

OmniHand 3 Ultra

Flagship direct-driven dexterous hand

21 active degrees of freedom in 630g, human-scale form factor. Engineered for continuous-duty research, embodied AI training, and the experiments that will define the new era of manipulation.

Designed for embodied AI training, teleoperation & demonstration capture, and bimanual contact-rich manipulation research.



Open & Compatible

   

*SDK in Python and C++



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Features and Benefits

Form Factor & Strength
Human-scale build - the highest force density in its category.

Clean Data, by Design
Direct-drive at every joint. $\pm 0.1\text{mm}$ repeatability across the full workspace, with joint state read directly from each actuator's encoder — a hand controller and learned policies can trust as ground truth.

Continuous-Duty Reliability
40-45 °C surface temperature under continuous load with no throttling. 500k validated cycles.

Vision-Based Tactile Sensing
Three-dimensional force vectors with 0.08mm deformation precision across a 0-30N range — enough to distinguish slip from contact, edge from surface.

Specifications

Degrees of Freedom	Dimensions	Weight	Payload	
21	205*93*50mm	630g	5kg	
Active				
Opening/ Closing Time (Typ.)	Repetitive Positioning Accuracy	Communication Interface		
0.3s	±0.1mm	CANFD/Ethernet		
Tactile Sensor	Palm			
	Sensing Approach	Force Sensing Resolution	Number of Tactile Pixels	
	3D tactile sensor	0.1N	300	
Fingertip				
Sensing Approach	Force Detection Range	Force Sensing Resolution	Spatial Resolution	Deformation Field Accuracy
Vision-based tactile sensor	0-30N	0.005N	0.04mm	0.08mm