepresence + interaction surface.                                          |
| Audio                                      | Mic array + speaker                               | \$60            | \$150            | ESTIMATE   | Calls, voice, audio anomaly detection.                                       |
| Connectivity                               | Wi-Fi 6E module + independent cellular modem      | \$100           | \$250            | ESTIMATE   | Cellular dedicated to escalation path + data plan (recurring, not in BOM).   |
| Battery + power system                     | Li-ion pack + BMS + DC-DC + fail-safe backup      | \$400           | \$900            | ESTIMATE   | Must keep escalation + dispenser lock alive through an outage.               |
| Wiring / connectors / CAN-FD / faste Misc. |                                                   | \$300           | \$700            | ESTIMATE   |                                                                              |
| Total                                      |                                                   | \$15,819        | \$25,529         |            |                                                                              |

| Subsystem                            | Reference part / class                       | Vol low (USD/unit) | Vol high (USD/unit) | Basis    | Notes & source                                                             |
|--------------------------------------|----------------------------------------------|--------------------|---------------------|----------|----------------------------------------------------------------------------|
| High-level compute [LEVER]           | Jetson T4000 / T5000 production module @1KU+ | \$2,999            | \$4,999             | LEVER    | Reads your choice on the Assumptions sheet. T5000 \$4,999 / T4000 \$2,999  |
| Safety supervisor MCU                | STM32H7 chip @10k + support components       | \$8                | \$15                | VERIFIED | Chip @10k ~\$8.19 — verified STMicroelectronics 2026.                      |
| Dispenser MCU                        | STM32H7/STM32G4 class @10k                   | \$6                | \$12                | VERIFIED | Independent dispense/escalation channel.                                   |
| Manipulation arm [LEVER]             | Purpose-built low-DOF Dynamixel arm          | \$700              | \$1,400             | LEVER    | Reads your choice on the Assumptions sheet. Volume = purpose-built arm     |
| Mobile base — drive                  | Custom integrated hub-motor + driver         | \$250              | \$450               | ESTIMATE | Volume integrated drive hardware.                                          |
| Base chassis / structure             | Molded / cast                                | \$300              | \$600               | ESTIMATE | Volume molded.                                                             |
| Depth cameras (x2)                   | RealSense / 2nd-source Orbbec / ZED          | \$400              | \$700               | ESTIMATE | SUPPLY RISK — qualify a second source (Orbbec ~\$250 / ZED) from the st    |
| 2D LiDAR                             | Slamtec RPLIDAR A1 / A2                      | \$80               | \$250               | VERIFIED | A1 ~\$100 class — verified Slamtec/listings 2026.                          |
| Thermal camera                       | FLIR Lepton-class radiometric                | \$150              | \$250               | ESTIMATE | Trend/dark-detection sensor.                                               |
| Contact vitals — BP cuff             | Oscillometric upper-arm OEM                  | \$25               | \$60                | ESTIMATE | Home-validated cuff module.                                                |
| Contact vitals — SpO2                | Medical OEM pulse-ox (Masimo/Nonin class)    | \$80               | \$250               | ESTIMATE | FDA-cleared OEM module; supplier qualification is a lead item.             |
| Contact vitals — temperature         | Contact/clinical IR thermometer module       | \$10               | \$35                | ESTIMATE |                                                                            |
| Med-dispensing mechanism [LEVER]     | Injection-molded unit-dose mechanism         | \$150              | \$400               | LEVER    | Reads your choice on the Assumptions sheet. Volume = molding + one m       |
| Display / face                       | Touchscreen + face display panel             | \$60               | \$180               | ESTIMATE | Telepresence + interaction surface.                                        |
| Audio                                | Mic array + speaker                          | \$25               | \$70                | ESTIMATE | Calls, voice, audio anomaly detection.                                     |
| Connectivity                         | Wi-Fi 6E module + independent cellular modem | \$50               | \$120               | ESTIMATE | Cellular dedicated to escalation path + data plan (recurring, not in BOM). |
| Battery + power system               | Li-ion pack + BMS + DC-DC + fail-safe backup | \$200              | \$450               | ESTIMATE | Must keep escalation + dispenser lock alive through an outage.             |
| Wiring / connectors / CAN-FD / faste | Misc.                                        | \$150              | \$350               | ESTIMATE |                                                                            |
| Total                                |                                              | \$5,643            | \$10,591            |          |                                                                            |