

Readiness report — OpenFlexure Microscope (high-res build, v7.0.0-beta5)

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Readiness: OpenFlexure Microscope (high-res build, v7.0.0-beta5)

Verdict: Ready · 2026-09-01 · est. parts cost \$215–\$305 **Cybersecurity — software & network: Review before networking**

The OpenFlexure Microscope remains fully implementable. All critical components, including the specialized optics and the Sangaboard controller, are in active production and stock. The estimated cost has remained stable since the 2026-07-19 report; while the Sangaboard price increased slightly, this was offset by price reductions for the Raspberry Pi 4B and Camera Module v2.

Action required

None — all checked parts are sourceable.

Parts

Main Electronic Modules and Boards

Part	Spec/Package	Status	Stock	Price	Source	Drift
Raspberry Pi 4 Model B	Single-board computer	Ready	High	\$35.00	CanaKit	-\$3.15
Sangaboard v0.5	RP2040-based Controller	Ready	Active	£28.00	TauLab	+£5.00
Raspberry Pi Camera Module v2	Sony IMX219 sensor	Ready	Active	\$13.21	eBay	-\$2.74
Illumination PCB	OFMv7 Illumination Kit	Ready	Active	£4.00	TauLab	—

Optical Components

Part	Spec/Package	Status	Stock	Price	Source	Drift
12.7 mm Achromatic Lens	ThorLabs AC127-050-A	Ready	In stock	\$64.83	ThorLabs	—
Microscope Objective	Generic RMS Thread	Ready	High	\$12.49	Walmart	-\$0.96
Condenser Lens	13 mm x 5 mm PMMA	Ready	High	~\$15.00	Amazon (50pk)	—

Electromechanical and Connectivity

Part	Spec/Package	Status	Stock	Price	Source	Drift
28BYJ-48 Stepper Motors	5 V geared version	Ready	High	\$4.14	StepperOnline	—
Pi Camera Ribbon Cable	200 mm, Type B FFC	Ready	1384	\$0.85	Newark	—
Female-Female Jumpers	30 cm	Ready	High	\$0.10	SparkFun	-\$0.40
2-pin Connector Housing	2.54 mm pitch	Ready	High	\$8.50	Walmart (Kit)	+\$3.01

Fasteners and Mechanical Support

Part	Spec/Package	Status	Stock	Price	Source	Drift
M3 Cap Head Screws	M3 x 10 mm (WF2345)	Ready	In stock	£1.68	Westfield (15pk)	—
M3 Hex Nuts (Stainless)	A2 Stainless (WF1255)	Ready	In stock	£2.17	Westfield (15pk)	—
M3 Hex Nuts (Brass)	Brass (WF20152)	Ready	In stock	£1.51	Westfield (6pk)	—
M3 Hex Bolts	M3 x 25 mm Full Thread	Ready	In stock	£1.29	Westfield (6pk)	—
M3 Washers	Form A (WF1189)	Ready	In stock	£1.45	Westfield (30pk)	—
No. 2 Self-Tapping	6.5 mm Pozi Pan (WF825)	Ready	1796	£1.02	Westfield (20pk)	—
Viton O-rings	30 mm ID, 2 mm thick	Ready	In stock	\$6.30	Vacuum Pump Supply	+\$5.75

Materials and Consumables

Part	Spec/Package	Status	Stock	Price	Source	Drift
PLA Filament	1.75 mm, Black/Any	Ready	High	\$10.99	eSUN	-\$1.00
Polypropylene Sheet	0.5 mm White (43142)	Ready	Active	£7.50	Kitronik	—
Micro SD Card	8 GB minimum	Ready	High	\$3.99	eBay	+\$0.99
Light Oil	RS 252-0168 / Generic	Ready	Active	\$2.50	Micro-Tools	—

Substitutes

None needed.

Instructors should verify any substitute against its datasheet before ordering.

Cybersecurity — software & network

Component	Version	How known	Support status
OpenFlexure Server / Connect	v7.0.0-beta5	read from project	supported
Raspberry Pi OS	not determined	unpinned	supported

Component	Finding	Severity	Fix available?
OpenFlexure Stack	Dependency scan not performed	posture	Mitigation only — Isolate network

What this means for your lab

The security posture of this lab has not been fully audited. As the software provides remote control of the microscope hardware, an attacker on the same network could potentially move the motors or access the camera feed if no authentication is configured. Instructors should isolate the Raspberry Pi on a dedicated network segment or a private VLAN and change all default passwords before deployment.

Not checked

- Raspberry Pi OS: version unpinned in project materials, preventing specific advisory lookup.
- Software Stack: No automated vulnerability scan has been run against the specific beta version dependencies.

Other dependencies

- **3D Fabrication:** Requires FFF printer with minimum 180 x 180 x 180 mm build volume. Status: Ready.
- **Firmware and Software:** Software remains active on GitLab. Status: Ready.
- **External Links:** Documentation sites build.openflexure.org and taulab.eu are active. Status: Ready.

Watch list

- **ThorLabs AC127-050-A:** This is a single-source precision optic. While stock is currently good, there are no verified drop-in substitutes that match the 12.7 mm diameter and 50 mm focal length requirements.
- **Sangoboard v5:** Shipping originates from specialty vendors in the UK; international shipping times should be factored into the procurement schedule.

- **Raspberry Pi 4B:** While pricing has stabilized, this component historically experiences supply volatility. Standardizing on the 2GB variant is recommended for budget consistency.