Latero™ System
System Overview

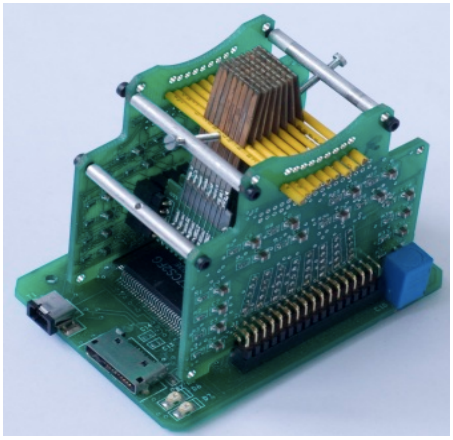

Fig. 1: Latero™ Tactile Head

The **Latero™** is a state-of-the-art tactile display that operates by locally deforming the fingerpad skin with an array of laterally moving piezoelectric actuators.

Fitting under a fingertip, the square array of 64 pins stimulates the skin to create a range of tactile sensations that can include vibrations, traveling features, as well as arbitrary spatio-temporal stimuli with high spatial and temporal accuracy.

The tactile display interfaces with a personal computer through a specialized controller that allows each pin to be programmed independently.

BUILT FOR RESEARCH

The Latero™ System was designed as an advanced tool for research. It has supported research published in Current Biology, Proceedings of the Royal Society B, Neuron, Proceedings of the Royal Society Interface, Proceedings of the National Academy of Sciences, among many others.

MAXIMUM FLEXIBILITY

The Latero™ Controller was built to accommodate a number of sensors and servo-motors. It acts both as a Controller that drives the high-voltage required by the Tactile Head and as a data acquisition interface with a number of analog and digital inputs/outputs.

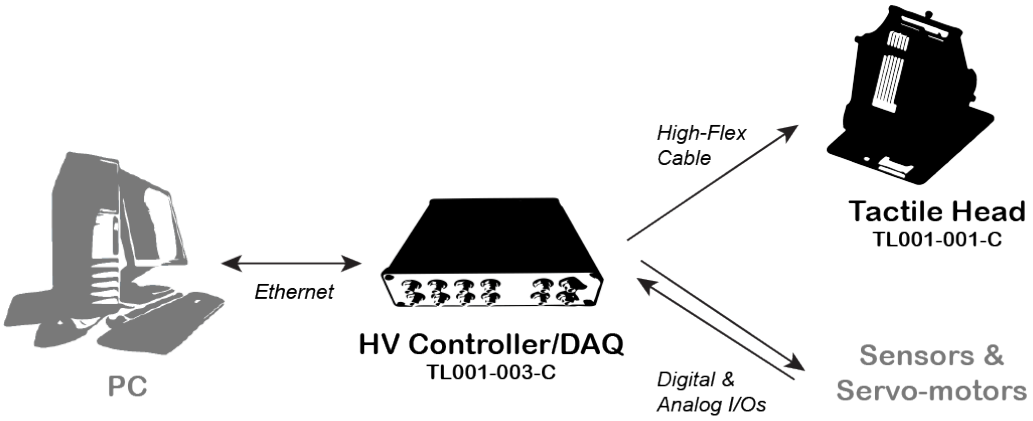

Fig. 2: Latero™ System

The Latero™ **Tactile Head** is driven by a **High-Voltage (HV) Controller** that interfaces with a **Personal Computer (PC)** through a custom UDP-based protocol via an Ethernet cable. This makes it possible to programmatically control all 64 piezoelectric actuators - commonly referred to as a tactile frame - from a PC at a refresh rate of **1 kHz**.

In addition, the **HV Controller** can also act as a **Data Acquisition (DAQ)** interface between the PC and various digital or analog **sensors** (e.g., load cell, high-precision encoders) and **actuators** (e.g., servo-motors). Control signals and sensor values are also exchanged with the PC via the custom UDP-based protocol.

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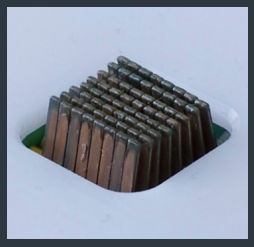
Latero™ System
Technical Specifications

Tactile Head
(TL001-001-C)

Weight	74 g
Outer Dimension	8x6x10 cm
Array Size	8x8
Pin Spacing (center to center)	1.2x1.6 mm
Active Area	1.2 cm^2

Controller
(TL001-03-C)

Input (from PC)	UDP-Based Protocol
Output (to Tactile Head)	0-200 V
4x Differential Analog Outputs	+/- 10 V
4x Differential Analog Inputs	+/- 10 V
4x Digital Inputs	CMOS
4x Digital Outputs	CMOS
Power Input	DC 12V – 500 mA
Enclosure	Aluminum



UNIQUE IN ITS CLASS

No other tactile display currently available on the market comes close to the Latero™ in terms of actuator density (1.2 x 1.6 mm) and actuator displacement. Each piezoelectric actuator blade is capable of up to 1 mm of free displacement.

Software

The Latero™ System is provided with low-level drivers such as C real-time drivers and Python script interfaces. However, no application-level software is provided. Application-level software exists but it is not the property of Tactile Labs. Contact Tactile Labs for more information.

Sensors & Servo-Motors Interfaces

The HV Controller/DAQ system makes it possible to synchronize data updates from sensors and servo-motors connected to the inputs/outputs of the HV Controller/DAQ with the refresh loop for the piezoelectric actuators. This configuration allows for a number of interesting closed-loop system applications. One popular application is to mount the Tactile Head on a custom-made carrier and to connect its encoders to the controller in order to enable the programming of the array of actuators in function of the position of the Tactile Head.

For more information about custom applications, please contact Tactile Labs.

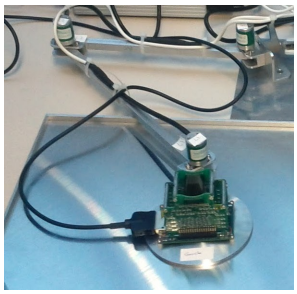


Fig. 3: Tactile Head mounted on a custom-made carrier

The Latero™ System is the result of collaboration between Motsai and Tactile Labs. It is manufactured by Motsai and distributed by Tactile Labs. Product may vary slightly from pictures.

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