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.

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.

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.

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 programatically 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.

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. ©2015 All Rights Reserved.
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 cm²

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

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