High-Depth Signal Tactile Sensor Factsheet
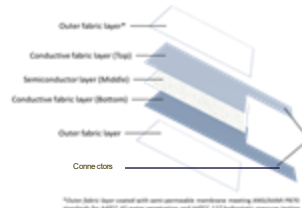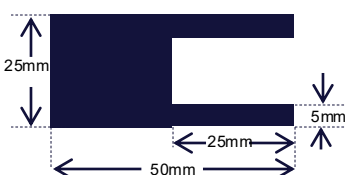## Fact sheet for Multi-modal fabric single sensors (SS)

Properties

Our first-of-its-kind high-depth signal tactile sensors enable accurate, highly sensitive, real-time measurements.

The patented technology uses a new approach. It uses a semi-conductive layer that provides sensor-level filtering for real-time Voltage differential (V∆) and/or capacitance (C) measurements. Resulting in a multi-modal sensing ability to detect proximity, contact, force and dynamic depth of pressure.

Made fully of fabric, our sensors are lightweight, durable and easy to integrate. They are also fully sustainable and recyclable. The natural softness and flexibility of the fabric makes the sensor ideal for objects that people interact with like chairs, bedding, and clothing. The sensors measure accurately even when used on soft surfaces, and subject to bending actions.

When the sensor is placed against hard, soft, and compressed base materials. Taring of the signals are automatically self-calibrated from the mechanical air separation of the conductive textile layers.

Clinically proven to be sensitive enough to detect vital signs when used on a mattress. They can be used across a wide array of industries and applications. The sensors are also proven to be robust and reliable making then perfect for industrial applications such as soft robotics where tactile grippers and mechanical hands are constantly changing form due to mechanical

Single sensors supplied in standard sizes
20x20mm
50x50mm
Others available on request and MOQs

Arrays of sensors and sensor gloves also available

Controller and electrical connector sold separately.
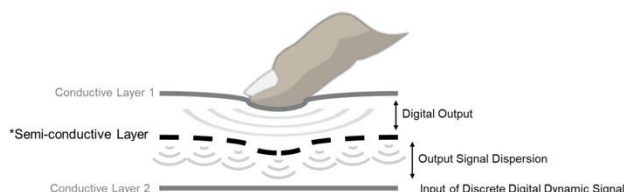
Clinical Trial Data

Sensors can measure weight differences, movement and vital signs of human participants. (weighing 46kg and 136kg lying on sensor array)
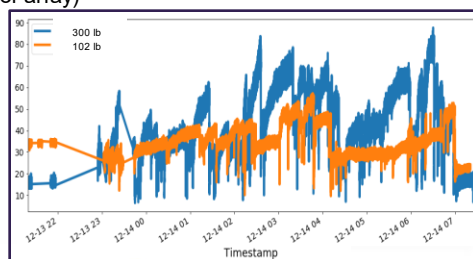
MORE ACCURATE   FASTER   MORE RELIABLE   MORE DURABLE   LIGHTWEIGHT   SUSTAINABLE   RECYCLABLE

Brighter Signals
The Future of Touch

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Fact sheet for Multi-modal fabric single sensors (SS)

Performance Data		Comment
Sensing Area	SS025 25x25 mm or _SS050 50x50mm	
Reading	ΔV: 0-5V range (0-1023)	Arduino Serial Monitor readout
Sampling Frequency	88Hz	At 9600 Baud Rate
Material Conductivity	0,7 Ohms / cm	Alternatives available on request
Response Time & Prolonged Pressure Response Time	1.46 ms at 115200 Baud Rate, 3922 Hz, 10-bit ADC. (Can vary based on sampling rate set) Sampling Period (Ts): Ts=1/fs, Tchange= 1/686 Hz, Ts=1/3922 Hz, Ts≈0.0014577 seconds, Ts≈1458 microseconds	Test measures time it takes for values to drop back down to baseline. Including after 45 minutes applied pressure

Mechanical & Environmental Data	
Size	_SS025 28x28mm or _SS050 55x55mm
Weight	_SS025 3g or _SS050 5g
Outer Materials	ANS/AAMi-PB70 AATCC42 (water penetration) AATCC127 (hydrostatic pressure test)
Operating Temperature	-40℃ to +85℃
Relative Humidity	20-100%
Durability of Textile Sensor	Normal operation >50,000 tours ISO12947 compliant
Longevity of Textile Sensor	Normal operation after 10 year ingress/egress impact simulation
Impact	BLUESIGN certified - Lowest possible impact on people and environment
Raw Material	GRS Certified – Global recycled standard
Recyclable	ESG – end of life sensor for secondary use

Multi-modal Properties

Below are two graphs demonstrating the same sensor using raw signals of different measurement methods (ΔV *top graph* and Capacitance *bottom graph*).

Direct ΔV measurement with 1KΩ pull-down resistor
Applied force by applying: 0.5kg, 1kg, 1.5kg, 12kg, 50g
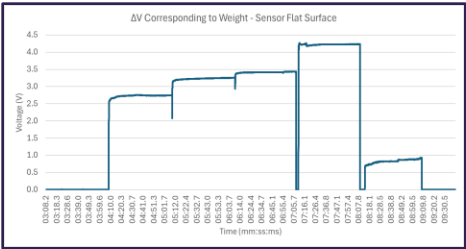High level of sensitivity and immediate recovery after heavy weight

ΔV Corresponding to Weight - Sensor Flat Surface

Capacitance (t∝RC) Measurement with 1MΩ resistor
Proximity and contact with sensor.

Capacitive Method - Sensor Flat Surface

*Direct contact value at 600 (maximum measurable value). Spikes are when hand touches metal from placing weight.

Electrical Data		Comment
Supply Voltage	As tested	
Power Consumption	1mA-4.8mA	Arduino Nano – Max power consumption based on maximum applied pressure
Analog Outputs	One per single sensor	Differs for arrays
Connectors	Application dependent	Can be purchased seperately