Tachin Technology – Flexible Tactile Data Acquisition Glove TachinGlove Snap

1 Product Description

The TachinGlove Snap Flexible Tactile Data Acquisition Glove is an intelligent wearable device designed for full-hand tactile signal acquisition and data recording. The product integrates high-density, ultra-thin flexible electronic skin sensing units capable of collecting multi-modal tactile signals, such as normal and tangential forces, and recording contact force distribution changes and features across the fingers, palm, and other regions during gripping, pressing, sliding, and other operations. It adopts a bio-mimetic high-density array layout for the hand, covering major tactile interaction areas including the five fingers and the palm; its flexible structure adapts to hand bending, grasping, and routine movements, supporting data acquisition under natural operating states to authentically restore human natural labor conditions. Featuring a low-noise design during airborne/air-grasping states, it reduces false trigger signals and invalid data interference in non-contact states, improving the stability and usability of the collected data while ensuring data purity.

The product features a unique quick-release design, allowing the acquisition module and the glove body to be rapidly separated for easy replacement of glove consumables, making it ideal for high-frequency testing and multi-batch collection. Additionally, Wi-Fi wireless communication and battery power completely eliminate wired constraints, enabling flexible, anytime, anywhere data collection suitable for mobile acquisition and multi-scenario deployment needs. The product can be applied in scenarios such as embodied AI training, robotic teleoperation, rehabilitation assessment, and industrial operation data collection, providing high-precision and high-reliability full-hand tactile signal acquisition and data recording solutions for related systems.

2 Product Features

- Multidimensional tactile sensing: Normal force and shear force
- High force resolution: 0.05 N/cm²

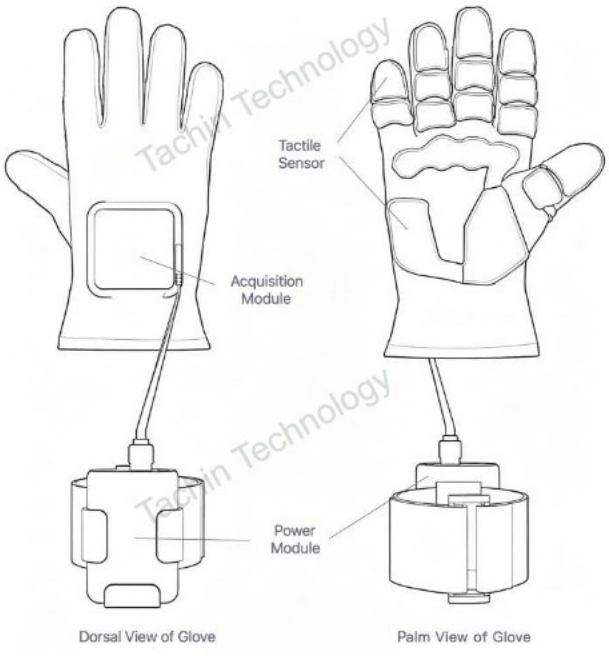
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- High-density sensor array: 783 sensing points
- Large coverage area: Full coverage of five fingers and palm with biomimetic palm-print distribution
- Wide force measurement range: Up to 30 N/cm²
- High spatial resolution: < 2 mm
- Low-noise acquisition: No data generated during free grasping, reducing invalid data
- High flexibility: Wi-Fi connectivity without cable restrictions
- Quick-Release Design: Facilitates rapid replacement of glove consumables

3 Application Scenarios

The TachinGlove Flexible Tactile Data Acquisition Glove can be used in embodied intelligence training, robotic teleoperation, rehabilitation assessment, industrial operation data collection, and other application scenarios. It supports tactile signal acquisition during human hand operations, motion teaching, contact force distribution recording, and multimodal dataset construction.

4 Product Structure



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Component	Description
Glove Palm	The palm and five fingers contain 783 pressure sensors arranged in a biomimetic palm-print array layout for collecting contact pressure distribution data during grasping, pressing, sliding, and other operations. The system supports low-noise acquisition during free-grasp conditions, reducing false trigger signals and invalid data interference in non-contact states, thereby improving data stability, usability, and purity.
Glove Back	Integrated high-precision data acquisition module for sensor signal collection, processing, and transmission, supporting high-frequency data acquisition requirements; integrated Wi-Fi communication module supporting wireless data transmission; supports a quick-release design, allowing rapid replacement when the glove becomes worn.
Power Module	Equipped with a high-capacity replaceable battery supporting continuous sampling time of more than 10 hours.

5 Product Specifications

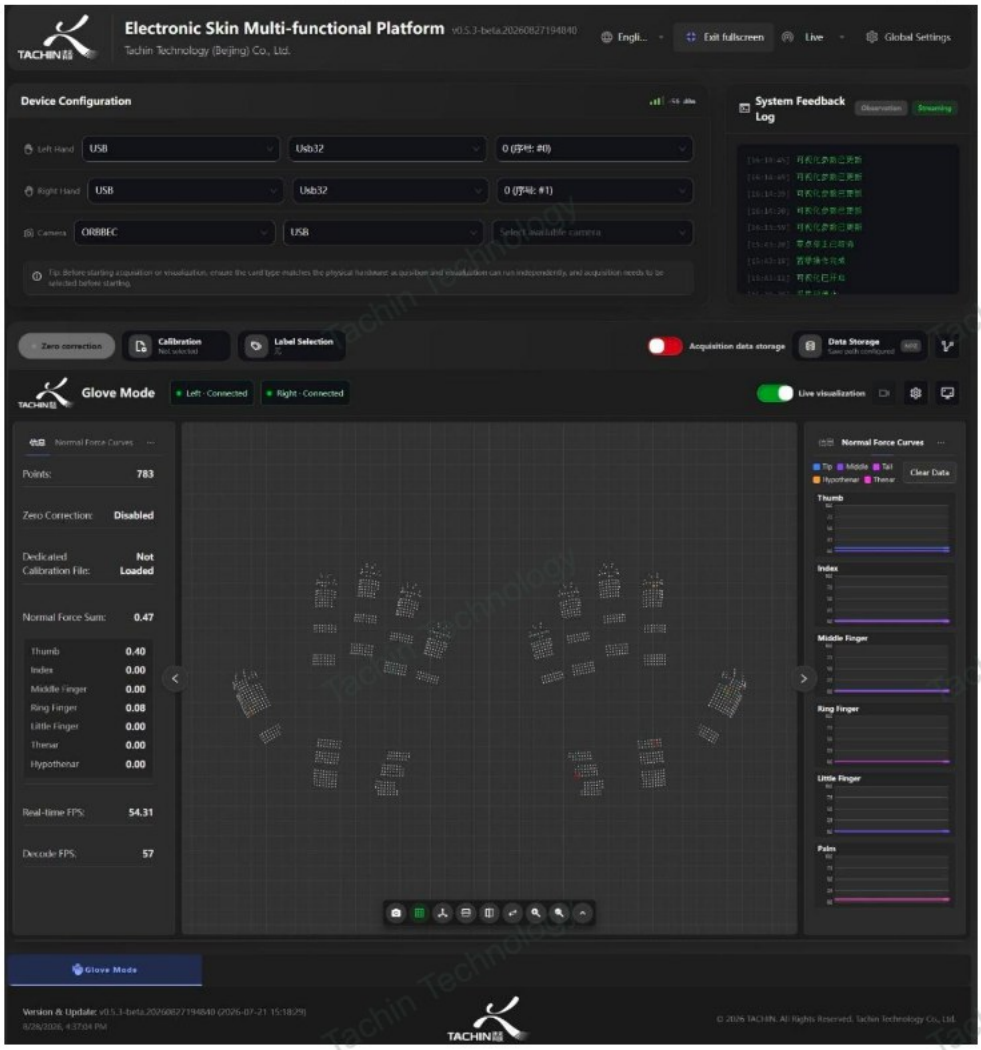
Parameter Category	Parameter Item		Typical Value
Appearance & Weight	Glove Size (L×W)		210×150 mm
	Glove Thickness (Single Layer)		1.4±0.2 mm
	Battery Size		76.5×53.2×15 mm
	Glove Net Weight		75 g
	Battery Net Weight		90 g
Tactile Sensor	Sensor Size	Sensor Thickness	1.0±0.1 mm
		Sensing Dimensions	Normal Force + Shear Force
		Single Sensor Size	1.5×1.5 mm
		Number of Sensors	783

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		Single-point Press Lifespan	300,000 cycles
	Normal Force	Measurement Range	0.2-30 N/cm²
		Average Measurement Accuracy	< 20% FS
		Measurement Resolution	0.05 N/cm²
		Spatial Resolution	< 2 mm
		Electrode Blind Area	0.5 mm
	Stability & Uniformity	Point Consistency	< 20%
		Constant Pressure Drift	< 10% FS
	Wireless Polling Rate		50 Hz
	Wired Polling Rate		100 Hz
Electrical & Communication	Power Supply		Battery or USB Type-C, 5 V / 1 A
	Power Consumption		1 W
	Telecommunication		WiFi or USB Type-C
Environmental Requirements	Operating Temperature		-5-45 ℃
	Storage Temperature		-10-45 ℃
	Operating Humidity		< 55% RH
	Storage Humidity		< 55% RH

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6 PC Software User Guide



The flexible tactile data acquisition glove supports two communication modes: Wi-Fi wireless connection and USB Type-C wired connection, which can be selected according to acquisition needs to flexibly adapt to different usage scenarios. The wireless mode is free from cable constraints and meets mobile acquisition needs; the wired mode provides a higher sampling rate, suitable for high-precision, long-time acquisition scenarios. Both connection modes support communication with the upper computer software to realize tactile data collection, display, storage, export, and other processing procedures.

The upper computer software is used for data reception, real-time display, storage, playback, export, and calibration management of the flexible tactile data acquisition

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glove. Its main functions include:

- Real-time visual display
  - Supports real-time display of tactile data such as 3D force, tangential force, and pressure distribution, showing data change trends and spatial distribution characteristics through dynamic waveform charts, heat maps, etc.
- Data management
  - Supports real-time storage of collected data, historical data playback, and data export, compatible with mainstream data formats, facilitating subsequent analysis and secondary processing by users.
- Zero correction
  - Supports sensor zero drift correction to reduce the impact of initial offset, environmental changes, or baseline drift caused by long-term use on collected data, ensuring the accuracy of data acquisition.
- Sensor calibration
  - Built-in standardized calibration process, users can complete sensor accuracy calibration with simple operations, compensate for performance fluctuations caused by manufacturing tolerances and aging, and improve the consistency of long-term measurement and data reliability.
- Operating Environment & Usage Instructions
  - Operating Platform: Host GUI software and SDK support Windows, Ubuntu, and other operating systems. Please verify that your computer's operating system matches the software version requirements before use.
  - Detailed operations: GUI interface operation procedures, API interface calling methods, parameter configuration, graphic tutorials, and troubleshooting are detailed in the User Manual.

7 Precautions

- Equipment Protection
  - The device is a precision electronic device; avoid collision, dropping, and extrusion.
  - Avoid contact with water, oil, and corrosive liquids to prevent equipment damage or sensor failure.
  - Avoid using in high-temperature, low-temperature, high-humidity, and dusty environments.
- Glove Usage

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- Avoid pulling the glove hard when wearing it.
- Avoid sharp objects scratching the glove surface to prevent sensor detachment or damage.
- Do not wear it for too long (rest for 10 minutes every 1-2 hours is recommended) to avoid compressing hands and affecting blood circulation.

- Data Collection
  - Ensure sufficient light and a simple background in the acquisition area.
  - Avoid strong light directly shining on the camera lens and hand occlusion.
  - Otherwise, it will affect motion capture accuracy and tactile data collection effect.
- Charging & Maintenance
  - Use the matching charging cable; avoid non-original charging equipment.
  - Avoid touching the device during charging to prevent short circuit or overheating.
  - Charge the lithium battery regularly (at least once a month is recommended) to avoid battery damage caused by long-term power loss.
- Software & Maintenance
  - Update the PC software regularly to ensure compatibility with the device.
  - Do not disassemble or repair the device by yourself when it fails; contact after-sales service personnel.
  - Turn off the device power in time after data collection and organize the equipment components.
  - Store in a dry and ventilated environment.

Contact Us

Tel: 010-67898850

Official Website: www.tachintech.com

Email: info@tachintech.com

Address: Room 1018, Building 9, No. 6, North Street, Dongsheng Science Park, Haidian District, Beijing

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