



Product Catalog

Embodied AI Data Collection Hardware

This catalog presents the Robotics Center hardware lineup for training embodied AI and robotic manipulation models. Each product is designed to solve a specific part of the data collection problem — from tactile sensing at the fingertips, to first-person vision, to lightweight body-worn capture.

In this catalog

<p>G1</p> <p>Tactile Glove</p> <p>162 pressure sensing points per hand</p>	<p>E1</p> <p>Egocentric System</p> <p>Modular head / wrist / gripper / compute</p>	<p>C1</p> <p>Camera</p> <p>Lightweight body-worn HD recorder</p>
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PRODUCT 01

G1

Tactile Glove

High-density fabric pressure sensing for grasp and manipulation



Overview

The Robotics Center G1 is a textile-based tactile glove that places 162 fabric pressure sensors densely across the fingers and palm of each hand. Paired with an onboard Bluetooth transmitter and a 6-axis IMU, it captures the full contact state of a human or robotic hand during manipulation — grip force, finger flexion, and contact distribution — in real time.

Because the sensing layer is woven into the fabric rather than bonded to a rigid substrate, the G1 is soft, breathable, and bends naturally with the hand. Sensors survive Z-fold creasing and kneading (minimum fold radius under 0.2 mm), and the array has passed automotive-grade durability testing at 200,000 cycles of 3 MPa impact.

Why It Matters

- **Dense tactile coverage** — 162 sensing points per hand, with 4 mm × 6 mm resolution — enough fidelity to distinguish individual fingertip contacts and palm grip distribution.
- **Fast enough for closed-loop** — 100 Hz sampling over serial, 30 Hz over Bluetooth, <0.2 ms response time — fast enough for real-time policy feedback.
- **Built-in flexion sensing** — Per-finger bending degree is reported alongside pressure, so grip posture is captured without a separate sensor.
- **Lightweight** — Only 35.4 g per glove. Demonstrators don't feel it; robots don't need extra actuation to compensate.

- **IMU included** — Integrated ICM-42688 6-axis IMU at 120 Hz for hand pose and motion context.

G1 Specifications

Sensing	
Sensing points per hand	162 (densely distributed across fingers and palm)
Sensing resolution	4 mm × 6 mm
Sensing area	179 × 145 mm (±3%)
Max single-point pressure range	350 N
Recognition accuracy	0.01 N
Repeatability / consistency	±8%
Response time	< 0.2 ms
Finger flexion sensing	Yes, per-finger bending degree reported
Physical	
Glove sensor dimensions	271 × 161 mm (±3%)
Net weight (per glove)	35.4 g
Skin thickness	≤ 2.33 mm
Surface fabric	Black textile, breathable, skin-friendly
Minimum fold radius	< 0.2 mm (survives Z-fold and kneading)
Durability	200,000 cycles at 3 MPa impact (automotive-grade)
Protection rating	IP21
IMU	
IMU device	6-axis (3-axis gyroscope + 3-axis accelerometer)
Gyroscope range	Programmable up to ± 2000 °/s
Accelerometer range	Programmable up to ± 16 g
IMU sample rate	120 Hz
Connectivity & Power	
Interfaces	Bluetooth + Serial (USB 3.0 to Type-C, 2 m cable)
Sampling frequency	30 Hz (Bluetooth) / 100 Hz (serial, user-configurable)
Bit rate	921,600 bps / 3,000,000 bps
Power	5 V / 2 A wall, or 3.7 V / 300 mAh onboard battery
Battery life (Bluetooth)	3.75 hours
Battery life (wired)	Powered from host (unlimited)

Standby	1 week
Environment	
Operating temperature	Textile: -40 °C to 80 °C; PCB: -25 °C to 85 °C
Operating humidity	< 90% RH, non-condensing
Storage temperature	-45 °C to 100 °C
Software	
Companion app	Real-time 3D / 2D / matrix pressure visualization
Data export	CSV
Recording	Real-time capture, storage, and playback
Platforms	Windows 8+ and macOS

Deployment

- **Data collection** — Human demonstrators wear left + right gloves to record natural manipulation trajectories.
- **Robot integration** — Gloves can be mounted directly onto robotic or humanoid hands for closed-loop tactile feedback.
- **Cohort studies** — Gloves are hot-swappable between demonstrators; data stream tags left-hand (LH) vs. right-hand (RH) automatically.

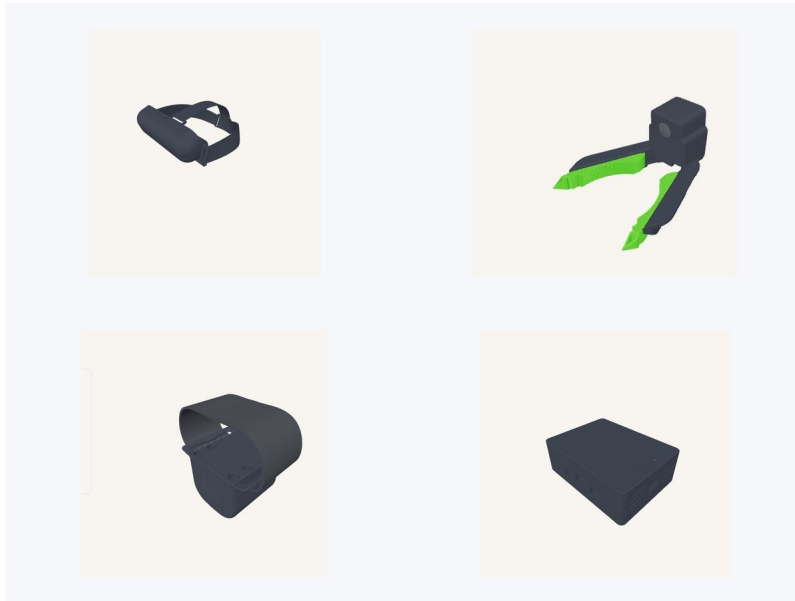
Companion sensing pads are available for full-body (464-point torso) and per-foot (120-point plantar) coverage, sharing the same Bluetooth protocol as the G1 glove. Contact us for the full-body tactile suit configuration.

PRODUCT 02

E1

Egocentric System

Modular first-person capture — head, wrist, gripper, and compute



Overview

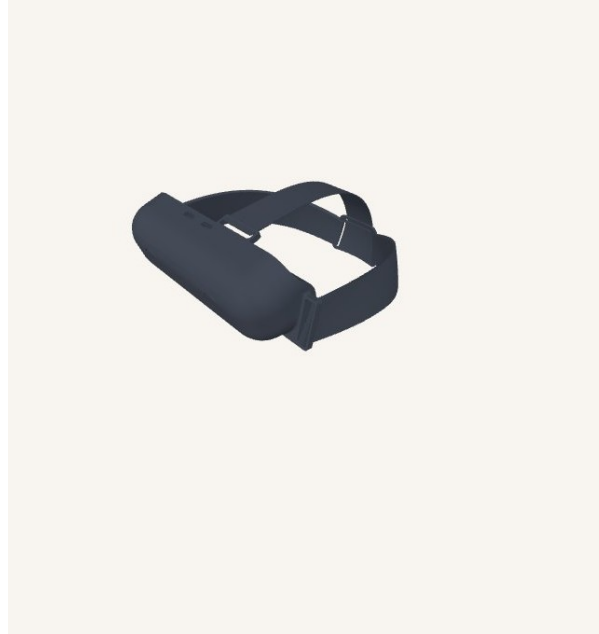
The Robotics Center E1 is a four-module human-action capture system designed for training manipulation and embodied AI policies. It records synchronized first-person video, wrist-level perception, and end-effector trajectories from human demonstrators — producing research-ready, LeRobot-compatible datasets at scale.

The modules are hot-swappable: use the head unit and wrist units for free-form household tasks, add the handheld gripper module for sim-to-real trajectory collection, or combine all four for full-stack manipulation research. A single compute module synchronizes timestamps across every sensor stream to a 1 TB SSD.

Design Principle

Less hardware, more data. The E1 baseline is intentionally lightweight — demonstrators can wear it for hours without fatigue, and every module is engineered to minimize the friction between a human action and a clean, trainable trace of that action.

E1-A Ego Unit — First-Person Vision



Head-mounted stereo camera. Dual 170° RGB cameras at a 65 mm baseline record wide-FOV stereo video; a built-in IMU anchors head motion with high-rate inertial data. Global-shutter sensors keep fast head turns artifact-free — clean data for SLAM, visual-inertial odometry, and 3D scene reconstruction.

Dimensions	160 × 57 × 54 mm
Weight	157 ± 5 g
RGB Camera	
Configuration	Stereo (2× RGB)
Stereo baseline	65 mm
Field of view	170°
Resolution	2048 × 1536
Frame rate	30 Hz
Shutter	Global shutter
IMU	
Accelerometer range	± 16 g
Gyroscope range	± 2000 deg/s
Data rate	120 Hz
Connectivity	
Interface	Type-C × 2

E1-B Wrist Unit — Close-Range Hand Coverage



A compact 62 g wrist-worn RGB camera that fills in what the ego view can't see — the moment of contact, finger motion, and fine object handling. Its 170° FOV keeps the hand and the manipulated object in frame throughout the task, even at close range. Two Wrist Units (one per arm) give full bimanual coverage for two-handed tasks.

Dimensions	33.5 × 42.8 × 27.4 mm
Weight	62 ± 5 g
RGB Camera	
Configuration	1× RGB
Field of view	170°
Resolution	1920 × 1080
Frame rate	30 Hz
Shutter	Rolling shutter

E1-C Gripper Unit — Handheld End-Effector



A handheld parallel-jaw gripper that the demonstrator uses as if they were the robot's end-effector. On board: a 170° wide-angle RGB camera, a high-precision magnetic encoder tracking jaw position at 120 Hz, a 6-axis IMU, and stereo microphones for capturing contact sounds. Data collected with the E1-C transfers directly to robotic grippers — same action space, no embodiment gap.

Dimensions	157 × 69 × 80 mm
Weight (single hand)	160 ± 5 g
Opening angle	60°
Max opening distance	155 mm
Max grip force	5 kg
Interface	Type-C × 1
RGB Camera	
Field of view	170°
Resolution	2048 × 1536
Frame rate	30 Hz
Shutter	Rolling shutter
Magnetic Encoder	
Precision	1.0 ± 0.2°
Data rate	120 Hz
IMU	
Accelerometer range	± 16 g
Gyroscope range	± 2000 deg/s
Data rate	120 Hz

Microphone	
Directivity	Omnidirectional
Channels	2 (stereo)
Sensitivity	-47 ± 4 dB

E1-D Compute Unit — Synchronized Recorder



The brain of the E1 system. Synchronizes timestamps across every module, records the full multi-stream session to a 1 TB internal SSD, and exposes 2.5 G Ethernet for fast offload. Five Type-C ports accept any combination of modules — typically one Ego Unit, two Wrist Units, and one or two Gripper Units. Powers from a standard 5 V / 4 A portable battery pack.

Dimensions	119 × 90.3 × 40.5 mm
Weight	214 ± 5 g
Storage	1 TB SSD
Interfaces	
Ethernet	2.5 G × 1
Power input	Type-C, 5 V / 4 A
Data ports	Type-C × 5 (2× USB 2.0, 3× USB 3.0)

E1 System Summary

- **Synchronized** — Every module is time-synchronized at the hardware level — no post-hoc alignment required.
- **Lightweight** — Total worn weight (Ego + 2× Wrist + Gripper) is under 600 g. Demonstrators can work for hours.
- **Modular** — Take only what the task needs. Tabletop manipulation? Skip the Ego Unit. Walking task? Drop the Gripper.
- **Trainable by default** — Outputs are LeRobot-compatible out of the box.

PRODUCT 03

C1

Camera

Lightweight body-worn HD recorder for large-scale data collection



Overview

The Robotics Center C1 is a lightweight, pocket-sized HD video recorder designed to clip to the chest, lapel, or shirt pocket. It's the cheapest, simplest way to collect large volumes of human-centric first-person video — the exact data format needed to pretrain egocentric vision models and embodied AI policies.

Under 100 grams, standalone on internal flash storage, no tethering to a phone or PC. Clip it on, press record, work normally. Variants record up to 15 hours continuously at HD resolution.

Why It's Useful

- **Cheap enough to scale** — Dozens of demonstrators can be equipped in parallel at a fraction of the cost of a research-grade headset.
- **Unobtrusive** — Under 100 g. Clips to a shirt pocket and disappears during the task — demonstrators forget it's there, producing natural behavior.
- **Zero setup** — Up to 128 GB internal flash storage. No app, no pairing, no cables during collection.
- **Runs all day** — Up to 15 hours continuous recording per session on the extended variant — a full workday of ego data.
- **Works in the dark** — Infrared-assisted low-light mode captures usable footage in dim indoor and evening scenes.
- **Stabilized** — Electronic image stabilization smooths out walking, bending, and reaching motions.

C1 Specifications



Form Factor	
Weight	< 100 g
Mount	Integrated spring clip (chest / pocket / lapel)
Storage medium	Internal flash DV
Imaging	
Sensor	1/3-inch FULL HD 3-CMOS image sensor
Sensor technology	CMOS
Digital resolution	14 MP
Grade	Professional
Features	
Night-mode recording	Yes (infrared-assisted)
Audio recording	Yes (built-in microphone)
Image stabilization	Electronic (EIS)
Storage Options	
Supported capacities	No card / 16 GB / 32 GB / 64 GB / 128 GB
Variants	
Standard HD	Direct-to-storage HD recording
Ultra-HD Network	Higher-resolution variant with network connectivity
15-hour Extended	Upgraded variant with ~15 h continuous recording

How G1, E1, and C1 Work Together

The three products address different parts of the same problem: collecting the data needed to train robots to act in the world. Each works alone; used together, they cover the full sensor stack a modern imitation-learning or VLA policy expects.

Capability	G1 Glove	E1 System	C1 Camera
Tactile / force data	✓ 162 points/hand	End-effector only	—
First-person video	—	✓ Stereo 2048×1536	✓ HD body-worn
Wrist / hand view	—	✓ Wrist Unit	—
Full manipulation trajectory	Hand only	✓ End-to-end	—
Hardware time sync	IMU + pressure	✓ All modules	Standalone only
Best for	Contact-rich skills	Full research dataset	Large-scale pretrain
Worn weight	35.4 g/glove	< 600 g total	< 100 g
Deployment scale	Lab / studio	Lab / studio	Field fleet

Recommended Combinations

- **Full manipulation dataset** — G1 + E1. Tactile grip data synchronized with first-person video and end-effector trajectories — the most complete training signal available for manipulation policies.
- **Large-scale ego pretrain** — C1 only. Deploy dozens of units to demonstrators across diverse environments for cheap, large-scale ego video pretraining.
- **Robot tactile feedback** — G1 only, mounted on robotic hands. Adds closed-loop tactile sensing to an existing manipulator for contact-aware policies.
- **Scale + fidelity** — C1 + E1 (cohort mode). Use C1 across a broad demonstrator pool for scale, then use E1 with a smaller expert group for high-fidelity fine-tuning data.

Next Steps

Pricing, volume discounts, integration support, and pilot programs are all available on request. Spec sheets and 3D models for each product can be provided under NDA.



Embodied AI Data Collection Hardware

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